

Do We Really Know that the WTO increases Trade?

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Question

- What is the effect of the multilateral system on international trade?

Answer

- GATT and WTO have negligible effect
- GSP has a large positive effect (doubles trade)

The Line

Answer to title question is negative:

We don't really know the WTO increases (or the GATT increased) trade!

Technical Summary

- Use ordinary bilateral “gravity” model of trade
 - Also use aggregate data with same results
- Large panel data set: annual data 1948-1999 for 178 “countries”
- Find effects of GATT/WTO membership in one/both countries are economically small, often negative, statistically insignificant
 - GSP does affect trade, so methodology/data not to blame
- Robust results

Motivation

- Many believe that trade is enhanced by multilateral system
 - Part of reason why trade has grown faster than income?

- WTO's objective:
 - “Its main function is to ensure that trade flows as smoothly, predictably and freely as possible.”

WTO quotations:

“... The achievements of the system are well worth celebrating. Since the General Agreement on Tariffs and Trade began operating from Geneva in 1948, world merchandise trade has increased 16 fold ... world trade now grows roughly three times faster than merchandise output ... this advance ranks among the great international economic achievements of the post-world war era ...”

“The past 50 years have seen an exceptional growth in world trade. Merchandise exports grew on average by 6% annually. Total trade in 2000 was 22-times the level of 1950. GATT and the WTO have helped to create a strong and prosperous trading system contributing to unprecedented growth.”

Literature

Gravity Model

$$\begin{aligned}\ln(X_{ijt}) = & \beta_0 + \beta_1 \ln D_{ij} + \beta_2 \ln(Y_i Y_j)_t + \beta_3 \ln(Y_i Y_j / \text{Pop}_i \text{Pop}_j)_t + \beta_4 \text{Lang}_{ij} + \beta_5 \text{Cont}_{ij} \\ & + \beta_6 \text{Landl}_{ij} + \beta_7 \text{Island}_{ij} + \beta_8 \ln(\text{Area}_i \text{Area}_j) + \beta_9 \text{ComCol}_{ij} + \beta_{10} \text{CurCol}_{ijt} \\ & + \beta_{11} \text{Colony}_{ij} + \beta_{12} \text{ComNat}_{ij} + \beta_{13} \text{CU}_{ijt} + \beta_{14} \text{FTA}_{ijt}, + \Sigma_t \phi_t T_t \\ & + \gamma_1 \text{Bothin}_{ijt} + \gamma_2 \text{Onein}_{ijt} + \gamma_3 \text{GSP}_{ijt} + \varepsilon_{ijt}\end{aligned}$$

where i and j denotes trading partners, t denotes time.

Estimation: OLS with year effects, robust standard errors

Parameters of Interest: γ_1 , γ_2 , and γ_3

Data Set

- Trade data from IMF's *Direction of Trade*
 - Real US \$
 - 178 trading entities, most global trade covered
 - 1948-1999 (with gaps)
 - Average (4 measures of) bilateral exports and imports
- PWT, WDI, IFS for population, GDP
- CIA's website

