

Gershon Feder

On Exports and Economic Growth

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ON EXPORTS AND ECONOMIC GROWTH*

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The paper analyses the sources of growth in the period 1964-1973 for a group of semi-industrialized less developed countries. An analytical framework is developed incorporating the possibility that marginal factor productivities are not equal in the export and non-export sectors of the economy. Econometric analysis utilizing this framework indicates that marginal factor productivities are significantly higher in the export sector. The difference seems to derive, in part, from inter-sectoral beneficial externalities generated by the export sector. The conclusion is therefore that growth can be generated not only by increases in the aggregate levels of labor and capital, but also by the reallocation of existing resources from the less efficient non-export sector to the higher productivity export sector.

1. Introduction

The relation between export performance and economic growth has been a subject of considerable interest to development economists in recent years. Empirical observations across countries tended to demonstrate that developing countries with a favorable export growth record tended to enjoy higher rates of growth of national income. Obviously, since exports are a component of aggregate output, one would expect a positive association in terms of the correlation coefficient [Kravis (1970)]. But several empirical studies demonstrate that exports contribute to GDP growth more than just the change in the volume of exports [Balassa (1978), Heller and Porter (1978), Michaely (1977), Michalopoulos and Jay (1973), Tyler (1981)].

Explanations for these observations were discussed by a number of economists, highlighting various beneficial aspects of exports, such as greater capacity utilization, economies of scale, incentives for technological improvements and efficient management due to competitive pressures abroad [see Balassa (1978), Keasing (1967, 1969), Krueger (1980), and Bhagwati and Srinivasan (1978)]. The implication of these discussions is that there are substantial differences between marginal factor productivities in export-oriented and non-export-oriented industries, such that the former have higher

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factor productivity. It follows, then, that countries which have adopted policies less biased against exports benefited from closer-to-optimal resource allocation and higher growth.

The present paper develops an analytical framework for the quantitative assessment of factor productivity differentials between exports and non-exports using aggregate data. This framework is utilized in an empirical study of sources of growth in a sample of semi-industrialized less developed countries within the decade 1964–1973. The analysis allows an estimate of the sectoral marginal productivities. Furthermore, the extent of inter-sectoral beneficial externalities generated by exports can be specifically identified. The results highlight the role of export performance in explaining the growth record of the sample countries.

2. Framework of analysis

The analysis in this paper adopts a supply side description of changes in aggregate output. In so doing, it follows a practice widely used in the empirical study of sources of growth [see, e.g., Hagen and Wawrylyshyn (1969) and Robinson (1971)]. Within such a framework, where aggregate growth is related to changes in capital and labor through an underlying production function, the studies of Balassa (1978), Chenery et al. (1970), Michalopoulos and Jay (1973) and Tyler (1981) have included an indicator of export performance among the variables explaining growth.¹ In the following, a framework is developed which provides a formal rationalization for the incorporation of export variables in the sources of growth equation. Furthermore, starting from the sectoral production functions, a proper specification of export variables is indicated and a non-conventional interpretation of parameters is implied.

Since the present analysis focuses on the potential non-optimality of resource allocation between export and non-export sectors, the economy is viewed as if it consists of two distinct sectors: one producing export goods, and the other producing for the domestic market.² Instead of an aggregate national production function, each of the two sectors' output is a function of the factors allocated to the sector. In addition, the output of the non-export sector is dependent on the volume of exports produced. This formulation represents the beneficial effects of exports on other sectors [Keesing (1967, p. 311, 1979, pp. 4, 5)], such as the development of efficient and internationally

¹Chenery et al. represent exports performance by export growth multiplied by export share; the other works include exports growth

²Clearly, this is an abstraction, as many firms are producing for both domestic and external markets. It may be argued that even then, the domestically marketed output of such firms is characterized by the same factor productivities which characterize exports. However, to the extent that growth of exports represents a good approximation of the changes in the volume of production of such firms, the results are still valid.

competitive management, the introduction of improved production techniques, training of higher quality labor, steadier flow of imported inputs, etc. These effects are referred to as externalities, since they are not reflected in market prices.

These externalities are incorporated in the formulation below:

$$N = F(K_n, L_n, X), \quad (1)$$

$$X = G(K_x, L_x), \quad \text{where} \quad (2)$$

N = non-exports,

X = exports,

K_n, K_x = respective sector capital stocks,

L_n, L_x = respective sector labor forces.

