

# Is Peace the Natural Effect of Trade?

New Evidence and Some Anomalies

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# Motivation

Alan Kuperman: we can reduce auto accidents (genocide) by toughening auto insurance benefits (not intervening) rather than simply making cars safer (getting at the root cause of the insurgence)

Lloyd Jeff Dumas: “Bombs don’t stop wars ... relationships do”

1. To understand peace one must examine dyads.
2. The important characteristic of dyads is gains from trade.
3. Conflict leads to the cessation or diminution of trade.
4. The higher the gains from trade, the higher the costs of conflict and hence the lower the conflict.

# Evidence

- Events Data
- MIDS Data

Application: Democratic Peace

Anomalies

# Data on Peace

**Net Cooperation From Actor Country To Target Country COPDAB Data, 1948-1973**

Target	Actor				
	China	Egypt	UK	USA	Russia
<b>Canada</b>	0.37	0.03	0.68	1.12	0.22
<b>China</b>		0.64	-0.56	-2.4	-0.93
<b>Egypt</b>	0.85		-3.07	0.63	2.77
<b>W Germany</b>	0.22	0.27	1.42	2.59	-1.13
<b>E Germany</b>	0.24	0.39	-0.25	-0.54	1.28
<b>Israel</b>	-0.21	-23.17	-0.16	2.16	-1.08
<b>Japan</b>	0.8	0.17	0.34	1.75	0.47
<b>UK</b>	-0.13	-3.07		3.73	-2.54
<b>USA</b>	-4.74	0.53	3.04		-7.14
<b>Russia</b>	-2.33	2.77	-2.86	-4.76	

**Net Cooperation From Actor Country To Target Country WEIS Data, 1966-1991**

Target	Actor								
	Canada	China	Egypt	Germany	Israel	Japan	UK	USA	Russia
<b>Canada</b>		2.57	3.417	1.627	1.475	2.031	1.61	1.63	-0.118
<b>China</b>	2.647		2.316	2.078	1.5	1.395	0.466	0.89	-1.077
<b>Egypt</b>	3.92	3.624		2.452	-2.682	2.067	2.273	1.42	2.216
<b>Germany</b>	2.443	0.555	0.85		0.494	2	1.51	1.64	0.005
<b>Israel</b>	0.555	-1.032	-2.865	1.393		-0.02	-0.0117	0.735	-1.762
<b>Japan</b>	2.586	0.337	0.26	1.621	0.09		1.653	1.284	0.47
<b>UK</b>	1.944	-0.27	0.086	2.002	-0.602	2.229		1.447	-0.791
<b>USA</b>	1.058	-0.826	0.31	0.706	0.404	1.064	1.162		-0.63
<b>Russia</b>	0.315	-1.42	1.03	0.288	-0.888	0.336	-0.614	-0.185	

# Motivation: Another Question

**Why do countries have good relations with some countries, but bad relations with others?**



# 1. To *understand* **peace** one must *examine* **dyads**

- Country pairs (dyads) should be the unit of observation rather than single countries (monads)