Multilateral Data

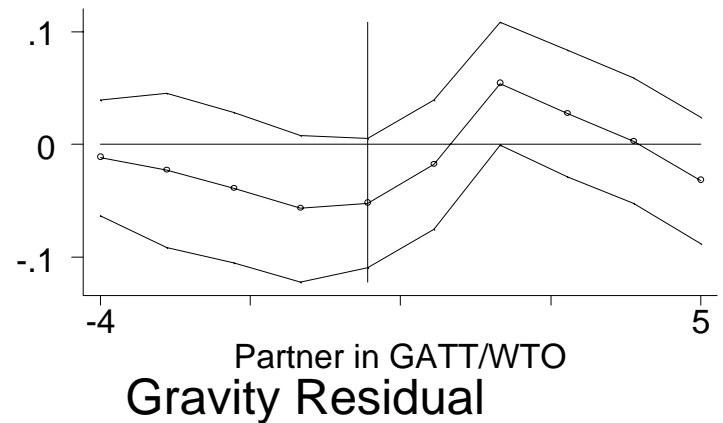
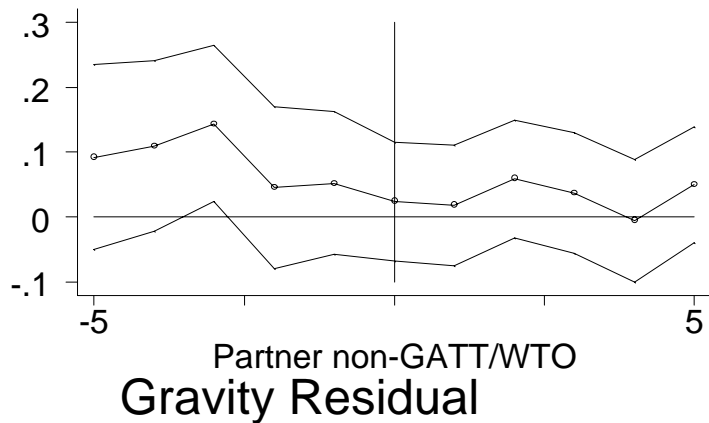
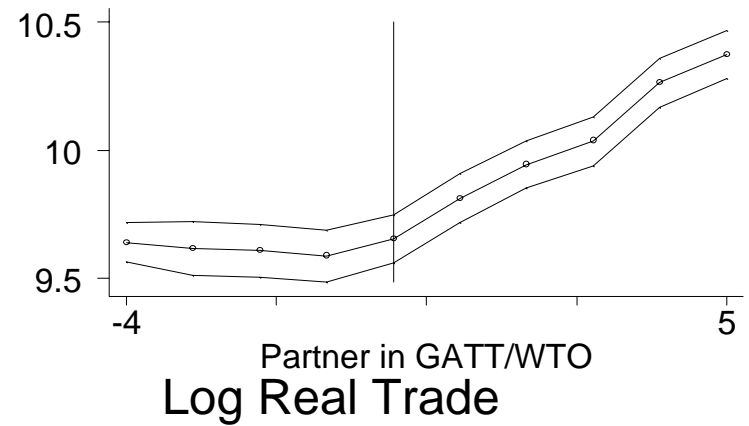
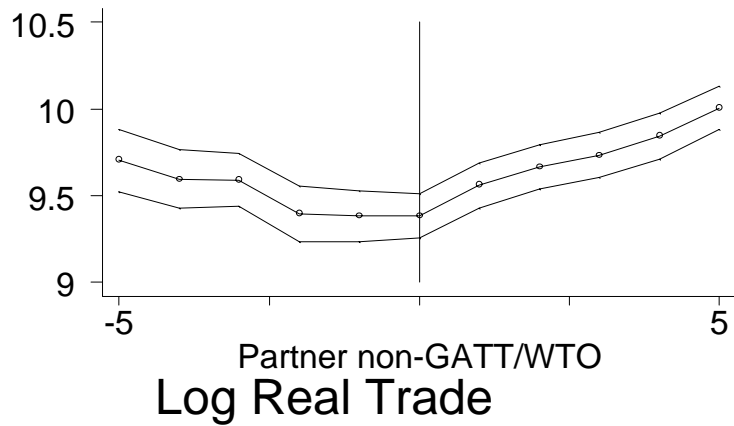
- WTO website for GATT/WTO accession
- Began in 1948 (covered 32 entities)
 - 1960: 50 “contracting parties”
 - 1970: 90
 - 1990: 112
 - Now: 158 with 29 “observers”
- GSP bilateral preferences from UN’s *Operation and Effects of the Generalized System of Preferences*
 - Interpolate from 1974, 1979, 1984 (data imperfect)

Descriptive Statistics

	Mean	Standard Deviation	Correlation with Both in GATT/WEO	Correlation with One in GATT/WEO	Correlation with GSP
Log Real Trade	10.06	3.34	.12	-.08	.24
Both in GATT/WTO	.49	.50	1.	-.83	.16
One in GATT/WTO	.42	.49	-.83	1.	-.06
GSP	.23	.42	.16	-.06	1.
Log Distance	8.16	.81	.04	.02	.14
Log product Real GDP	47.88	2.68	.19	-.10	.27
Log product Real GDP p/c	16.03	1.50	.13	-.05	.35
Regional FTA	.01	.12	.03	-.04	-.03
Currency Union	.01	.12	.04	-.04	-.06
Common Language	.22	.42	.04	-.07	-.06
Land Border	.03	.17	-.02	-.02	-.09
Number Landlocked	.25	.47	.01	-.01	.03
Number Islands	.34	.54	.04	-.02	.00
Log product Land Area	24.21	3.28	-.02	.02	.04
Common Colonizer	.10	.30	.02	-.03	-.18
Currently Colonized	.002	.04	.04	-.04	-.01
Ever Colony	.02	.14	.04	-.03	.08
Common Country	.0003	.02	.02	-.01	-.00

234,597 observations.

