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Impact of American Foreign

Trade on

Smaller Economies

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Introduction:

In a large economy like the American economy with total imports a small proportion of output . it is expected a priori that major sources of inflation would be domestic rather than imported. It is further expected that the increase in domestic cost items would be to the effect of exporting inflation to the rest of the world with small economies doing sizeble trade with the States affected the most.

The parpose of this study is three folds:

1- To investigate whether the increases in factors costs affect U.S. export prices more than prices within the U.S. domestic markets.

2- To use the latest U.S. Input-Output tables of 1972 to compare the commodity structure of exports to the commodity structure of total output. The purpose is to find out whether commodity categorses in which exports represent relatively high proportion of total output were subjected to faster price increases than the rest of commodity categories. Otherwise,, one would have to find other entrepratations for price differences.

3- To check if a small economy like the Egyptian economy suffers, on the average, from less favorable terms of trade with the U.S. e.g

higher prices than the general export prices for the same commodity groups using some commodity examples.

To start with, it is well recognized that the United States can export inflation via two different channels:

a- Rapid increases in the prices of exported commodities, factors of production, including labor and technology.

b- The declining exchange value of the American Currency. Lower exchange rate of the American dollar against other curancies means that American exports become relatively cheaper from the buyers point of view. Thus, demand on American exports is expected to increase pushing their prices up.

Most of the attention in this study is directed toward exporting inflation through trade. According to basic concepts of international trade, prices in both domestic and export markets are determined by the collective effects of supply and demand in domestic and export markets respectively. Since the supply side, which reflects factors costs are common for both domestic and exported commodities, the differences in the price movements in both markets are being discussed to investigate their most problable causes.

According to basic theories of international trade, comparation advantages in the production costs of commodities lead countries to exchange commodities. Under the assumption of free trade, the exchange continues to the point that prices for a specific commodity are equalized in both exporting and importing countries(see for example kreinin (7)P. 249 and P. 281).

If some trade barriers exist, e.g. import duties levied by the importing country, the tarrif will be divided between the two countries, exporting and importing, in proportion to the elasticity of their supply and demand curves respectively. The end result would be to the effect that consumers in the importing country would be paying higher prices for the commodity, thus demanding less quantity. If supply by the exporting country is elastic and the quantity reduced in demand by the importing country can be rechanneled to other countries, or other uses, then the imposed tarrif will mainly be paid by the consumer in the importing country. On the other hand, if the quantity imported is sizable enough to affect the total demand on a specific commodity, then the exporter will find it beneficial to respond in terms of reducing the price to encourage demand thus absorbing part of the imposed tarrif. The implication of this to the importing country is that even though consumers will be paying higher price for the commodity than consumers in the exporting country, yet the

country as a whole will be paying only the market price less the tarrif which is considered as a revenue. The end effect would be less prices paid by the importing country, meaning that domestic prices in the exporting country would be higher than the prices obtained from exports (see kreinin(7) PP. 276-278).

In the light of these basic concepts of international trade, differences in price movements between U.S. domestic markets and U.S. Export prices will be examined and discussed.

Methods and Variables:

Two techniques of multivariate analysis are used to find out whether results of one supports the other's One technique is multiple regression analysis and the other technique is canonical correlation analysis. In both techniques two sets of variables are used; one is designated as dependent or criterion set, and the other is designated as independent or predictor set. Percent changes in domestic and export prices make the first set. Domestic, imported material cost, and labor costs all are factor cost items which constitute second set.

Explicitly, the Variables are:

1) Changes in gross national product price deflator Y_1; which is used to measure changes in domestic prices.

2) Changes in the unit value of exports Y_2. Each of Y_1 and Y_2 is used as a dependent variable in a regression equation, together they constitute the criterion variables set for the canonical correlation analysis.

3) Change in unit labor cost in private businesses X_1 is used to measure the cost of labor input adjusted for changes in productivity.

4) Change in the wholesale price index of crude materials X_2 is used to measure changes in domestic material costs.

5) Change in the unit value of imports X_3 to measure changes in the cost of imported material.

Variables 3,4, and 5 are used to measure the costs of factor inputs. In some trials but did not yield significant results subsequently it was removed. The factor cost variables are used as independent variables Set in regression analysis and as predictor variables Set in canonical correlation analysis.

