Export Instability and Economic Development: a Reappraisal *

I. Introduction

1. Among the many problems besetting international economic relations, the instability of exports of developing countries has always been a major topic of analysis and discussion. Developing countries, in fact, insist on identifying export instability as an important obstacle to development, though most of the inquiries conducted in the last 20 or 30 years about the causes and consequences of such instability seem to have produced controversial results. Recently, after the Sixth and Seventh Special Sessions of the United Nations General Assembly aiming at the introduction in world economic relations of a "New International Economic Order", and UNCTAD IV in Nairobi (May 1976), a new interest has been stimulated in these problems, also in conjunction with initiatives for stabilization agreements of various kinds.[1]

The economic literature on export instability has always been divided into two main streams, one analyzing the world markets for

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[1] The final Report adopted at Nairobi describes the first two objectives of UNCTAD's "Integrated Programme for Commodities" as: 1) "to achieve stable conditions in commodity trade, *including avoidance of excessive price fluctuations*"; 2) "to improve and sustain the real income of individual developing countries through increased export earnings, and *to protect them from fluctuations in export earnings, especially from commodities*". Of the "international measures" envisaged for supporting the "Programme", a vital one is: "The improvement and enlargement of compensatory financing facilities for *the stabilization, around a growing trend, of export earnings of developing countries*". Proceedings of United Nations Conference on Trade and Development, Fourth Session, Nairobi 1976, Vol. I, Report and Annexes, U.N., New York, 1977.

primary commodities and their quantity-price-earnings relationships,[2] the other focussing on individual developing countries and their macroeconomic frameworks where the causes and consequences of export instability come to the surface. Recently, an interesting study by Brook, Grilli and Waelbroeck has been added to the first stream,[3] a survey article by Stein to the second.[4] Therefore, before setting off to give a contribution to the theoretical and empirical analysis of export instability, it is useful to comment on these latest additions which have enlivened the debate, beginning from the former one.

2. Starting from the welfare analysis of price stabilization developed by Massell[5] and others,[6] the three authors break down welfare results into pure welfare and income effects, to obtain criteria for the choice of commodities whose price stabilization would benefit developing countries, both as exporters and consumers. Having defined stabilization as " smoothing out price fluctuations around the trend set by market forces ", they carry out an empirical analysis on seventeen primary commodities over 1954-73. Their results point, first of all, to the crucial importance of the source of price fluctuations: depending on whether the cause is the supply or demand shifts, the effects of stabilization will be different. In conclusion, only in the case of four export commodities (cocoa, coffee, jute and wool) would price stabilization clearly benefit developing countries.

Theoretically penetrating as it is, and certainly going one step further than Massell, this analysis, however, remains too abstract for generating policy suggestions with operational value. While the authors themselves indicate the limitations of the partial equilibrium analysis employed in the study — which neglects the possible indirect effects of price stabilization of a commodity on its long-term demand prospects, on related commodities and on the incentives to develop

2 See, for instance, " Instability in Export Markets of Underdeveloped Countries in relation to their ability to obtain foreign exchange from exports of primary commodities, 1901-1950 ", United Nations, New York, 1952; and also United Nations 1959 and 1961 [24, 25], FAO 1965 [6], IMF-IBRD 1969 [10].

3 E. Brook, E. Grilli, J. Waelbroeck, " Commodity Price Stabilization and the Developing Countries ", in this *Review*, March 1978.

4 Leslie Stein, " Export Instability and Economic Development ", in this *Review*, September 1977.

5 Benton F. Massell, " Price Stabilization and Welfare ", *The Quarterly Journal of Economics*, Vol. LXXXIII, No. 2, May 1969.

6 D. Hueth and A. Schmitz, " International Trade in Intermediate and Final Goods: Some Welfare Implications of Destabilized Prices ", *The Quarterly Journal of Economics*, Vol. LXXXVI, No. 3, August 1972.

man-made substitutes — it seems there are two more fundamental assumptions, implicit in the analysis, which particularly limit its empirical value.

If main criteria adopted by the authors for choosing the commodities to be stabilized are the price-quantity relationships prevailing in the world market in 1954-1973 and ascertained in their empirical analysis, a continuation or reproduction of such relationships is assumed for the future. Considering the violent price rises and other dramatic economic events which have taken place in 1974-77, it is to be expected that for a number of products the source of price fluctuations has changed, as well as the structure of its export markets. On the other hand, by examining commodity trade on a world market basis, one implicitly assumes that for each commodity the source and the magnitude of export instability are the same or are similar for all exporting countries. It can be shown, on the contrary, that many developing countries have a pronounced export instability for commodities which on the world market turn out to be stable, and also that commodities, the instability of which is attributed in the world market to quantity fluctuations, may be unstable for some countries because of price fluctuations, while sometimes world price instability is accompanied by national quantity fluctuations.[7] Though the authors themselves conclude " that *prima facie* the scope for commodity price stabilization which is clearly beneficial to developing countries in welfare and income terms appears to be quite limited ", what seems fundamental is that the problem cannot be confined in the borderlines of international price stabilization alone. To ensure developing countries such dependable export earnings as are necessary for development and growth, more comprehensive and highly flexible schemes should be aimed at, in order to cope simultaneously, and using various instruments of economic policy, with the many different situations of individual developing countries.