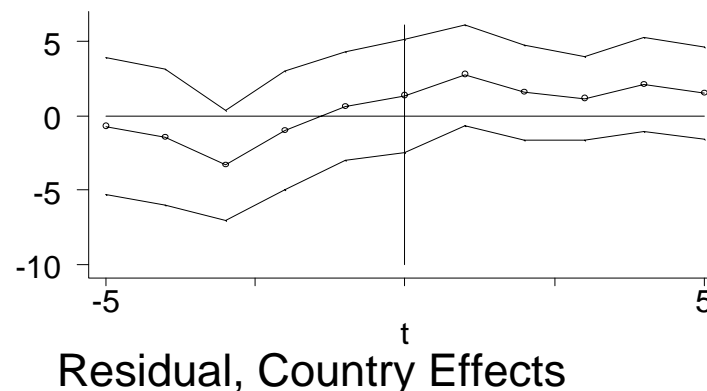
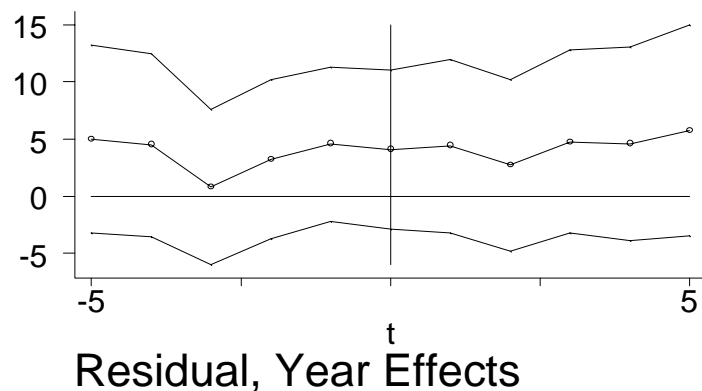
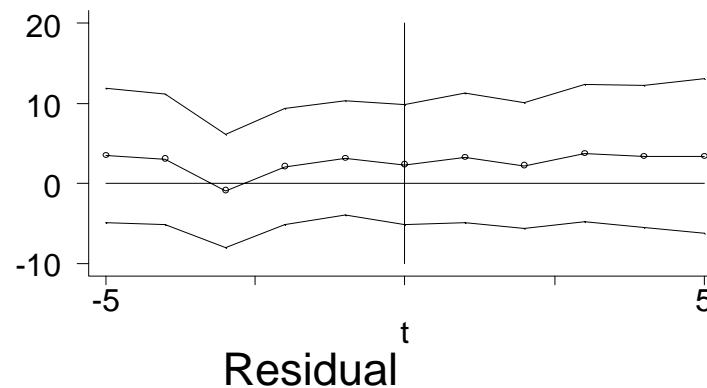
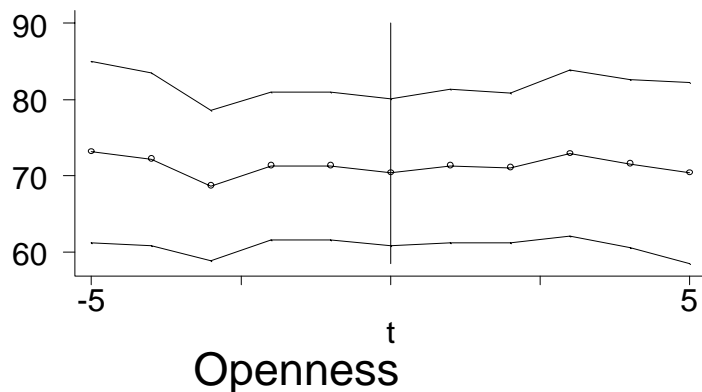
Albania	Djibouti	Latvia	Saudi Arabia
Algeria	Dominica	Lebanon	Senegal
Angola	Dominican Rep.	Lesotho	Seychelles
Antigua and Barbuda	Ecuador	Liberia	Sierra Leone
Argentina	Egypt	Libya	Singapore
Armenia	El Salvador	Lithuania	Slovak Republic
Australia	Equatorial Guinea	Luxembourg	Slovenia
Austria	Estonia	Macedonia	Solomon Islands
Azerbaijan	Ethiopia	Madagascar	Somalia
Bahamas	Fiji	Malawi	South Africa
Bahrain	Finland	Malaysia	Spain
Bangladesh	France	Maldives	Sri Lanka
Barbados	Gabon	Mali	St. Kitts & Nevis
Belarus	Gambia	Malta	St. Lucia
Belgium	Georgia	Mauritania	St. Vincent & Gren.
Belize	Germany	Mauritius	Sudan
Benin	Ghana	Mexico	Suriname
Bermuda	Greece	Moldova	Swaziland
Bhutan	Grenada	Mongolia	Sweden
Bolivia	Guatemala	Morocco	Switzerland
Botswana	Guinea	Mozambique	Syria
Brazil	Guinea-Bissau	Namibia	Tajikistan
Bulgaria	Guyana	Nepal	Tanzania
Burkina Faso	Haiti	Netherlands	Thailand
Burma (Myanmar)	Honduras	New Zealand	Togo
Burundi	Hong Kong	Nicaragua	Tonga
Cambodia	Hungary	Niger	Trinidad & Tobago
Cameroon	Iceland	Nigeria	Tunisia
Canada	India	Norway	Turkey
Cape Verde	Indonesia	Oman	Turkmenistan
Central African Rep.	Iran	Pakistan	Uganda
Chad	Iraq	Panama	Ukraine
Chile	Ireland	Papua N. Guinea	United Arab Emirates
China	Israel	Paraguay	United Kingdom
Colombia	Italy	Peru	United States
Comoros	Jamaica	Philippines	Uruguay
Congo, Dem. Rep. of (Zaire)	Japan	Poland	Uzbekistan
Congo, Rep. of	Jordan	Portugal	Vanuatu
Costa Rica	Kazakhstan	Qatar	Venezuela
Cote d'Ivoire (Ivory Coast)	Kenya	Reunion	Vietnam
Croatia	Kiribati	Romania	Yemen, Republic of
Cyprus	Korea, South (R)	Russia	Yugoslavia, Socialist Fed. Rep. of
Czech Republic	Kuwait	Rwanda	Zambia
Denmark	Kyrgyz Republic	Samoa	Zimbabwe
	Lao People's Dem. Rep.	Sao Tome & Principe	



