

# Working Paper Special

## Appendix and Tables

### US Economic Sanctions: Their Impact on Trade, Jobs, and Wages

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#### Appendix 1: Countries in Data Set

Algeria	Hungary	Paraguay
Angola	Iceland	Peru
Argentina	India	Philippines
Armenia	Indonesia	Poland
Australia	Iran	Portugal
Austria	Iraq	Romania
Belgium	Ireland	Russia
Bolivia	Israel	Saudi Arabia
Brazil	Italy	Serbia/Montenegro
Bulgaria	Japan	Singapore
Canada	Kenya	Somalia
Chile	South Korea	South Africa
China	Kuwait	Spain
Colombia	Libya	Sudan
Cuba	Lithuania	Surinam
Czechoslovakia	Macedonia	Sweden
Denmark	Malawi	Switzerland
Ecuador	Malaysia	Syria
Egypt	Mexico	Taiwan
El Salvador	Morocco	Thailand
Ethiopia	Myanmar (Burma)	Tunisia
Finland	Nepal	Turkey
France	Netherlands	United Kindgom
Gambia	New Zealand	United States
Germany	Nicaragua	Uruguay
Ghana	Nigeria	Venezuela
Greece	North Korea	Vietnam
Guatemala	Norway	Zimbabwe
Haiti	Pakistan	
Hong Kong	Panama	

Table 1: Glossary for sanctions variables

### Dummy Variable Explanation

LIM	Limited financial, cultural, travel, or trade restrictions
MOD	Broader trade or financial restrictions
EXT	Comprehensive trade and financial restrictions
LIM1*2	Limited sanctions lifted one to two years ago
MOD1*2	Moderate sanctions lifted one to two years ago
EXT1*2	Extensive sanctions lifted one to two years ago
LIM3*4	Limited sanctions lifted three to four years ago
MOD3*4	Moderate sanctions lifted three to four years ago
EXT3*4	Extensive sanctions lifted three to four years ago

**Table 2: 1985 Results, All Countries**

Variable	Estimated coefficient	Standard error	t-statistic	
C (constant)	-9.334	0.438	-21.306	-21.306
<i>Standard gravity model variables</i>				
LGNP	0.770	0.015	52.117	*
LGNPPC	0.209	0.018	11.907	*
LDIST	-0.779	0.035	-22.525	*
ADJ	0.507	0.156	3.244	*
LANG	0.488	0.075	6.492	*
BLOC	0.491	0.170	2.889	*
<i>Sanctions dummy variables</i>				
LIM	-0.326	0.121	-2.692	*
MOD	-0.787	0.295	-2.672	*
EXT	-2.424	0.432	-5.611	*
LIM1*2	0.209	0.528	0.397	
MOD1*2	-0.514	0.646	-0.796	
EXT1*2	<i>na</i>	<i>na</i>	<i>na</i>	
LIM3*4	-0.135	0.335	-0.403	
MOD3*4	0.691	0.644	1.073	
EXT3*4	-1.597	0.744	-2.148	**

\* Significant at the 99 percent confidence level or better.

\*\*Significant at the 95 percent confidence level or better.

<b>Number of observations</b>	2,472
<b>Standard error of regression</b>	1.286
<b>Adjusted R2</b>	0.691

na means there are no observations in the sample with this type of sanction.

**Table 3: 1990 Results, All Countries**

<b>Variable</b>	<b>Estimated coefficient</b>	<b>Standard error</b>	<b>t-statistic</b>
C (constant)	-8.871	0.406	-21.856
<i>Standard gravity model variables</i>			
LGNP	0.794	0.014	56.352*
LGNPPC	0.086	0.015	5.611*
LDIST	-0.704	0.034	-20.547*
ADJ	0.718	0.149	4.825*
LANG	0.620	0.073	8.503*
BLOC	0.523	0.148	3.541*
<i>Sanctions dummy variables</i>			
LIM	-0.520	0.124	-4.205*
MOD	-0.238	0.135	-1.762**
EXT	-2.288	0.371	-6.163*
LIM1*2	-0.986	1.280	-0.771
MOD1*2	-0.783	1.280	-0.612
EXT1*2	-0.878	0.905	-0.970
LIM3*4	0.600	0.573	1.047
MOD3*4	na	na	na
EXT3*4	na	na	na

\* Significant at the 99 percent confidence level or better.