7 Research is now being completed by the author of the present study on the supply/demand, price/quantity instabilities of export flows of primary commodities from individual developing countries. Preliminary results over 1961-72 indicate, for instance, that, while export earnings from coffee fluctuated in the world market by ±4.6 percent a year, countries like Yemen, Haiti, Burundi and Rwanda (where coffee represented in 1972 between 37 percent and 88 percent of total earnings from exports of goods) experienced average fluctuations of, respectively, ±13 percent, ±14 percent, ±22 percent and ±24 percent a year, which might include in some cases the effects of the International Coffee Agreement. On the other hand, while coffee instability on the world market was mostly due over 1961-72 to price fluctuations, coffee exports from Tanzania, for instance, fluctuated by ±14 percent a year over the period, mainly because of quantity variations.

3. In the stream of the literature on export instability which is more focussed on countries, Leslie Stein in a recent article in this Review briefly examined [8] the works of a number of authors in the field,[9] coming to the following conclusions:

1) a consensus seems to emerge that exports from developing countries are more unstable than exports from developed countries, and that instability has been declining in the sixties *for both groups of countries*;

2) no single factor has generally proved to be a major cause of instability for most countries; [10]

3) the question of the adverse effects of export instability remains an open one.[11] Stein finds, on one side, the early results from Coppock (1962) and MacBean (1966), later confirmed by Kenen and Voivodas and supported by Knudsen and Parnes, questioning such effects; on the other side he cites the opinion of Maizels [12] (on MacBean's results) and that of Glezakos, which seems however to be based on statistically questionable results; [13]

4) and, consequent to 2) and 3) above, the suitability of large aggregates of countries for the study of export instability is to be questioned, as well as the usefulness of large scale stabilization agreements of the sort proposed and strongly advocated by UNCTAD.

8 Leslie Stein, "Export Instability and Economic Development", in this *Review*, September 1977.

9 Coppock [3], MacBean [16], Erb and Schiavo-Campo [4], Massell [19], Lawson [13], Naya [20], Glezakos [7], Kenen and Voivodas [11], Askari and Weil [1], Knudsen and Parnes [12], Lim [15].

10 Main factors of export instability traditionally indicated by the literature are: 1) low price elasticity of demand and supply, 2) low income elasticity of demand, 3) sudden variations in supply for natural causes like droughts, floods, etc, 4) strong variations in industrial countries' demand for raw materials following their economic cycles, 5) concentration of a country's exports in one or few commodities and in one or few markets.

11 It is generally accepted in the literature that fluctuations in export earnings would influence the economy of a developing country in two main ways: by causing variations in exporters' income, which are transmitted through a multiplier effect to the other sectors of the economy changing domestic expenditure for consumption and investment, or by bringing about fluctuations in the country's external purchasing power and therefore in imports for consumption and investment.

12 In his review of MacBean's, "Export...", *op. cit.*, *Am. Ec. Rev.*, June 1968, Alfred Maizels claims that, by excluding a number of special cases, results by MacBean would seem to support the proposition that export instability and growth of national income are negatively correlated.

13 Stein finds, first of all, that 7 of the 40 countries included by Glezakos in his sample are not normally considered developing countries (Cyprus, Greece, Iceland, Portugal, Spain, Turkey, and Yugoslavia) and also that, while data on national incomes have been taken in the study in real terms, no deflation seems to have been applied to export data.

4. Contrary to Stein's latter conclusion, the starting point of this paper is precisely that most empirical results on export instability are to be questioned since the "aggregates" there examined are not large enough, and that greater care should be used in the studies to ensure a proper statistical coverage. With more than 130 countries formally classified by the United Nations as developing, results from samples of 40-50 countries are insufficient to represent all developing countries as a group compared to the developed ones. Coppock and MacBean [16] both analyzed the same sample of 45 countries over 1946-58,[14] Erb and Schiavo-Campo [4] the same countries again over a later period (1954-66) and so did Lawson [13] over 1950-69. Insufficient as it was, that sample also included among the "developing countries" South Africa, Greece and Turkey.[15] Later, no real improvement on the sample size appears to have been effected by Naya [20] (48 countries), Glezakos [7] (40 countries) and others.

That such samples are not much representative of developing countries is also confirmed by two observations:

1) samples for developed countries used in the studies mentioned include at least 18 countries [16] covering 70-75 percent of the total; since developing countries are only covered by 30-35 percent, comparisons between the two groups are clearly incorrect, in view of the fact that no sample stratification to improve representativeness was ever attempted in the literature;

2) an analysis of the 45 developing countries included in the "Coppock" sample [17] shows that exclusions refer in most cases to the

14 Also, to avoid distortions, the period 1946-50 should have been excluded; cf. Lawson [13], *op. cit.*, page 55: "if we are interested in examining post-war experience, then it seems essential to begin by omitting the period 1946-50, which, by general agreement, was untypical. Beginning the study in 1950 means that most of the effects of the abolition of international price control in 1947, and some of those due to the widespread devaluation against the dollar of 1949, will not influence the results".