Results:

Quarterly data for the period 1970-1979 yielded the following results:

a) Regression Results[1]

Price equation for domestic prices in which all independent variables were lagged one quarter is:

$$(Y_1)_{t+1} = 1.0615 + .1074\ X_1 + .0311\ X_2 + .0923\ X_3$$
$$(1.58) \quad (1.54) \quad (3.69)$$

$F_{3,34} = 9.64$ R=.678 D-W=1.74

Corrasponding price equation for exports is:

$$Y_2 = -.6814 + .8818\ X_1 + .2351\ X_2 + .331\ X_3$$
$$(5.53) \quad (4.96) \quad (5.64)$$

$F_{3,34} = 43.66$ R= .891 D-W= 1.92

Figures in parantheses under the coeffecients represent their t values. Regression results indicate that export price coeffecients are higher and have higher significante than their corresponding domestic price coefficients. This is true for the coefficients of every factor cost variable. The two sets of coeffecients representing the two regression equetions were found to

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1) An extended discussion of price models can be found in William Nordhaus(5) PP. 16-49.

be significantly different which indicates that cost factors affect export prices much more than domestic prices. Since both exports and domestic prices are subjected to the same cost structure, it is suggested that differences exist on the market side.

It is noteworthy to mention that the addition of other factors on the cost side, e.g. interest rate did not lead to any improvements in the estimates. Also, the addition of variables reflecting demand side to the domestic price equation produced either insignificant changes as in the case of using a proxy for excess demand or had the wrong sign as in the case of money supply which was found to be highly correlated with unit labor cost X_1. The incluston of money supply led indeed to a decrease in the regression coeffecient of labor input and a reduction in its significance level.

As to the demand side factors on U.S. exports they are expected to be numerous. Their end effect on prices would depend on the nature of markets in which commodities are traded. If markets are organized and are dealing in highly standardized products, prices in different markets, i.e. prices in domestic and export

markets will tend to differ only as a result of shipping costs and trade barriers. On the other hand, for highly differentiated goods, the sellers would exercise big influence in setting prices. Clark, Enzler, and lowrey(2) estimated that the dollar price of exports of agricultural commodities rose from seven to ten percent as a direct consequence of the net effective depreciation of the dollar between 1971 and mid-1973, when the depreciation was at its maximum. As to U.S. exports of finished and semi-finished manufactured goods, they were unable to detect any significant exchange rate effect. They concluded that cost and demand conditions in the U.S. manufacturing sector appear to nearly explain all of the variations in the prices of U.S. manufactured exports.

b) Canonical Correlation Results[1]:

Canonical correlation is used to find two linear combinations one of each of the two sets of variables, dependent and independent, which have the maximum correlation between them. Canonical variates measure the importance of each one of the original variables in its own set.

The resulting two canonical correlations are significant beyond the .05 level(table I). This is an indication that there are two

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1) Technical aspects of canonical correlation analysis are explained in the appendix.

significant ways of relating the two sets of variables. The first canonical function produced =.78, meaning that the derived two linear composites account for 78% of the shared variation between the two sets of variables.

Table I

equation Number	λ	canonical Correlation	Wilks' Lambda	Chi-Square	D.F.	Significance
1	.782	.884	.178	51.79	4	0.00
2	.183	.428	.817	6.87	2	0.03

The canonical variates of the first equation reveal that "export prices" is the main criterion variable contributing to the relationship(table II). While the canonical variates for the predictor variables reveal about equal weights for the three cost variables.

Table II

	Canvar 1	Canvar 2
Y_1	-.111	-.892
Y_2	.993	.451
X_1	.488	.31
X_2	.441	.31
X_3	.514	.09

After the first relation is accounted for a second relation is obtained and gave a canonical correlation of .428. Naturally, the second relation is less significant than the first one, yet it is still significant bayond the .05 level. In the second relation, cononical variates are different than the in the first one. However, the second relation should be interpreted as augmenting the results of the first relation, thus being of a secondary importance. an important conclusion of correlation analysis is that it supports results of regression analysis about the stronger effect of cost factors on export prices. Price differences between domestic and export markets may in part reflect differences in the commodity composition between the two markets. While domestic prices rose by 182% between first quarter of 1970 and first quarter of 1979 at an annual rate of about 7% and rose by 12.7 for the year 1979, the corresponding figure for exports were 229 between 1970 and 1979 or an annual rate of 9.5% and by 15.8% of the year 1979. Examination of the commodity structure of exports may reveal that some commodity groups whose prices rose sharply constitute higher proportion of exports than of domestic use. The 1972 input-output tables which were published in 1979, reveal that total exports account for 6.15% of total commodity output. Highest commodity exports in dollar value and as a percentage of commodity output is in agriculture products 13.9% motor vehicle and equipment

6.3%; and aircrafts and parts 18.4%. Agriculture export prices were found to fluctuate a great deal. As an example export prices for edible nuts, fresh or dried, rose by 54% in 1978 and declined by 5% in the folloaing year. Dried Fruit export prices declined by 18.9% in 1980 while export prices of beens, peas, and lentils rose by 18.8% for the same year.