## 2. Gains From Trade

- Gains from trade is the important characteristic of the match

FIGURE 1

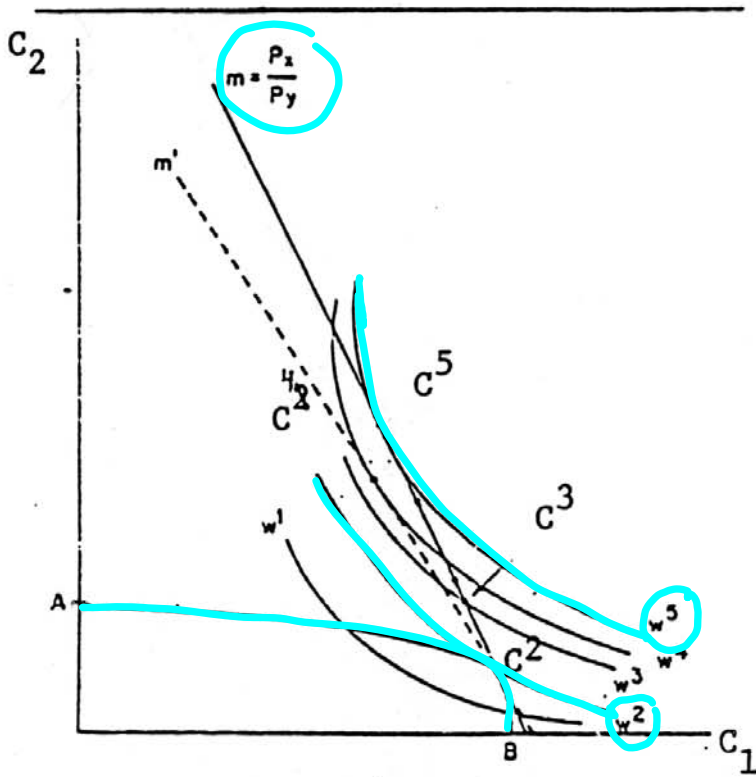


Figure 1: The Gains from Trade

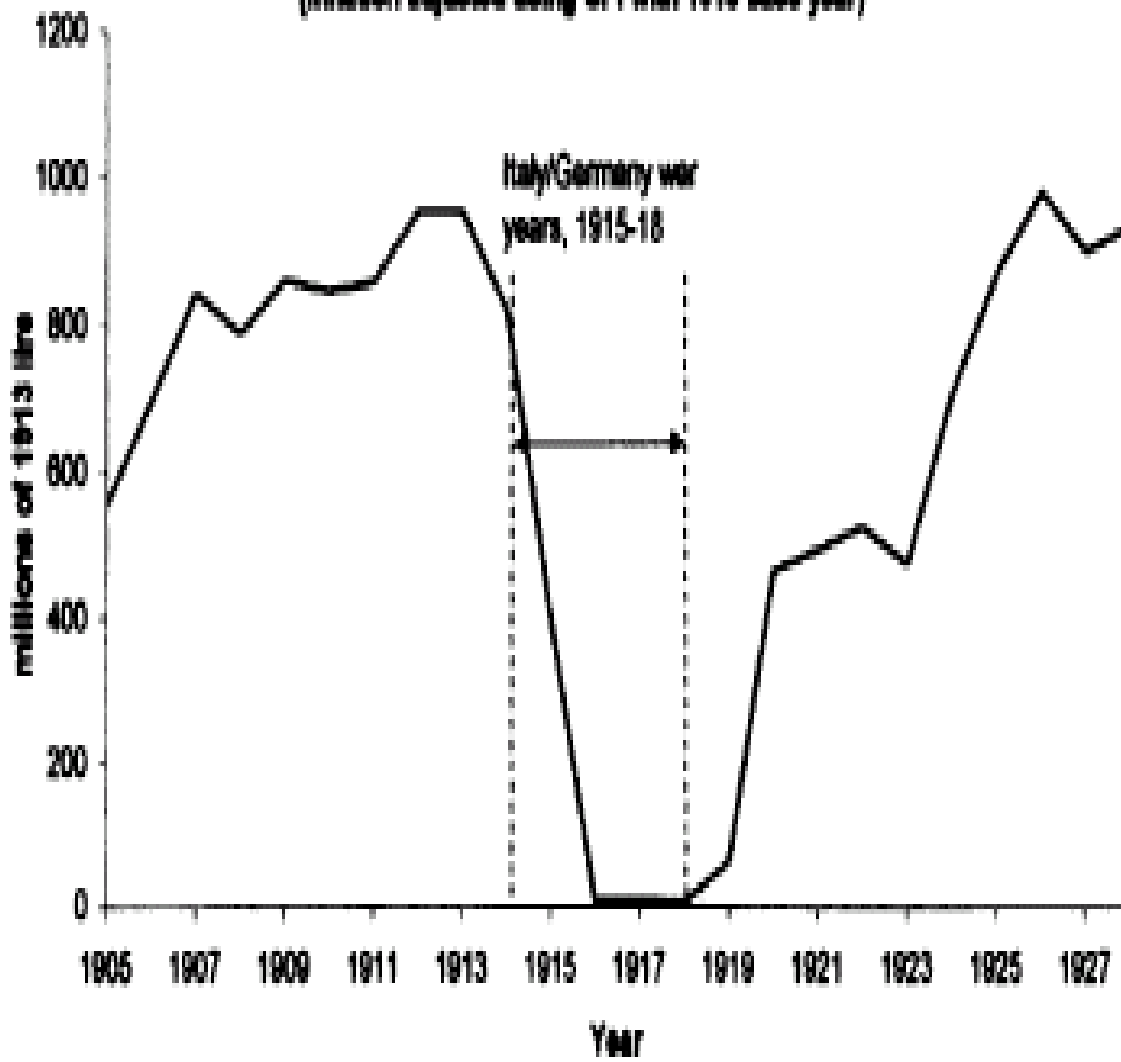
Source: S. Polachek, "Conflict and Trade," JCR (1980)