15 Turkey is a developing country in the UN classification but is considered developed in UNCTAD's *Handbook of International Trade and Development Statistics 1976*, which is the basic statistical source of the present study.

16 In the "Coppock-MacBean-Lawson sample": Australia, Austria, Belgium-Luxembourg, Canada, Denmark, Finland, Germany, France, Iceland, Ireland, Israel, Italy, Japan, Norway, Sweden, Switzerland, United Kingdom, United States.

17 Argentina, Bolivia, Brazil, Burma, Ceylon (Sri Lanka), Chile, China (Taiwan), Colombia, Costa Rica, Cuba, Dominican Rep., Ecuador, El Salvador, Ethiopia, Ghana, *Greece*, Guatemala, Haiti, Honduras, India, Indonesia, Iran, Iraq, Malaya, Mexico, Morocco, Nicaragua, Nigeria, Pakistan, Panama, Paraguay, Peru, Philippines, Portugal, Rhodesia, Sudan, Syria, Thailand, Tunisia, *Turkey*, *South Africa*, United Arab Rep., Uruguay, Venezuela, Vietnam.

smallest of the developing countries. Since these — as will be seen later — are also the most exposed to export fluctuations and to their effects, it becomes clear that, for years, half of the problem has been avoided by excluding from the analysis *the most unstable countries.*[18]

In the present study, therefore, to assess on a proper comparative basis the extent to which export instability manifests itself, an unprecedented coverage of 149 countries has been realized, practically including all developing (123) and developed (26) countries of the world.[19] The relationships of export instability with the rest of the economy have also been explored, trying to ascertain the probable impact on developing countries' growth performances. After drawing some relevant conclusions from the empirical results obtained, further lines of research have been indicated, to sharpen the analysis of instability, in particular from the point of view of individual countries which may be involved in stabilization agreements and compensatory financing schemes.

II. Methodology

The measure of instability

5. In line with MacBean[20] and others, export instability is defined in this study as the residual variability of export values after correcting for trend. The aim is to ascertain year-to-year fluctuations of exports separately from underlying trends. Cyclical and other types of fluctuations, which can be useful occasionally in examining certain countries or commodities, are not suitable for analyses where a high degree of comparability of the results is necessary. On the other hand, the choice of a trend correction method is closely connected with the choice of an instability index, which is defined here as the average of annual percentage differences between observed and calculated

18 Lack of data is a justification for early studies only, and with reference to particular variables like investment, imports of capital goods and so on: data on total exports, imports and GDP, in fact, have always been available for quite a large number of countries.

19 Centrally planned countries have been excluded from the analysis because their exports are controlled by the State and avoidance of export fluctuations is deliberately pursued as a government policy.

20 Cf. page 24 in MacBean, *op. cit.*

(trend) values, disregarding the signs of the differences and expressing them as percentages of the trend value.[21] Such an index is easy to understand because it shows in percentage form, for the period considered, the average annual fluctuation of exports.

To correct for trend, linear, exponential and other functions have been used, but generally the best results were obtained with a linear regression of the logarithms of annual data on time, which means that trends are expressed as constant annual percentage increases or decreases. This standard functional form was finally adopted throughout the present study.

Choice of Time Periods and Data

6. Leaving aside recent years after 1973, when the price boom due to the oil crisis inflated the monetary value of world exports in such a way as to invalidate trend analysis,[22] the periods chosen for this study were 1950-61 and 1961-72. Earlier studies, in fact, had suggested that the fifties were different from the sixties, and better results were also obtained in terms of fit since a majority of countries showed substantial differences in their export trends between the two periods.

All data, including those on GNP, are, unless stated otherwise, in U.S. dollars at current prices. Data on export earnings refer to f.o.b. values from exports of goods. The exclusion of services is mainly due to the fact that most of the propositions and arguments in the field are specifically related to merchandise exports; moreover, data on services are lacking or unreliable for many countries. Usage of dollar

21 That is: $$I = \frac{1}{N} \sum_{i=1}^{N} \left(\frac{|X_i - X'_i|}{X'_i} \right) 100$$

where X_i = observed data
X'_i = calculated trend value
N = number of years

Average annual deviations from 5-year and 7-year moving averages centred on the mid-year have been used by some authors including MacBean. The main disadvantage of that approach is that data are lost at the beginning and at the end of the time series. Massell used the standard error of estimate of a linear regression on time divided by the mean of the observations. Another alternative, the Coppock index, which has been referred to by many authors, is inappropriate in cases where the true underlying trend function is other than exponential.

