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HOW FAR CAN WE PUSH THE "LAW OF ONE PRICE"?

by

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1. Introduction and Summary

Students exposed to the pure theory of international trade have been seduced by visions of an imaginary world with few goods, each typically produced by several countries but nevertheless homogeneous. In the assumed absence of transport costs and trade restrictions, perfect commodity arbitrage insures that each good is uniformly priced (in common-currency units) throughout the world -- the "law of one price" prevails.

Such simplification has facilitated the derivation of numerous theorems, many of which have in turn translated into useful insights about the real world. But the law of one price can be pushed too far; and indeed, the conclusions of the new "global monetarist" analysis of devaluation[1] rest on an invalid application of this law.

As a refutation of the global monetarist view, this
paper presents evidence that exchange-rate changes substantially
alter the relative dollar-equivalent prices of the most narrowly-
defined domestic and foreign manufactured-goods for which prices
can readily be matched. Moreover, these relative price effects
seem to persist for at least several years and cannot be shrugged
off as transitory. In other words, for manufactured goods
selected from the most disaggregated commodity lists for which
U.S. and foreign prices can be matched, the products of different
countries exhibit relative price behavior which marks them as
differentiated products, rather than near perfect substitutes.
Thus, devaluations may change relative prices sufficiently
to have persistent effects on international trade volumes.2/

To clarify discussion it is useful to distinguish two
contexts in which the law of one price is valid from a third
context in which the law of one price does not hold. (1) In a
comparison of U.S., European and Japanese prices of various well-
defined steel items (plate, galvanized sheet, cold-rolled sheet,
and hot-rolled sheet) c.i.f. for delivery in a common port,

2/ The Mundell-Laffer hypothesis also grossly oversimplifies
the wealth effects of devaluation and thereby mistreats a second
channel through which devaluations can affect real variables.
See Peter Isard and Michael G. Porter, "The Analysis of Exchange
Rate Movements: Neutrality Results and The Role of Expectations,"
processed, October 1975.

Rosenberg[3]/ found that relative dollar prices charged by different

countries were fairly constant over time and were not significantly

affected by exchange-rate realignments. The dollar prices of

primary commodities are also generally considered to be fairly

independent of country of origin.[4]/ These are cases in which the

products of _different_ countries are close to identical, or near-

perfect substitutes, so that any price disparities would be rapidly

eliminated by commodity arbitrage. (2) In the absence of

restrictions on commodity arbitrage, a product of any _single_

country sold competitively in two different markets (foreign or

domestic) would also obey the law of one price in the sense that

its dollar-equivalent prices in the two markets could not differ

by more than the cost of transportation between these markets.

Many U.S. manufactured goods do not have near-perfect

substitutes on the lists of products manufactured abroad, however,

and in this third context the law of one price is denied as an

empirical proposition. Agricultural tilling machinery produced

in the United States, for example, is apparently not a close

substitute for agricultural tilling machinery produced in Germany.

3/ Laurence C. Rosenberg, "The Impact of the Smithsonian and
February, 1973 Devaluations on Imports: A Case Study of Steel
Imports," in Peter B. Clark, Dennis Logue and Richard J. Sweeney,
eds., The Effects of Exchange Rate Adjustments (U.S. Department
of the Treasury, forthcoming, 1976).

4/ This may not be the case when sellers of primary commodities
have monopoly power and/or enter into long-term marketing agree-
ments with their customers, as do U.S. copper producers, for
example.

More generally, the most disaggregated groupings of manufactured goods for which both U.S. and German prices are readily available are dominated by products for which German dollar price indexes diverge over time from U.S. dollar price indexes[5] in a manner that is strongly correlated with exchange-rate movements. This divergence is evident in comparisons of U.S. wholesale transactions prices and German export transactions prices for various 2 and 3-digit sectors of the WPI industry breakdown (Section 2), in comparisons of U.S. and German export transactions prices for various 4 and 5-digit SITC machinery categories (Section 3), and in comparisons of U.S. export unit values with unit values of U.S. imports from Canada, Germany and Japan for various 7-digit Schedule A and B commodity groups (Section 4).