### 3. Conflict leads to the Cessation or Diminution of Trade

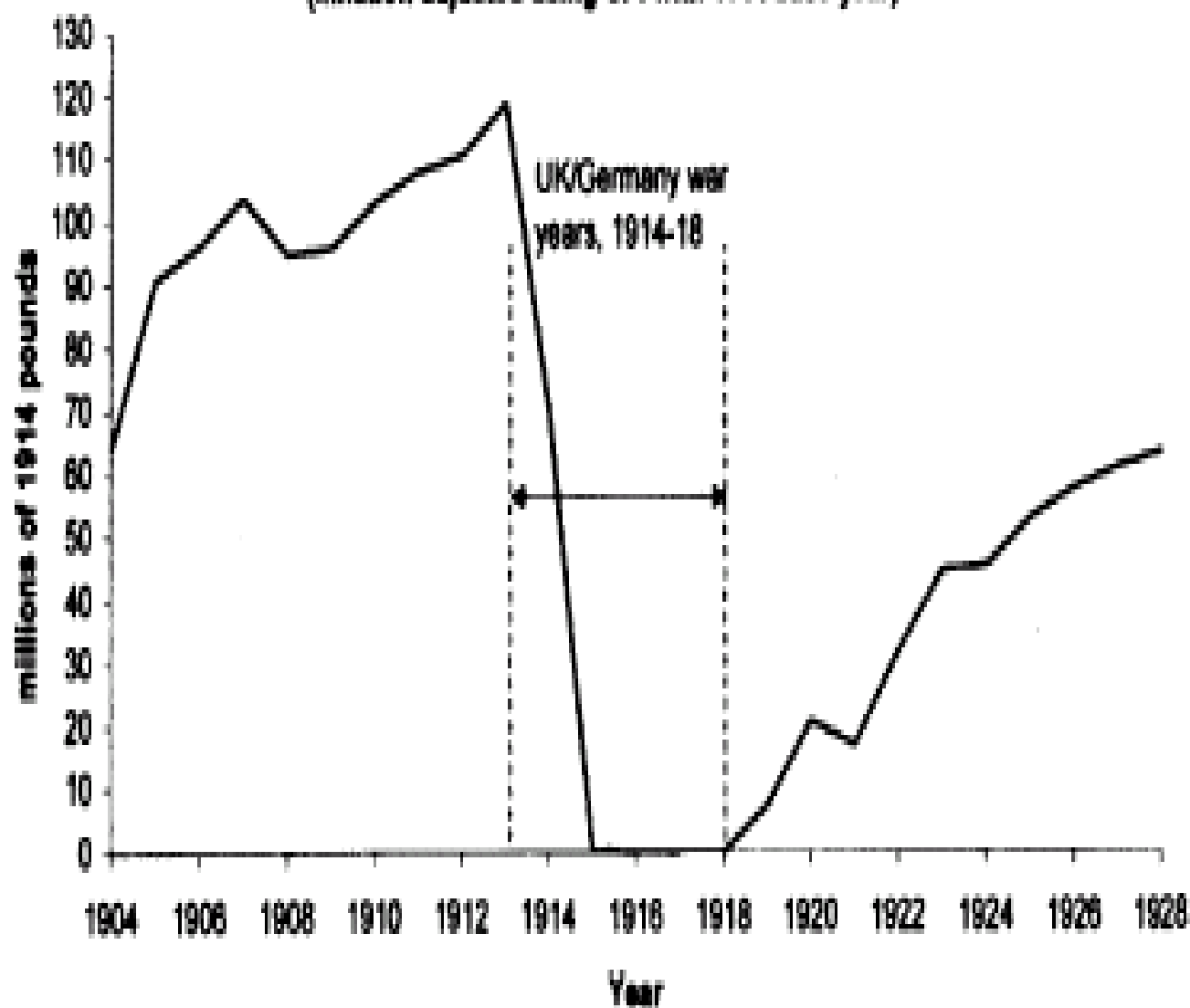
- If conflict leads to the cessation or diminution of trade then the costs of conflict are larger the greater the gains from trade

# Evidence From Anderton

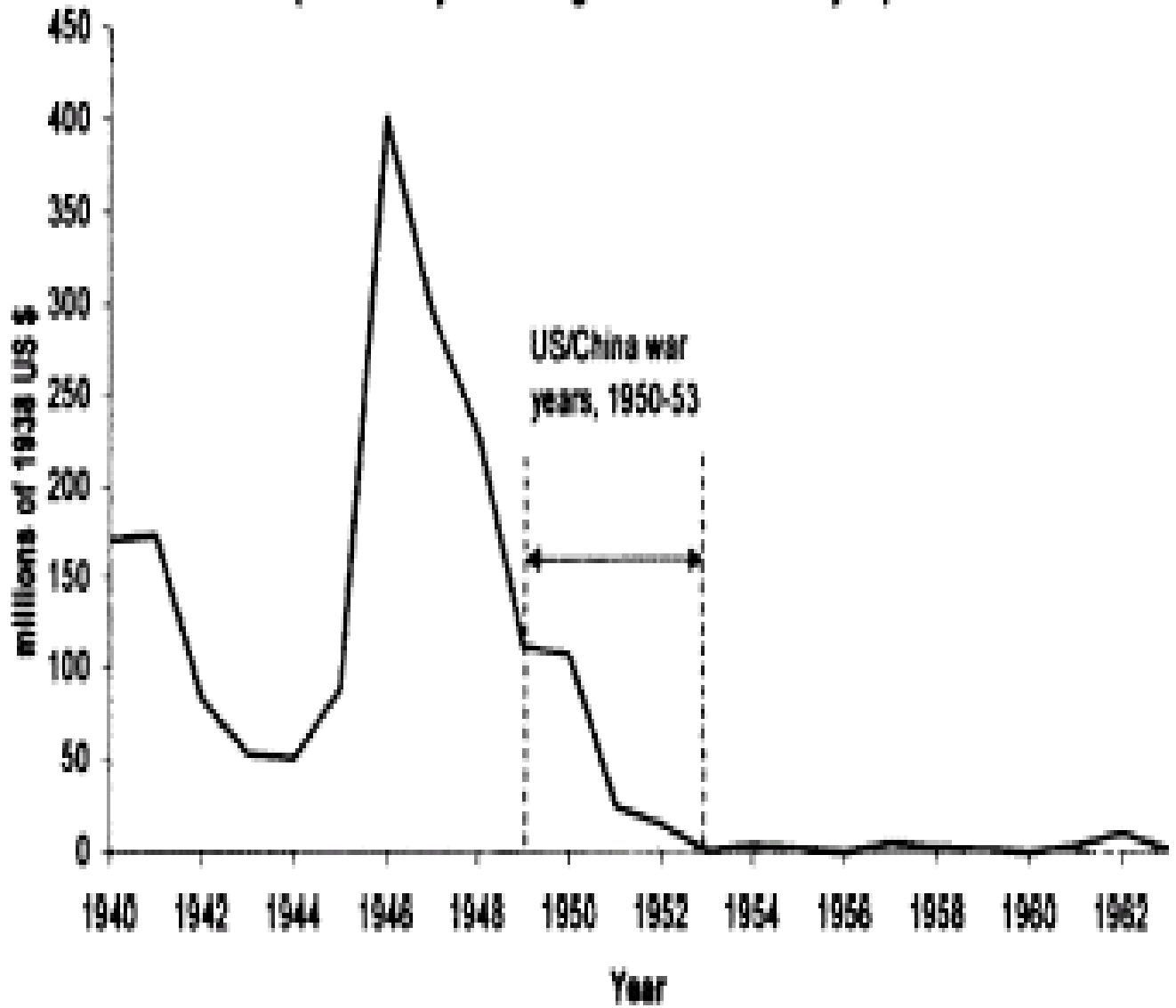
Italy Real Merchandise Trade (Exports + Imports) with Germany, 1904-1928  
(Inflation adjusted using CPI with 1913 base year)