22 Exports from developing countries tripled in value between 1972 and 1974, with their volume only increasing by 9 percent: to examine such developments, a comparative analysis would be necessary of the differential rates of inflation of national currencies and the dollar, and actual export and import prices of each country, which would clearly go beyond the limits of the present study.

data seems to be obvious, for it probably gives an acceptable estimate of a large part of a country's ability to import; moreover the trend correction procedure used in computing instability indices turns out to adjust implicitly for the inflation of the U.S. dollar, which becomes a rising element of any calculated trend.

III. Empirical Results

The Levels of Export Instability

7. Instability indices and annual trend rates of growth for 123 developing countries and 26 developed countries are reported in Tables 1-2 for 1950-61, in Tables 3-4 for 1961-72. The hypothesis that developing countries are much more exposed to fluctuations of export earnings is fully confirmed: the index of instability is on average 63 percent higher than for developed countries in 1950-61, 134 percent higher in 1961-72. Actual values of the averages [23] are ± 11.7 percent and ± 7.2 percent a year in the first period, ± 11.7

Table 1

DEVELOPED COUNTRIES RANKED ACCORDING TO THE INDICES OF INSTABILITY OF THE VALUE OF THEIR TOTAL EXPORTS OF GOODS OVER 1950-61

(millions of U.S. dollars f.o.b. at current prices)

Country	Index of Instability 1950-61	Annual Trend Rates of Growth 1950-61	Country	Index of Instability 1950-61	Annual Trend Rates of Growth 1950-61
1. Finland	11.8	5.5	14. Sweden	7.4	6.7
2. Spain	10.6	3.9	15. Yugoslavia	7.3	13.0
3. Greece	10.6	8.7	16. Austria	6.7	11.6
4. Germany	10.5	15.8	17. South Africa	6.6	6.2
5. Turkey	9.6	0.3	18. Portugal	6.2	4.1
6. U. S. A.	8.4	4.9	19. Israel	5.9	19.0
7. Norway	8.2	6.6	20. France	5.6	6.7
8. Australia	8.1	1.6	21. New Zealand	5.5	3.1
9. Belgium	8.0	6.3	22. Canada	5.3	5.1
10. Italy	7.7	11.1	23. Netherlands	3.9	9.3
11. Japan	7.7	15.4	24. U. K.	3.6	4.7
12. Iceland	7.6	7.0	25. Switzerland	2.9	6.9
13. Ireland	7.5	6.6	26. Denmark	2.4	7.4
			Averages (non-weighted)	± 7.2	+ 7.5

Source of data: Handbook of International Trade and Development Statistics, UNCTAD 1976.

23 Since, more than at world level, the consequences of export instability are felt by the countries having themselves such instability, we have preferred in this context to use simple arithmetic averages, which give the same importance to each country. Any weighting criterion (GDP, population, etc.) would tend to hide at world level the extreme instability in a large number of small countries.

Table 2

DEVELOPING COUNTRIES RANKED ACCORDING TO THE INDICES OF INSTABILITY OF THE VALUE OF THEIR TOTAL EXPORTS OF GOODS OVER 1950-61

(millions of U.S. dollars f.o.b. at current prices)