Since data regarding sectoral allocations of primary production factors are not readily available, a specification is required which will allow estimates of sectoral marginal productivities using aggregate (national) data. This is accomplished as follows:

Suppose that the ratio of respective marginal factor productivities in the two sectors deviates from unity by a factor δ , i.e.,

$$(G_k/F_k) = (G_L/F_L) = 1 + \delta, \quad (3)$$

where the subscripts denote partial derivatives.

In the absence of externalities, and for a given set of prices, a situation where $\delta=0$ would reflect an allocation of resources which maximizes national output. However, due to a number of reasons, marginal factor productivities are likely to be lower in the non-export sector (i.e., $\delta > 0$). One important reason is the more competitive environment in which export-oriented firms operate. Competition induces innovativeness, adaptability, efficient management of firms' resources, etc. Another reason for deviations between sectoral marginal factor productivities are various regulations and constraints such as credit and foreign exchange rationing [Balassa (1977)]. The higher perceived uncertainty associated with export enterprises may be another factor contributing to deviations in marginal productivity. Productivity differentials which are due to externalities are not included in δ , as they will be specifically identified.

A differentiation of eqs. (1) and (2) yields

$$\dot{N} = F_k \cdot I_n + F_L \cdot \dot{L}_n + F_x \cdot \dot{X}, \quad (4)$$

$$\dot{X} = G_k \cdot I_x + G_L \cdot \dot{L}_x, \quad (5)$$

where I_n and I are respective sectoral gross investments. \dot{L}_n and \dot{L}_x are sectoral changes in labor force, and F_x describes the marginal externality effect of exports on the output of non-exports.

Denoting Gross Domestic Product by Y , and since by definition $Y = N + X$, it follows

$$\dot{Y} = \dot{N} + \dot{X}. \quad (6)$$

Using eqs. (3)–(5) in eq. (6) yields

$$\begin{aligned} \dot{Y} &= F_k \cdot I_n + F_L \cdot \dot{L}_n + F_x \cdot \dot{X} + (1 + \delta) \cdot F_k \cdot I_x + (1 + \delta) \cdot F_L \cdot \dot{L}_x \\ &= F_k \cdot (I_n + I_x) + F_L \cdot (\dot{L}_n + \dot{L}_x) + F_x \cdot \dot{X} + \delta \cdot (F_k \cdot I_x + F_L \cdot \dot{L}_x). \end{aligned} \quad (7)$$

Define total investment I ($\equiv I_n + I_x$) and total growth of labor \dot{L} ($\equiv \dot{L}_n + \dot{L}_x$). Recall that eqs. (3) and (5) imply

$$F_k \cdot I_x + F_L \cdot \dot{L}_x = \frac{1}{1 + \delta} \cdot (G_k \cdot I_x + G_L \cdot \dot{L}_x) = \frac{\dot{X}}{1 + \delta}. \quad (8)$$

Using this result in eq. (7) finally yields

$$\dot{Y} = F_k \cdot I + F_L \cdot \dot{L} + [\delta/(1 + \delta) + F_x] \cdot \dot{X}. \quad (9)$$

Following arguments similar to those presented by Bruno (1968), suppose that a linear relationship exists between the real marginal productivity of labor in a given sector and average output per laborer in the economy, say

$$F_L = \beta \cdot (Y/L). \quad (10)$$

Then, dividing eq. (9) through by Y and denoting $F_k \equiv \alpha$ yields, after some manipulation

$$\dot{Y}/Y = \alpha \cdot (I/Y) + \beta \cdot (\dot{L}/L) + [\delta/(1 + \delta) + F_x] \cdot (\dot{X}/X) \cdot (X/Y). \quad (11)$$

The formulation in eq. (11) will be the basis of the empirical work reported in the next section.³ Note that if marginal productivities are equalized across sectors ($\delta = 0$) and if there are no inter-sectoral externalities ($F_x = 0$), then eq. (11) reduces to the familiar neo-classical formulation of the sources-of-growth model. In the more general case, the term $[\delta/(1 + \delta) + F_x]$ is likely to be non-zero for less developed countries.

³Another section will discuss a specification allowing a separate estimate of F_x .