UK Real Merchandise Trade (Exports + Imports) with Germany, 1904-1928  
(Inflation adjusted using CPI with 1914 base year)



US Real Merchandise Trade (Exports + Imports) with China, 1940-83  
(inflation adjusted using CPI with 1938 base year)



## 4. Countries with the highest gains from trade engage in the least conflict

- Those countries with the highest gains from trade face the highest costs of conflict and thus engage in the least conflict.



TABLE 2  
Impact of Trade on Conflict  
All Years Pooled  
(t-values in parentheses)

<i>Specification</i> <sup>1</sup>	<i>Adjustment for Country Attributes</i>	<i>Independent Variable</i>	<i>Intercept</i>	<i>Coefficient</i>	<i>Elasticity</i> <sup>2</sup>
(1)	no	X	-1.3241 (13.7)	-.0028 (13.3)	.192
(2)	no	M	-1.3341 (13.8)	-.0027 (12.8)	.185
(3)	yes	X	-.0984 (0.1)	-.0023 (9.8)	.152
(4)	yes	M	-.1119 (0.1)	-.0023 (9.9)	.152

1. See Table 1 for specifications.

2. The percentage of impact on conflict given a 1% change in trade.

Computed as:

$$\text{Elasticity} = \frac{\partial \text{NETF}}{\partial X} \frac{\text{mean } X}{\text{mean NETF}}$$

and

$$\text{Elasticity} = \frac{\partial \text{NETF}}{\partial M} \frac{\text{mean } M}{\text{mean NETF}}$$

**Table 5: The Trade-Conflict Relationship:**  
 (Dependent Variable: Conflict as a Function of Trade Holding Cooperation Constant)

Variables	COPDAB (1948-78)	WEIS (1966-92)	VRA (1990-2000)
Trade	-.0010*	-.0002***	-.0001**
Cooperation	.1508***	.8904***	.3554***
Maximum Power	148.3688***	26.8794**	6.9180
Minimum Power	324.8879***	-59.9876	-11.0458
Power Ratio	-.0154***	-.0038***	-.0014**
Joint Democracy	-.0236***	-.0016	.0020***
Political Dissimilarity	.9821***	.3085***	.1631***
Contiguity Dummy	47.9052***	10.1308***	4.2107***
Major Power Dummy	9.6358***	-2.9004***	.8638***
WTO Membership Dummy	-6.5634***	-5.3386***	-.4939***
Constant	-4.7531**	2.4171	-1.3982***
Observations	76,705	15,702	36,434
R-Squared	.0080	.0248	.3699
Probability > F	.0000	.0000	.0000

Note: Dependent Variable is Conflict as Defined in the text. See Table 3 for variable definitions.

\*\*\* denotes  $P < .01$ , \*\* denotes  $P < .05$ , \* denotes  $P < .10$ .

# MIDS Data

Table 6  
Variable Definitions and Means  
(1950-1985)

	Mean
Duration - the duration of the dispute in days (MIDs)	102.2
Fatalities - a categorical variable ranging from 0 to 6 denoting the number of fatalities during the dispute (MIDs)	0.39
Trade - bilateral trade measured in the year prior to dispute onset; in constant 1983 millions of \$US (IMF Direction of Trade)	9.45
Relative power - the ratio of the larger to smaller state's Composite Index of National Capabilities scores (COW)	28.5
Relative GDP - the ratio of the larger to smaller state's GDP (Penn World Tables)	3.08
Contiguity - dummy variable; 1 if countries are contiguous (Jon Haveman, <a href="http://intrepid.mgmt.purdue.edu/trade.resources/data/gravity">http://intrepid.mgmt.purdue.edu/trade.resources/data/gravity</a> )	0.41
Distance - the distance (in miles) between primary (usually capital) cities (Jon Haveman, <a href="http://intrepid.mgmt.purdue.edu/trade.resources/data/gravity">http://intrepid.mgmt.purdue.edu/trade.resources/data/gravity</a> )	2778.1
Allies - dummy variable; 1 if the countries are allies (COW)	0.26
Joint democracy - the sum of each country's democracy score (Polity III)	7.23
Number of observations	840

Table 7  
Distribution of Dispute Duration and Fatalities

	All Disputes	
	Frequency	Percent
<i>Dispute duration</i>		
1 day	287	34.2
2-7 days	102	12.1
8-30 days	102	12.1
31-90 days	103	12.3
91-365 days	185	22.0
>365 days	61	7.3
<i>Fatalities</i>		
None	598	79.6
1-25 deaths	82	10.9
26-100 deaths	33	4.4
101-250 deaths	24	3.2
251-500 deaths	4	0.5
501-999 deaths	1	0.1
>999 deaths	9	1.2