Country	Index of Instability 1950-61	Annual Trend Rates of Growth 1950-61	Country	Index of Instability 1950-61	Annual Trend Rates of Growth 1950-61
1. Nepal	58.9	19.7	63. Singapore	9.8	– 0.1
2. Korea, Rep. of	28.9	3.4	64. Ivory Coast	9.7	5.0
3. Iran	28.4	32.9	65. Cyprus	9.7	3.1
4. Guam	27.7	11.3	66. Somalia	9.5	14.7
5. South Viet-Nam	21.3	– 2.0	67. Barbados	9.5	2.8
6. Togo	21.2	2.9	68. Guadeloupe	9.5	5.3
7. New Caledonia	21.0	15.9	69. Malta	9.3	6.9
8. Jordan	20.8	13.1	70. Burma	9.3	0.7
9. Sabah	20.5	9.9	71. Tunisia	9.3	1.5
10. American Samoa	20.2	23.7	72. Uganda	9.1	3.0
11. Iraq	20.0	13.0	73. Indonesia	9.1	– 1.4
12. Falkland Is.	19.5	– 2.1	74. Peru	9.0	7.2
13. Niger	19.1	6.1	75. Cuba	9.0	– 0.6
14. Gambia	18.1	1.4	76. Botswana	9.0	7.5
15. Mauritania	17.7	6.8	77. Madagascar	9.0	– 0.1
16. Guinea Bissau	17.2	1.5	78. Costa Rica	8.9	2.9
17. Liberia	17.2	8.1	79. Congo	8.9	13.5
18. Sudan	17.1	2.7	80. Lesotho	8.8	8.5
19. West Malaysia	16.9	0.5	81. Chile	8.8	3.5
20. Guinea	16.7	12.5	82. Jamaica	8.8	13.9
21. Upper Volta	16.6	0.9	83. Yemen Dem. Rep.	8.8	5.1
22. Syrian Arab Rep.	16.4	4.3	84. Argentina	8.7	– 0.3
23. Uruguay	16.4	– 6.8	85. Gabon	8.6	10.9
24. Pakistan	15.6	– 3.1	86. Ecuador	8.6	6.0
25. U. S. Virgin Is.	15.6	9.6	87. Dominican Rep.	8.5	4.1
26. Zambia	15.3	6.2	88. Guyana	8.4	8.0
27. Hong-Kong	15.2	0.6	89. Martinique	8.4	6.8
28. Fiji	14.8	6.6	90. Sarawak	8.0	1.1
29. Kenya	14.3	8.9	91. Belize	7.9	8.7
30. Western Samoa	13.9	4.7	92. Honduras	7.8	1.6
31. Lybian Arab. Rep.	13.8	2.9	93. Thailand	7.8	2.5
32. Senegal	13.6	4.6	94. Windward Islands	7.8	6.3
33. Kuwait	13.3	13.5	95. El Salvador	7.7	4.7
34. Bahamas	13.1	8.4	96. Netherl. Antilles	7.7	0.4
35. Nicaragua	13.0	6.4	97. Algeria	7.7	4.2
36. Papua N. Guinea	12.9	10.6	98. Macau	7.7	10.1
37. Colombia	12.8	– 0.3	99. Central Afric. Rep.	7.7	– 1.0
38. Mauritius	12.8	2.5	100. Mexico	7.4	3.3
39. Greenland	12.7	3.0	101. Nigeria	7.3	4.3
40. Bolivia	12.6	– 5.8	102. Mozambique	6.9	6.9
41. Ethiopia	12.5	5.6	103. Angola	6.9	3.6
42. Bermuda	12.4	24.1	104. Saudi Arabia	6.9	7.8
43. Haiti	12.4	– 4.0	105. Surinam	6.8	7.9
44. Chad	12.4	– 0.1	106. India	6.7	0.3
45. Mali	12.2	5.0	107. French Polinesia	6.7	3.9
46. Benin	12.2	3.9	108. Paraguay	6.6	– 1.2
47. Leeward Is.	12.1	2.3	109. Ghana	6.5	3.1
48. Cameroon	12.0	6.2	110. Brazil	6.5	– 1.6
49. Lebanon	12.0	8.0	111. South. Rhodesia	6.4	5.7
50. Bangladesh	11.8	0.7	112. Morocco	6.4	4.4
51. Cambodia	11.5	2.5	113. Guatemala	6.4	3.1
52. Yemen	11.5	8.5	114. Burundi	6.1	10.1
53. Rwanda	11.3	17.7	115. Sri Lanka	5.8	0.7
54. Sao Tome Princ.	10.8	– 1.1	116. Malawi	5.6	4.4
55. Brunei	10.7	0.8	117. Venezuela	5.5	7.3
56. Sierra Leone	10.5	12.1	118. Philippines	5.5	4.3
57. Cape Verde Is.	10.5	3.0	119. Afghanistan	5.3	2.4
58. Egypt	10.4	0.3	120. Swaziland	4.3	16.5
59. Reunion	10.2	3.5	121. Trinidad & Tobago	3.9	10.8
60. Panama	10.1	2.8	122. New Hebrides	0.0	0.0
61. Tanzania	10.0	3.4	123. Lao	0.0	0.0
62. Zaire	9.9	3.3			
			Averages (non-weighted)	±11.7	+ 5.4

Source of data: Handbook of International Trade and Development Statistics, UNCTAD 1976.

TABLE 3

DEVELOPED COUNTRIES RANKED ACCORDING TO THE INDICES OF INSTABILITY OF THE VALUE OF THEIR TOTAL EXPORTS OF GOODS OVER 1961-72

(millions of U.S. dollars f.o.b. at current prices)

Country	Index of Instability 1961-72	Annual Trend Rates of Growth 1961-72	Country	Index of Instability 1961-72	Annual Trend Rates of Growth 1961-72
1. Iceland	15.1	6.2	14. Germany	4.3	12.8
2. Spain	8.2	16.7	15. Denmark	3.9	9.2
3. Ireland	7.5	10.6	16. U.K.	3.9	7.5
4. New Zealand	7.2	5.9	17. Belgium	3.8	13.1
5. Australia	6.4	8.6	18. Sweden	3.7	10.8
6. Austria	6.2	11.0	19. Japan	3.7	19.0
7. Turkey	6.0	7.4	20. Portugal	3.4	12.5
8. France	5.5	12.0	21. Israel	2.9	14.1
9. Netherlands	5.4	12.9	22. Canada	2.9	12.8
10. Yugoslavia	5.1	11.9	23. Norway	2.8	11.8
11. Finland	4.7	9.4	24. Italy	2.5	14.3
12. Greece	4.4	12.4	25. Switzerland	2.5	11.4
13. South Africa	4.3	6.5	26. U.S.A.	2.2	8.2
			Averages (non-weighted)	± 5.0	+11.0

Source of data: Handbook of International Trade and Development Statistics, UNCTAD 1976.