\*\*Significant at the 95 percent confidence level or better using a one-tailed test.

<b>Number of observations</b>	2,628
<b>Standard error of regression</b>	1.279
<b>Adjusted R2</b>	0.721

na means there are no observations in the sample with this type of sanction.

**Table 4: 1995 Results, all countries**

Variable	Estimated coefficient	Standard error	t-statistic
C (constant)	-8.050	0.360	-22.352
<i>Standard gravity model variables</i>			
LGNP	0.811	0.013	62.286*
LGNPPC	0.091	0.014	6.317*
LDIST	-0.856	0.032	-26.401*
ADJ	0.570	0.142	4.018*
LANG	0.787	0.069	11.479*
BLOC	0.175	0.128	1.362
<i>Sanctions dummy variables</i>			
LIM	-0.148	0.119	-1.246
MOD	-0.374	0.139	-2.691*
EXT	-2.510	0.227	-11.053*
LIM1*2	-0.156	0.148	-1.058
MOD1*2	-0.990	0.613	-1.615***
EXT1*2	-0.233	0.244	-0.955
LIM3*4	0.653	0.283	2.309**
MOD3*4	<i>na</i>	<i>na</i>	<i>na</i>
EXT3*4	<i>na</i>	<i>na</i>	<i>na</i>

\* Significant at the 99 percent confidence level or better.

\*\*Significant at the 95 percent confidence level or better.

\*\*\*Significant at the 90 percent confidence level or better.

<b>Number of observations</b>	2,714
<b>Standard error of regression</b>	1.225
<b>Adjusted R2</b>	0.761

*na* means there are no observations in the sample with this type of sanction.

**Table 5: Impact of Sanctions on Bilateral Merchandise Trade**

Level of sanctions imposed in base year	Estimated percentage change in trade		
	1985	1990	1995 Average
<i>All countries, exports plus imports</i>			

Limited (LIM)	-27.8	-40.6	-13.8 <sup>a</sup>	-27.4
Moderate (MOD)	-54.5	-21.2	-31.2	-35.6
Extensive (EXT)	-91.1	-89.9	-91.9	-91.0
<i>OECD countries, exports only</i>				
Limited (LIM)	<i>na</i>	<i>na</i>	-21.5	<i>na</i>
Moderate (MOD)	<i>na</i>	<i>na</i>	-33.1	<i>na</i>
Extensive (EXT)	<i>na</i>	<i>na</i>	-78.0	<i>na</i>

a. The coefficient on this variable was not statistically significant at the usual levels.  
*na* means no regression was run for OECD exports in this year.

**Table 6. 1995 Results, OECD countries, exports only**

<b>Variable</b>	<b>Estimated coefficient</b>	<b>Standard error</b>	<b>t-statistic</b>
C (constant)	-9.816	0.381	-25.774
<i>Standard gravity model variables</i>			
LGNP	0.817	0.013	63.237*
LGNPPC	0.131	0.017	7.968*
LDIST	-0.850	0.031	-27.387*
ADJ	0.342	0.146	2.348**
LANG	0.836	0.079	10.559*
BLOC	-0.012	0.097	-0.119
<i>Sanctions dummy variables</i>			
LIM	-0.242	0.093	-2.595*
MOD	-0.402	0.155	-2.592*
EXT	-1.513	0.230	-6.586*
LIM1*2	-0.048	0.178	-0.217
MOD1*2	<i>na</i>	<i>na</i>	<i>na</i>
EXT1*2	0.470	0.308	1.525
LIM3*4	0.703	0.252	2.792*
MOD3*4	<i>na</i>	<i>na</i>	<i>na</i>
EXT3*4	<i>na</i>	<i>na</i>	<i>na</i>

\* Significant at the 99 percent confidence level or better.

\*\*Significant at the 95 percent confidence level or better.

<b>Number of observations</b>	2,118
<b>Standard error of regression</b>	1.055
<b>Adjusted R2</b>	0.812

na means there are no observations in the sample with this type of sanction.