Table 8  
Dispute Duration Results

	(1)	(2)	(3)	(4)
Constant	3.568 ** (.087)	3.683 ** (.173)	3.907 ** (.199)	3.914 ** (.198)
Trade	-0.0036** (.001)	-0.0033** (.001)	-0.0036** (.015)	-0.0029* (.002)
Relative Power		.0013 (.001)		.0019 ** (.001)
Relative GDP			-.0758* (.039)	-.0802** (.039)
Contiguity		-.4357** (.202)	-.6317** (.218)	-.7690** (.227)
Distance.		.00002 (.00003)	.00007 * (.00004)	.00007 * (.00004)
Allies		.1158 (.203)	-.0445 (.213)	.0855 (.220)
Democracy		-.0043 (.005)	-.0014 (.004)	-.0079* (.005)
Scale	2.0272 (.063)	2.0182 (.065)	2.000 (.072)	1.990 (.072)
Log-likelihood	-1393.6	-1294.3	-1026.0	-1010.1
Observations	619	576	459	453

Table 9  
Fatality Logit Results

	(1)	(2)	(3)	(4)
Constant	-1.249 ** (.125)	-1.815** (.329)	-2.119** (.476)	-2.148** (.481)
Trade	-.0844** (.029) [-.0124]	-.0642** (.028) [-.0094]	-.0781** (.032) [-.0123]	-.0762** (.032) [-.0118]
Relative Power		-.0002 (.001) [-.00003]		-.0002 (.001) [-.00003]
Relative GDP			.0209 (.060) [.0033]	.0261 (.061) [.0040]
Contiguity		.9402 ** (.297) [.1378]	1.362 ** (.361) [.2141]	1.290 ** (.376) [.1993]
Distance		-.00002 (.00006) [-2.9X10 <sup>-6</sup> ]	6.09X10 <sup>-6</sup> (.00007) [9.6X10 <sup>-7</sup> ]	6.09X10 <sup>-6</sup> (.00007) [1.2X10 <sup>-6</sup> ]
Allies		.2218 (.276) [.0325]	.0957 (.295) [.0150]	.1952 (.314) [.0302]
Democracy		.0006 (.023) [.00009]	.0091 (.025) [.0014]	.0084 (.026) [.0013]
Log-likelihood	-254.5	-225.5	-184.9	-180.6
Total obs.	565	527	425	419
Obs. with fatalities	101	94	83	80

The dependent variable is dichotomous with 1 denoting the dispute had fatalities, 0 no fatalities. Standard errors are in parentheses. The brackets contain the marginal effects, calculated as  $\beta p(1-p)$ .

# Democracy and Trade



TABLE 1  
CONTINUOUS AND DICHOTOMOUS INDICES OF DEMOCRACY BY COUNTRY  
(1958-1968)

Country Code	Country	Continuous Gurr Index	Dichotomous Gurr Index <sup>a</sup>	Dichotomous Gurr Index <sup>b</sup>
2	US	10.0	1.0	1.0
20	Canada	10.0	1.0	1.0
200	England	10.0	1.0	1.0
220	France	6.0	0.0	1.0
260	West Germany	10.0	1.0	1.0
265	East Germany	1.0	0.0	0.0
325	Italy	10.0	1.0	1.0
350	Greece	6.3	0.9	0.9
352	Cyprus	3.0	0.3	0.3
365	USSR	1.0	0.0	0.0
600	Morocco	0.7	0.0	0.0
315	Algeria	1.0	0.0	0.0
616	Tunisia	1.0	0.0	0.0
620	Libya	0.0	0.0	0.0
625	Sudan	2.4	0.3	0.3
630	Iran	0.0	0.0	0.0
640	Turkey	8.4	0.9	0.9
645	Iraq	1.0	0.0	0.0
651	UAR (Egypt)	1.0	0.0	0.0
652	Syria	1.8	0.0	0.0
660	Lebanon	4.0	0.0	0.0
663	Jordan	0.0	0.0	0.0
666	Israel	10.0	1.0	1.0
670	Saudi Arabia	0.0	0.0	0.0
690	Kuwait	0.0	0.0	0.0
710	China	1.0	0.0	0.0
740	Japan	10.0	1.0	1.0
750	India	10.0	1.0	1.0
770	Pakistan	3.0	0.0	0.3
850	Indonesia	1.8	0.0	0.0

<sup>a</sup> Gurr Index must be 7 or higher to be classified as a democracy.

<sup>b</sup> Gurr Index must be 5 or higher to be classified as a democracy.

Table 5

The Impact of Democracy and Trade on Conflict\*

Variable	Coef	t-value	Coef	t-value	Coef	t-value	Coef	t-value	Coef	t-value
INTERCEP	-1.92	-8.416	-1.01	-8.11	-1.91	-8.423	-1.71	-9.2	-3.00	-10.0
DEMCAT	-1.51	-4.182			-0.48	-1.256			0.37	0.9
ADEM	0.85	2.601			0.94	2.905			2.1	5.5
TDEM	2.58	7.776			2.66	8.092			2.4	6.1
NEWX			-0.003	-10.39	-0.003	-8.225	-0.003	-8.5	-0.003	-6.8
GNP-actor							-1.3 E-8	-11.7	-1.4 E-8	12.5
GNP-target							7.6 E-9	6.6	6.5 E-9	2.5
pop-actor							2.0 E-5	12.4	2.0 E-5	12.0
pop-target							4.7 E-6	2.8	4.3 E-6	5.0
R-square	0.025		0.021		0.038		0.08		0.09	