Mean, with +/- 2 standard deviations
Effect of GATT/WTO entry on Bilateral Trade

Event Study: Bilateral Trade and GATT/WTO entry

PWT6 data, 1950-98. Mean, with +/- 2 standard deviations.
 Regressions include logs of real GDP and real GDP p/c.



+/- 5 years around entry of 104 countries

Effect of GATT/WEO entry on Aggregate Openness, $(X+M)/Y$

Event Study: Aggregate Openness and GATT/WTO entry

Table 1: Benchmark Results

	Default	No Industrial Countries	Post '70	With Country Effects
Both in GATT/WTO	-.04 (.05)	-.21 (.07)	-.08 (.07)	.15 (.05)
One in GATT/WTO	-.06 (.05)	-.20 (.06)	-.09 (.07)	.05 (.04)
GSP	.86 (.03)	.04 (.10)	.84 (.03)	.70 (.03)
Log Distance	-1.12 (.02)	-1.23 (.03)	-1.22 (.02)	-1.31 (.02)
Log product Real GDP	.92 (.01)	.96 (.02)	.95 (.01)	.16 (.05)
Log product Real GDP p/c	.32 (.01)	.20 (.02)	.32 (.02)	.54 (.05)
Regional FTA	1.20 (.11)	1.50 (.15)	1.10 (.12)	.94 (.13)
Currency Union	1.12 (.12)	1.00 (.15)	1.23 (.15)	1.19 (.12)
Common Language	.31 (.04)	.10 (.06)	.35 (.04)	.27 (.04)
Land Border	.53 (.11)	.72 (.12)	.69 (.12)	.28 (.11)
Number Landlocked	-.27 (.03)	-.28 (.05)	-.31 (.03)	-1.54 (.32)
Number Islands	.04 (.04)	-.14 (.06)	.03 (.04)	-.87 (.19)
Log product Land Area	-.10 (.01)	-.17 (.01)	-.10 (.01)	.38 (.03)
Common Colonizer	.58 (.07)	.73 (.07)	.52 (.07)	.60 (.06)
Currently Colonized	1.08 (.23)		1.12 (.41)	.72 (.26)
Ever Colony	1.16 (.12)	-.42 (.57)	1.28 (.12)	1.27 (.11)
Common Country	-.02 (1.08)		-.32 (1.04)	.31 (.58)
Observations	234,597	114,615	183,328	234,597
R²	.65	.47	.65	.70
RMSE	1.98	2.36	2.10	1.82

Regressand: log real trade. OLS with year effects (intercepts not reported).
Robust standard errors (clustering by country-pairs) in parentheses.

Notes:

1. Model works well
2. GATT/WTO membership has small effects
3. GSP has big effect
4. Robustness

Table 2: Cross-Sectional Analysis

	Both in GATT/WTO	One in GATT/WTO	GSP
1950	.59 (.12)	.21 (.09)	
1955	.64 (.11)	.30 (.09)	
1960	.40 (.10)	.07 (.07)	
1965	.23 (.07)	.13 (.07)	
1970	-.15 (.10)	-.04 (.10)	.40 (.23)
1975	-.33 (.11)	-.16 (.11)	.92 (.05)
1980	-.09 (.11)	.02 (.11)	.90 (.05)
1985	.18 (.15)	.15 (.16)	.80 (.06)
1990	.58 (.20)	.43 (.21)	.76 (.05)
1995	-.50 (.21)	-.66 (.21)	.59 (.05)

Regressand: log real trade. OLS with intercept not reported.

Robust standard errors in parentheses.

Regressors included but with unrecorded coefficients: regional FTA; currency union; log distance; log product real GDP; log product real GDP p/c; common language; land border; number landlocked; number islands; log product land area; common colonizer; currently colonized; ever colony; and common country.