**Table 7: 1995 Results, US Exports**

<b>Variable</b>	<b>Estimated coefficient</b>	<b>Standard error</b>	<b>t-statistic</b>	
C (constant)	-12.448	3.219	-3.867	
<i>Standard gravity model variables</i>				
LGNP	0.856	0.088	9.772	*
LGNPPC	0.137	0.117	1.172	
LDIST	-0.643	0.319	-2.013	**
ADJ	0.550	1.394	0.395	
LANG	0.588	0.287	2.046	**
BLOC	0.412	1.050	0.393	
<i>Sanctions dummy variables</i>				
LIM	-0.234	0.332	-0.705	
MOD	-1.138	0.514	-2.214	**
EXT	-3.452	0.631	-5.470	*
LIM1*2	-0.208	1.046	-0.199	
MOD1*2	na	na	na	
EXT1*2	1.880	1.098	1.712	***
LIM3*4	0.322	0.591	0.545	
MOD3*4	na	na	na	
EXT3*4	na	na	na	

\* Significant at the 99 percent confidence level or better.

\*\*Significant at the 95 percent confidence level or better.

\*\*\*Significant at the 90 percent confidence level or better.

<b>Number of observations</b>	84
<b>Standard error of regression</b>	1.009
<b>Adjusted R2</b>	0.809

na means there are no observations in the sample with this type of sanction.

**Table 8: US exports lost due to economic sanctions in place in 1995**

<b>Target country</b>	<b>Sanctions level 1995</b>	<b>Actual exports 1995</b>	<b>Estimated reduction in US exports</b>	<b>Estimated reduction in US exports</b>	<b>Estimated reduction in US exports</b>

			using coefficients for OECD exports <sup>e</sup>	using coefficients for US exports <sup>f</sup>	using coefficients for US exports <sup>f</sup>	
Angola	MOD	260	128.3	551		
Bulgaria	LIM	132	36	36		*
Burma	MOD	16	8	34		
China	LIM	11,749	3,213	3,213		*
Cuba <sup>a</sup>	EXT	6	1,094	1,094		
Czech	LIM	556	152	152		*
Ecuador	LIM	1,538	421	421		*
Guatemala	LIM	1,652	452	452		*
Hungary	LIM	296	81	81		*
India	LIM	3,296	901	901		*
Indonesia	LIM	3,395	929	929		*
Iran	EXT	238	842	2,526		
Iraq <sup>b</sup>	EXT	-	1,992	1,992		
Libya <sup>b</sup>	EXT	-	1,513	1,513		
Nigeria	LIM	602	165	165		*
North Korea <sup>c</sup>	EXT	5	185	185		
Pakistan	MOD	935	461	1,983		
Peru	LIM	1,775	485	485		*
Poland	LIM	776	212	212		*
Romania	LIM	256	70	70		*
Russia	LIM	2,651	725	725		*
Serbia & Montenegro <sup>d</sup>	EXT	-	675	675		
Sudan	MOD	44	22	93		
Syria	MOD	223	110	473		
The Gambia	LIM	7	2	2		*
Vietnam	LIM	253	69	69		*
<b>TOTAL</b>			<b>14,942</b>	<b>19,031</b>		

a. Estimated 1995 exports to Cuba calculated as (US share of 1995 OECD exports to the Dominican Republic) multiplied by (1995 OECD exports to Cuba)

b. Estimated 1995 exports to Iraq, Libya calculated as (US exports in last year before sanctions) multiplied by (world exports 1995/world exports last year before sanctions).

c. Estimated 1995 exports to N. Korea calculated as (US share of 1995 OECD exports to S. Korea) multiplied by (1995 OECD exports to N. Korea)

d. Estimated 1995 exports to Serbia calculated as estimated 1995 US exports to all of Yugoslavia less observed exports to Croatia and Bosnia Herzegovina.

e. Calculated as [(actual 1995 exports)/exponent of coefficient from Table 6] - actual 1995 exports.

f. Calculated as [(actual 1995 exports)/exponent of coefficient from Table 7] - actual 1995 exports.

\*The limited (LIM) coefficient for US exports-only in 1995 (Table 7) is not statistically significant, so the OECD exports-only coefficient is used in its place.