Under the present formulation the parameter α should be interpreted as the marginal productivity of capital in the non-export sector, rather than as the marginal productivity of capital in the economy as a whole.

Denote by $TMPK_x$ the total increment to GDP brought about by a marginal increase in capital allocated to the export sector; $TMPK_x$ can be referred to as the social marginal productivity of investment in exports. Similarly denote by $TMPL_x$ the effect on GDP of a marginal increase in export sector labor. Then, one can show

$$(TMPL_x - F_L)/G_L = (TMPK_x - F_k)/G_k = \delta/(1 + g) + F_x. \quad (12)$$

Eq. (12) clarifies the interpretation of the term on the extreme right-hand side (which in some of the empirical work reported below will be estimated as a fixed parameter): it measures the difference between the marginal contribution to CDP of production factors in the two sectors, relative to the marginal contributions of these factors to export sector's output.

The interpretation of the sources-of-growth equation [eq. (11)] is then straightforward: the rate of growth of GDP is composed of the contribution of factor accumulation (i.e., growth of capital and labor) and the gains brought about by shifting factors from a low productivity sector (non-exports) to a high real productivity sector (exports).

Econometric formulation

Eq. (11) was used for a cross-country regression relating the rate of growth of GDP (in constant prices) to the share of investment in GDP, growth of population (proxy for labor growth) and to the growth of exports (in constant prices) multiplied by exports share in GDP.

The study focuses on a group of less developed countries defined by Chenery (1980) as semi-industrialized. The definition involves both relative and absolute indicators (such as the share of industrial output in GNP and the level of per capita industrial output). Since the indicators do not necessarily overlap, Chenery (1980) distinguishes between those countries which are only 'marginally' semi-industrialized, and those which qualify under a stricter definition. Accordingly, the study provides estimates for the sample defined by the strict definition (19 countries) as well as a larger sample (31 observations) including also marginal cases.

An issue which needs to be addressed is the length of time to be covered by any single country observation. Earlier studies used 5-10 year averages, since annual data include substantial random effects which tend to be eliminated by the procedure of averaging. The existence of lagged responses is another element which becomes less severe when averages rather than

annual data are used. This study uses averages defined over the decade 1964-1973.

There are a host of econometric problems related to cross-country aggregate analysis of growth (e.g., possibility of simultaneous determination of both dependent and explanatory variables). Some of these complications are discussed by Hagen and Hawrylyshyn (1969) and by Chenery et al. (1970), and will not be repeated here. The constancy of parameters across observations merits, however, some further elaboration. Any cross-country study assumes implicitly that parameters are in some general way similar across countries. In a production function context, different countries are thus assumed to operate with identical production functions. In studies where the production function framework is complicated further by the existence of non-optimal allocation, an additional assumption is involved, namely, that the degree of misallocation [as indicated by the right-hand side of eq. (12)] is similar across countries.

These problems need to be borne in mind when parameters are interpreted. It is probably better to treat the estimated coefficients as average values which provide a general order of magnitude within the sample but are not applicable to any specific country. An attempt will be made in a latter section to allow for a possibility of variation across observations in the externality effect F . We set out now, however, to estimate eq. (11) in the form

$$\dot{Y}/Y = \alpha \cdot (I/Y) + \beta (\dot{L}/L) + \gamma \cdot ((\dot{X}/X) \cdot (X/Y)), \quad (13)$$

where the parameter γ represents the differential productivities of factors, as explained earlier. It is expected that α , the marginal productivity of capital in the non-export sector, will be positive but its magnitude should be less than the figures in the range 0.2-0.35 which were reported by earlier studies⁴ based on an aggregate macro production function. The reason is that in such studies the estimated parameter is some average (although not necessarily properly weighted) of marginal productivities in the two sectors, and is thus likely to be higher than a specific estimate of marginal productivity in the low productivity sector. The hypothesis that marginal productivities in the export sector are higher and that exports generate beneficial externalities suggests that the parameter γ should be positive and significantly different from zero. The parameter β , related to labor growth, should also be significantly more than zero if labor surplus was not the prevalent situation in sample countries during the period covered.

⁴For example, Humphries (1976) reports figures in the range 0.25-0.33; Pesmazoglu (1972) reports estimates in the range 0.17-0.35.