The denial of the law of one price in this context -- at the most disaggregated product level for which price data can be readily matched -- provides a strong presumption that it is impossible to assemble available data into aggregate price indexes which can be expected to obey the law of one price (except, perhaps, when product coverage is restricted to primary commodities). Obversely, the notion that aggregate indexes of

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[5] This divergence should come as no surprise to anyone familiar with the work of Irving B. Kravis and Robert E. Lipsey, Price Competitiveness in World Trade, National Bureau of Economic Research, Studies in International Economic Relations No. 6, New York, 1971.

export or tradeable-goods prices will exhibit purchasing power parity -- i.e., that relative home-currency prices of different countries will stay in line with exchange rates -- cannot validly lean on the law of one price for support.

2. Comparative Movements of U.S. and German Industrial Prices

The adjustment mechanism alleged to police the law of one price is commodity arbitrage. Under free trade, if products were marketed competitively, commodity arbitrage would prevent disparities between the f.o.b. transactions prices associated with export and domestic sales of the same product -- i.e., export and wholesale transactions prices would be equal f.o.b. International tests of the law of one price would be insensitive to whether the comparisons were between international wholesale prices, export prices, or a mix of both.

Discriminating monopolies and tariffs, subsidies, or other trade restrictions create disparities between export and wholesale prices. Provided that trade restrictions do not change substantially during the data period, however, international comparisons of any mix of export and wholesale prices can validly test the law of one price by focussing on whether any initial disparities change substantially over time. Evidence that disparities between the common-currency prices of different countries are systematically correlated with exchange rates, rather than randomly fluctuating over time, is a strong denial of the law of one price for the products being compared.

The United States, Germany and Japan publish data on

export transactions prices. The coverage of U.S. data is

restricted mainly to various 4 and 5-digit-SITC machinery items,

collected only once a year (in June) prior to 1974 and 4 times a

year beginning in 1974. German and Japanese data are available

monthly for a broad list of items; but for many items Japanese

prices are sticky. These considerations have led us to first

compare monthly time series of U.S. wholesale prices and German

export prices for a variety of industries over the 1968-75 period,

and to then compare June data on U.S. and German export prices

for various machinery categories over the 1970-75 period.[6]

The first set of industry price comparisons is described

by Figure 1 and Tables 1 and 2. The exchange rate is measured

in dollars per mark (1970=100),[7] and relative price indexes are

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[6] The first comparison extends a similar study of the 1968-73 period, described by Peter Isard, "The Price Effects of Exchange Rate Changes," in Peter B. Clark, Dennis Logue and Richard J. Sweeney, eds., The Effects of Exchange Rate Adjustments (U.S. Department of the Treasury, forthcoming, 1976). This comparison focuses on 2 and 3-digit sectors of the 8-digit WPI industry breakdown, and does not consider the most narrowly-defined industries for which price comparison is possible. The comparisons of machinery export prices (Section 3) and U.S. import and export unit values (Section 4), however, are restricted to the most narrowly-defined products for which such prices can readily be compared.