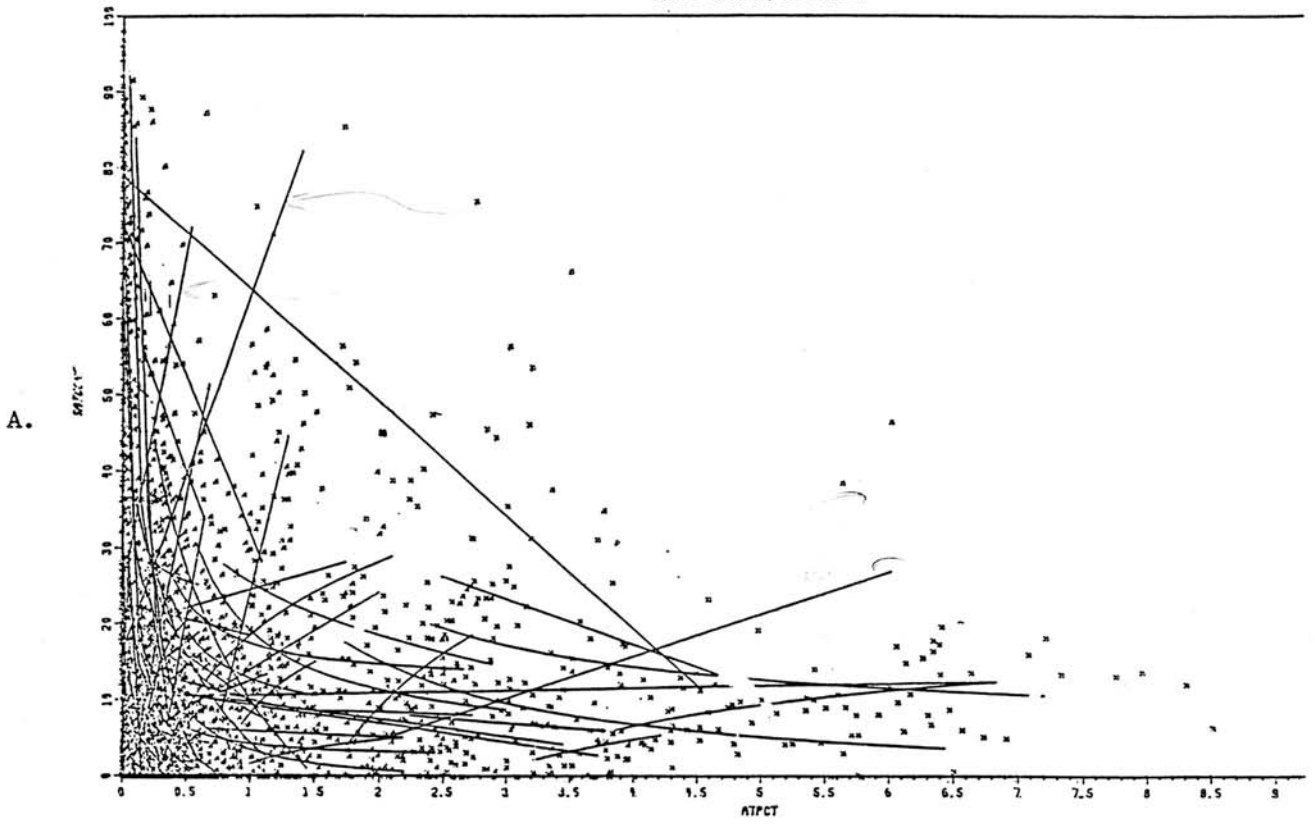
US as Target Eliminated

Variable	Coef	t-value	Coef	t-value	Coef	t-value
INTERCEP	-1.92	-13.165	-1.19	-14.68	-1.91	-13.253
DEMCAT	-1.06	-4.435			-0.16	-0.646
ADEM	0.85	4.068			0.95	4.608
TDEM	1.78	8.104			1.874	8.659
NEWX			-0.0035	-13.24	-0.0032	-11.295
R-square	0.029		0.035		0.054	

