EXPORT INSTABILITY AND POLITICAL VIOLENCE IN UNDERDEVELOPED COUNTRIES

by

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ABSTRACT

There have been few attempts to empirically delineate and assess the importance of "external" or "international" factors in the study of comparative politics and political development. The purpose of this thesis is to examine an "international-national linkage" which has been the subject of considerable speculation butressed with anecdotal evidence. The linkage is between the short term instability of export proceeds of underdeveloped countries and the amount of political violence within these countries. The independent variables are export instability, export losses, export instability impact, and the impact of export losses.

In the first section of the thesis, the external nature of export instability is discussed. Export instability is not always induced externally. The evidence linking export instability to domestic economic disturbances and economic disturbances to political violence is presented and discussed in the next section. Domestic economic disturbance is an unmeasured intervening variable in this study.

There are many methods of computing the instability of export proceeds. Percentage deviations from annual trend values are used in this thesis, with the trend values computed using five year moving averages. The data sources and various measures of political violence available are assessed in terms of validity and reliability. A composite index of "the total magnitude of civil strife," developed by Gurr and Ruttenberg, is used to measure the amount of political violence.

The results of a cross-sectional correlation analysis for a sample of forty-seven underdeveloped countries indicate zero relationships between the four independent variables and political violence.

A lack of covariation within the total sample may obscure significant correlations of opposite sign within specified subsamples. Accordingly, the sample is subdivided into three relatively homogeneous socio-economic regions and four political system types. The extent and direction of the relationships does vary according to region and type of political system. The variation is not large.

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A problem well stated is half solved.

John Dewey

Science is nothing but developed perception, interpreted intent, common sense, rounded out and minutely articulated.

George Santayana

Common sense: that which tells us that the earth is flat.

Anon.

Truth emerges more readily from error than from confusion.

Francis Bacon

We must expand our students vow of poverty to include not only the willingness to accept poverty of finances, but also a poverty of experimental results.

Donald T. Campbell
and
Julian C. Stanley

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INTRODUCTION

It is a common but significant criticism that "external" or "international" factors are ignored in conceptual approaches to comparative politics in general and political development in particular. For example Fred Riggs, discussing the early structural functional approach proposed by Gabriel Almond, noted and criticized the "tacit assumption. . . that the politics of developing countries can be treated as relatively autonomous or closed political systems."[1]

The impetus to bridge the conceptual gap between comparative and international politics has come primarily from students of international relations. James Rosenau has written on the "penetrated state" and has developed an elaborate typology of "national-international linkage" phenomena.[2] Karl Deutsch has also discussed external influences on the domestic politics of states.[3] Stanley Hoffman, "without wanting to sound like an imperialist" for his own discipline, states that "if in the study of politics, we were to put the primary emphasis on world affairs, we might produce a Copernican revolution . . . ."[4] The thrust of his argument is not that domestic politics can be or should be treated as a function of international relations but that domestic political systems should not be studied in isolation.

Despite the criticism and attempts at conceptual revision, there has been very little systematic empirical research delineating and assessing the importance of "external"

factors.[5] Speculation coupled with anecdotal evidence is, on the other hand, abundant. One example will be sufficient to illustrate this now. Samuel Huntington argues that the apparent "waves" of domestic political violence in the post World War II period are the result of a cross national demonstration effect.

> The power of example, the influence exercised by the "pace setter" is a critically important result of the improvement in world wide communications. A successful coup or insurrection by one party or group in one country inspires similar parties or groups in other countries to similar action.
>
> Revolution (and other forms of domestic violence reflecting changing political tides) are seldom exported, but they are often imitated.[6]

The purpose of this paper is to examine one international-national linkage which has been the subject of considerable speculation butressed with anecdotal evidence. The linkage is between the external economic environments of Third World countries and political instability within them. More specifically, the hypothesis is that there is a positive correlation between the degree of short term export instability and political instability in economically underdeveloped countries. Export instability is defined by economists as the annual deviations from the trend of total export proceeds. I have defined political instability in terms of the number and type of political events, whose common denominator is the actual or threatened use of violence, occurring within a country.

Almond and Powell, in the most recent version of the structural functional framework, include a description of the "international extractive capability" of states. They provide a hypothetical example, to illustrate the use of this concept, which is similar to the hypothesis to be probed in this paper.

> In a nation where 90 percent of foreign exchange depends upon a single agricultural product or mineral resource, it may be impossible to maintain a stable extractive capability which may in turn weaken other capabilities.[7]

Export instability can be considered "external" insofar as it is assumed that the demand for the exports of Third World countries is autonomous of the domestic conditions of the exporting country.[8] Export instability is therefore external because of the locus of disturbance and the lack of control the exporting country has over a basic source of income. For example, Fluharty describes the export position of Colombia as follows:

> It is no exaggeration to say that coffee pays the bill for Colombian prosperity, and that prosperity is always subject to the habits of North Americans regarding coffee. Should all Americans cut their daily ration of coffee by one cup, misery would descend upon millions of Colombians.[9]

This assumption is often the basis for recommending international agreements to reduce the effects of or to compensate for the losses due to export instability. The Board of the United Nations Conference on Trade and Development (UNCTAD) declared in 1969 that

> it has long been a source of serious concern to developing countries that development programmes, however well conceived and however well executed, are often at the mercy of external forces beyond their control in the form of unforseen fluctuations in commodity export markets.[10]

This reasoning also constitutes a minor theme in some of the writings on neo-colonialism. Nkrumah writes that "international capital's control of the world market as well as the prices of commodities bought and sold there"[11] works to the detriment of the Third World. Worsley's position is similar[12] and, from a very different political perspective, Coppock would seem to concur. Export fluctuations in less developed countries, he argues, create particularly good opportunities for "Soviet Communist intervention" because the fall in proceeds "emanates or appears to emanate from capitalist industrial countries."[13]

The locus of the disturbance and the degree of control are not, however, usually simple to determine. Internal or domestic factors such as droughts, floods, or disease resulting in crop failure would also reduce export proceeds. The cocao proceeds of Ghana sharply declined in the late 1940's because of the "swollen shoot" which necessitated the destruction of thousands of cocao trees.[14]

Ghana provides an example of a case in which variations in the supply may result in a reduction of price and proceeds. Like many other primary products, cocao has a low elasticity of demand and Ghana has the largest proportion of the world

market for cocao. Generally, "the larger a country's trade share the greater the chance that a proportionate increase in exports will upset the prevailing price structure."[15] The supply and demand relationships of cocao are particularly intricate but the data presented in Table I illustrate this point.[16] If the volume of cocao increases, the price and proceeds tend to decline. Cocao proceeds of another country with a smaller share of the market would fluctuate with Ghanaian proceeds. In this case, because the disturbance is in another country and there is relatively little means of control over it, the export instability would be "external."

It is impossible to sort out when and for which countries and commodities export fluctuations are "external" as opposed to "internal." It seems reasonable, however, to suppose that export instability is "more external than internal."[17] The question of the boundaries between national and international phenomena has often been debated. The conceptual problem has not been solved and the debate over specific types of variables has often resembled a peculiar jurisdictional dispute.[18] This type of debate contributes little to our understanding. The relevance of this debate is questionable if variables designated as "external" do not covary with theoretically interesting "internal" variables. The establishment of covariation is a necessary first step. The importance of variables designated as "external" is an empirical question and should be treated as such.[19] In short,

TABLE I

Price and Volume of Cocao Exports from Ghana 1950 - 1962

Year	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962
Price[1]	205	262	253	237	395	318	218	195	316	275	219	171	159
Volume[2]	267	230	212	237	214	206	234	260	197	250	303	450	421
Proceeds[3]	54.6	60.3	52.5	56.1	84.6	65.6	51.1	50.9	62.3	68.8	66.4	69.3	67.0

[1] Average F.O.B. value in pounds (Ghana) per ton

[2] Thousands of tons exported

[3] Millions of pounds (Ghana)

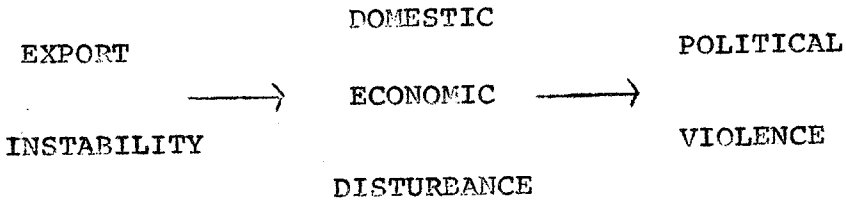
Source: Tony Killick, "External Trade," The Economy of Ghana, eds. and research directors, Wally Birmingham, I. Neustadt and E.N. Omabol, London, George Allen and Unwin Ltd., 1966, p. 348, Table 14:10. (A Study of Contemporary Ghana, Volume 1)

the purpose of this thesis is to add some systematic evidence to the mass of anecdote and speculation concerning the political and social effects of one "external" variable--export instability.

The reasoning behind the hypothesis that export instability causes political instability or violence in economically underdeveloped countries is outlined in the schematic diagram below.

Figure 1.

The Hypothesized Relationship Between Export Instability and Political Violence



In the following two sections of this thesis, the evidence relevant to each step in this relationship will be presented and evaluated. Next, the variables will be empirically defined and the "data making" procedures will be described. The hypotheses, refined in light of the discussion of the evidence in the literature, will be examined using cross-sectional analysis with a sample of forty-seven less developed countries and the results interpreted.

Export Instability and Economic Disturbance: The Evidence

It has often been noted that the financial "losses" of less developed countries from export instability since 1950 were much greater than the inflow into these countries of all foreign economic aid and private investment.[20] The validity and accuracy of this calculation has been questioned,[21] but it does provide one indication of the magnitude of the problem of export instability.

There appears to be a consensus in the literature on economic development that the internal economic consequences of export instability are extremely detrimental. Higgins states that:

> Underdeveloped countries outside the arid zone are unstable mainly because of their orientation towards exports, often combined with concentration on a very small range of raw materials and foodstuffs. In recent decades, the markets for these exports have been extremely unstable. This importance and instability of exports is the main factor which through the action of the "multiplier" and "accelerator" causes fluctuations in income and employment.[22]

Ingram concurs, stating that large changes in export proceeds are "a major disruptive influence."[23] Bhagwati notes that the less developed countries are more dependent upon taxes derived from trade. Export fluctuation therefore "tends to translate itself immediately into unstable revenue. . . ."[24] While Kenen points out that short term export instability was more pronounced prior to World War II, he also argues that the economic and social tolerances are much lower now.[25]

More emphatically, Cairncross asserts that the damaging effects of export instability "are beyond question."[26]

This argument assumes that less developed countries are more dependent upon trade than the industrial countries and that their exports are highly concentrated in a small number of primary products whose prices are "notoriously volatile." It is then inferred that extreme export instability is a phenomenon peculiar to economically underdeveloped countries.

This characterization has been examined in part by Coppock and not found to be accurate. Using a sample of eighty nations, Coppock reported a correlation coefficient (Pearson product moment) of -0.23 between export instability and the degree of economic development as measured by gross national product per capita.[27]

I re-analyzed the data reported by Coppock and others in order to examine the characterization more completely; to aid in assessing the reliability of various measures of export instability and estimates of gross national product per capita; and to provide a more representative picture of the 1946-1958 time period under consideration. The correlation between export instability and economic development was also recomputed because it was not clear whether Coppock transformed his variables prior to correlational analysis. The use of the product moment statistic assumes normal distributions. The distribution of GNP per capita is not normal but highly skewed. Therefore, Coppock's coefficient could be inaccurate.[28]

The degree of economic development is measured by the per capita gross national product. This indicator has all the limitations common to most measures which are derived from national accounts statistics and are magnified by cross national comparison. (These limitations will be discussed in some detail below.) It has, however, considerable convergent validity.[29] All of the most frequently used alternatives are highly correlated with GNP per capita.[30] The reliability of Coppock's estimates can be determined by the size of the correlation coefficient between the two estimates for 1957.