3. Empirical analysis

3.1. Empirical results of the basic formulation

Table 1 reports the results of two specifications of the regression equation: One, referred to as the conventional neo-classical model, assumes that $\gamma=0$, and thus presents GDP growth as the result of capital and labor growth only. The second specification follows eq. (13). Comparison of the two specifications highlights, therefore, the superior explanatory power of eq. (13). For both samples, the adjusted R^2 is almost doubled when the specification allowing for differences in marginal productivities is used. The results lend strong support to the hypothesis that marginal factor productivities in the export sector are higher than in the non-export sector, as the coefficient of $(\dot{X}/X) \cdot (X/Y)$ is positive and significantly different from zero. The sign and magnitude of the coefficient related to investment are within the range expected. Specifically, when the conventional neo-classical formulation is used, the estimated parameter is within the range observed in earlier studies. When the formulation of eq. (13) is adopted, the parameter declines sharply.

The parameter associated with labor growth (which, as explained earlier, reflects the relation between marginal labor productivity and average output per laborer) is significantly greater than zero.⁵ This may be taken as an

Table 1
Regression results for semi-industrialized LDCs, 1964–1973.^a

Variable (parameter)	Extended sample (including marginal cases)		Limited sample (excluding marginal cases)	
	Conventional neo-classical model	Eq. (15)	Conventional neo-classical model	Eq. (15)
\dot{Y} (α)	0.284 (4.311)	0.178 (3.542)	0.311 (2.973)	0.196 (2.432)
\dot{L}/L (β)	0.739 (1.990)	0.747 (2.862)	0.853 (1.652)	0.737 (1.976)
$(\dot{X}/X) \cdot (X/Y)$ (γ)		0.422 (5.454)		0.390 (3.985)
Constant	-0.002 (0.554)	0.002 (0.180)	-0.016 (0.611)	0.0 (0.001)
\bar{R}^2	0.370	0.689	0.331	0.653
No. of observations	31	31	19	19

^aNumbers in parentheses are *t*-values.

⁵With a 5% one-tail test.

indication that surplus labor was not the general case for sample countries in the period under investigation.

The point estimate for γ can be used further to provide some information on the social marginal productivity of capital in export (TMPK_x). Recalling eq. (12), it is noted that $TMPK_x = (1 + F_x) \cdot G_k$, thus

$$TMPK_x = F_k \cdot (1 + F_x) / (1 - \gamma + F_x). \quad (14)$$

While F_k and γ were estimated, F_x is not known (in a later section of this chapter some direct estimates of F_x will be obtained). For a plausible range of F_x values one can, however, calculate the corresponding values of the social marginal product of investment in exports, using eq. (14). These are presented in table 2.

Table 2
Possible values of the social marginal product of investment
in exports for semi-industrialized LDCs.

F_x	TMPK, (extended sample)	TMPK, (limited sample)
0.10	0.289	0.302
0.20	0.275	0.210
0.30	0.264	0.280
0.40	0.255	0.272
0.50	0.248	0.265
1.00	0.226	0.243

It should be emphasized that the estimates reported in table 2 are strictly consistent for only one particular (and unknown) value of F_x . This follows from the fact that γ incorporates F_x , and thus varying the latter while holding γ fixed is not strictly legitimate. However, it is evident from these calculations that the marginal value to the economy from a unit investment in exports expansion is substantially higher than that of investment in non-exports. While these numbers correspond to sample averages, they provide strong support to the view that the success story of export-led economies such as Korea is due in large part to the enormous shift of resources into the higher productivity export sector.

3.2. Specifying the externality effect and empirical results

So far we were not able to decompose the factor productivity differential γ into its components. One can identify the specific inter-sectoral externality effect by adopting a plausible specification for the term F_x . Suppose that

exports affect the production of non-exports with constant elasticity, i.e.,

$$N = F(K_n, L_n, X) = X^\theta \cdot \psi(K_n, L_n), \quad (15)$$

where θ is a parameter. One can show

$$\partial N / \partial X \equiv F_x = \theta \cdot (N/X). \quad (16)$$

Eq. (11) can now be rewritten

$$\frac{\dot{Y}}{Y} = \alpha \cdot \frac{I}{Y} + \beta \cdot \frac{\dot{L}}{L} + \frac{\delta}{1+\delta} + \theta \cdot \frac{N}{X} \cdot \frac{\dot{X}}{X} \cdot \frac{X}{Y}, \quad \text{But} \quad (17)$$

$$\theta \cdot \frac{N}{X} = \theta \cdot \frac{N/Y}{X/Y} = \theta \cdot \frac{[1 - (X/Y)]}{(X/Y)} = \frac{\theta}{(X/Y)} - \theta.$$