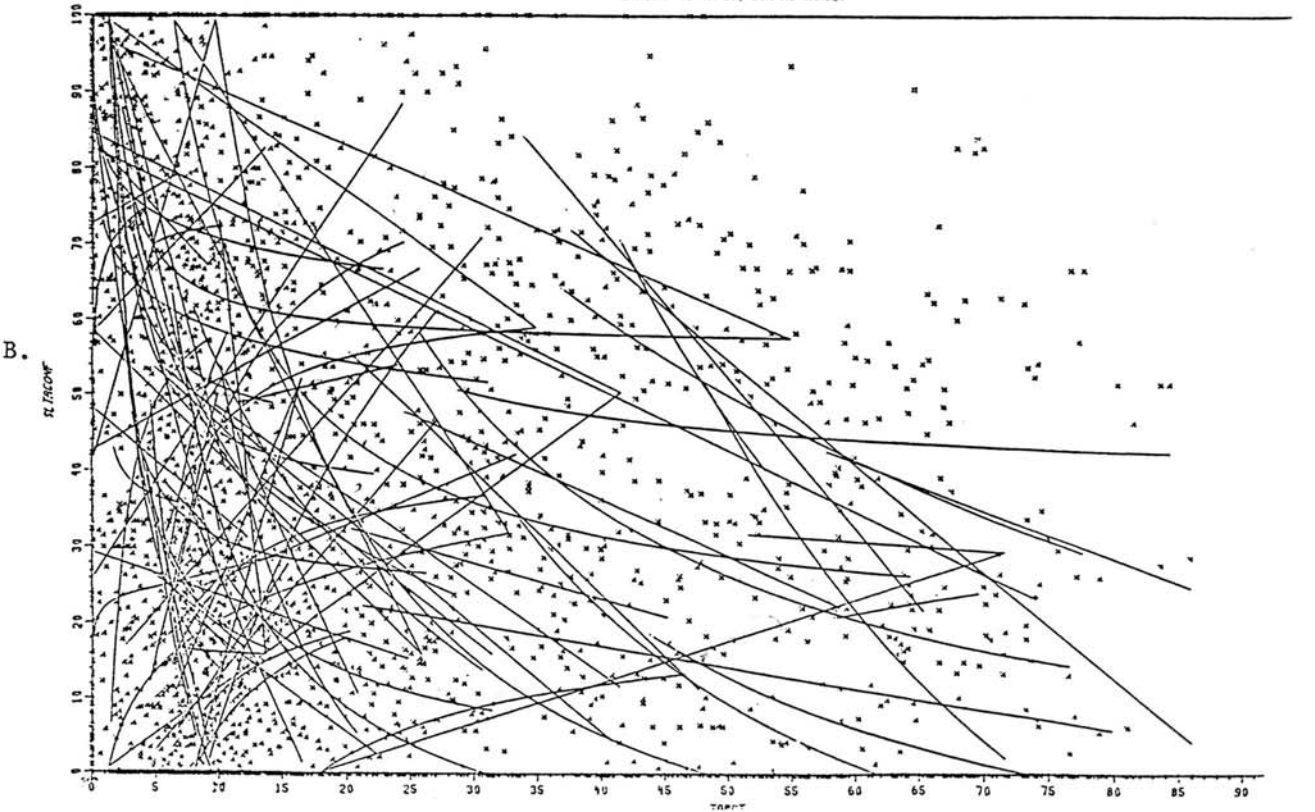
\* Dependent Variable: NETF

# Anomalies

FIGURE 3  
Conflict Data  
SATCONV V. ATPCT, USA AS ACTOR



SLTACONV V. TAPCT, USA AS TARGET



# Demand Elasticity and Gains From Trade

Table 11

## Bilateral Import Demand Elasticities

OBS	ACTOR	TARGET	ELASR	OBS	ACTOR	TARGET	ELASR	OBS	ACTOR	TARGET	ELASR
1	AUS	CAN	0.72	68	JAP	IT	2.84	135	SWIT	US	0.72
2	AUS	GER	0.26	69	JAP	MEX	1.22	136	TAI	AUS	0.67
3	AUS	JAP	0.78	70	JAP	NETH	2.84	137	TAI	BEL	0.67
4	AUS	MEX	0.60	71	JAP	NOR	2.84	138	TAI	CAN	0.95
5	AUS	SKOR	0.60	72	JAP	SKOR	1.22	139	TAI	FRA	0.67
6	AUS	TAI	0.60	73	JAP	SWE	2.84	140	TAI	GER	1.42
7	AUS	UK	0.55	74	JAP	SWIT	2.84	141	TAI	IT	0.67
8	AUS	US	0.72	75	JAP	TAI	1.22	142	TAI	JAP	0.78
9	BEL	CAN	0.72	76	JAP	UK	0.74	143	TAI	NETH	0.67
10	BEL	GER	0.26	77	JAP	US	0.72	144	TAI	NOR	0.67
11	BEL	JAP	0.78	78	MEX	AUS	0.67	145	TAI	SWE	0.67
12	BEL	MEX	0.60	79	MEX	BEL	0.67	146	TAI	SWIT	0.67
13	BEL	SKOR	0.60	80	MEX	CAN	0.95	147	TAI	UK	0.15
14	BEL	TAI	0.60	81	MEX	FRA	0.67	148	TAI	US	1.45
15	BEL	UK	0.55	82	MEX	GER	1.42	149	UK	AUS	0.13
16	BEL	US	0.72	83	MEX	IT	0.67	150	UK	BEL	0.13
17	CAN	AUS	1.73	84	MEX	JAP	0.78	151	UK	CAN	1.62
18	CAN	BEL	1.73	85	MEX	NETH	0.67	152	UK	GER	0.13
19	CAN	FRA	1.73	86	MEX	NOR	0.67	153	UK	IT	0.49
20	CAN	GER	0.34	87	MEX	SWE	0.67	154	UK	JAP	0.13
21	CAN	IT	1.73	88	MEX	SWIT	0.67	155	UK	MEX	0.29
22	CAN	JAP	1.28	89	MEX	UK	0.15	156	UK	NETH	0.13
23	CAN	MEX	1.17	90	MEX	US	1.45	157	UK	NOR	0.13
24	CAN	NETH	1.73	91	NETH	CAN	0.72	158	UK	SKOR	0.17
25	CAN	NOR	1.73	92	NETH	GER	0.26	159	UK	SWE	0.13
26	CAN	SKOR	1.17	93	NETH	JAP	0.78	160	UK	SWIT	0.13
27	CAN	SWE	1.73	94	NETH	MEX	0.60	161	UK	TAI	0.17
28	CAN	SWIT	1.73	95	NETH	SKOR	0.60	162	UK	US	0.88
29	CAN	TAI	1.17	96	NETH	TAI	0.60	163	US	AUS	1.17
30	CAN	UK	0.46	97	NETH	UK	0.55	164	US	BEL	1.17
31	CAN	US	0.99	98	NOR	US	0.72	165	US	CAN	0.80
32	FRA	CAN	0.72	99	NOR	CAN	0.72	166	US	FRA	1.17
33	FRA	GER	0.26	100	NOR	GER	0.78	167	US	GER	1.70
34	FRA	JAP	0.78	101	NOR	JAP	0.78	168	US	IT	1.17
35	FRA	MEX	0.60	102	NOR	MEX	0.60	169	US	JAP	1.13
36	FRA	SKOR	0.60	103	NOR	SKOR	0.60	170	US	MEX	0.45
37	FRA	TAI	0.60	104	NOR	TAI	0.60	171	US	NETH	1.17
38	FRA	UK	0.55	105	NOR	UK	0.55	172	US	NOR	1.17
39	FRA	US	0.72	106	NOR	US	0.72	173	US	SKOR	0.45
40	GER	AUS	0.73	107	SKOR	AUS	0.67	174	US	SWE	1.17
41	GER	BEL	0.73	108	SKOR	BEL	0.67	175	US	SWIT	1.17
42	GER	CAN	0.67	109	SKOR	CAN	0.95	176	US	TAI	0.45
43	GER	FRA	0.73	110	SKOR	FRA	0.67	177	US	UK	0.34