Trade orientation was measured by the ratio of total trade, imports plus exports, to GNP expressed as a percentage.[31] Coppock measured commodity concentration using the Hirschman index.[32] The Hirschman index measures concentration per se, not the type of commodities. The export proceeds of each country are usually compiled according to a standard commodity classification. The index values are computed by summing the squared percentages of total proceeds in each class and taking the square root.[33] This measure does not differentiate between concentration in industrial products or primary products. A country with 100 per cent of its proceeds derived from manufactured goods would receive the same value as a country with its total proceeds derived from the sale of one agricultural product. To differentiate the two cases a measure of the dependency on exportation of primary products was included. The measure is the percentage of total export proceeds accounted

for by primary products in 1955.[34]

Export instability refers to the annual fluctuations of export proceeds from the trend of these proceeds over time. There are numerous methods of measuring export instability. In his analysis, Coppock relied almost exclusively on the "log variance" method of computation but presented data on two other measures. The computation procedures are described more fully elsewhere. Briefly, however, the three measures differ in the way the trend in the series was eliminated. Coppock's "log variance" method and the "percentage deviations" method formally eliminate the trend.[35] The third measure, developed by the United Nations, eliminates the trend only in a rather haphazard manner.[36] It has less "face validity" because of this and, as Coppock points out, steady growth of proceeds may be interpreted by this procedure as export instability.[37]

It can be readily appreciated from the correlation matrix (Table II) that the characterization needs qualification. While there is some evidence that as industrialization increases over time, the relative importance of trade declines,[38] the inference that less developed countries are more dependent upon trade is not strongly supported. There is only a moderate relationship between trade orientation and economic development. The exports of economically underdeveloped countries are more concentrated in a few products and are composed primarily of raw materials. However, the inference that the

TABLE II

Correlation Matrix of Export Instability and Various Economic Measures

	1	2	3	4	5	6	7	8	9
1. GNP per capita 1955	1.0000								
2. GNP per capita 1957 (Coppock)	.9294	1.0000							
3. GNP per capita 1957	.9711	.9233	1.0000						
4. Export Instability 1946-1958 ("log variance")	-.2741	-.2927	-.2986	1.0000					
5. Export Instability 1946-1958 ("percentage deviations")	-.3119	-.3461	-.3365	.8965	1.0000				
6. Export Instability 1946-1958 (United Nations)	-.1950	-.1880	-.2195	.9064	.8392	1.0000			
7. Trade Orientation 1957	.2467	.3032	.2185	-.2401	-.2260	-.1535	1.0000		

TABLE II (Continued)

	1	2	3	4	5	6	7	8	9
8. Hirschman Index of Commodity Concentration 1957	-.3798	-.3132	-.4352	.0296	.0324	.0230	.2098	1.0000	
9. Dependence on Raw Materials 1955	-.5098	-.5213	-.5717	.0916	.1969	.0091	.0310	.5399	1.0000

_____ p = < .01 _____ p = < .05

Sources: Joseph D. Coppock, International Economic Instability: The Experience After World War II, New York, McGraw-Hill Book Company, 1962, Appendix, Table A-2.

Bruce Russett et al., World Handbook of Political and Social Indicators, New Haven, Yale University Press, 1964, pp. 155-157.

Norton Ginsburg, Atlas of Economic Development, Chicago, University of Chicago Press, 1959, pp. 16-19, 106-107.

underdeveloped countries are therefore most likely to suffer extreme fluctuations in exports is inaccurate. The correlation coefficients for two of the measures of export instability and GNP per capita are significant statistically and substantively[39] but they are not as high as one would expect from the previous argument. Clearly, export instability is not restricted to economically underdeveloped countries.

The correlations using the United Nations measure of export instability and GNP per capita are lower than those of the other two measures. However, all three measures of export instability are highly intercorrelated, indicating significant validity. This fact will be used below to assess the validity of the measure of export instability I have employed.

Coppock and Macbean have also demonstrated that the generalization that export fluctuations inevitably result in internal economic disturbances must be similarly qualified. Macbean terms this generalization "an orthodoxy" with "almost universal acceptance" and concludes that "instead of being peculiarly vulnerable to export fluctuations such countries may have a 'natural' resistance."[40]

Two of the correlations reported above would appear to be relevant to the immunity of less developed countries. As has been pointed out, less developed countries do not exhibit greater export instability than the more advanced countries nor are they more trade-orientated than these

countries. The effects of export instability may depend upon the interaction between the degree of export instability and the size of the trade orientation. For example, Country A, which has an extreme amount of export instability and a very low trade orientation, may be more immune than Country B which has only a moderate amount of export instability but an extreme dependence upon trade.

The macro economic effects of export instability have clearly been overstated. Both Coppock and Macbean in cross-sectional analyses found insignificant covariation between export instability and fluctuations in national income.[41] Grouping his sample of seventy countries into thirds according to the degree of export instability, Coppock reported a moderate relationship.[42] Macbean's longitudinal analysis of a much smaller number of countries yielded mixed results.[43] In some less developed countries with high dependency upon trade "some consistent relationship between direction of change in GNP and exports may well exist."[44] Macbean also examined the relationships between export instability and other indicators of domestic economic conditions but found little covariation.[45]

The consequences to the domestic economy have clearly been exaggerated in much of the literature but these findings do not indicate that export instability has only meager effects in all less developed countries. As Macbean states:

> At no point do I deny that some underdeveloped countries may suffer severely from export instability. On the contrary I feel certain they do.
>
> The study has not established that fluctuations in export earnings do no damage to underdeveloped countries, but it has shown that the contrary view of grave internal troubles arising inevitably from export instability is not upheld by the only readily obtainable evidence.[46]

These results have stimulated discussion of policy proposals to counter export instability but have not deterred speculation about the domestic political consequences. Pincus, favourably noting Macbean's findings, rather melodramatically restates a variant of the central hypothesis.

> Kwame Nkrumah loiters in Guinea, a solitary redeemer, savoring memories of former potency and dreaming of power as yet untasted. A protesting Sukarno slides inexorably down a pole greased by his cabinet ministers.
>
> These vagaries, which help shape the world's political destinies, all reflect in part the fluctuations of world markets for commodities - the foodstuffs and raw materials that enter world trade. Nkrumah suffered politically from the consequences of the falling prices for cocao; Sukarno from declining rubber prices and reductions in export volume for tin and rubber. . . .[47]

Coppock stresses the importance of export instability because of its "effects on the internal and external politics" of many countries. His rather "cold warriorish" argument is, to quote briefly, as follows:

> The consequent internal economic distress provides one basis for political disturbances. Political disturbances create opportunities for Soviet Communist penetration and the weakening of the relative power position of the Free World.[48]

Economic Disturbance and Political Violence: The Evidence

Walt Rostow is one of the few economists who has attempted to link variability of trade with political instability. He examined the relationships between cyclical expansion and depression of trade, unemployment, bread prices and overt mass protest in nineteenth century England. He reported a positive correlation between cyclical depression, high unemployment, high bread prices and extensive political protest.[49] However, inspection of Rostow's methodology reveals that, rather than supporting the hypothesis, he had accepted it as true in deriving his index of political protest. The variables are not independently defined. Although Rostow has often been cited as presenting data in support of the relationship between economic and political instability,[50] his Social Tension Chart "at best summarized influences operating on the industrial working class." As he mentions in a note, his method makes "the quite arbitrary judgement that cyclical unemployment and high food prices were equally responsible for unrest."[51]

T.S. Ashton, in his economic history of eighteenth century England, provides some anecdotal evidence linking economic fluctuations with riots and other political disturbances.[52] However, he makes an error similar to Rostow's. Evidence of "social unrest and distress" is also used as a criterion for classifying periods as depressions.[53]

Although Rostow and Ashton do not add empirical support for the hypothesis, their acceptance of it does not appear mistaken in the light of later studies. Gurr reported significant correlations between the magnitudes of conspiracy, internal war, civil turmoil, and the total magnitude of civil strife and "short term deprivation" or economic disturbance in a sample of 115 countries. "Short term depreviation" is a composite measure combining aggregate data on trends in trade value, rates of inflation, rates of GNP per capita growth and other information on economic conditions, including the condition of the export markets.[54] Feierabend, Feierabend and Conroe found a similar correlation between the growth rates of GNP per capita and political violence in eighty-four countries.[55] However, in an earlier study Gurr discovered an unexpected lack of covariation between growth rates of GNP per capita and civil violence in less developed countries. Evaluating this, Gurr concluded that the most likely explanation was "the inadequacy of economic growth rates as an indicator of the impact of economic fluctuations on people in developing countries. . . ."[56]

Tanter and Midlarsky found that the correlation between GNP per capita rates of change and frequency of revolution varied according to geographical and cultural region. The correlation for Latin American countries was insignificant but in the Middle East and Asia it was very strong. One limitation of these results is the very small number of cases upon which the correlations were computed.[57]

In his classic study of the CCF in Saskatchewan, Lipset assigned particular importance to the "boom and bust" character of the wheat economy in the development of the radical protest party. He also argues that "the price received by the Canadian farmer is more closely determined by world market conditions" than in other wheat exporting nations.[58]

A similar situation existed in the "King Cotton" economy of the American South. Both areas could be usefully considered analogous in the structure of their economies to many contemporary less developed states. Davies, in fact, uses the analogy to make the situation in the pre Civil War American South more understandable. Referring to the economic crisis in cotton in 1857, he writes:

> It was an epitome of the southern dependence upon the North, of the dependence of any raw material producing colony on the financial and other economic circumstances of the diversified "mother country." In 1857 the South was hit by a panic in the New York commodity exchange market. . . . This was the final critical downturn in the gratification of Southerners.
>
> The growing and now enormous tensions found release in secession![59]

Davies has presented other historical evidence in support of his J-curve hypothesis on the occurrence of revolutions. According to the J-curve hypothesis, revolutions are most probable "when a prolonged period of objective economic and social development is followed by a short period of sharp reversal."[60]

Worsley, in his studies of millenarian movements in Melanesia, provides an interesting example of the effects of export instability.[61] The European settlers introduced a plantation system of agriculture and encouraged cash cropping among the native inhabitants. The fluctuations in the demand for copra, the principal export, were not readily understood and, argues Worsley, created individual and cultural stress.

> . . . the vagaries of the world economy appear mysterious, fortuitous and uncontrollable to the native who receives say, £2 per ton for his copra per year, £8 the next and possibly in other years may be unable to find a buyer at all. Wages and prices for trade goods are subject to similar fluctuations.[62]

Many of the millenarian movements noted by Worsley resulted in "aggression and even violence toward European settlers, missionaries and administrators."[63] He makes a similar argument applicable to contemporary Third World states.[64]

Hovland and Sears found a strong positive correlation between poor economic conditions and high social aggression in the American south.[65] In an ecological analysis "testing" the frustration aggression hypothesis, they compared a composite economic indicator (Ayres Index), the per acre value of cotton, and the farm value of cotton with the number of Negro lynchings and total lynchings from 1882 to 1930. Since the absolute value of cotton and the absolute numbers of lynchings tended to decrease with time, deviations from linear trends were intercorrelated. The tetrachoric correlation coefficients ranged from 0.61 to 0.72. However, a

reanalysis of their data by Mintz demonstrates that the high correlations seem to be statistical artifacts "caused by the arbitrary choice of straight lines (to eliminate trends), which are not appropriate to the data."[66] The use of the tetrachoric statistic was also criticized. Dividing the total time period into segments within which fits seemed more reasonable and using product moment correlations, Mintz found substantially reduced coefficients. I also reanalyzed these data using moving averages to eliminate the trend. The product moment correlations were of the same magnitude as those reported by Mintz. The introduction of one, two and three year time lags resulted in smaller correlations.

Austin, linking the export performance of cocao to political instability in Ghana, provides further anecdotal evidence. The passage below is cited because it clearly illustrates the two steps in the hypothesized relationship.