[7] For December 1968 - September 1969 the exchange rate is set 4 per cent above the actual spot rate to reflect the effective exchange rate for German exports under the 4 per cent export tax levied between late November 1968 and the mark revaluation in October 1969.
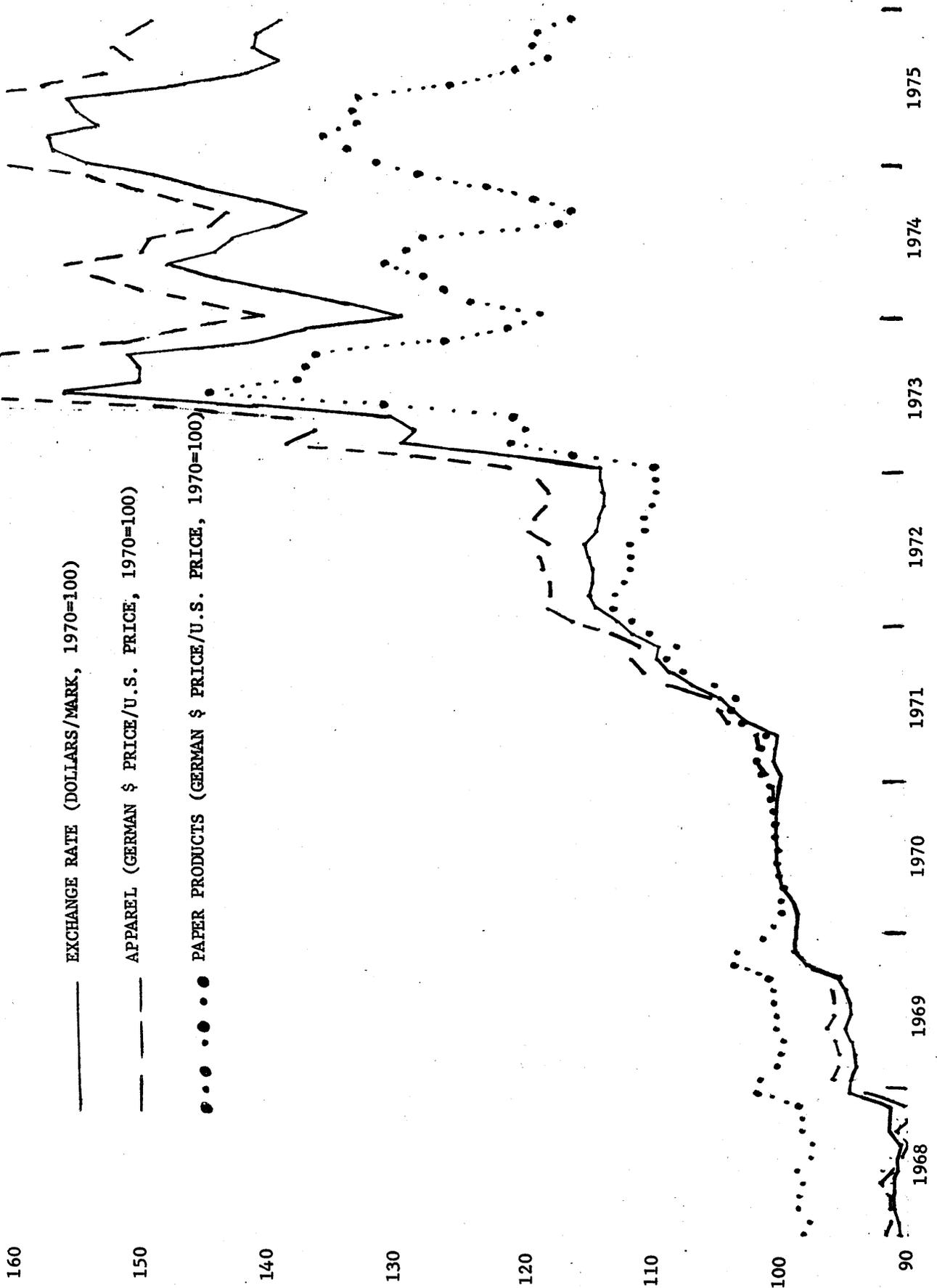
Figure 1

EXCHANGE RATE (DOLLARS/MARK, 1970=100)

APPAREL (GERMAN $ PRICE/U.S. PRICE, 1970=100)

PAPER PRODUCTS (GERMAN $ PRICE/U.S. PRICE, 1970=100)