Export prices for transportation equipment rose by 10.5% for lorries and trucks rose by 9.1%, and for parts of motor vchicles rose by 12.8% for the same year of 1980. For aircrafts, export prices rose by 8.3% in 1978, by 5.1% in 1979 and by 6.5% in 1980. Parts of aircrafts, export prices rose by 9.1% in 79 and by 11.4% in 1980. These figures reveal that except for agriculture products, no export price in these categories exceed the general increase in domestic prices which was 9% in 1978 and 12.7% in 1979. Thus, differences in prices between domestic and export prices cannot be mainly attributed to differences in commodity composition of the two markets, since the commodity groups which have high export output ratio are not the ones with relatively higher export prices.

On the other hand, since commodities whether directed to domestic or export markets are in general subjected to the same cost structure, it is expected that their responses to cost factors could be

attributed to differences on the market side. In addition to many situation in which U.S. companies would be facing more favorable market conditions abroad than at home, there is the additional power exercised by multinational or global corporations which control a substantial portion of world trade. As in Barnet and others (1), PP. 157-159 , "More than half of all U.S. exports take the form of exports from U.S. parents to their subsidiaries overseas". The impact is crucial on the balance of payments of the importing countries. "The issue is the nature of the impact. Whether exports benefit a poor economy depends critically on the price. It does not help the foreign-exchange problem of a poor country to export goods at a bargain. When global corporations buy from and sell to their own subsidieries they establish prices that often have little connection to the market price. Indeed, when the corporate headquarters is acting as both buyer and seller, the very concept of the market has lost its significance."

Maximizing over all profits is the objective of global corporations. Exports and imports prices in different countries are manipulted to achieve this obgective. "In addition to the standard practice of over pricing imports are cruder practices which divert foreign exchange and tax revenues from poor countries". "There are

several other advantages to the company(global corporation) in addition to tax avoidance in manipulating import and export prices. Minimizing local profits is often an essential public relations strategy. Moreover, in countries which impose a percentage limitation on the repatriation of profits, over pricing imports and under pricing of exports are good ways to repatriate more profits than the local government allows. All of this makes good business sense, but its impact on the economy of poor countries is cruel. It means exorbitant consumer prices for such necessities as lifesaving drugs and a loss of tax revenues and foreign exchange. It is one more example of the basic conflict in outlook, interest, and goals between the global corporation and countries trying to solve the problems of poverty, unemployment, and inequality". Such practices reflect a weak bargaining power on the part of underdeveloped countries. This is mainly due to the lack of tramed administrators who are no match for the corporate negotiator; a lack of effective laws to control foreign businesses ub their countries; and the lack of sufficient information about alternative sources of supply.

To what extent does the preceding argument apply to Egypt. Exports to Egypt is used as an example of U.S. trading with a small country. Comparisons are made between some selected U.S. general export prices and Egypt's imports from the U.S. for the same commodity groups.

It is expected that such comparisons would reveal whether Egypt, as a small country, suffers from terms of trade which are worse than the general terms of trade for U.S. exports. Comparisons for which comparable data were available are shown in table III. Since we are comparing changes in U.S. export prices f.o.b. with changes in Egypt's Import prices c.i.f., there is an implicit assumption here that intercountry transportation costs are changing in about the same proportions as the prices of the commodities being shipped.

Table III

Comparison of Some U.S. Export Prices
With Egypt's Import Prices

Classification		Lorries	Parts of tractors & motor cars	Parts of ballons & airships	medicals surgical instruments	measurement and control instrument	Taps and valves appliances
Change in U.S. Export Prices.	1977	9.9	6.5	11.5	n.a	8.4	6.4
(anual rate)	1978	10.8	9.9	10.2	11.6	12.4	5.8
%	1979	10.4	17.1	9.1	2.4	10.4	10.2
	1980	11.4	8.9	11.4	11.0	12	13.1
Change in Prices of Egypt's imports from U.S. (annual rate)	1977	63.9	26 av	n.a.	55.6	42 av	14.7
	1978	15.9	26 av	n.a.	75	42 av	72.2
%	1979	3 av	26 av	98%	30.1	42 av	24 av
	1980	3 av	26 av	80%	14.5	42 av	24 av

av. : average of several year
n.a.: not available.

Table Sources: U.S. export prices; Bureau of labor statistics, division of International Prices U.S.A.

Egypt's import prices are calculated from data published in"monthly review of Foreign Trade", Central Agency for mobilization and Statistics, Cairo, Egypt.

Comparative prices reveal that for almost every category, price increases of Egypt's imports from the U.S. are much higher than the increases in the general price level of U.S. exports for the same commodity group. The implication of this is that even though a large economy like the American Economy is generating inflation internally and is exporting it to other parts of the world, the problem is even worse for smaller economies trading with the U.S. like the Egyptian Economy One problem could be that small countries are more of price takers who would not have much bargaining power in the face of large monopolistic firms especially if their share is small out of the total exports of the exporting country and especially if the buyers lack sufficient information about alternative sources of supply. Often, small countries finance their imports through tied loans. It is not uncommon that such loans involve some unfavorable terms of trade among which are higher prices than those paid other wise in the case of free sources of finance.