> In 1961 there was a serious check to the economy. At a time when the government was heavily committed on its capital expenditure the cocao price began to fall, and it was obliged to draw heavily on its reserves. As part of the measures taken, a harsh budget was introduced in mid July. Government expenditure was left untouched but increased duties were levied on a wide range of consumer goods in an attempt to raise additional revenue. A new system of purchase tax was also adopted, and a compulsory savings scheme imposed whereby a levy of 5 percent was deducted from all salaried and wage incomes over £120 a year. Prices rose sharply, and the net income of farmers and wage-earners alike fell. The budget bore heavily in particular on the skilled and semi skilled worker, and a major strike took place in September among the railway and harbour workers in Sekondi-Takoradi. It was the first large scale stoppage since the

> miners strike of 1955-56 and was based on genuine grievances. But because such action was now illegal under the 1958 Industrial Relations Act, a state of emergency was declared in the town. Violence broke out between the strikers and police.... The Sekondi strike was not perhaps a major threat to the regime, but it was one that might well become so.[67]

The 1966 coup d'etat which overthrew Nkrumah has been also attributed in part to the decline in cocao proceeds. Bretton acknowledges the "critical" role of fluctuating cocao prices but he states that Ghana's economic disturbances were in part the result of governmental mismanagement. "To insist," he states,

> as Nkrumah did that the Ghanian economy was deteriorating simply because the consumers of the world's cocao refused to pay higher prices was something of an exaggeration. . . the central deficiency (was) - Nkrumah himself.[68]

Coups d'etat in Latin America have also been associated with economic deterioration. Fossum's study of Latin American military coups is one of the few attempts to deal relatively systematically with the political consequences of export variations.[69] Fossum notes that "most Latin American countries rely heavily on one or a few products for their incomes and are particularly vulnerable to economic fluctuations."[70] The greater frequencies of coups during the early 1930's and during the period from 1961 to 1963 are explained as follows:

> The first period covers the great economic depression, and the last period is a period with constantly declining prices on raw commodities on the world market. . . .

"It should be noted," he continues

> that the lowest frequencies are found during the two world wars, neither of which touched Latin America directly except by creating a great demand for Latin American exports and hence an economic boom.[71]

The table Fossum is interpreting is reproduced below.

TABLE III

Number of Coups per Three Year Intervals for Twenty Latin American Countries 1907 - 66

Years	No.	Years	No.
1907-09	4	1937-39	3
1910-12	6	1940-42	0
1913-15	4	1943-45	9
1917-18	1	1946-48	9
1919-21	5	1949-51	5
1922-24	2	1952-54	6
1925-27	4	1955-57	8
1928-30	7	1958-60	2
1931-33	9	1961-63	10
1934-36	6	1964-66	5
		Total	105

Source: Egil Fossum, "Factors Influencing the Occurrence of Military Coups d'Etat in Latin America," Journal of Peace Research, vol. 4, no. 3 (1967), p. 237.

It is not readily apparent from this table that the war years, specifically 1939 to 1945, had a significantly lower

frequency of coups and no data are presented in the paper to support the statement that commodity prices for Latin American exports declined so sharply during 1961-1963.

For the period 1922-1938 Fossum does present some evidence. Each year in this period was classified as either an "improvement" or a "deterioration" year, depending on whether export proceeds rose or fell relative to the previous year. He found that coups were twice as frequent during "deterioration" years. The data and analysis present certain difficulties, however.

In his analysis, as in the table reproduced above, Fossum looked at the continent as an aggregate. Given that eighty per cent of the coups during this period occurred in only seven of the twenty countries, would not a more accurate description be obtained if each country were examined individually? Analyzing the later period, 1951 to 1963, Fossum does use the country, not the continent, as the unit of analysis.[72] With reference to the independent variable, the specific level of aggregation is not clear. The years are defined according to "the rise or fall in the value of world exports in relation to the preceding year" (emphasis added).[73] Whether he is referring to the total value of Latin American exports or to the total value of world export trade is problematic.

In summary, the evidence in support of the proposed relationship is ambiguous. Export instability does not have grave internal economic consequences in all underdeveloped

countries. There is considerable speculation and anecdotal evidence in support of the relationship but the results of the few studies examining trade, in general, and export instability, specifically, and the amount of political violence or the occurrence of particular violent events are unsatisfactory for a variety of methodological reasons. There does however seem to be a consistently strong relationship between domestic economic disturbance and political violence.

The Empirical Domain and "Data-Making" Procedures

In this portion of the thesis, the procedures used to measure the variables will be described and the validity of the measures will be assessed. In the following section, the hypotheses will be presented and examined using data on forty-seven economically less developed countries. Next, the hypotheses will be analyzed within different groups of countries, specifying the relationship according to socio-economic region and the type of political systems.

The primary sources for the export proceeds statistics are the historical trade series for individual countries found in the United Nations Yearbook of International Trade Statistics. These statistics are for merchandise trade, which the United Nations defines as "all goods which add to or subtract from the material resources of a country as a result of their movements into or out of the country."[74] The major exclusions are gold and economic assistance.

Although trade statistics are usually considered among the most accurate of national accounts statistics, there are a number of sources of error. Because the values of many countries' currencies vary over time, the proceeds were converted into United States dollars, the most stable currency. However, the appropriate rates of exchange are difficult to determine. The conversion factors provided by the United Nations were used. In most instances they are the official exchange rates, therefore their accuracy is indeed suspect. The conversion into U.S. dollars probably represents the largest single source of error in the data.

Another source of error is that the trade figures, which are reported by the individual member countries, are based on different definitions of exports or systems of trade. The two most frequently used systems of valuation are "special trade" and "general trade." The main difference between the two systems is in the method of recording warehoused and re-exported goods. Because no method was available to make the two systems strictly comparable, the differences were disregarded. Similarly, I disregarded the few exceptions in which exports were not valued f.o.b.

These sources of error and the error introduced by currency conversion are irrelevant to the calculation and comparison of export instability values <u>if it is assumed</u> that, for each country, the error is constant over time. The export instability scores are standardized by the use of percentages

and calculated on the basis of each country's export performance over time. In short, the absolute values are not compared. Countries for which the assumption of constant error appeared less warranted were excluded from the analysis.[75]

Time series data, such as that on export proceeds, can be considered as consisting of three components: long term trend, a short term movement and random fluctuations. Studies of "trade cycles" are concerned with the long term movement of proceeds, and export instability is defined in terms of the short term variations. The first problem in measuring export instability then is to separate the two primary components. There are a number of ways of doing this. As Yule and Kendall point out:

> We have to be most careful that the residuals do not reflect the nature of the trend fitting rather than any intrinsic property of their own. In no branch of statistics do we have to guard so much against projecting our preconceived ideas into the data by the technique of analysis adopted.[76]

The reanalysis by Mintz of the Hovland and Sears data on lynchings and cotton prices should amply demonstrate the dangers.[77]

The procedure adopted, to separate the short term movements from the trend, was to use moving averages. Annual trend values were computed using five year moving averages centered upon the middle year. Short term fluctuations were calculated by taking the difference between the annual trend values and the actual annual values of export proceeds. The measure of export instability is the mean of the annual percentage deviations from the trend. (The step by step compu-

tation procedure is illustrated in Table IV.) Export instability was measured over three and five year periods in order to be comparable with the political violence data, which were only available for these time periods.

TABLE IV

The Five Year Moving Averages Method of Calculating Export Instability: Ceylon 1961-1965

Year	Export Proceeds (U.S.Millions)	Trend	Deviation	(%)	Export Instab. (1961-1965)
1959	368				
1960	385				
1961	364	372	-8	-2.1	
1962	380	377	3	.8	
1963	363	382	-19	-5.0	4.1
1964	394	381	13	3.4	
1965	409	374	35	9.4	
1966	357				
1967	348				

Macbean also used this procedure in his study of export instability. He writes that Coppock's log variance measure "approximates [it] closely"[78] but he does not directly compare the two procedures. Since the United Nations' measure and the log variance measure are strongly intercorrelated I assessed the validity and reliability of the five year moving averages measure by comparing it to that of the United Nations. Twelve

countries were randomly selected and export stability scores were computed using both methods for the 1950-1960 period.[79]

TABLE V

A Comparison of Export Instability Measures for Twelve Countries: 1950 - 1960

Country	Export Instability	
	United Nations Method	5-Year Moving Averages Method
Jordan	44.0	23.0
Albania	22.6	16.4
Nicaragua	17.5	8.3
Pakistan	17.4	12.0
Peru	14.3	9.2
Argentina	12.5	8.6
Bolivia	11.7	13.6
France	11.6	6.7
Portugal	10.8	7.2
Brazil	10.5	5.7
Czechoslovakia	9.3	3.9
Paraguay	8.5	6.4

Pearson product moment correlation coefficient: 0.89

The United Nations and moving averages measures are also strongly correlated.

The use of moving averages does not necessitate rigorous assumptions about the shape of the trend. Moving averages "smooth the curve." However, in some cases moving averages are clearly inappropriate for measuring export fluctuations.

The case of Libya provides an example of the distortion that can result. The exports of Libya during 1954-1960 ranged between 10.7 and 15.2 millions of U.S. dollars. In 1961 the proceeds increased sevenfold and in 1962 they were more than twice the 1961 value. The moving averages smooth the curve but in doing so they interpret the 1959-1960 period as one of very great instability, whereas in fact it was one of little variation followed by a period of extremely rapid growth. Cases such as Libya were excluded from this analysis.

While export instability has been defined by economists in terms of short term deviations about the trend, much of the anecdotal evidence attesting to the significance of export instability is concerned with the "losses" in export proceeds, not simply variation. The measure of export instability, the mean of the absolute percentage deviations, ignores the type of fluctuation in exports. I have differentiated between export variation and export losses. Losses are defined as negative deviations from the trend and the measure of export losses is the mean of the negative deviations.

Earlier it was found that, contrary to expectations, economically underdeveloped countries do not experience substantially greater export instability than industrialized countries, nor are they all heavily dependent upon international trade. The apparent immunity of underdeveloped countries to the detrimental economic effects of export instability could be dependent upon the size of the trade orientation. In other words the "impact" of export instability varies

according to the degree of export instability and the importance of trade to the economy. As I stated above, a country with a very small trade orientation and extreme export instability would, according to this argument, be "more immune" than a country with only moderate export instability but with a very large trade orientation. To measure this impact of export instability I have used the product of the trade orientation and export instability values for each country. Similarly, the impact from losses are indicated by the product of export instability losses and trade orientation.

These values are simple to compute but there is a great possibility of measurement error. Because the absolute values are used, all the sources of error enumerated above with respect to trade statistics, are relevant. Further inaccuracy is introduced through the measurement of trade orientation by the ratio of total trade to gross national product. As was the case with export proceeds, the conversion of national estimates of GNP into a common currency unit permits considerable error. More important, the statistical definition of GNP is much more variable than the definition of export proceeds. There are variations in definition in more developed countries and an even greater ambiguity between these and the underdeveloped countries. For example, in "capitalist" countries, the service industries tend to be included and, in "socialist" countries, these are often ignored or undervalued. In many underdeveloped countries many

services are not bought or sold or given a monetary value and, therefore, are generally excluded. A similar problem arises in underdeveloped countries that have a large proportion of their population in subsistence agriculture.[81]

There is probably great inaccuracy in comparisons of GNP for developed and underdeveloped countries but the assumption that the estimates for underdeveloped countries, as a group, are merely biased is tenuous. For example, the subsistence agricultural "sector" may be overestimated as easily as underestimated.[82] The assumption that the error is constant within the underdeveloped countries is less realistic than the assumption that the error in an individual country's export proceeds is constant over time. In the latter case, some criteria for evaluating the validity of the assumption were provided in the data source. To compensate for some of these deficiencies, impact values were calculated using different estimates of trade orientation.[83] However, in light of the possibilities of error, the results of the analysis should be treated cautiously.

There are a number of published indicators of political violence and a number of data collections that could be used to construct measures for this study.[84] Both are difficult to evaluate rigorously. There are limited published comparisons of independently gathered and scaled estimates of the extent of political violence.[85] The possibilities of convergent validity and reliability checks are

made less feasible because few of the readily accessible estimates are temporally congruent. For example, "deaths from domestic group violence" collected under the auspices of the Dimensionality of Nations Project were not collected for 1961-1962. Therefore, a precise comparison of the DON estimates with those of Gurr was impractical.[86]

Lacking more precise means of comparing the various measures of violence and lacking the resources to develop new measures, I evaluated the different data collections, from which the measures were derived, in terms of two criteria. These were the number and variety of the sources of information relied upon and, a more practical criterion, the number of underdeveloped countries included. Using these criteria, the Gurr data were judged the best available for this study.[87]

Although Gurr gathered most of his information from the New York Times Index, he scrutinized a comprehensive series of other sources such as Facts on File, Asian Recorder and African Digest. In contrast, the Feierabend data bank was compiled using only two sources, Deadline Data and the Encyclopedia Britannica Yearbooks. However, their index of political violence correlates 0.700 with Gurr's for 1961-1965.[88] I am attributing a large proportion of the unexplained variance to the inadequacies of the Feierabends' information sources. The DON researchers used more sources than the Feierabends, including the New York Times, but they restricted data collection to fewer countries than either the Feierabends or Gurr.