160

150

140

130

120

110

100

90

1968   1969   1970   1971   1972   1973   1974   1975

Table 1: Percentage Changes in Exchange Rates and Relative Dollar Price Indexes Between Selected Periods

	Jan-Mar 1968 to June-Aug 1969	June-Aug 1969 to Feb.-Apr 1971	Feb-Apr 1971 to July-Sept 1972	July-Sept 1972 to Aug-Oct 1973	Aug-Oct 1973 to Aug-Oct 1974	Aug-Oct 1974 to Feb-Apr 1975	Feb-Apr 1975 to Oct-Dec 1975	Jan-Mar 1968 to Oct-Dec 1975
Exchange rate (dollars/mark)	4.07	5.85	14.14	31.33	-7.70	12.11	-9.90	53.94
German dollar price								
U.S. price								
Apparel	4.57	6.15	16.73	36.26	-10.52	13.61	-8.47	64.29
Industrial chemicals	6.17	3.36	9.91	43.92	-15.01	-13.47	-16.04	7.18
Agricultural chemicals	8.39	-4.51	9.02	37.36	14.37	-10.26	-27.05	16.06
Plastic materials	10.73	10.90	14.93	28.96	-20.23	-10.13	-13.11	13.37
Paper products	2.08	0.86	9.35	23.57	-14.12	13.92	-12.00	19.78
Metalworking machinery	10.68	20.66	14.23	33.52	-14.98	11.08	-12.04	69.18
Electrical industrial equipment	5.36	7.85	15.04	34.08	-5.06	8.88	-11.85	59.71
Home electronic equipment	10.99	8.07	10.87	38.32	-5.68	12.69	-9.22	77.51
Glass products	-0.47	-3.66	19.54	38.97	-11.61	4.44	-13.26	27.55

Table 2.   Cumulative Percentage Changes in Exchange Rates and Relative Dollar Price Indexes

| | Jan.-March 68 to | | | | | | |
	June-Aug.69	Feb-Apr 71	July-Sept 72	Aug.-Oct.73	Aug-Oct.74	Feb.-Apr.75	Oct.-Dec.75
Exchange rate (dollars/mark)	4.06	10.16	25.73	65.13	52.41	70.86	53.94
German dollar price							
U.S. price							
Apparel	4.57	11.00	29.57	76.55	57.98	79.49	64.29
Industrial Chemicals	6.17	9.73	20.61	73.58	47.53	27.66	7.18
Agricultural Chemicals	8.39	3.50	12.83	54.99	77.27	59.09	16.06
Plastic Materials	10.73	22.79	41.13	82.00	45.18	30.48	13.37
Paper products	2.08	2.96	12.59	39.14	19.49	36.12	19.78
Metalworking machinery	10.68	33.55	52.56	103.69	73.16	92.34	69.18
Elec industrial equip.	5.36	13.63	30.72	75.26	66.40	81.17	59.71
Home electronic equip.	10.99	19.95	33.00	83.96	73.50	95.53	77.51
Glass products	-0.47	-4.11	14.63	59.30	40.80	47.05	27.55

German mark prices multiplied by the exchange rate and divided by
U.S. dollar prices (and then converted to 1970=100). Industry
definitions are described in the data appendix. The Figure
presents strong evidence that relative dollar prices of apparel
and paper products have not fluctuated about constant levels
during the 8-year data period under examination, but rather have
been influenced heavily by exchange rate movements. Interpreted
casually, the Figure suggests that the relative price of apparel
is explained almost entirely by the exchange rate, whereas the
relative price of paper products adjusts almost entirely to
exchange rate changes in the short-run while moving back slowly
toward its initial level over time.