Table 3: Allowing the Effects to vary over GATT rounds

	OLS, Year Effects	OLS, Year Effects	Fixed Country-Pair Effects	Fixed Country-Pair Effects
GATT Regime	Both in GATT/WTO	One in GATT/WTO	Both in GATT/WTO	One in GATT/WTO
Before Annecy Round (1949)	1.17 (.62)	.43 (.56)	.76 (.35)	.08 (.25)
Annecy to Torquay Round (1951)	.26 (.12)	.14 (.09)	.34 (.09)	.11 (.06)
Torquay to Geneva Round (1956)	.12 (.10)	.14 (.09)	.35 (.04)	.14 (.03)
Torquay to Dillon Round (1961)	-.02 (.09)	.03 (.07)	.24 (.04)	.10 (.03)
Dillon to Kennedy Round (1967)	-.09 (.06)	-.05 (.06)	.26 (.03)	.11 (.02)
Kennedy to Tokyo Round (1979)	-.14 (.07)	-.05 (.07)	.06 (.02)	.04 (.02)
Tokyo to Uruguay Round (1994)	.19 (.09)	.05 (.09)	-.07 (.02)	-.09 (.02)
After Uruguay Round	-.85 (.12)	-.80 (.12)	.18 (.02)	.14 (.03)

Regressand: log real trade.

OLS: robust standard errors (clustering by country-pairs) in parentheses.

Regressors not recorded: GSP; regional FTA; currency union; log distance; log product real GDP; log product real GDP p/c; common language; land border; number landlocked; number islands; log product land area; common colonizer; currently colonized; ever colony; and common country; intercepts.

Table 4: Allowing the Effects to vary by Region and Income Class

	Both in GATT/WTO	One in GATT/WTO	GSP
Default	-.04 (.05)	-.06 (.05)	.86 (.03)
South Asia	.93 (.40)	.67 (.39)	.86 (.11)
East Asia	.02 (.12)	-.13 (.10)	.60 (.10)
Sub-Saharan Africa	-.29 (.10)	-.28 (.09)	.97 (.06)
Middle-East or North Africa	-.16 (.12)	-.01 (.08)	1.05 (.09)
Latin America or Caribbean	.10 (.08)	.13 (.07)	.93 (.06)
High Income	-.26 (.09)	-.20 (.08)	.48 (.04)
Middle Income	-.05 (.06)	-.02 (.05)	.93 (.04)
Low Income	-.38 (.08)	-.37 (.08)	1.11 (.05)
Least Developed	-.34 (.11)	-.21 (.10)	1.09 (.07)

Regressand: log real trade. OLS with year effects (intercepts not reported).

Robust standard errors (clustering by country-pairs) in parentheses.

Regressors not recorded: regional FTA; currency union; log distance; log product real GDP; log product real GDP p/c; common language; land border; number landlocked; number islands; log product land area; common colonizer; currently colonized; ever colony; and common country.

Table 5: Sample Sensitivity Analysis

	Both in GATT/WTO	One in GATT/WTO	GSP
Data before 1980	.01 (.05)	.01 (.05)	.88 (.04)
Data after 1979	-.04 (.08)	-.08 (.08)	.81 (.04)
Only Industrial Countries	.47 (.22)	.19 (.22)	-.40 (.09)
No African Countries	-.06 (.07)	-.08 (.06)	.70 (.04)
No Latin or Caribbean countries	-.10 (.06)	-.16 (.06)	.64 (.04)
No OPEC Countries	-.17 (.06)	-.17 (.06)	.80 (.03)
No RTA Observations	-.05 (.05)	-.07 (.05)	.84 (.03)
Without Poorest Quartile of real GDP p/c	.15 (.07)	.14 (.06)	.73 (.03)
Without Smallest Quartile of real GDP	.21 (.06)	.16 (.06)	.69 (.03)
Without 3σ Outliers	-.07 (.05)	-.07 (.04)	.79 (.03)
Only Canadian Observations	-.01 (.13)		.32 (.15)
Only American Observations	.06 (.11)		.28 (.14)
Only British Observations	.16 (.10)		-.22 (.12)
Only French Observations	.21 (.09)		.23 (.13)
Only Italian Observations	.02 (.10)		.08 (.13)
Only German Observations	-.16 (.26)	-.20 (.23)	-.16 (.13)
Only Japanese Observations	-.39 (.36)	-.40 (.31)	.32 (.15)

Regressand: log real trade. OLS with year effects (intercepts not reported) unless noted.

Robust standard errors (clustering by country-pairs) in parentheses.

Regressors not recorded: regional FTA; currency union; log distance; log product real GDP; log product real GDP p/c; common language; land border; number landlocked; number islands; log product land area; common colonizer; currently colonized; ever colony; and common country.