Gurr defined civil violence as "all collective, non-governmental attacks on persons or property, resulting in intentional damage to them, that occur within the boundaries of an autonomous or colonial political unit."[89] With the assistance of Ruttenburg, he developed a complex measure of the "total magnitude of civil strife."[90] The first five basic estimates are the proportion of the population involved, the proportion of the area of the country in which the violence is occurring, the number of casualties, the amount of property damage and the duration of the events. These five basic estimates were then combined into three composite measures: "pervasiveness," "intensity," and "amplitude" of violence. The total magnitude of civil strife represents the weighted combination of these three. Estimates of total magnitude are available for 1961-1963 and 1961-1965.

This measure of political violence is one of the amount of violence. Many of the anecdotal examples and the more systematic studies reviewed above were concerned with particular types of violent events. Rostow examined riots and violent demonstrations; Tanter and Midlarsky and Davies attempted to explain the occurrence of revolution; and Fossum analyzed factors relating to the occurrence of military coups d'etat in Latin America. Rummel, Tanter, Feierabend and Feierabend and Firestone and McCormick,[91] using factor analysis have shown that there are three relatively distinct types of violent events however. As Fossum argues, for example, there may well be a relationship between export fluctuations and a particular

type of event in Latin America but my analysis cannot probe that relationship.

The reliance of cross national studies of political violence upon the news gathering agencies for information has prompted some criticism. As one student of Latin American politics has put it, it appears that political stability "is manifested simply by the absence of those interesting events that are reported in the news media."[92]

Many relevant events are not recorded at all, much less noted, in the public press. This raises the serious possibility of error in the data as a result of underreporting of some events in particular countries. In other words, are the events recorded in the press a representative sample of all the relevant events? Because the total population of events is unknown, the question is difficult to answer. One way of increasing the probability of a representative sample is to use, as Gurr has, a large number of diverse news sources.

One factor which could decrease the probability is the extent of press censorship within individual countries. It seems plausible to expect systematic underreporting in countries with a repressive government and strict press censorship. Gurr, using an index of the degree of press censorship, tested this possibility. The correlations between this index and measures of the duration intensity and pervasiveness of civil violence indicated that "more strife tends to be reported from polities with low press freedom, not less as might be expected." As he also points out, these results "almost

certainly" reflect the covariation between economic development and press freedom.[93] Because violence is more "deviant" in developed countries, I examined the possibility that the degree of press censorship is related to the degree of violence within underdeveloped countries to be used in the analysis below.[94] (See Table VI) The general lack of relationship indicates that there is little systematic understatement resulting from press censorship in underdeveloped countries as a whole or in particular regional or political groupings of underdeveloped countries.

TABLE VI

Domestic Violence and the Extent of Press Freedom

Sample	Domestic Violence 1961-1963	1961-1965	Sample	Domestic Violence 1961-1963	1961-1965
Total Sample	-0.064 (N=47)	-0.038 (N=47)	Polyarchy	-0.106 (N=14)	0.275 (N=14)
Latin Region	0.144 (N=21)	0.182 (N=21)	Personalist	0.238 (N=13)	-0.018 (N=13)
Asian Region	-0.254 (N=13)	-0.016 (N=13)	Elistist	0.193 (N=13)	0.201 (N=13)
African Region	0.348 (N=12)	0.081 (N=12)	Centrist	0.041 (N=7)	0.264 (N=7)

Another problem concomitant with reliance upon news sources is the lack of detailed information on some events.[95] To supply estimates for missing data on particular events, Gurr used the mean of all other countries for the event in question. As he notes, this procedure provided "implausibly high esti-

mates" for some events and countries.[96] The countries whose values Gurr considered grossly overestimated were excluded from my sample.

The Hypotheses and Results

The first hypothesis is that there is a positive relationship between the degree of export instability and the amount of political violence in economically underdeveloped countries.

Hypothesis 1.

> The greater the degree of export instability experienced by an underdeveloped country, the greater the amount of political violence in that country.

The evidence, anecdotal and systematic, in support of this proposition has been reviewed above.

Much of this evidence related to a particular type of export fluctuation, losses in export proceeds. In Ghana, the price of an proceeds from the cocao harvest declined and strikes, riots and coup d'etat followed. Fossum hypothesized a relationship between "deterioration years" and coups d'etat. The losses of proceeds were considered to be as important, or more important, than the fluctuation of proceeds per se. In the following table hypothetical export instability data for two countries are displayed. While the degree of export instability for both Country A and Country B is the same, the losses of the former are clearly greater than those of the latter. The two examples just noted and the evidence discussed

TABLE VII

Hypothetical Export Instability Data for Two Countries

Time	Percentage Deviations from the Trend	
	Country A	Country B
Year 1	-3	-3
Year 2	8	-8
Year 3	-12	12
Year 4	-10	10
Year 5	3	3
Export Instability	4.3	4.3
Export Losses	5.0	2.8

earlier would lead one to infer that Country A would suffer greater violence than Country B.

Hypothesis II.

> The greater the losses in exports of an underdeveloped country, the greater the amount of violence in that country.

The evidence linking export instability to domestic economic disturbances was "ambiguous" and as I have pointed out the effects of export instability on the national economy may depend upon the "impact" of export instability. That is, the effect would vary with the degree of export instability and the importance of trade to the economy. Accepting this

argument, and given the consistent relationships between economic disturbances and political violence, one would expect a positive relationship between the impact of export instability and political violence.

Hypothesis III.

> The greater the impact of export instability in an underdeveloped country, the greater the amount of political violence in that country.

The same reasoning extends to the losses from export instability.

Hypothesis IV.

> The greater the impact of losses from export instability in an underdeveloped country, the greater the amount of political violence in that country.

These hypotheses were examined in a cross-sectional correlational analysis of data for forty-seven economically less developed countries. (The countries contained in this sample are listed in Table XIII below.) All of the independent variables were measured over three and five year time periods, corresponding to the periods for which Gurr and Ruttenburg computed the political violence measures. As a result of this, there cannot be legitimate inference about specific years within these time periods. A number of studies implicitly allowed for, or explicitly included, the possibility of a time lagged relationship. The hypotheses are also examined allowing for one and two year time lags.

The results of the correlational analysis are presented in Tables VIII, IX, X and XI. A brief inspection of these tables

TABLE VIII

Export Instability and Political Violence in Forty-Seven Underdeveloped Countries: Correlation Coefficients

Time Lag	Export Instability	Political Violence 1961-1963	Political Violence 1961-1965
None	Mean deviations	-0.139 (N=47)	-0.098 (N=46)
	Mean squared deviations	-0.164 (N=47)	-0.095 (N=46)
1 Year	Mean deviations	0.029 (N=42)	0.021 (N=41)
	Mean squared deviations	0.052 (N=42)	0.055 (N=41)
2 years	Mean deviations	-0.067 (N=41)	-0.060 (N=40)
	Mean squared deviations	-0.023 (N=41)	0.073 (N=40)

TABLE IX

Export Losses and Political Violence in Forty-Seven Underdeveloped Countries: Correlation Coefficients

Time Lag	Export Losses	Political Violence 1961-1963	Political Violence 1961-1965
None	Mean negative deviations	-0.189 (N=47)	-0.093 (N=46)
	Mean squared negative deviations	-0.148 (N=47)	-0.082 (N=46)
1 year	Mean negative deviations	-0.046 (N=42)	-0.186 (N=41)
	Mean squared negative deviations	-0.035 (N=42)	-0.158 (N=41)
2 years	Mean negative deviations	-0.195 (N=40)	-0.241 (N=40)
	Mean squared negative deviations	-0.269 (N=41)	-0.209 (N=40)

TABLE X

Export Instability Impact and Political Violence in Forty-Seven Underdeveloped Countries: Correlation Coefficients

Time Lag	Export Instability Impact		Political Violence 1961-1963	Political Violence 1961-1965
None	Impact:	mean deviations		
		1957	-0.026	0.039
		1965	-0.142	-0.075
	Impact:	mean squared deviations		
		1957	-0.048	-0.014
		1965	-0.170	-0.086
1 year	Impact:	mean deviations		
		1957	0.008	0.166
		1965	-0.180	0.023
	Impact:	mean squared deviations		
		1957	0.040	0.136
		1965	0.021	0.050
2 years	Impact:	mean deviations		
		1957	-0.084	0.108
		1965	-0.105	-0.035
	Impact:	mean squared deviations		
		1957	-0.045	0.036
		1965	-0.056	-0.056

TABLE XI

Impact of Losses from Export Instability and Political Violence in Forty-Seven Underdeveloped Countries: Correlation Coefficients

Time Lag	Export Instability Losses		Political Violence 1961-1963	Political Violence 1961-1965
None	Impact losses: Mean deviations	1957	-0.095 (N=43)	-0.022 (N=43)
		1965	-0.170 (N=47)	-0.075 (N=46)
	Impact Losses: Mean squared deviations	1957	-0.058 (N=43)	-0.070 (N=43)
		1965	-0.153 (N=47)	-0.086 (N=46)
1 year	Impact Losses: Mean deviations	1957	-0.084 (N=40)	-0.117 (N=40)
		1965	-0.080 (N=42)	-0.190 (N=41)
	Impact Losses: Mean squared deviations	1957	-0.077 (N=40)	-0.113 (N=40)
		1965	-0.073 (N=42)	-0.172 (N=40)
2 years	Impact Losses: Mean deviations	1957	-0.267 (N=39)	-0.096 (N=39)
		1965	-0.261 (N=41)	-0.194 (N=40)
	Impact Losses: Mean squared deviations	1957	-0.307 (N=39)	-0.128 (N=39)
		1965	-0.304 (N=40)	-0.190 (N=40)

indicates that there is little or no covariation between export instability, export losses, export instability impact and the amount of political violence. Most of the correlation coefficients are close to zero. Judging from the signs of the largest coefficients (Tables IX, XI) there appears to be a slight negative relationship between export losses and impact of losses from export instability and political violence. The first four hypotheses can be unambiguously rejected. Whether there are zero relationships within independently specified subsamples is, however, another question.

Specification of Results: Socio Economic Region and Type of Political System

Hypotheses I through IV were formulated on the assumption that the proposed relationships would hold for all economically underdeveloped countries, regardless of the geographic, socio economic and cultural region and type of political system. Demonstrating that there is a lack of support for these hypotheses should not signal the completion of the analysis. As Selvin, for one, points out, the assumption in doing so is that if there is no covariation between two variables when all other variables are not controlled, there will be no covariation when other factors are controlled or taken into account.[97] This assumption is not always correct and should be examined more closely.

The sample of forty-seven underdeveloped countries was subdivided into three relatively homogeneous socio-economic

regions. These regions are Africa, Asia and Latin America, and, with few exceptions, they correspond closely with common geographical divisions.[99] The classification of countries was based, in part, upon Russett's inductively defined regions of "sociocultural homogeneity."[100]

Using factor analysis, Russett reduced fifty-four social, economic and demographic variables into five basic dimensions. Another factor analysis was performed on the variables most strongly associated with each dimension in order to compute factor scores for each of the eighty-four countries in his sample on each dimension. The countries were then grouped into regions according to these factor scores.

Because Russett did not include a number of countries that are in my sample, some of the assignments here are based on educated guesswork. Russett's primary exclusions were African countries which became independent after 1958. Rather than include them in Russett's Afro-Asian region, they were grouped into a separate African region.[101] The small size of my sample necessitated other changes. Russett's Latin American and Semi-developed Latin regions were combined to provide a larger number of cases for statistical manipulation. This change and minor revisions that are noted in Table XII were necessary and appear reasonable.