In Tables 1 and 2 we have divided the sample period into
8 three-month periods, during each of which the exchange rate was
fairly stable. Table 1 compares movements in exchange rates and
relative prices during the succesive intervals between these 8
periods, while Table 2 shows cumulative changes. The first
interval in Table 1 starts at the beginning of the data period
and ends just prior to the German revaluation in October 1969.
The second interval includes this revaluation and ends just prior
to the start of the German float in May 1971. The third interval
spans the German float, the Smithsonian Agreement in December 1971,
and the three quarters following the Smithsonian yet prior to
the early signs of the pressures that brought the realignment

in February 1973. The fourth interval includes the realignments

of first-quarter 1973 and the floating period thereafter, ending

when the mark was at its peak in Summer 1973. The fifth interval

ends a year later, after the mark had fallen to a trough in

January 1974, risen to a new peak in May, and then depreciated

to a Summer 1974 trough. The sixth interval ends with the mark

at its next peak in Spring 1975. The seventh interval spans

the dollar appreciation in the second half of 1975.

For most of these intervals, changes in the exchange

rate are paralleled fairly closely by movements in 5 of the 9

relative price indexes -- those for apparel, metalworking

machinery, electrical industrial equipment, home electronic

equipment, and glass products -- although relative prices of

metalworking machinery and home electronic equipment show

"unexplained" upward shifts in the first two intervals while the

relative price of glass products shows "unexplained" downward

shifts. The relative price of paper products moves up proportionately

less (or down proportionately more) than the exchange rate in

6 out of 7 intervals; while relative prices of industrial

chemicals, agricultural chemicals and plastic materials parallel

exchange rates fairly closely for the first half of the sample

period and then fall sharply during the second half.

The conclusions drawn from this informal analysis are

(1) that exchange rate movements are associated with substantial

short-run changes in relative dollar price indexes for all
industrial categories considered here, and (2) that in most
cases a major share of the short-run relative price change
persists for at least several years. Careful econometric studies
of data for a longer sample period might indeed find that the
relative price changes associated with any particular exchange
rate movement are completely offset over long periods of time.
But in reality exchange rates are rarely stable over long periods
of time. Thus, for practical purposes, products at this level
of disaggregation are not sufficiently close substitutes to
preclude substantial and persistant changes in relative common-
currency prices.

3. Comparative Movements of U.S. and German Export Prices for
   Selected Machinery Categories

U.S. and German export transactions prices for various
4 and 5-digit SITC machinery categories allow relative price
comparisons at a finer level of commodity disaggregation than
the industry groups considered above. Prior to 1974, U.S.
data are collected only once a year, in June. Table 3 compares
relative prices for six machinery categories with the exchange
rate in June of each year during the 1970-75 period. (See the
data appendix for product descriptions.) The conclusions of
the previous section extend to this finer level of disaggregation.

Table 3. Exchange Rates and Relative Export Price Indexes for Selected Machinery Categories
(1970 = 100)

	Exchange Rate	German Dollar Price/U.S. Dollar Price					
		Internal Combustion Engineers	Agricultural Tilling Machinery	Office Calculating Machines	Metal-Working Machinery	Pumps	Forklift Trucks
June 1970	100	100	100	100	100	100	100
June 1971	103.4	104.1	108.9	110.3	110.4	106.2	111.1
June 1972	114.6	119.8	116.6	114.4	125.2	121.2	125.6
June 1973	140.9	155.5	136.2	139.3	153.8	144.7	159.7
June 1974	143.9	147.7	138.1	146.0	144.3	151.7	145.1
June 1975	155.2	148.1	122.5	147.7	141.8	139.3	139.1

Machinery items at the 4 and 5-digit SITC level of disaggregation

are not sufficiently close substitutes to preclude substantial

and persistent changes in relative common-currency prices.

4. Comparisons of U.S. Export Unit Values with Unit Values of
   U.S. Imports from Canada, Germany and Japan

U.S. export price data are available at a still finer

level of product disaggregation in the form of unit value indexes

for 7-digit Schedule-B export commodities. These export unit

values can be compared with 7-digit Schedule-A import unit values

for products distinguished by country of origin.[8][9] Unlike the

process of collecting transactions price data, however, the

process of collecting unit value information does not hold

constant the mix of items within each commodity group whose

prices are sampled. Thus, on the one hand, there is no strong

presumption that the law of one price will be more evident in

these unit value data than it is in the export and wholesale price

data previously examined for less-disaggregated commodity groups.