percent and ± 5.0 percent a year in the second period. Nothing changed, therefore, for the developing countries between the fifties and the sixties: if there was any "decline in world export instability" as claimed by Stein, it was only the developed countries who benefited from it.[24] These results, in fact, strongly contradict the results of Lawson who maintained even in 1974: "it is clear that, between the fifties and the sixties, LDC export instability fell by between a third and a half".[25]

Another important aspect is that, while being subject to such a higher instability, developing countries had also to see exports from developed countries expand at faster rates of growth than their own: respectively, in fact, average growth rates were 5.4 and 7.1 percent in the first period, 7.9 and 11.0 percent in the second period. In the sixties, therefore, there was a general expansion of world trade which benefited both groups of countries; but while, in the first period, average growth rate of developed countries' exports was

24 Cf.: J. L. LEITH, "The Decline in World Export Instability: A Comment", *Oxf. Bull. of Ec. and Stat.*, August 1970; G. F. ERB and S. SCHIAVO-CAMPO, "The Decline in World Export Instability: A Reply", *Oxf. Bull. of Ec. and Stat.*, August 1971; C. W. LAWSON, "The Decline in World Export Instability: A Reappraisal", *Oxf. Bull. of Ec. and Stat.*, February 1974.

25 C. W. LAWSON, *op. cit.*, pages 62, 63.

TABLE 4

DEVELOPING COUNTRIES RANKED ACCORDING TO THE INDICES OF INSTABILITY OF THE VALUE OF THEIR TOTAL EXPORTS OF GOODS OVER 1961-72

(millions of U.S. dollars f.o.b. at current prices)

Country	Index of Instability 1961-72	Annual Trend Rates of Growth 1961-72	Country	Index of Instability 1961-72	Annual Trend Rates of Growth 1961-72
1. Mauritania	67.9	36.8	63. New Hebrides	9.3	8.6
2. Lybian Arab Rep.	48.5	41.0	64. Malta	9.1	15.4
3. Cambodia	42.3	−11.6	65. Barbados	9.1	3.4
4. South Viet-Nam	38.9	−22.7	66. Saudi Arabia	9.0	13.6
5. Nepal	34.6	22.7	67. Tunisia	9.0	8.0
6. Lao	33.0	21.1	68. Ghana	9.0	2.9
7. Guam	30.9	0.1	69. Ecuador	9.0	7.0
8. Falkland Is.	30.2	−11.3	70. Iran	9.0	13.9
9. Bahamas	26.8	40.1	71. Iraq	8.9	3.0
10. Upper Volta	26.7	13.2	72. Brazil	8.8	9.8
11. Mali	25.2	9.4	73. Guinea	8.8	1.5
12. Bermuda	20.5	8.7	74. Haiti	8.6	1.1
13. Rwanda	20.2	15.2	75. Chad	8.5	5.1
14. South. Rhodesia	18.5	6.1	76. Sarawak	8.2	6.9
15. Yemen	18.2	0.3	77. Ethiopia	8.1	5.4
16. Benin	17.8	13.7	78. Cameroon	8.1	8.1
17. Bangladesh	17.6	0.3	79. Uganda	7.8	6.5
18. Botswana	17.5	12.8	80. Thailand	7.8	6.6
19. Dominican Rep.	16.6	5.5	81. Belize	7.6	6.6
20. Congo	16.5	3.1	82. Jamaica	7.5	6.6
21. U.S. Virgin Is.	16.2	40.0	83. Netherl. Antilles	7.1	0.5
22. Indonesia	15.8	6.8	84. Colombia	7.1	5.4
23. Zambia	15.6	10.2	85. Leeward Islands	7.0	0.4
24. Gambia	15.5	5.9	86. Somalia	7.0	3.2
25. Burma	14.8	− 8.4	87. Tanzania	6.8	5.5
26. Nigeria	14.6	12.5	88. Argentina	6.7	4.7
27. Central Afric. Rep.	14.4	8.2	89. Cape Verde Is.	6.6	− 0.2
28. New Caledonia	14.1	17.0	90. Reunion	6.6	3.5
29. Burundi	13.1	10.8	91. Pakistan	6.3	9.0
30. Zaire	13.1	8.0	92. Malawi	6.2	10.4
31. Brunei	13.0	6.7	93. Gabon	6.2	11.5
32. Mauritius	12.9	1.2	94. Madagascar	6.2	6.5
33. Lesotho	12.9	2.6	95. Guatemala	6.1	10.1
34. Niger	12.8	8.3	96. Afghanistan	6.1	4.4
35. Guinea Bissau	12.6	−10.6	97. Ivory Coast	6.0	10.2
36. Panama	12.4	11.4	98. El Salvador	5.9	7.1
37. Jordan	12.3	9.8	99. Uruguay	5.8	2.7
38. Western Samoa	12.2	− 2.9	100. Peru	5.7	6.6
39. Singapore	11.9	6.3	101. Egypt	5.6	5.9
40. French Polinesia	11.8	4.3	102. Angola	5.6	12.7
41. Yemen Dem. Rep.	11.8	− 5.9	103. Swaziland	5.5	11.5
42. Sao Tome & Princ.	11.7	3.3	104. Kuwait	5.3	7.3
43. Greenland	11.5	7.1	105. India	5.3	4.1
44. Chile	11.4	7.4	106. West Malaysia	5.1	5.1
45. Syrian Arab Rep.	11.4	4.9	107. Philippines	5.1	7.2
46. Fiji	11.2	6.1	108. Lebanon	4.8	20.5
47. Togo	11.2	11.5	109. Korea	4.8	39.1
48. Martinique	10.9	1.1	110. Morocco	4.7	4.5
49. Cuba	10.5	4.3	111. Kenya	4.5	6.6
50. Surinam	10.4	15.8	112. Costa Rica	4.5	11.6
51. Paraguay	10.2	7.2	113. Guadeloupe	4.4	0.9
52. Sudan	10.2	5.2	114. Guyana	4.2	4.8
53. Liberia	10.2	13.2	115. Mozambique	4.0	6.3
54. Sierra Leone	9.9	3.9	116. Mexico	4.0	6.5
55. Nicaragua	9.8	10.4	117. Sabah	3.4	10.7
56. Macau	9.8	12.9	118. Windward Islands	3.4	5.2
57. Papua N. Guinea	9.8	15.5	119. Sri Lanka	3.3	− 1.7
58. Honduras	9.7	10.2	120. Venezuela	3.3	1.3
59. Algeria	9.5	3.7	121. Cyprus	3.3	8.9
60. Bolivia	9.5	13.3	122. Hong-Kong	2.6	15.9
61. American Samoa	9.3	16.0	123. Trinidad & Tobago	1.9	4.3
62. Senegal	9.3	3.2			
			Averages (non-weighted)	±11.7	+ 7.9