The sample was also grouped according to the type of political system: "polyarchic," "elitist," "centrist," and "personalist." These groupings were derived from a Q factor

TABLE XII

Sample Countries Classified According to Region and Political System Type

Country	Region	Political System	Country	Region	Political System
Afganistan	Asian[1]	Centrist	Malagasy	African[1]	Elitist
Argentina	Latin	Personalist	Malaysia	Asian	Polyarchic
Bolivia	Latin	Polyarchic	Mexico	Latin	Polyarchic
Brazil	Latin	Polyarchic	Morocco	African	Elitist[3]
Burma	Asian	Elitist	Nicaragua	Latin	Personalist
Cambodia	Asian[1]	Elitist	Pakistan	Asian	Elitist
Ceylon	Asian	Polyarchic	Panama	Latin	Personalist
Chile	Latin	Polyarchic	Paraguay	Latin	Personalist
Colombia	Latin	Polyarchic	Peru	Latin	Personalist
Costa Rica	Latin	Polyarchic	Philippines	Latin	Polyarchic
Cuba	Latin	Centrist	Portugal	Latin	Centrist
Dominican Republic	Latin	Personalist[3]	Sierra Leone	African[1]	Elitist
Ecuador	Latin	Personalist	Sudan	African[1]	Elitist
El Salvador	Latin	Personalist	Syria	Asian	Personalist
Ethiopia	African[1]	Centrist	Taiwan	Asian	Centrist[2]
Ghana	African[1]	Elitist	Thailand	Asian	Personalist
Greece	Western	Polyarchic	Togo	African[1]	Elitist
Guatemala	Latin	Personalist	Tunisia	African[1]	Elitist
Honduras	Latin	Personalist	Turkey	Asian	Polyarchic
India	Asian	Polyarchic	Uganda	African[1]	Elitist
Indonesia	Asian	Elitist	UAR	African	Centrist
Iraq	Asian	Personalist	Uruguay	Latin	Polyarchic
Kenya	African[1]	Elitist	Venezuela	Latin	Polyarchic
Liberia	African[1]	Centrist			

[1]Not included in Russett, International Regions and the International System: A Study of Political Ecology, Chicago, Rand McNally, 1967, pp. 24-25.

[2]Not included in Banks and Gregg, "Grouping Political Systems: Q-Factor Analysis of A Cross Polity Survey," American Behavioral Scientist, vol. 9 (November 1965), pp. 3-6.

[3]Classified as "polyarchic" in Ibid.

analysis by Banks and Gregg of the political variables from A Cross-Polity Survey.[102] Unlike the aggregate data used by Russett these variables are "soft," generally consisting of dichotomized or trichotomized politically relevant characteristics such as "freedom of group opposition," "articulation by non associational groups," "charisma," and "personalismo." There is a general lack of "hard" data on theoretically relevant variables in comparative politics so that the judgemental approach used in A Cross-Polity Survey must be relied upon.

Briefly, the "polyarchic" group, with few exceptions, corresponds to the less developed countries usually considered "democratic." The "elitist" group largely overlaps with the African regional group. These states are characterized as having "relatively small 'modernizing elites'" who are "attempting to bring about rapid and radical social change. . ." The smallest group in this analysis is the "centrist" group which consists of "totalitarian, semi-totalitarian, and authoritarian regimes."[103] Banks and Gregg use "sporadically authoritarian" as an alternative to "personalist." These "personalist" nations are largely Latin.[104]

Minor changes were made in the assignment of countries to specific groupings. These were made on the basis of comments by Banks and Gregg in their paper and the revisions made by others who have used the classification, particularly Gurr,[105] and Wilkenfeld.[106] For example, although the Dominican Republic loads highly on the polyarchic factor, Banks and Gregg

considered this as a result of coding error in the original study. Following Gurr, the Dominican Republic was regrouped into the "personalist" category. Other changes are noted in Table XII.

To provide a criterion for evaluating the reliability and validity of these groupings, I compared the Banks and Gregg assessment of "polyarchy," measured in terms of the loading of each country on the "polyarchy" factor, with other independent judgements of political democracy in less developed countries. The results of Fitzgibbon's polling of Latin American experts were used.[107] These have the advantage of providing scores for different periods of time, therefore permitting evaluation of the stability of the degree of polyarchy across time. The data are presented in Table XIII. The high intercorrelations and the significantly large difference in the mean "democratic achievement" scores indicate that these groupings are relatively homogeneous and do not change significantly with time.

There is little evidence to suggest the strength and direction of the relationships for particular groups of countries. The anecdotal evidence, relating export instability export losses and economic disturbances to political violence, would seem to suggest that positive relationships exist within "non-democratic" countries. This, however, does not provide a firm basis for prediction. Similarly, with socio-economic regions, I cannot specify, for example, that the

TABLE XIII

A Comparison of Two Measures of "Democracy"

Group	Country	Democratic Achievement 1960	1965	Polyarchy Factor Loading
Personalist	Argentina	704.5	662	-.539
Polyarchic	Bolivia	439	401	-.573
Polyarchic	Brazil	648.5	574.5	-.616
Polyarchic	Chile	741.5	755	-.741
Polyarchic	Colombia	651.5	638.5	-.656
Polyarchic	Costa Rica	768	781.5	-.807
Centrist	Cuba	452	381	-.171
Personalist	Ecuador	556.5	448	-.536
Personalist	El Salvador	508.5	510.5	-.399
Personalist	Guatemala	483.5	437	-.258
Personalist	Haiti	309.5	248	-.488
Personalist	Honduras	452.5	423.5	-.650
Polyarchic	Mexico	664	674	-.431
Personalist	Nicaragua	370.5	420	-.587
Personalist	Panama	519.5	542.5	-.316
Personalist	Paraguay	284	331	-.481
Personalist	Peru	562.5	556	-.807
Polyarchic	Uruguay	785	781.5	-.637
Polyarchic	Venezuela	611.5	665	-.399

Spearman Rank Order Correlations	1	2	3
1. Democratic Achievement 1960	1.0		
2. Democratic Achievement 1965	0.98	1.0	
3. Polyarchy Factor Loading	0.85	0.87	1.0

Mean Scores on "Democratic Achievement" for Personalist and Polyarchic Countries

	1960	1965
Personalist mean score	475.1	457.9
Polyarchic mean score	663.6	658.8

Sources: Russell H. Fitzgibbon, "Measuring Democratic Change in Latin America," The Journal of Politics, vol. 29 (February 1967), pp. 129-166 (Reprinted in John E. Mueller, ed., Approaches to Measurement in International Relations: A Non Evangelical Survey, New York, Appleton-Century-Crofts, 1969, pp. 253-282.)

Arthur S. Banks and Phillip Gregg, "Grouping Political Systems: Q-Factor Analysis of A Cross Polity Survey," The American Behavioral Scientist, vol. 9 (November 1965), p. 4.

relationship between violence and export losses will be strongly positive for the Latin group and strongly negative for the Asian group. Therefore, the hypotheses are simply that the relationships with political violence will vary depending upon the socio-economic region and type of political system.

Hypothesis V.

> The correlation between export instability and the political violence varies depending upon the socio-economic region or the type of political system.

Hypothesis VI.

> The correlation between export instability losses and political violence varies depending upon the socio-economic region and the type of political system.

Hypothesis VII.

> The correlation between export instability impact and political violence varies depending upon the socio-economic region and the type of political system.

Hypothesis VIII.

> The correlation between the losses of export instability impact and political violence varies depending upon the socio-economic region and the type of political system.

Like the previous four hypotheses, these were examined using cross-sectional correlation. Not all of the tables generated will be discussed in detail. However, the methodological problems noted in particular tables are common to many of them. The tables not reported in the text below can be found in the appendices.

In the specification of a zero relationship, the pattern of correlation coefficients is of particular importance. To aid in evaluating the correlation coefficients, statistical significance tests will be used. Much of the controversy, concerning the use and misuse of significance tests, is irrelevant when correlation coefficients are computed. The size and sign of the coefficient indicate the extent and direction of covariation. That is, there is less danger of confusing statistical with substantive significance or importance. With a small, and in many cases, fluctuating number of observations, the size of the correlation coefficient may be deceptive. The tests provide a simple means of assessing the "reality" of the observed relationship, as opposed to the hypothesis that it is a product of chance. In short, the tests provide evidence relevant to the elimination of one plausible alternative hypothesis which threatens internal validity. They are not used to either "sanctify or condemn" a relationship.[108]

Within the African group of countries, there is a moderate positive relationship between export instability and political violence when one and two year time lags are introduced (Table XIV). Among the Latin countries there is a contrary tendency. While the simultaneous correlations indicate a near zero relationship, the time lagged correlations indicate a weak negative tendency (see Table XV).

TABLE XIV

Export Instability and Political Violence in African Countries: Correlation Coefficients

Time Lag	Export Instability	Political Violence 1961-1963	Political Violence 1961-1965
None	Mean deviations	-0.215 (N=12)	0.160 (N=12)
	Mean squared deviations	-0.261 (N=12)	0.014 (N=12)
1 year	Mean deviations	0.449 (N=7)	0.618 (N=7)
	Mean squared deviations	0.421 (N=7)	0.701* (N=7)
2 years	Mean deviations	0.502 (N=7)	0.845** (N=7)
	Mean squared deviations	0.499 (N=7)	0.763* (N=7)

* p = < .05 ** p = < .01

TABLE XV

Export Instability and Political Violence in Latin Countries: Correlation Coefficients

Time Lag	Export Instability	Political Violence 1961-1963	Political Violence 1961-1965
None	Mean deviations	0.225 (N=21)	0.059 (N=20)
	Mean squared deviations	0.209 (N=21)	0.153 (N=20)
1 year	Mean deviations	-0.321 (N=21)	-0.283 (N=21)
	Mean squared deviations	-0.320 (N=21)	-0.267 (N=21)
2 years	Mean deviations	-0.360 (N=21)	-0.270 (N=21)
	Mean squared deviations	-0.337 (N=21)	-0.238 (N=21)

TABLE XVI

Export Instability and Political Violence in Asian Countries: Correlation Coefficients

Time Lag	Export Instability	Political Violence 1961-1963	Political Violence 1961-1965
None	Mean deviations	-0.313 (N=13)	-0.313 (N=13)
	Mean squared deviations	-0.360 (N=13)	-0.265 (N=13)
1 year	Mean deviations	0.606* (N=12)	0.188 (N=12)
	Mean squared deviations	0.608* (N=12)	0.214 (N=12)
2 years	Mean deviations	0.167 (N=12)	-0.108 (N=11)
	Mean squared deviations	0.249 (N=12)	-0.151 (N=11)

* $p = < .05$

The relationship between export instability and political violence is not at all clear in Asian countries. With no time lag, the tendency is slightly negative. For the 1961-1965 period of violence, the coefficients indicate a zero relationship with one and two year lags. The high coefficients for the three year period and one year time lag however, indicate a strong positive relationship. At best, the correlations indicate a weak positive correlation.

Analysis of the relationship between export instability and political violence within different political systems also illustrates that the extent and direction of the covariation depends upon context. In the polyarchic countries there is a strong negative correlation. All of the coefficients for the five year measures of instability and violence are, with a one and two year lag, statistically and substantively significant. The coefficients for the three year period, although smaller, are consistently negative (see Table XVII).

TABLE XVII

Export Instability and Political Violence in Polyarchic Countries: Correlation Coefficients

Time Lag	Export Instability	Political Violence 1961-1963	Political Violence 1961-1965
None	Mean deviations	0.113 (N=14)	-0.016 (N=14)
	Mean squared deviations	0.079 (N=14)	0.080 (N=14)
1 year	Mean deviations	-0.294 (N=14)	-0.628* (N=14)
	Mean squared deviations	-0.239 (N=14)	-0.591* (N=14)
2 years	Mean deviations	-0.397 (N=14)	-0.569* (N=14)

* p = < .05

The fact that there is a negative relationship within the polyarchic group of countries coincides with earlier speculation about the specification according to political system type. Based on the lack of anecdotal examples relating export instability to violence in "democratic" countries, I speculated that the relationship would tend to be positive within "non democratic" countries. Following this, I combined the authoritarian countries (the centrist, elitist and personalist groups) into a "non polyarchic" category. Testing the hypothesis for this category provides no evidence to confirm the speculation There is a zero relationship between export instability and political violence in "closed" political systems (see Table XVIII).

TABLE XVIII

Export Instability and Political Violence in "Non Polyarchic" Countries: Correlation Coefficients

Time Lag	Export Instability	Political Violence 1961-1963	Political Violence 1961-1965
None	Mean deviations	-0.207 (N=33)	-0.112 (N=32)
	Mean squared deviations	-0.233 (N=33)	-0.129 (N=32)
1 year	Mean deviations	0.149 (N=28)	0.264 (N=27)
	Mean squared deviations	0.174 (N=28)	0.286 (N=27)
2 years	Mean deviations	0.102 (N=27)	0.137 (N=26)
	Mean squared deviations	0.140 (N=27)	0.090 (N=26)

Examining the different types of "closed" political systems separately, reveals a weak positive relationship for the personalist countries with one and two year time lags. The correlation coefficients computed with the five year measures range from 0.332 to 0.381. The coefficients computed for the shorter time period are near zero.