Table 6: Estimation Sensitivity Analysis

	Both in GATT/WTO	One in GATT/WTO	GSP
With Quadratic Gravity terms	-.02 (.05)	-.02 (.05)	.86 (.03)
Without Year Effects	-.53 (.06)	-.33 (.05)	.47 (.03)
Dis-aggregated Regional Trade Agreements	-.03 (.05)	-.06 (.05)	.83 (.03)
Controlling for Aggregate Third-Country Trade	-.08 (.05)	-.16 (.05)	.50 (.03)
5-yr averages	-.06 (.06)	-.07 (.05)	.89 (.03)
Random Effects (GLS) Estimator	-.07 (.02)	-.06 (.02)	.04 (.01)
Fixed Effects (Within) Estimator	.15 (.02)	.05 (.02)	.11 (.01)
Random Effects (GLS) Estimator with Years	.11 (.02)	.03 (.02)	.30 (.01)
Fixed Effects (Within) Estimator with Years	.13 (.02)	.06 (.02)	.18 (.01)
Treatment MLE : Both members vs. neither	-.20 (.07)		.74 (.04)
Treatment MLE : One member vs. neither		-.26 (.07)	1.19 (.05)
Median Regression	-.51 (.02)	-.30 (.02)	.27 (.01)
Weighted Least Squares	-.03 (.05)	-.05 (.05)	.84 (.03)
Tobit	-.64 (.02)	-.41 (.02)	.58 (.01)
With Lagged Dependent Variable	-.03 (.01)	-.02 (.01)	.10 (.01)
Arellano-Bond Dynamic Panel	.12 (.04)	.02 (.04)	.35 (.02)

Regressand: log real trade. OLS with year effects (intercepts not reported) unless noted.

Robust standard errors (clustering by country-pairs) in parentheses.

Regressors not recorded: regional FTA; currency union; log distance; log product real GDP; log product real GDP p/c; common language; land border; number landlocked; number islands; log product land area; common colonizer; currently colonized; ever colony; and common country.

Table 7: Dynamic Analysis

Estimator	OLS	Prais-Winsten	Prais-Winsten	Random Effects	Random Effects	Random Effects
Autocorrelation Coefficient		.83	.83		.66	.66
Both in GATT/WTO	-.07 (.05)	.09 (.03)	.09 (.04)	.11 (.02)	.13 (.03)	.13 (.03)
One in GATT/WTO	-.07 (.05)	.03 (.03)	.03 (.03)	.03 (.02)	.04 (.03)	.04 (.02)
Accession 5 years ago	.22 (.03)		.00 (.01)	-.04 (.02)		-.02 (.02)
Accession 10 years ago	.43 (.03)		.04 (.01)	.08 (.03)		.04 (.02)
Accession 15 years ago	.47 (.03)		.01 (.01)	.10 (.03)		.00 (.02)
Accession 20 years ago	.66 (.03)		.04 (.01)	.22 (.03)		.05 (.02)

Regressand: log real trade.

Standard errors in parentheses (robust for OLS and Prais-Winsten).

Regressors included but with unrecorded coefficients: regional FTA; currency union; log distance; log product real GDP; log product real GDP p/c; common language; land border; number landlocked; number islands; log product land area; common colonizer; currently colonized; ever colony; common country; year effects.

Table 8: Perturbations of the Gravity Model

Both in GATT/WTO	-.04 (.05)	.14 (.05)	1.23 (.08)			.02 (.05)
One in GATT/WTO	-.06 (.05)	-.02 (.05)	.46 (.07)			-.02 (.05)
GSP	.86 (.03)	.74 (.03)	2.17 (.07)	.86 (.03)	.88 (.03)	.85 (.03)
Neither in GATT/WTO				.05 (.05)		
1 Founder of GATT					.22 (.04)	
2 Founders of GATT					.46 (.10)	
Min. Years In GATT/WTO					.001 (.001)	
Max. Years In GATT/WTO					-.007 (.002)	
Both in IMF						-.59 (.10)
One in IMF						-.36 (.10)
Log Distance	-1.12 (.02)	-1.27 (.02)		-1.12 (.02)	-1.13 (.02)	-1.12 (.02)
Log product Real GDP	.92 (.01)	.79 (.01)		.92 (.01)	.91 (.01)	.92 (.01)
Log product Real GDP p/c	.32 (.01)	.45 (.01)		.32 (.01)	.32 (.01)	.32 (.01)
Regional FTA	1.20 (.11)			1.20 (.11)	1.18 (.11)	1.20 (.11)
Currency Union	1.12 (.12)			1.12 (.12)	1.11 (.12)	1.11 (.12)
Common Language	.31 (.04)			.31 (.04)	.29 (.04)	.32 (.04)
Land Border	.52 (.11)			.52 (.11)	.52 (.11)	.53 (.11)
Number Landlocked	-.27 (.03)			-.27 (.03)	-.27 (.03)	-.29 (.03)
Number Islands	.04 (.04)			.04 (.04)	.00 (.04)	.04 (.04)
Log product Land Area	-.10 (.01)			-.10 (.01)	-.10 (.01)	-.10 (.01)
Common Colonizer	.58 (.07)			.59 (.07)	.57 (.07)	.59 (.07)
Currently Colonized	1.08 (.23)			1.08 (.23)	.85 (.26)	.92 (.23)
Ever Colony	1.16 (.12)			1.16 (.12)	1.11 (.12)	1.17 (.12)
Common Country	-.02 (1.08)			-.02 (1.08)	-.07 (1.10)	.17 (1.08)
R²	.65	.63	.12	.65	.65	.65
RMSE	1.98	2.04	3.13	1.98	1.98	1.98

Regressand: log real trade. OLS with year effects (intercepts not reported). 234,597 observations.
Robust standard errors (clustering by country-pairs) in parentheses.