Using this result, eq. (17) is rearranged, obtaining

$$\frac{\dot{Y}}{Y} = \alpha \cdot \frac{I}{Y} + \beta \cdot \frac{\dot{L}}{L} + \left(\frac{\delta}{1+\delta} - \theta \right) \frac{\dot{X}}{X} \cdot \frac{X}{Y} + \theta \cdot \frac{\dot{X}}{X}, \quad (18)$$

Note that if it is assumed $\delta/(1+S) = \theta$, the model reduces to

$$\frac{\dot{Y}}{Y} = \alpha \cdot \frac{I}{Y} + \beta \cdot \frac{\dot{L}}{L} + \theta \cdot \frac{\dot{X}}{X}$$

which is essentially the equation adopted by Michalopoulos and Jay (1973), Balassa (1978) and Tyler (1981).⁶

Results of regressions adopting the specification of eq. (18) are reported in table 3.

The modified formulation increases the explanatory power of the model considerably. The results indicate that the inter-sector externality parameter (8) is statistically significant in both samples. The magnitude of the estimated parameter is quite substantial. If exports are increased by 10% without withdrawing resources from the non-export sector, the latter grows by approximately 1.3%. The other component of productivity differential (the parameter δ) can be calculated given the estimate of θ and the parameter associated with $(\dot{X}/X) \cdot (X/Y)$. The result is $\delta 20.75$, implying that there is a substantial productivity differential between exports and non-exports in addition to the differential due to externalities.

⁶The earlier works make a distinction between domestic capital and foreign capital flows. Such a distinction was experimented with in various regressions under the present study, but no (statistically) significant difference was indicated.

Table 3

Regression results for semi-industrialized LDCs with specific inter-sectoral externalities, 1964-1973.⁷

Variable (parameter)	Extended sample (including marginal cases)	Limited sample (excluding marginal cases)
I/Y	(a) 0.124 (3.009)	0.139 (2.047)
\dot{L}/L	(β) 0.696 (3.299)	0.587 (1.921)
$(\dot{X}/X) \cdot (X/Y) (\delta/(1+\delta) - \theta)$	0.305 (5.571)	0.302 (3.581)
\dot{X}/X	(θ) 0.131 (4.239)	0.124 (2.989)
Constant	0.006 (0.596)	0.005 (0.331)
\bar{R}^2	0.809	0.773
No. of observations	31	19

⁷Figures in parentheses are *t*-values.

The coefficients of investment share and labor growth are within the same order of magnitude of the estimates obtained in table 2, and are statistically significant.⁷

Using the results of table 3, the social marginal product of investment in exports (TMPK_x) can be calculated. Recall from eq. (16) $F_x = \theta \cdot ((1-x)/x)$, where x is the share of exports in GDP. It follows then,

$$\gamma(x) = \frac{\delta}{1+\delta} + \theta \cdot \frac{1-x}{x},$$

and eq. (14) can be written

$$TMPK_x = F_k \cdot \left(1 + \theta \cdot \frac{1-x}{x} \right) \cdot (1+\delta). \quad (19)$$

Using the parameters reported in table 3, eq. (19) generates the social marginal product of investment in exports for economies with different values of x . These are presented in table 4.

The calculations in table 4 are free of the inconsistencies associated with the numbers presented in table 2. Again, it is demonstrated that, at the margin, investment in the export sector has a substantially higher social

⁷At a 5% one-tailed test.

Table 4
Social marginal product of investment in exports semi-industrialized LDCs, 1964-1973.

Share of exports in GDP (x)	TMPK _x	
	Extended sample	Limited sample
0.1	0.479	0.512
0.15	0.353	0.412
0.20	0.335	0.362
0.25	0.306	0.332
0.30	0.287	0.312
0.35	0.273	0.298
0.40	0.263	0.287
0.45	0.255	0.279
0.50	0.248	0.272

marginal productivity than investment in non-exports. The differential is smaller in economies where a large share of resources is already allocated to the export sector, as in such economies the inter-sector externality effect is smaller.