While the coefficients for the longer time period have tended to be larger, it would be incorrect to infer that they are artificially inflated because of the length of the time period. Time, of course, is a "modifiable unit" and the manner in which it is modified can substantially affect the size of the correlation coefficient.[109] Yule and Kendall, for example, have demonstrated that the way geographic units are modified or aggregated may raise the correlation of different crop yields within them from hear zero to 0.990.[110] Robinson demonstrated the same phenomena in his classic paper on the "ecological fallacy."[111] The important point is that these modifications resulted in fewer cases for analysis. In my cross-sectional analysis however, the modification of time does not reduce the number of cases or units of analysis.[112]

The coefficients for the elitist group present a conflicting picture. While the simultaneous correlations indicate a weak negative relationship, the introduction of time lags produces positive coefficients. None of the coefficients are statistically significant and the reduction of the number of cases because of missing data may have affected them considerably.

TABLE XIX

Export Instability and Political Violence in Personalist Countries: Correlation Coefficients

Time Lag	Export Instability	Political Violence 1961-1963	Political Violence 1961-1965
None	Mean deviations	0.059 (N=13)	0.063 (N=13)
	Mean squared deviations	0.027 (N=13)	0.065 (N=13)
1 year	Mean deviations	-0.102 (N=13)	0.381 (N=13)
	Mean squared deviations	-0.090 (N=13)	0.332 (N=13)
2 years	Mean deviations	0.096 (N=13)	0.376 (N=13)
	Mean squared deviations	0.145 (N=13)	0.375 (N=13)

TABLE XX

Export Instability and Political Violence in Elitist Countries: Correlation Coefficients

Time Lag	Export Instability	Political Violence 1961-1963	Political Violence 1961-1965
None	Mean deviations	-0.369 (N=13)	-0.017 (N=13)
	Mean squared deviations	-0.402 (N=13)	-0.085 (N=13)
1 year	Mean deviations	0.586 (N=10)	0.145 (N=9)
	Mean squared deviations	0.532 (N=10)	0.136 (N=9)
2 years	Mean deviations	0.156 (N=9)	0.228 (N=8)
	Mean squared deviations	0.131 (N=9)	0.180 (N=8)

The covariation between export losses and political violence also varies depending upon the socio-economic region and type of political system. The tendency within the Latin and Asian groups is in the negative direction but none of the coefficients are statistically significant. The coefficients for the African group do not portray an unambiguous picture. While the coefficients computed with the three year measures are close to zero, those computed with the five year measures indicate a positive relationship. (The Tables of correlation coefficients can be found in Appendix I.)

TABLE XXI

Export Losses and Political Violence in Polyarchic and "Non Polyarchic" Countries: Correlation Coefficients

Time Lag	Export Instability Losses	Political Violence 1961-1963	Political Violence 1961-1965
	Polyarchic Countries		
None	Mean deviations	0.048 (N=14)	0.022 (N=14)
	Mean squared deviations	0.132 (N=14)	0.085 (N=14)
1 year	Mean deviations	-0.291 (N=14)	-0.632* (N=14)
	Mean squared deviations	-0.262 (N=14)	-0.597* (N=14)
2 years	Mean deviations	-0.330 (N=14)	-0.686** (N=14)
	Mean squared deviations	-0.416 (N=14)	-0.620* (N=14)
	"Non Polyarchic" Countries		
None	Mean deviations	-0.207 (N=33)	-0.117 (N=32)
	Mean squared deviations	-0.233 (N=33)	-0.109 (N=32)
1 year	Mean deviations	0.029 (N=28)	-0.071 (N=27)
	Mean squared deviations	0.046 (N=28)	-0.034 (N=27)
2 years	Mean deviations	-0.148 (N=26)	-0.101 (N=26)
	Mean squared deviations	-0.218 (N=27)	-0.076 (N=26)

* p = < .05 ** p = < .01

TABLE XXII

Export Losses and Political Violence in Personalist Countries: Correlation Coefficients

Time Lag	Export Losses	Political Violence 1961-1963	Political Violence 1961-1965
None	Mean deviations	-0.163 (N=13)	0.161 (N=13)
	Mean squared deviations	-0.059 (N=13)	0.145 (N=13)
1 year	Mean deviations	0.166 (N=13)	0.597* (N=13)
	Mean squared deviations	0.163 (N=13)	0.589* (N=13)
2 years	Mean deviations	0.115 (N=13)	0.348 (N=13)
	Mean squared deviations	0.134 (N=13)	0.481 (N=13)

* p= <.05

The pattern of covariation within different political system groups is similar to the pattern observed for export instability. The tendency within the polyarchic group is clearly negative, while the tendency in nonpolyarchic countries is near zero. The time lagged correlations between losses and violence are positive for personalist countries. The positive correlations are, however, significant substantively and statistically only for the larger time periods. The correlations for the three year measures are insignificant. The tendency within the elitist group is negative (see Appendix II).

While the extent of variation is less than that found with export instability and export losses as independent variables, the relationship between export instability impact and political violence does vary within the sub-samples. Within the Latin and Asian subgroups, there are no significant correlation coefficients. There is a discernible negative tendency in the Latin countries, but no definite tendency in the Asian countries. Among the African countries there appears to be, despite the small number of cases, a positive tendency with time lags (see Appendix III).

TABLE XXIII

Export Instability Impact and Political Violence in Polyarchic Countries: Correlation Coefficients

Time Lag	Export Instability Impact	Political Violence 1961-1963	Political Violence 1961-1965
None	Mean deviations		
	1957 (N=13)	-0.114	0.203
	1960 (N=13)	-0.056	0.103
	1965 (N=14)	-0.096	-0.008
	Mean squared deviations		
	1957 (N=13)	-0.030	0.188
	1960 (N=13)	-0.004	0.123
	1965 (N=14)	-0.040	0.070
1 year	Mean deviations		
	1957 (N=13)	-0.471	-0.235
	1960 (N=13)	-0.447	-0.337
	1965 (N=14)	-0.393	-0.419
	Mean squared deviations		
	1957 (N=13)	-0.381	-0.380
	1960 (N=13)	-0.362	-0.448
	1965 (N=14)	-0.317	-0.500
2 years	Mean deviations		
	1957 (N=13)	-0.507	-0.152
	1960 (N=13)	-0.515	-0.251
	1965 (N=14)	-0.442	-0.360
	Mean squared deviations		
	1957 (N=13)	-0.480	-0.315
	1960 (N=13)	-0.481	-0.387
	1965 (N=14)	-0.418	-0.450

The relationship within the polyarchic group is moderate in size and negative in direction (Table XXIII). The time lagged correlations computed with the five year measures are also moderate in size within the personalist countries but positive in sign. However, those computed with the three year measures show a lack of covariation (Table XXIV).

TABLE XXIV

Export Instability Impact and Political Violence in Personalist Countries: Correlation Coefficients

Time Lag	Export Instability Impact	Political Violence 1961-1963	Political Violence 1961-1965
None	Mean deviations		
	1957 (N=13)	0.138	0.206
	1960 (N=12)	-0.094	0.311
	1965 (N=13)	0.005	0.165
	Mean squared deviations		
	1957 (N=13)	0.072	0.149
	1960 (N=12)	-0.100	0.145
	1965 (N=13)	-0.001	0.134
1 year	Mean deviations		
	1957 (N=13)	-0.054	0.350
	1960 (N=12)	-0.134	0.548*
	1965 (N=13)	-0.101	0.290
	Mean squared deviations		
	1957 (N=13)	-0.061	0.326
	1960 (N=12)	-0.132	0.548*
	1965 (N=13)	-0.092	0.289
2 years	Mean deviations		
	1957 (N=13)	0.116	0.353
	1960 (N=12)	0.021	0.442
	1965 (N=13)	0.034	0.280
	Mean squared deviations		
	1957 (N=13)	0.150	0.365
	1960 (N=12)	0.079	0.552*
	1965 (N=13)	0.100	0.311

* $p = < .05$

The inconsistencies of the correlation coefficients for the two time periods may be the result of error in the political violence measure. They also suggest the influence of "extraneous historical" factors.[113] Unfortunately these complexities cannot be explored with the present data.

The probability of measurement error is more acute within specific time periods. As it was pointed out above, the export instability impact and losses from export instability impact measures are most vulnerable to distortion and error. This is because the absolute values of imports, exports and gross national product are used in the calculation. Different estimates of GNP were used to partially ecounteract this possibility or error.[114] In Table XXIV the larger coefficients are based upon the "1960" estimate of export instability impact. This may reflect the temporal differences in the estimates or error. The other coefficients, however, are similar in size and support the conclusion that there is a positive relationship within the personalist group. Within the elitist group the opposite is the case and measurement error appears more significant than temporal differences. While all the coefficients computed with the "1960" estimate are statistically significant and very large, those computed with the "1957" and "1965" estimates indicate a zero relationship (see Table XXV). Combining the "closed" political systems into the non polyarchic category also produces a zero relationship (Appendix III).

TABLE XXV

Export Instability Impact and Political Violence in Elitist Countries: Correlation Coefficients

Time Lag	Export Instability Impact	Political Violence 1961-1963	Political Violence 1961-1965
None	Mean deviations		
	1957 (N=10)	-0.202	-0.221
	1960 (N= 8)	0.200	0.765*
	1965=(N=13)	-0.420	-0.121
	Mean squared deviations		
	1957 (N=10)	-0.238	-0.261
	1960 (N= 8)	0.251	0.800**
	1965 (N=13)	-0.448	-0.147
1 year	Mean deviations		
	1957 (N= 9)	0.436	0.090
	1960 (N= 8)	0.327	0.823**
	1965 (N=10)	-0.449	0.060
	Mean squared deviations		
	1957 (N= 9)	0.541	0.067
	1960 (N= 8)	0.435	0.948**
	1965 (N=10)	0.535	0.089
2 years	Mean deviation		
	1957 (N= 8)	0.047	-0.019
	1960 (N= 7)	0.279	0.784*
	1965 (N= 9)	0.065	0.024
	Mean squared deviations		
	1957 (N= 8)	0.092	0.039
	1960 (N= 7)	0.482	0.801*
	1965 (N= 9)	0.088	0.075

* p = < .05 ** p = < .01

The relationships between the losses from export instability impact and political violence, within the socio-economic regions and political systems, follow the pattern observed above with the other independent variables. There is no significant covariation within the Latin and Asian groups. The tendency in the latter is weak and negative. Using the five year measures, there are significant positive correlation coefficients within the African group.

These coefficients, however, tend to increase in size with a reduction in the number of cases. It cannot be assumed that the loss of cases is random and differential reduction in cases may threaten internal validity. The problem is analogous to self selection in some experimental and survey research.

> Generally speaking, the greater the amount of cooperation involved, the greater the amount of disruption of routine and the higher our refusal role, the more opportunity there is for a selection specificity effect.[115]

The coefficients also tend to increase in size with increases in the length of the time lag. This tendency is common to a number of the tables already presented. Campbell and Stanley state that "as the time interval between X and effect increases, the plausibility of effects from extraneous historical events also increases."[116] The "mortality rate" and "history" impinge upon the validity of the results for the Asian, African and elitist groups in particular. Given that the number of cases decreases with longer time lags, the positive correlations between losses from export instability impact

TABLE XXVI

Impact of Losses from Export Instability and Political Violence in African Countries: Correlation Coefficients

Time Lag	Impact Losses	Political Violence 1961-1963	Political Violence 1961-1965
None	Mean deviations 1965 (N=12)	-0.144	0.080
	Mean squared deviations 1965 (N=12)	-0.179	0.107
1 year	Mean deviations 1965 (N= 8)	-0.213	0.403
	Mean squared deviations 1965 (N= 8)	-0.179	0.456
2 years	Mean deviations 1965 (N= 7)	-0.124	0.719
	Mean squared deviations 1965 (N= 7)	-0.105	0.713

and political violence should be accepted only with extreme caution. (See Appendix IV for the tables of correlation coefficients for the other regions.)