Appendix 3a: Aggregate Openness and the GATT/WTO

	Member of GATT/WTO	Log Real GDP per capita	Log population	Remoteness	R ²
	-.11 (.02)				.12
	-.01 (.01)	.13 (.01)	-.22 (.004)	-1.86 (.39)	.53
With Extra Controls*	-.00 (.01)	.13 (.01)	-.16 (.006)	-.51 (.44)	.56
Without year Effects	-.01 (.02)				.00
Without year Effects	.032 (.014)	.16 (.01)	-.21 (.003)	-5.92 (.34)	.47
Without year Effects, Extra Controls*	.006 (.015)	.15 (.01)	-.14 (.006)	-4.96 (.39)	.51
Level of Openness	-5.95 (1.12)				.08
Level of Openness	-.21 (.92)	9.61 (.52)	-12.63 (.26)	82.5 (33.2)	.40
Level of Openness, Extra Controls*	-.58 (1.01)	9.65 (.50)	-4.59 (.59)	243 (36)	.48
Remoteness using levels	.00 (.01)	.12 (.01)	-.22 (.004)	-1547. (390)	.53

Regressand: log of openness (i.e., ratio of exports plus imports to GDP in percent) unless noted.

Data from PWT6; 158 countries, 1950-1998; 5499 observations unless noted.

OLS with year effects (intercepts not reported).

Robust standard errors in parentheses.

* "Extra Controls" are: a) currency union dummy; b) dependency dummy; c) log of area; d) island dummy; and e) landlocked dummy. Extra controls reduce observations to 4803.

Appendix 3b: Aggregate Openness, Tariffs, and the GATT/WTO

	Member of GATT/WTO	Log Real GDP per capita	Log population	Remoteness	Tariffs	R²
	-.02 (.02)	.06 (.01)	-.23 (.01)	-1.52 (.58)	-.010 (.001)	.51
Without year Effects	-.03 (.02)	.07 (.01)	-.22 (.01)	-3.32 (.53)	-.010 (.001)	.49
Level of Openness	.79 (1.66)	4.65 (.75)	-15 (.6)	125 (61)	-.64 (.10)	.36

Regressand: log of openness (i.e., ratio of exports plus imports to GDP in percent).

Data from PWT6; 158 countries, 1970-1998; 2099 observations.

OLS with year effects (intercepts not reported).

Robust standard errors in parentheses.

Tariffs are import duties as percentage of imports, taken from WDI 2002.

Appendix 4: Instrumental Variable Estimates of the GATT/WTO Effect

			IV Estimate γ_1	IV Estimate γ_2	R ² from First-Stage	R ² from First-Stage
	Functional Form of IVs	Instrumental Variables	Both in GATT/WTO	One in GATT/WTO	Both in GATT/WTO	One in GATT/WTO
Whole Sample	Log product	1: Democracy, Polity	8.4 (3.5)	14 (6.4)	.18	.08
Whole Sample	Log product	2: Freedom, Civil, Political Rights	-12.4 (5.9)	-21 (9.2)	.14	.07
Whole Sample	Log product	1 + 2 (Dem'y, Pol'y, Free., Civil, Pol'l)	-15.0 (7.5)	-24 (11.5)	.18	.09
Whole Sample	Sum	1: Democracy, Polity	9.3 (5.4)	16 (10.1)	.17	.07
Whole Sample	Sum	2: Freedom, Civil, Political Rights	-7.2 (3.0)	-12.6 (4.4)	.14	.07
Whole Sample	Sum	1 + 2 (Dem'y, Pol'y, Free., Civil, Pol'l)	-7.0 (2.8)	-12.0 (4.2)	.17	.09
1950	Log products	1: Democracy, Polity	3.1 (3.5)	11.6 (28)	.26	.03
1960	Log products	1: Democracy, Polity	52 (2000)	-150 (6,000)	.21	.03
1970	Log products	1: Democracy, Polity	1.1 (4.9)	-.4 (9.9)	.10	.03
1980	Log products	1: Democracy, Polity	-43 (300)	-70 (500)	.16	.06
1990	Log products	1: Democracy, Polity	900 (60,000)	13,000 (87,000)	.17	.10

Regressand: log real trade.

IV: robust standard errors (clustering by country-pairs) in parentheses.

Instrumental variables: Set 1: log product (sum) of two countries': a) democracy, and b) polity scores. Set 2: log product (sum) of two countries'; a) political rights; b) civil rights; c) freedom scores.

Regressors not recorded: GSP; regional FTA; currency union; log distance; log product real GDP; log product real GDP p/c; common language; land border; number landlocked; number islands; log product land area; common colonizer; currently colonized; ever colony; and common country; year intercepts.