But on the other hand, there is no presumption that shifts in

commodity composition will generate "noise" in relative export

and import unit values that is strongly correlated with exchange-

rate movements.

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[8] The Schedule-A and Schedule-B classifications differ, but a
reasonably close matching is possible at the 7-digit level.

[9] It is not appropriate to dismiss this comparison on the
grounds that countries rarely export the exact same products that
they import. The relevant issue is whether products selected from
disaggregated lists of U.S. manufactured goods have close (not exact)
substitutes on lists of goods manufactured abroad, and this is an
empirical question which should be addressed in each of the few
contexts for which matching data are available.

Because our only access to these unit value data was by
hand copying, we limited our sample size to 5 commodity groups and
constructed unit values on a quarterly basis, rather than monthly,
from first-quarter 1968 through first-quarter 1975. Our focus is
on unit values of exports to all importing-areas combined and
unit values of imports from three selected countries: Canada,
Germany and Japan. The 5 commodity groups are soaps, tires
(pneumatic passenger car), wall paper, ceramic tile (floor and
wall), and steel bars. (See the data appendix for detailed
definitions of commodity groups.) Export unit values are generally
f.a.s. at the U.S. port of export, based on the transactions
price, including inland freight, insurance and other charges
incurred in placing the merchandise alongside the carrier at the
U.S. port of exportation. Import unit values are c.i.f. beginning
in 1974; prior to 1974 c.i.f. values are not available and import
value is defined generally as "the market value in the foreign
country."

These unit value data fluctuate so erratically that it
is difficult to reach any conclusions about the law of one price
by looking casually at plots analogous to Figure 1, or at infor-
mation analogous to that provided in Tables 1-3. Accordingly we
have relied on regression analysis to determine if any part of
the variation in ratios of import unit values to export unit
values is related systematically to fluctuations in exchange rates.

Our notation is:

t = index of quarterly time periods

R_t = ratio of U.S. import unit value by country-of-origin to U.S. export unit value, in period t

S_t = exchange rate in period t: the U.S. dollar price of one unit of the currency of the country-of-origin of U.S. imports.

D_t = dummy variable: 0 from 1968 Q1 to 1973 Q4; 1 from 1974 Q1 to 1975 Q1

where D_t is introduced to adjust for the shift in first-quarter

1974 in the method of valuing imports.

The first regression hypothesis that we tested is

$$(1) \quad R_t = a_o + a_1 \, S_t + a_2 \, D_t + e_t + \rho e_{t-1}$$

which allows for first-order autocorrelation. We also tested

the hypothesis

$$(2) \quad \Delta R_t = b_1 \, \Delta S_t + b_2 \, \Delta D_t + u_t + \sigma u_{t-1}$$

which allows for a different pattern of serial correlation.[10]

In each case we used the Cochrane-Orcutt procedure. The empirical

results argued in favor of hypothesis (1) on two counts: the Durbin-

Watson statistics were closer to 2.0 for 6 out of 11 pairs of

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[10] Other patterns of serial correlation are more difficult to take into account and have been implicitly assumed not to exist.

commodities and countries-of-origin,[11] while corrected-R^2

statistics were consistently higher.[12]

Table 4 presents the regression results for hypothesis

(1). Ratios of German dollar prices to U.S. dollar prices, and

ratios of Japanese dollar prices to U.S. dollar prices, are seen

to be significantly and positively dependent on U.S. dollar prices

of the mark and yen, respectively, for almost all commodity

groups under consideration. A similar finding does not emerge in

the Canadian case, perhaps because the exchange rate between the

U.S. and Canadian dollars showed little variance and no abrupt

changes during the sample period. The significance of exchange

rate levels in the German and Japanese cases, however, suggests

again that substantial changes in exchange rates typically have sub-

stantial and persistent effects on the relative common-currency prices

of closely-matched manufactures produced in different countries.