Such a situation is not uncommon for small nations trading with big ones. Barnet and others(1) PP. 80-81) indicated that "The "tie-in" arrangements which forced poor countries to buy U.S. products with their foreign money was extremely profitable for U.S. compances. In 1967, for example, a senate investigating committee found that public health grants to certain latin American countries were being used to buy drugs from pfizer, Merck, and other U.S. drug companies at substantial markups over their U.S. Prices. There is increased use of the Export-Import Bank to finance exports of global corporations. Through its voting power in international aid and financing organizations such as the World Bank, the U.S. Government still seeks to use public money to subsidize American global business, despite increasing resistance from Congress to foreign assistance boondoggles and give aways."

It is important when evaluating the effects of importing inflation to know the relative importance of such imports. In the case of Egypt imports represented 38% of GDP in 1980/1981. Imports from U.S. alone represented 19% of total imports in 1980. The problem would be worse if other sizable portions of imports come from countries which give forms of trade similar to those given by the U.S.

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Appendix

Canonical Correlation

The internalations between two sets of veriables is maximized through reducing each set to one variable. This one variable is a function of the variables in the set such that the correlation between the two resulting variables is maximum. One set of variables is designated as criterion variable Y and is made of q variables,and the other is designated as predictor variables X and consists of P variables. Therefore, canonical correlation analysis starts by partitioning the P+ q intercorrelation matrix which is obtained from original variables in standardited form as follows.

$$R=\left[\begin{array}{c|c} R_{xx} & R_{xy} \\ \hline R_{xy} & R_{yy} \end{array}\right] \qquad (1)$$

The problem then, is to find a vector of weights a_i of order P, and a vactor of weights b_i of order q to apply to the prodictor and criterion variables such that the correlation between the composite scores is maximum. Thus the composite criterion variables. $Y = b_i Y_i$ whose variance is $b' R_{yy} b$, and whose covariance with the predictor variable is $R_{xy} b$. If each element of the variance $R_{yx} b$ is divided by $(b' R_{yy} b)^{\frac{1}{2}}$ which is a scalar, the vector R_{xy} of correlation between the predictor variables and the composite criterion Y^{*}, becomes

$$R_{xy}^{*} = R_{xy} b / (b' R_{yy} b)^{\frac{1}{2}} \qquad (2)$$

The partitioned matrix R of order P+q is replaced by the partioned matrix R^*

$$R^* = \begin{bmatrix} R_{xx} & R_{xy^*} \\ R'_{xy^*} & 1 \end{bmatrix} \qquad (3)$$

Multiple regression can now be applied to find the multiple corralation coefficent between the P prodictor variates and y^* and is given by

$$r^2 = R'_{xy^*} \; R_{xx}^{-1} \; R_{xy^*} \qquad (4)$$

use λ for r^2 therfore

$$\lambda = b' \; R_{xy} \; R_{xx}^{-1} \; R_{xy^*} \; b \; / (b' \; R_{yy} b) \qquad (5)$$

The problem now is reduced to find the vector b which makes λ maximum. Therefore;

$$b'R_{yy} \; b(2 \; R'_{xy} \; R_{xx}^{-1} \; R_{xy} b) = (b' \; R'_{xy} \; R_{xx}^{-1} \; R_{xy} b)(2R_{yy} b) \qquad (6)$$

or, when using λ for what it stands,

$$R'_{xy} \; R_{xx}^{-1} \; R_{xy} b = \lambda R_{yy} b \qquad (7)$$

or

$$(R'_{xy} \; R_{xx}^{-1} \; R_{xy} - \lambda R_{yy}) b = 0 \qquad (8)$$

Premultiply within the brackets by R_{yy}^{-1} thus

$$(R_{yy}^{-1} \; R'_{xy} \; R_{xx}^{-1} \; R_{xy} - \lambda I) \; b = 0 \qquad (9)$$

Therefore λ is the latent root of the matrix $R_{yy}^{-1} R_{xy}' R_{xx}^{-1} R_{xy}$ whose rank is the P or q whichever is smaller. The set of coefficents b is the charactristic vector associated with λ. The set of weights a associated with the predictor variates is calculated as

$$a = R_{xx}^{-1} R_{xy} b/\sqrt{\lambda}$$

A set of weights b and a set of weights a can be found corresponding to each latent root λ_i

The significance of the canonical correlation coeffecient can be tested using Bartlett formula

$$\chi^2 = -\left[(N-1) - \frac{1}{2}(P+q+1)\right] \log_e (1-\lambda_i)$$

Where N is the sample size. This X^2 value would have $(P+q+1-2i)$ degrees of freedom.