3.3. Sources of growth

Using the results of table 3 and the mean values of sample variables, the average rate of GDP growth in the period 1964-1973 can be decomposed so as to identify the contributions of aggregate investment, labor force growth and resource shifts into exports. This is done in table 5 for both samples. The results indicate that the gain in productivity due to closer-to-optimal

Table 5
Sources of growth of semi-industrialized LDCs, 1964-1973.

Variable	(1) Mean in sample		(2) Parameter (from table 3)		(3) Contribution to growth [(1) x (2)] x 100	
	Extended sample	Limited sample	Extended sample	Limited sample	Extended sample	Limited sample
I/Y	0.205	0.222	0.124	0.139	2.54	3.09
L/L	0.023	0.020	0.696	0.587	1.60	1.17
(X̄/X) (N̄/N)	0.022	0.03	0.305	0.302	0.67	0.91
X̄/X	0.084	0.105	0.131	0.124	1.10	1.30
Constant			0.006	0.005	0.60	0.53
GDP growth (Ȳ/Y)	0.065	0.040			6.5	7.0

4. Concluding remarks

This paper provides evidence supporting the view that the success of economies which adopt export-oriented policies is due, at least partially, to the fact that such policies bring the economy closer to an optimal allocation of resources. The estimates show that there are, on average, substantial differences in marginal factor productivities between the export and non-export sectors. These differences derive in part from the failure of entrepreneurs to equate marginal factor productivities and in part due to externalities. The latter are generated because the export sector confers positive effects on the productivity in the other sector, but these are not reflected in market prices.

The results are such that social marginal productivities are higher in the export-sector, and economies which shift resources into exports will gain more than inward-oriented economies. The empirical findings suggest that even when entrepreneurs optimize resource allocation given the prices they face, there are substantial gains to be made due to the externality effects.

The analytical framework developed in this study can be utilized in studies using more detailed data such that the extent of productivity differential in specific groups of countries (with different policy orientation) can be assessed. Similarly, the relation between inter-sector externalities and export composition can be clarified further using the same analytical framework.

Appendix: Sources of data and definitions

A.1. Calculation of variables

All data were obtained from World Tables 1980. Variables were calculated from time series for the period 1964–1973 in constant prices. Average rates of growth were obtained by regressing $\ln Z_t = a + b \cdot t$ where Z_t is the economic variable under consideration and t is time. The rate of growth, say r , is then calculated as $r = e^b - 1$. Average ratios (investment/GDP, export/GDP) were calculated as simple averages for the decade.

Table A.1 presents means and standard deviations of the variables used in the study.

A.2. Composition of samples

Following Chenery (1980), the strict definition of semi-industrialized LDCs applies to the following economies which are included in the 'limited sample': Argentina, Brazil, Chile, *Taiwan* (China), Colombia, Costa Rica, Greece, Hong Kong, Israel, Korea, Malaysia, Mexico, Portugal, Singapore, South Africa, Spain, Turkey, Uruguay and Yugoslavia. In addition, Ireland and Venezuela fall under the strict definition but were excluded from the sample;

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Table A.1
Characteristics of the samples of semi-industrialized LDCs,
1964-1973.

Variable	Mean (standard deviation)	
	Extended sample	Limited sample:
GDP growth	0.065 (0.022)	0.070 (0.025)
Investment GDP	0.205 (0.050)	0.222 (0.047)
Population growth	0.023 (0.009)	0.020 (0.009)
Exports growth	0.084 (0.070)	0.105 (0.080)
Export share	0.235 (0.225)	0.266 (0.282)
(Export growth) x export share	0.022 (0.032)	0.030 (0.038)

the former is defined by the World Bank as a developed country and the latter is a major oil exporter. Countries which are considered as marginally semi-industrialized were added to the limited sample creating the 'extended sample'. These countries are: Dominican Republic, Ecuador, Egypt, Guatemala, India, Ivory Coast, Kenya, Morocco, Peru, Philippines, Syria, Thailand and Tunisia. In addition, Iran, Iraq and Algeria are defined as marginal cases but were excluded from the sample, being major oil exporters.

The sample of developed countries consists of Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Ireland, Italy, Japan, The Netherlands, Norway, Sweden, Switzerland, U.K., and U.S.A.

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