44	GER	IT	0.73	111	SKOR	GER	1.42	178	US		
45	GER	JAP	1.51	112	SKOR	IT	0.67				
46	GER	MEX	0.16	113	SKOR	JAP	0.78				
47	GER	NETH	0.73	114	SKOR	NETH	0.67				
48	GER	NOR	0.73	115	SKOR	NOR	0.67				
49	GER	SKOR	0.16	116	SKOR	SWE	0.67				
50	GER	SWE	0.73	117	SKOR	SWIT	0.67				
51	GER	SWIT	0.73	118	SKOR	UK	0.15				
52	GER	TAI	0.16	119	SKOR	US	1.45				
53	GER	UK	0.11	120	SWE	CAN	0.72				
54	GER	US	0.89	121	SWE	GER	0.26				
55	IT	CAN	0.72	122	SWE	JAP	0.78				
56	IT	GER	0.26	123	SWE	MEX	0.60				
57	IT	JAP	0.78	124	SWE	SKOR	0.60				
58	IT	MEX	0.60	125	SWE	TAI	0.60				
59	IT	SKOR	0.60	126	SWE	UK	0.55				
60	IT	TAI	0.60	127	SWE	US	0.72				
61	IT	UK	0.55	128	SWIT	CAN	0.72				
62	IT	US	0.72	129	SWIT	GER	0.26				
63	JAP	AUS	2.84	130	SWIT	JAP	0.78				
64	JAP	BEL	2.84	131	SWIT	MEX	0.60				
65	JAP	CAN	0.36	132	SWIT	SKOR	0.60				
66	JAP	FRA	2.84	133	SWIT	TAI	0.60				
67	JAP	GER	1.31	134	SWIT	UK	0.55				

Source: James Mackay (1982)

**Table 12**  
**The Trade-Conflict Relation**

Variable	Mean <sup>1</sup>	Coefficient <sup>2</sup>	Elasticity <sup>3</sup>
Constant		-50.49 (3.12)	
Dyadic Trade Elasticity	0.83 (.04)	37.62 (2.63)	0.47
Exports (billions US\$)	4.13 (0.67)	-4.49 (4.47)	0.28 0.28
Imports (billions of US\$)	4.02 (0.67)	-8.21 (-6.86)	0.50
GNP (actor)	232.8 (26.1)	0.0178 (0.46)	
GNP (actor) – GNP (target)	3.93 (39.0)	-0.056 (2.20)	0.003
Net Conflict	-66.63 (9.66)		
R <sup>2</sup>		0.35	
Number of Observations		178	

<sup>1</sup> Standard error of mean in parentheses

<sup>2</sup> t-values in parentheses

<sup>3</sup> computed at mean values



## EATING THE LEEK.

FLUELLEN . . . MR. COBDEN,

PISTOL . . . MR. DISRAELI.

FLUELLEN. *"I pray you fall to; if you can mock a leek, you can eat a leek."*—HEN. V.

☞ The Derby Ministry declared their adherence to the Free-trade Policy of Messrs. Cobden and Bright, which they had formerly resisted.—1852.



He seems  
to be  
regressing



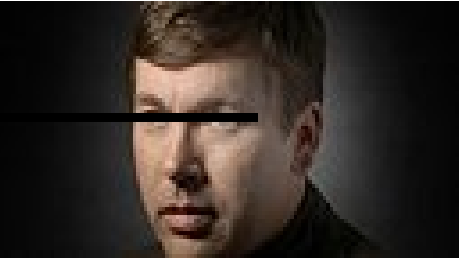
28 July '09

Wholson

[www.cartoonists.com.au](http://www.cartoonists.com.au)

## What's so wrong with peace, love and bargains?

Posted: Nov. 25, 2006



**Patrick McIlheran**

Consumers benefit from trade but in more than low prices. The benefit lies also in better odds for peace. Make deals, not war: This, aside from what you paid for door buster DVD players Friday, is a worthwhile tradeoff.

*Patrick McIlheran is a Journal Sentinel editorial columnist.  
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