Appendix 5: The Effect of WTO/GATT Membership on Exporters and Importers

	Both in GATT/WTO	Only Exporter in GATT/WTO	Only Importer in GATT/WTO	GSP
OLS	.01 (.05)	.01 (.05)	-.12 (.05)	.76 (.03)
OLS with equal GDP exporter and importer coefficients	.01 (.05)	.12 (.05)	-.25 (.05)	.76 (.03)
Fixed Effects	.07 (.02)	.06 (.02)	-.06 (.02)	.17 (.01)
Random Effects	.06 (.02)	.02 (.02)	-.10 (.02)	.27 (.01)

Regressand: log real exports from one country to the other. 387,780 observations.

Robust standard errors (clustering by country-pairs) in parentheses.

Regressors not recorded: regional FTA; currency union; log distance; log exporter real GDP; log exporter real GDP p/c; log importer real GDP; log importer real GDP p/c; common language; land border; number landlocked; number islands; log product land area; common colonizer; currently colonized; ever colony; common country; and year effects.

Appendix 6: Adding Tariffs to the Benchmark Model

Both in GATT/WTO	.09 (.11)	.05 (.11)	.08 (.11)	.06 (.11)
One in GATT/WTO	.02 (.11)	.00 (.11)	.03 (.11)	.01 (.11)
GSP	.68 (.04)	.68 (.04)	.66 (.04)	.54 (.04)
Log Distance	-1.24 (.03)	-1.24 (.03)	-1.25 (.03)	-1.22 (.03)
Log product Real GDP	.94 (.01)	.94 (.01)	.94 (.01)	.91 (.01)
Log product Real GDP p/c	.45 (.02)	.42 (.02)	.47 (.02)	.39 (.02)
Regional FTA	.58 (.13)	.54 (.13)	.84 (.15)	.57 (.18)
Currency Union	1.24 (.19)	1.21 (.19)	1.17 (.20)	1.19 (.19)
Common Language	.41 (.05)	.42 (.05)	.43 (.05)	.53 (.05)
Land Border	.46 (.14)	.47 (.14)	.51 (.15)	.51 (.15)
Number Landlocked	-.16 (.04)	-.19 (.04)	-.12 (.04)	-.15 (.04)
Number Islands	.06 (.05)	.07 (.05)	.07 (.05)	.20 (.05)
Log product Land Area	-.08 (.01)	-.07 (.01)	-.07 (.01)	-.04 (.01)
Common Colonizer	.54 (.09)	.59 (.09)	.58 (.09)	.61 (.09)
Currently Colonized	.69 (1.30)	.63 (1.31)	1.06 (1.16)	.81 (1.20)
Ever Colony	1.04 (.12)	1.04 (.12)	1.10 (.13)	.90 (.13)
Sum of Tariffs		-.0053 (.0009)		
Log product Of Tariffs				-.14 (.01)
Observations	78,254	78,254	69,859	69,859
R²	.71	.71	.69	.69
RMSE	1.86	1.85	1.90	1.89

Regressand: log real trade. OLS with year effects (intercepts not reported).

Robust standard errors (clustering by country-pairs) in parentheses.

Tariffs are import duties as percentage of imports, taken from WDI 2002.

Appendix 7: Other Measures of Trade Policy in the Benchmark Model

Both in GATT/WTO	-.39 (.14)	-.76 (.14)	-.46 (.13)	.11 (.20)	.15 (.20)	-.10 (.12)	-.09 (.12)
One in GATT/WTO	-.55 (.14)	-.77 (.14)	-.57 (.14)	-.12 (.16)	-.14 (.15)	-.16 (.11)	-.15 (.11)
GSP	.52 (.04)	.46 (.03)	.48 (.04)	N/a	N/a	.10 (.11)	.12 (.11)
Sum of Economic Freedom Indices		-.76 (.03)					
Sum of IEF Trade Policy sub-indices			-.23 (.01)				
Sum of Dollar's Price Distortions					1.52 (.35)		
Sum of Black Market Premia							-.11 (.04)
Observations	21,935	21,935	21,935	7,412	7,412	26,912	26,912

Regressand: log real trade. OLS with year effects (intercepts not reported).

Robust standard errors (clustering by country-pairs) in parentheses.

Regressors not recorded: regional FTA; currency union; log distance; log product real GDP; log product real GDP p/c; common language; land border; number landlocked; number islands; log product land area; common colonizer; currently colonized; ever colony; and common country.

More Technical Issues

- Reverse Causality biases coefficients *up*
- Little *measurement error* with respect to accession dates
- Little evidence of trade *diversion* (or *creation!*)
- Missing trade data: Heckman's "treatment methodology"
 - Also missing output: possibly more serious

Summary of Different Estimates

- 80 estimates of γ_1
 - Mean: .05
 - Median: .02
 - 39 negative
 - 4 greater than .69 (doubling)
 - 1 w/o gravity, other 3 insignificant at .01
 - 71% t-statistics < 2.5

Why Has Trade Grown Faster than Income if not GATT?

- Different question but possibly:
 - Higher productivity in tradables
 - Falling transport costs
 - Regional trade associations
 - Converging tastes
 - Changing factor endowments
 - Growing liquidity