In specifying the zero relationship between losses from export instability impact and political violence, the type of political system is more relevant than socio-economic region. The negative covariation within the polyarchic sample is the strongest. Again, there is a lack of covariation within the nonpolyarchic group and the type of "closed" political system is important (Tables XXVII and XXVIII). The

TABLE XXVII

Impact of Losses from Export Instability and Political Violence in Polyarchic Countries: Correlation Coefficients

Time Lag	Impact Losses	Political Violence 1961-1963	Political Violence 1961-1965
None	Mean deviations		
	1957 (N=13)	-0.160	0.225
	1960 (N=13)	-0.107	0.134
	1965 (N=14)	-0.128	0.018
	Mean squared deviations		
	1957 (N=13)	-0.001	0.175
	1960 (N=13)	0.033	0.110
	1965 (N=14)	-0.005	0.075
1 year	Mean deviations		
	1957 (N=13)	-0.536*	-0.440
	1960 (N=13)	-0.501	-0.508
	1965 (N=14)	-0.421	-0.558*
	Mean squared deviations		
	1957 (N=13)	-0.425	-0.498
	1960 (N=13)	-0.401	-0.537*
	1965 (N=14)	-0.344	-0.572*
2 years	Mean deviations		
	1957 (N=13)	-0.555*	-0.407
	1960 (N=13)	-0.518	-0.490
	1965 (N=14)	-0.434	-0.544*
	Mean squared deviations		
	1957 (N=13)	-0.575*	-0.498
	1960 (N=13)	-0.551*	-0.544*
	1965 (N=14)	-0.480	-0.582*

* p = < .05

TABLE XXVIII

Impact of Losses from Export Instability and Political Violence in "Non Polyarchic" Countries: Correlation Coefficients

Time Lag	Impact Losses	Political Violence 1961-1963	Political Violence 1961-1965
None	Mean deviations		
	1957 (N=30)	-0.067	-0.026
	1960 (N=23)	-0.303	-0.077
	1965 (N=33)	-0.163	-0.086
	Mean squared deviations		
	1957 (N=30)	-0.074	-0.145
	1960 (N=23)	-0.173	-0.232
	1965 (N=33)	-0.173	-0.096
1 year	Mean deviations		
	1957 (N=27)	-0.025	-0.070
	1960 (N=22)	-0.001	0.277
	1965 (N=28)	-0.025	-0.127
	Mean squared deviations		
	1957 (N=27)	-0.008	0.294
	1960 (N=22)	0.015	0.278
	1965 (N=28)	-0.009	-0.084
2 years	Mean deviations		
	1957 (N=26)	-0.231	0.191
	1960 (N=22)	-0.067	0.051
	1965 (N=27)	-0.235	-0.097
	Mean squared deviations		
	1957 (N=26)	-0.261	0.142
	1960 (N=22)	-0.029	0.032
	1965 (N=27)	-0.263	-0.078

tendency exhibited in the elitist countries is negative and weak. Within the personalist group, the coefficients computed with the three year measures are non significant. Those computed with the five year measures do, however, indicate a moderate positive relationship with time lags (see Appendix IV and Table XXIX).

TABLE XXIX

Impact of Losses from Export Instability and Political Violence in Personalist Countries: Correlation Coefficients

Time Lag	Impact Losses	Political Violence 1961-1963	Political Violence 1961-1965
None	Mean deviations		
	1957 (N=13)	-0.069	0.328
	1960 (N=12)	-0.263	0.311
	1965 (N=13)	-0.190	0.251
	Mean squared deviations		
	1957 (N=13)	-0.017	0.238
	1960 (N=12)	-0.183	0.145
	1965 (N=13)	-0.089	0.206
1 year	Mean deviations		
	1957 (N=13)	0.204	0.581*
	1960 (N=12)	0.165	0.548*
	1965 (N=13)	0.188	0.528
	Mean squared deviations		
	1957 (N=13)	0.178	0.578*
	1960 (N=12)	0.139	0.548
	1965 (N=13)	0.164	0.547*
2 years	Mean deviations		
	1957 (N=13)	0.030	0.385
	1960 (N=12)	0.003	0.442
	1965 (N=13)	-0.004	0.335
	Mean squared deviations		
	1957 (N=13)	0.068	0.489
	1960 (N=12)	0.047	0.552*
	1965 (N=13)	0.043	0.459

* $p = < .05$

CONCLUSION

In summary there is no covariation between the amount of political violence and export instability, export losses, export instability impact and losses from export instability impact in underdeveloped countries. The zero relationships in the total sample do mask correlations of opposite signs within specified subsamples. The relationships vary in strength and direction within different socio-economic regions and types of political systems.

The largest variation is found between political groupings. The strongest and most consistent correlations are between political violence and export instability, export losses and losses from export instability impact. They are all negative. No covariations equivalent in strength and opposite sign exist in the "closed" political systems. There are moderate positive correlations between export losses and impact of export instability losses and political violence in a particular group of "closed" countries, the personalist states.

The relationships within the polyarchic and personalist subsamples can be generalized. Most of the underdeveloped polyarchic and personalist countries in the whole population are contained in the samples so there is little probability of selection bias.

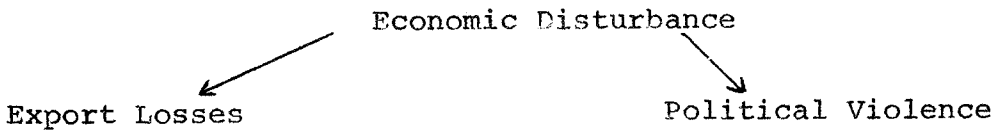
These correlations cannot be considered causal relationships.[117] Although, for example, there is a positive correlation between export losses and political violence in personalist countries and the temporal order has been esta-

blished with time lagged correlations, the association between the two variables may be spurious. The establishment of causal relationships requires the introduction of additional variables. In a simple bivariate analysis the correlation should be considered spurious until it is otherwise demonstrated.[118]

The implications of the earlier discussion of the "nature" of export instability are obviously relevant to the problem of spuriousness. As formulated above, the relationship between export losses and political violence is:

Export Losses ⟶ Economic Disturbance ⟶ Political Violence

Economic disturbance was not measured and was assumed to be intervening between export losses and political violence. If the locus and control of export losses is "internal," the most likely relationship would be:



Whether economic disturbances are intervening or causal can only be decided with further analysis. This analysis has investigated and found very little covariation between political violence and a number of variables designated as "external." This is the necessary first step in assessing the influence of "international" factors on domestic politics.

FOOTNOTES

[1]Fred W. Riggs, "The Theory of Developing Polities," World Politics, vol. 16, no. 1 (October 1963), p. 171. With reference to Latin America, Osvaldo Sunkel states that

> . . . if one examines the writings of economists, sociologists and political scientists in Latin America, external dependence as a subject is remarkably absent. It would appear that sociology, economics, and political science in the post-war period have not been concerned with this question.

Osvaldo Sunkel, "National Development Policy and External Dependence in Latin America," The Journal of Development Studies, vol. 6, no. 1 (October 1969), pp. 23-24.

[2]James N. Rosenau, "Pre-theories and Theories of Foreign Policy," Approaches to Comparative and International Politics, ed. R. Barry Farrell, Evanston, Northwestern University Press, 1966, pp. 27-92; "Introduction: Political Science in a Shrinking World," Linkage Politics: Essays on the Convergence of National and International Systems, ed. James N. Rosenau, New York, The Free Press, 1969, pp. 1-17; "Toward the Study of National-International Linkages," Linkage Politics, pp. 44-63; "The Politics of National Adaption," a paper prepared for Round Table on The Comparative Study of Foreign Policy at the 65th Annual Meeting of the American Political Science Association, New York, September 3, 1969; and "The Adaption of National Societies: A Theory of Political Behavior and its Transformation," unpublished manuscript, October, 1969.

[3]Karl W. Deutsch, "External Influences on the Internal Behavior of States," Approaches to Comparative and International Politics, ed. R. Barry Farrell, pp. 5-26.

[4]Stanley H. Hoffmann, "International Relations: The Long Road to Theory," World Politics, vol. 11, no. 3 (April 1959), pp. 347. See also the same authors, Contemporary Theory in International Relations, Englewood Cliffs, N.J., Prentice-Hall Inc., 1960, pp. 1-12.

[5]Gabriel Almond has revised his structural functional approach to include "external" factors. This revision is not fully integrated into his approach, however. See Gabriel Almond and G. Bingham Powell, Jr., Comparative Politics: A Developmental Approach, New York, Little Brown & Company, 1966. For examples of more or less systematic empirical studies, see Manus Midlarsky and Raymond Tanter, "Toward a Theory of Political Instability in Latin America," Journal of Peace Research, vol. 4, no. 3 (1967), pp. 209-227; Charles Wolf, Jr., "The Political Effects of Military Programs: Some Indications from Latin America," Orbis, vol. 8,

no. 4 (Winter, 1965), pp. 871-893; C. Wolf, Jr., United States Policy and the Third World: Problems and Analysis, Little Brown & Company, Boston, 1967, pp. 90-162; Merle Kling, "Taxes on the 'External' Sector: An Index of Political Behavior in Latin America?" Midwest Journal of Political Science, vol. 3, no. 2 (May 1959), pp. 127-150; Egil Fossum, "Factors Influencing the Occurrence of Military Coup d'Etat in Latin America," Journal of Peace Research, vol. 4, no. 3 (1967), pp. 228-257; and Bruce M. Russett, "Indicators for America's linkages with the Changing World Environment," a paper delivered at the annual meeting of the American Political Science Association, New York, September 2-6, 1969.

[6]Samuel P. Huntington, "Patterns of Violence in World Politics," Changing Patterns of Military Politics, ed. Samuel P. Huntington, New York, The Free Press of Glencoe, 1962, pp. 45-46.

[7]Almond and Powell, Comparative Politics, p. 196.

[8]In order to simplify his proposed simulation of less developed countries, Shubick assumes the demand is exogenous. See Martin Shubick, "Simulation of Socio-Economic Systems," General Systems Yearbook, vol. 12 (1967), pp. 165-166.

[9]Vernon Lee Fluharty, Dance of the Millions: Military Rule and the Social Revolution in Colombia, 1930-1956, Pittsburgh, University of Pittsburgh Press, 1957, p. 15.

[10]The Trade and Development Board of the United Nations Conference on Trade and Development (UNCTAD) at the Ninth Session, August 26 - September 23, 1969 in Geneva. Cited in United Nations Monthly Chronicle, United Nations Office of Public Information, vol. 6, no. 9 (October 1969), p. 48. See also Charles Kindleberger, Foreign Trade and the National Economy, New Haven and London, Yale University Press, 1963, pp. 218-221.

[11]Kwame Nkrumah, Neo Colonialism: The Last Stage of Imperialism, London, Heinemann Educational Books, 1969, p. 241. Also see Jack Woddis, Introduction to Neo-Colonialism: The New Imperialism In Asia, Africa and Latin America, New York, International Publishers, 1969; and Pierre Jalee, The Pillage of the Third World, New York, Monthly Review Press, 1968.

[12]Peter Worsley, The Third World, London, Weidenfeld and Nicholson, 1967, pp. 290-292.

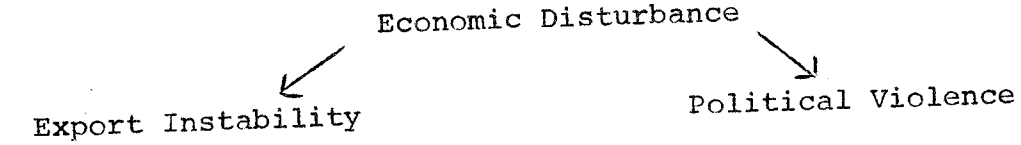
[13]Joseph D. Coppock, International Economic Instability: The Experience after World War II, New York, McGraw-Hill Book Company, 1962, p. 4.

[14]A very brief description of these events can be found in Dennis Austin, Politics in Ghana, 1946-1960, London, Oxford University Press, 1966.

[15]Barend A. DeVries, The Export Experience of Developing Countries, World Bank Staff Occasional Papers, Number Three, 1967. (Distributed by the Johns Hopkins University Press.)