Source of data: Handbook of International Trade and Development Statistics, UNCTAD 1976.

higher than developing countries' by 1.7 percent, in the sixties this difference became 3.1 percent.

Going back to the measures of export instability, an analysis of the distribution of the various countries' indices gives a better picture of the situation than consideration of the averages alone. It is clear that, in 1950-61, while the most unstable of the developed countries, i.e. Finland, exhibited an export instability of ± 11.8 percent a year (Table 1), there were at the same time as many as 49 developing countries with higher instability — up to ±58.9 percent a year (Table 2). The situation did not improve but worsened in 1961-72: taking the second most unstable of the developed countries, that is Spain with an average fluctuation of ± 8.2 percent (Table 3) — since the first one, Iceland, shows irregular results due to the "fish war" with Great Britain — one finds that there were as many as 75 developing countries in 1961-72 with higher instability levels — up to ± 67.9 percent a year.

Causes and Consequences of Export Instability

8. As was seen in the introduction, when the debate on the causes of export instability is conducted with regard to commodities, the main points are supply shifts in developing countries, demand shifts in developed countries and commodity concentration or market concentration of exports. At the different level of aggregation of this study, where the focus is on total exports of goods from individual countries, different hypotheses will be made, which refer to the macroeconomic features of the countries involved and are more directly related to a national accounts-economic growth framework, without contesting the significance of the demand-supply arguments.

By using Spearman's rank correlation coefficient, tests have been made to show for the period 1961-72 (which ensures better data and larger sample sizes) that export instability of developing countries is negatively associated with:

1) the size of exports, in value;
2) the economic size of countries, as given by their GDP;
3) the level of development, as indicated by per capita GDP;
4) the growth rate of exports;

5) the growth rate of GDP;
6) the growth rate of investment.

Taking for 1), 2), 3) respective values in dollars for a middle year of the period, i.e. 1967 for 1961-72, and values in real terms for 4), 5), 6), to compare with the instability indices, which are already net of the inflation of the dollar,[26] significant results have been obtained (Table 5).

9. The close association between export instability and economic size of developing countries, which was found[27] by Erb and Schiavo-Campo for 1954-66, is here strongly confirmed.

Comparing the values of the coefficients in table 5, it seems however that the true relationship is with the size of exports, more than with the size of countries. Since exports are a substantial com-

Table 5

SPEARMAN'S RANK CORRELATION COEFFICIENTS

Export instability indices over 1961-72 and	Coefficients
— Export Values in 1967	S = −0.42 *** (−4.72)
— GDP in 1967	S = −0.31 *** (−3.39)
— Per Capita GDP in 1967	S = −0.39 *** (−3.94)
— Export growth rates	S = −0.06 (−0.65)
— GDP growth rates	S[1] = −0.33 *** (−3.29)
— Investment growth rates	S[2] = −0.02 (−0.19)

(t - values in parentheses)
*** = significant at 1% level of statistical significance.

[1] For lack of data on growth rates of GDP, the sample size had to be reduced to 101 countries, excluding the following: Lybian Arab Rep., Guam, Bahamas, Bermuda, U.S. Virgin Islands, New Caledonia, Brunei, French-Polinesia, Sao Tome & Principe, Greenland, Martinique, Surinam, American Samoa, Malta, Belize, Netherlands Antilles, Leeward Islands, Cape Verde Islands, Reunion, Kuwait, Guadeloupe, Windward Islands. For better comparability, such a sample was also adopted for correlation with per capita GDP.