11/ Four of the 15 pairs were discarded because U.S. imports
from the country-of-origin were zero or negligible, so that unit
values could not be computed, in one or more quarters of the sample
period.
12/ It is worth noting, however, that b_1 was judged to be
significantly greater than zero with at least 95 per cent confidence
in 5 of the 11 estimates of equation (2).

Table 4.   Regression Results for Hypothesis (1)

		a_0	a_1	a_2	ρ	$\bar{R}^2$	D.W.
CANADA	tires	-4.16	.0588	-.317	.859	.737	2.33
		(-.832)	(1.16)	(-1.15)	(8.87)		
	wallpaper	-.406	.0118	.361	.186	.656	1.89
		(-.462)	(1.31)	(4.50)	(1.00)		
	steel bars	.852	-.00292	.418	.0930	.553	1.94
		(.935)	(-.312)	(4.82)	(.494)		
GERMANY	soap	.726	.0938	-.791	.120	.148	1.60
		(.607)	(2.35)	(-1.35)	(.641)		
	tires	-.0828	.0437	-.142	.758	.728	1.66
		(-.152)	(2.72)	(-.816)	(6.15)		
	wallpaper	.316	.0264	-.0401	-.0974	.163	1.96
		(.885)	(2.21)	(-.223)	(-.518)		
JAPAN	soap	-.582	15.49	.921	.113	.0674	1.87
		(-.137)	(1.12)	(.740)	(.604)		
	tires	-.940	6.28	.244	.461	.869	2.11
		(-2.90)	(6.04)	(2.95)	(2.75)		
	wallpaper	-.720	6.79	1.07	.153	.901	2.04
		(-1.83)	(5.30)	(9.40)	(.817)		
	ceramic tile	.0242	2.32	.428	.125	.693	1.74
		(.0826)	(2.43)	(4.99)	(.665)		
	steel bars	.183	1.39	.148	.508	.672	2.42
		(.825)	(1.95)	(2.71)	(3.12)		

Note: Numbers in parentheses are t-values. Critical values for the
one-tailed t-test are 1.71 (95 per cent confidence) and 2.48
(99 per cent confidence).

DATA APPENDIX

A.) U.S. and German Transactions Prices for Selected Industries

U.S. wholesale price indexes were taken from various issues of the Monthly Labor Review (U.S. Department of Labor, Bureau of Labor Statistics). In most cases these are constructed from f.o.b. prices at production or central marketing point. Weights are based on value of shipments data from the 1963 industrial censuses.[1/]

German export price indexes were taken from Preise Löhne Wirtschaftrechnungen Reihe 1: Preise und Preisindices für Aussenhandelsgüter (Statistiches Bundesamt Wiesbaden, various annual and monthly issues). Prices are generally collected on an f.o.b. basis and in all cases are duty free. Weights are based on German export values.

Foreign exchange rates for the Deutschemark vis-a-vis the dollar were taken from various issues of the Federal Reserve Bulletin, computed as monthly averages of noon buying rates in New York for spot cable transfers.

The 9 industries, their respective titles in the U.S. and German data sources, their U.S. wholesale price codes in parentheses, and other relevant specifics are as follows:

1. Apparel (03-5); Bekleidung (zusammen).

[1/] For a more complete description, see U.S. Department of Labor, Bureau of Labor Statistics, BLS Handbook of Methods, Bulletin 1711, 1971, Chpt. 11.

2. Industrial chemicals (06-1); weighted average of Anorganische and Organische Grundstoffe und Chemikalien. The weights used to combine the German series were .4250 (inorganic) and .5750 (organic), based on the relative weights of these items in the U.S. wholesale price index.[2]

3. Agricultural chemicals and chemical products (06-5); Düngemittel und Schädlingsbekämpfungsmittel.

4. Plastic resins and meterials (06-6); Kunststoffe.

5. Pulp, paper and allied products (09); Papier und Pappewaren.

6. Metal-working machinery and equipment (11-3); Metallbearbeitungsmaschinen (zusammen).

7. Electrical machinery and equipment (11-7); weighted average of Geräte und Einrichtungen (a) zur Elektrizitätserzeugung and (b) zur Elektrizitätsverteilung. The weights used to combine the German series were (a) .4983 and (b) .5017, based on the relative weights assigned to items (a) 11-73 plus 11-74 and (b) 11-71 plus 11-75 in the U.S. wholesale price index.[3]

8. Home electronic equipment (12-5); Rundfunk - Fernseh - phonotechn. Geräte und Einrichtungen.

9. Flat glass plus Glass containers (13-11 plus 13-8); Glas und Glaswaren (zusammen).

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[2] Source: U.S. Department of Labor, Bureau of Labor Statistics, Wholesale Prices and Price Indexes: Supplement 1972, Feb. 1973, Table 4.

[3] Source: Ibid.

B.) U.S. and German Export Prices for Selected Machinery Categories

U.S. export price indexes for 4 and 5-digit SITC categories of machinery are taken from quarterly news releases by the Division of International Prices of the Bureau of Labor Statistics, U.S. Department of Labor. German export price indexes and exchange rates are from sources described in part A.

The machinery categories listed in Table 3 have the following representations in the U.S. and German data sources:

1. U.S.: Internal Combustion Engines Other Than for Aircraft (SITC 711.5); Germany, Internal Combustion Engines for Motor Vehicles and Motorcycles (Verbrennungsmotoren für Kraftwagen und Krafträder).

2. U.S.: Calculating Machines, Accounting Machines and Similar Machines Incorporating a Calculating Device (SITC 714.2); Germany: Adding and Calculating and Accounting Machines (Rechen und Buchungsmachinen).

3. U.S.: Machine Tools for Working Metals (SITC 715.1); Germany: Metalworking Machinery (Metalbearbeitungsmachinen).

4. U.S.: Pumps, Excluding Centrifuges (SITC 719.2 excl. 719.23); Germany: Pumps and Compression Equipment (Pumpen und Druckluftgeräte und dgl.).

5. U.S.: Forklift Trucks (SITC 719.32); Germany: cranes and Lifting Gear (Krane und Hebezeuge).

6. U.S.: Argricultural Machinery and Appliances for Preparing and Cultivating the Soil (SITC 712.1); Germany: Soil Tilling Equipment (Ackerschlepper).

C.) <u>Unit Values of U.S. Exports and Imports</u>

Sources: U.S. Department of Commerce, Bureau of the Census, "U.S. Exports: Schedule B Commodity by Country" (FT 410 publications, various issues) and "U.S. General Imports: Schedule A Commodity by Country" (FT 135 publications, various issues). Data on dollar values and physical quantities were gathered -- cumulative, January to date -- for March, June, September and December of each year, from which quarterly values and quantities were derived and quarterly unit values then computed. The five commodity categories and their 7-digit Schedule B and Schedule A codes are:

1. Exports of "soap, bulk" (5541010); imports of "soaps, including soap powers, but not synthetic detergents" (5541000).

2. Exports of "tires, passenger car and motorcycle, pneumatic" (6291010); imports of "tires, pneumatic, passenger car, new" (6291015).

3. Exports of "wallpaper" (6419700); imports of "wallpaper" (6419700).

4. Exports of "non-refractory ceramic floor and wall tiles" (6624610); imports of "tile, ceramic floor and wall, except masaic, glazed" (6624750).

5. Exports of "carbon steel bars and rods and hollow drill steel, cold finished, n.e.c." (6732440); imports of steel bars, not alloyed, cold formed (6732440).