[2] This sample had further to be reduced to 87 countries.

[26] See above Section II on methodology, para. 6.
[27] G. Erb and S. Schiavo-Campo, *op. cit.*, page 280.

ponent of GDP, it is obvious that larger countries tend to have larger exports, except for poorer countries with important subsistence sectors (also reflected in lower per capita incomes) which do not take part in the export activities of the rest of the economy. The coefficient of per capita GDP (−0.39), in fact, is much closer to the coefficient of the size of exports (−0.42) than of countries (−0.31). Per capita GDP, also, has to be considered a proxy for the degree of industrialization of a country, and most often for the level of diversification of exports.

The very low and insignificant coefficient of the correlation with export growth rates seems to confirm, on the one hand, that export instability is independent of rising or stagnant trends, on the other, that the trend correction procedure adopted in the study in order to measure net instability through the indices is in fact correct.

With regard to export size and growth rates, it was also possible to calculate correlation coefficients for the period 1950-61; the following results have been obtained:

$$S = \underset{(-2.65)}{-0.24^{***}} \quad \text{for size of exports and}$$

$$S = \underset{(-1.03)}{-0.09} \quad \text{for export growth rates.}$$

Correlation with size of exports is again significant at 1 percent level, while it is almost obvious for the coefficient to be smaller in a period of time when the trade expansion of developing countries was lower (as seen before in para. 7).

After so many debates in the literature about the harmful consequences of export instability, the most interesting result of Table 5 is certainly given by the correlation with GDP growth rates: a strong negative association emerges between export instability and economic growth, for a large sample of 101 countries, statistically significant at 1 percent level. Though the greatest caution should always be used in interpreting any association between two variables as a relationship of cause and effect, it seems much more likely that export instability leads to lower economic growth than the other way round. Since exports are always a substantial part of GDP, lower GDP growth is obviously associated with lower growth of exports, and it has been shown already for both periods of time that no association exists between growth rates of exports and their instability.

Given the correlation between instability and GDP, one would expect a similar result for investment growth, and it is disappointing to realize that the correlation coefficient is in this case very close to zero. Possibly other factors are at work, like long time-lags between investment expenditure and production expansion, inflow of foreign capital for investment independently of export revenue, large investment in infrastructures with little or no impact on GDP over the medium term.

IV. Conclusions

10. This analysis of export instability, conducted for the first time with a full statistical coverage of 149 countries, has yielded five principal findings:

1) that there was no decline between 1950-61 and 1961-72 in the export instability of developing countries, which remained in the two periods at the same high level;

2) that the much lower export instability of developed countries further declined in 1961-72, to become less than half of that of developing countries;

3) that in both periods one fifth of all developing countries had export instabilities ranging from ± 16 to ± 60 percent a year, *levels unknown to any developed country*;

4) that for developing countries a strong, highly significant association could be found in 1961-72 between the degree of export instability and:

a) the size of countries (as measured by GDP);

b) the size of exports;

c) the level of development (as measured by per capita GDP);

d) the growth rate of GDP.

Higher export instability was shown by smaller countries, by countries having smaller exports, by less developed countries, by countries with slower economic growth.

5) that for developing countries no association could be found between the degree of export instability and the rates of growth of exports and investment.

Considering what have been the long-standing issues in the literature on export instability, this study, subject to refutation, seems to have made a significant step forward. It has clearly shown what for years remained so often controversial: that export instability is an economic phenomenon affecting almost exclusively the developing countries, and that such instability is strongly and negatively correlated with economic growth. Since the results have also shown the connections between instability and economic size (in terms of countries, exports, and per capita income), it would be shown that export instability does not lower economic growth if economic size *per se* proved to be negatively associated with economic growth. The contrary is often argued, that it tends to be easier for smaller countries to accelerate their economic development.

The results obtained in this paper certainly support the view that export instability is an important obstacle to development.

With regard to measures of economic policy like price stabilization, which are often suggested for reducing the extent or the impact of export instability, the serious situation of small and poor countries, which has been shown in the results of this study, points to the necessity of strengthening current efforts for setting up economic integration schemes, with a view to helping the less favoured among the developing countries. Stabilization agreements, on the other hand, might also obtain greater effectiveness if conceived on a regional basis.

Therefore, to devise appropriate measures for this or other courses of action, further research is needed to investigate the effective channels through which export instability is transmitted and becomes a brake on the growth of developing economies. By exploring the links between the export sector and the other sectors of the economy, and the types of investment which are financed through exports, the true causal relationships would be ascertained, and it would probably emerge that export fluctuations affect the composition rather than the quantity of investment. One possible future research objective would consist in the analysis of a few selected countries — possibly representative of different typical situations of developing countries — for which a thorough investigation should be carried out with respect to: 1) sources and modes of investment financing; 2) import content of investment; 3) import changes in relation to export fluctuations; 4) growth patterns and time-lags for all the above mentioned variables.

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