[16]The complexity of the problem is amply demonstrated in F. Helmut Weymar, The Dynamics of the World Cocao Market, Cambridge Mass., The M.I.T. Press, 1968, Appendix 2; Tony Killick, "External Trade," The Economy of Ghana, eds. and research directors, Wally Birmingham, I. Neustadt, and E.N. Omabol, London, George Allen and Unwin Ltd., 1966. (A Study of Contemporary Ghana, Volume I.)

[17]The supposition that export instability is "more external" than "internal" is of course very important in a causal analysis. If export instability were the result of internal or local economic disturbance, the relationship between export instability and political violence could be spurious. Compare the following diagram with Figure 1.



My purpose at this point, however, is to see if there is covariation between export instability and political violence.

[18]For a rather depressing example of this type of debate, see James N. Rosenau, Of Boundaries and Bridges: A Report on a Conference on the Interdependencies of National and International Political Systems, Princeton University, N.J., Center of International Studies, (Research Monograph No. 27.) As Rosenau states, the conference "can hardly be regarded as a success," p. 1.

[19]Extending Hoffman's analogy to the Copernican revolution, more systematic observations of the planets are needed. If the Ptolemaic systems could have accurately accounted for such planetary phenomena as "retrograde motion," the revolution would not have been necessary. Copernicus wrote De Revolutionibus in an attempt to provide a more accurate and parsimonious theory.

> Copernicus did not attack the two-sphere universe, though his work ultimately overthrew it and he did

not abandon the use of epicycles and eccentrics, though these too were abandoned by his successors. What Copernicus did attack and what started the revolution in astronomy was certain of the apparently trivial mathematical details like equants, embodied in the complex mathematical systems of Ptolemy and his successors.

Thomas S. Kuhn, The Copernican Revolution: Planetary Astronomy in the Development of Western Thought, New York, Vintage Books, 1959, p. 73.

[20]Eric R. Wolf, Peasants, Englewood Cliffs, N.J., Prentice-Hall Inc., 1966, pp. 44-45; Robert L. Heilbroner, The Great Ascent: The Struggle for Economic Development in our Time, New York, Harper and Row, 1963, pp. 102-105; and Maurice Dobb, Economic Growth and Underdeveloped Countries, New York, International Publishers, 1963, pp. 22-23.

[21]Adrian Moyes and Teresa Hayter, World III: A Handbook on Developing Countries, Oxford, Pergamon Press, 1964, pp. 60-64.

[22]Benjamin Higgins, Economic Development, New York, W.W. Norton, 1968, (revised edition), p. 550.

[23]James C. Ingram, International Economic Problems, New York, John Wiley & Sons, 1966, pp. 83-84.

[24]Jagdish Bhagwati, The Economies of Underdeveloped Countries, New York, McGraw-Hill Book Company, 1966, p. 78.

[25]Peter B. Kenen, International Economics, Englewood Cliffs, N.J., Prentice Hall, 1964, p. 102.

[26]Allan K. Cairncross, Factors in Economic Development, London, Allen and Unwin, 1962, p. 213; see also Seymour S. Goodman, "Problems of the External Sector of Developing Countries," The Developing Economies, vol. 7, no. 3 (September 1969), pp. 351-366 and Kindelberger, Foreign Trade and the National Economy, pp. 212-226.

[27]Coppock, International Economic Instability, pp. 16.

[28]In this re-analysis all the variables were transformed using $\log_{10}$ to bring the distributions closer to normal and "pull in" extreme values.

[29]Campbell and Fiske state that:

> Reliability and validity can be seen as regions on a continuum. Reliability is the agreement between two efforts to measure the same trait through maximally similar methods. Validity is represented in the agreement between two attempts to measure the same trait through maximally different methods.

Donald T. Campbell and Donald W. Fiske, "Convergent and Discriminant Validation by the Multitrait and Multimethod Matrix," Psychological Bulletin, vol. 56, no. 2 (March 1959), p. 83.

[30]See Jack Sawyer, "Dimensions of Nations: Size, Wealth and Politics," American Journal of Sociology, vol. 73, no. 2 (July 1967), pp. 169-172 and Bruce M. Russett, et al., World Handbook of Political and Social Indicators, New Haven, Yale University Press, 1964, p. 277 for correlates of GNP per capita for 1955 and 1957, respectively. The same relationships have been found within nations. See Robert E. Roberts and George W. McBee, "Modernization and Economic Development in Mexico: A Factor Analytic Approach," Economic Development and Cultural Change, vol. 16, no. 4 (July 1969), pp. 603-612; Christen I. Johassen and Sherwood H. Peres, Interrelations of Dimensions of Community Systems, Columbus, Ohio, Ohio State University Press, 1960; and Nathaniel B. Guyol, "Energy Consumption and Economic Development," Essays on Geography and Economic Development, ed. Norton Ginsburg, Chicago, University of Chicago Press, 1962, pp. 65-77.

[31]
> . . . one may accept the foreign trade proportion as a rough indicator of the dependence of a country's overall performance upon material flows to and from the rest of the world. . .

Simon Kuznets, Modern Economic Growth: Rate Structure and Spread, New Haven, Yale University Press, 1966, p. 302. Also see Karl Deutsch, "Toward an Inventory of Basic Trends and Patterns in Comparative and International Politics," American Political Science Review, vol. 54, no. 1 (March 1960), Appendix 1.

[32]Coppock also used other measures of commodity concentration and presented the relevant data. See Coppock, International Economic Instability, Appendix Table A-2.

[33]Further description of the index and computation procedure can be found in Albert O. Hirschman, National Power and the Structure of Foreign Trade, Berkeley and Los Angeles, University of California Press, 1945.

[34]Norton Ginsberg, Atlas of Economic Development, Chicago, University of Chicago Press, 1959, pp. 106-107.

[35]Coppock's "log variance" measure is computed using the formula:

$$V_{log} = \frac{\Sigma(\log \frac{X_t + 1}{X_t} - m)^2}{N}$$

X_t = the value of total proceeds in year t

N = the number of years minus 1

m = the arithmetic mean of the differences between the logs of X_t and $X_t + 1$, etc.

V_{log} = the logarithmic variance of the series

Export instability index = antilog $\sqrt{V_{log}}$

The "percentage deviations" method is to fit a curve to the time series and express the annual deviations from this curve as percentages of the annual trend values. Coppock, International Economic Instability, pp. 20-25.

[36]The United Nations procedure is very similar to computing annual percentage changes in export proceeds. The difference is that an increase is not calculated as a percentage of the previous year but as a percentage of the peak value. See Ibid. and Instability in Export Markets of Underdeveloped Countries, New York, United Nations Secretariat, 1952.

[37]Op. cit., p. 25.

[38]Karl Deutsch and Alexander Eckstein, "National Industrialization and the Declining Share of the International Economic Sector, 1890-1959," World Politics, vol. 13, No. 1 (January 1961), pp. 267-299.

[39]Failure to differentiate between statistical and substantive significance has been one source of the debate over the use and abuse of tests of statistical significance. See David Gold, "Statistical Tests and Substantive Significance," The American Sociologist, vol. 4, no. 1 (February 1969), pp. 42-46.

[40]Macbean, Export Instability and Economic Development, pp. 31 & 86. There are some economists who do not accept the orthodoxy. Their dissent is not as important because they lack the empirical evidence. See, for example, Paul Baran, The Political Economy of Growth, New York, Monthly Review Press, 1957, pp. 230-234.

[41]Coppock, International Economic Instability, pp. 107-108; Macbean, Export Instability and Economic Development, pp. 62-66.

[42]Coppock, International Economic Instability, pp. 114-122.

[43]Macbean, Export Instability, pp. 62-68, 99-102.

[44]Ibid., p. 63.

[45]Macbean analyzed the effects of export instability on capital goods imported, investment, consumer goods imported, and rates of inflation. Only in the last two variables was there any significant covariation. Ibid., pp. 69-85.

[46]Ibid., p. 341.

[47]John A. Pincus, "Commodity Agreements: Bonanza or Illusion?" Reshaping the World Economy: Rich and Poor Countries, ed. John A. Pincus, Englewood Cliffs, N.J., Prentice-Hall Inc., 1968, p. 143.

[48]Coppock, International Economic Instability, pp. 4-5.

[49]Walt W. Rostow, British Economy of the Nineteenth Century, Oxford, At the Clarendon Press, 1948, Chapter 5.

[50]For example, see Ted Robert Gurr, "Psychological Factors in Civil Violence," World Politics, vol. 20, no. 2 (January 1968), p. 260 and Ted Robert Gurr, Why Men Rebel, Princeton, N.J., Princeton University Press, 1970, p. 62.

[51]Op. cit., p. 123.

[52]T.S. Ashton, Economic Fluctuations in England 1700-1800, Oxford, At the Clarendon Press, 1959, pp. 146, 147, 149, 154-155, and 160.

[53]Ibid., p. 155.
Nevertheless, the evidence of social unrest and distress is sufficient to justify our regarding the period from 1765 to 1769 as one of depression.

[54]Ted Gurr, "A Causal Model of Civil Strife: A Comparative Analysis Using New Indices," American Political Science Review, vol. 62, no. 4 (December 1968), pp. 1111-1112, 1117.

[55]Ivo K. Feierabend and Rosalind L. Feierabend, "Aggressive Behaviors Within Politics, 1948-1962: A Cross-National Study," Journal of Conflict Resolution, vol. 10, no. 3, pp. 262-269. Also see Ivo K. Feierabend and Rosalind L. Feierabend, "Social Change and Political Violence: Cross-National Patterns," Violence in America: Historical and Comparative Perspectives, eds. Hugh Davis Graham and Ted Robert Gurr (The complete official report to the National Commission on the Causes and Prevention of Violence, June 1969). New York, Signet Books, 1969, pp. 606-668.

[56]Ted Gurr, with the assistance of Charles Ruttenberg, The Conditions of Civil Violence: First Tests of a Causal Model, Princeton, N.J., Center of International Studies, Princeton University, April 1967 (Research Monograph Number 28), pp. 66-67.

[57]Raymond Tanter and Manus Midlarsky, "A Theory of Revolution," Journal of Conflict Resolution, vol. 11, no. 3 (September 1967), pp. 264-280.

[58]Seymour Martin Lipset, Agrarian Socialism, New York, Doubleday Books, 1963, pp. 46, 44-46, 90. See also his references to similar protest movements in Seymour Martin Lipset, Political Man: The Social Basis of Politics, New York, Doubleday Books, 1963.

[59]James C. Davies, "The J-Curve of Rising and Declining Satisfactions as a Cause of Some Great Revolutions and a Contained Rebellion," Violence in America, eds. Graham and Gurr, p. 687.

[60]James C. Davies, "Toward a Theory of Revolution," American Sociological Review, vol. 27, no. 1 (February 1962), p. 6. It should be noted that Davies' data in this article and ibid. limit his conclusions to the sociological formulation of the J-Curve hypothesis. Tanter and Midlarsky provide further evidence for the J-curve hypothesis. Raymond Tanter and Manus Midlarsky, "A Theory of Revolution," pp. 264-280.

[61]Peter M. Worsley, The Trumpet Shall Sound: A Study of Cargo Cults in Melanesia, New York, Schocken Books, 1968. (Second, augmented edition.) and "Millenarian Movements in Melanesia," Rhodes-Livingston Institute, vol. 21 (March 1957), pp. 18-31.

[62]Ibid., p. 25.

[63]As calculated from the map in Worsley, The Trumpet shall Sound, thirty-three percent of the movements exhibited marked violence.

[64]Worsley, The Third World, pp. 290-292.

[65]Carl Hovland and Robert R. Sears, "Minor Studies of Aggression: VI. Correlation of Lynchings with Economic Indices," The Journal of Psychology, vol. 9 (1940), pp. 301-310.

[66]Alexander Mintz, "Re-examination of Correlations between Lynchings and Economic Indices," Journal of Abnormal and Social Psychology, vol. 41 (April 1946), p. 155. Despite Mintz's critique, the original study is still favourably cited. John Shelton Reed catalogues its subsequent popularity in John Shelton Reed, "A Note on the Control of Lynching," Public Opinion Quarterly, vol. 28, no. 2 (Summer 1964), pp. 268-269.

[67]Austin, Politics in Ghana, pp. 400-401. In a longer passage Rod Bunker records a similar series of events. See Rod Bunker, "Linkages and the Foreign Policy of Peru, 1958-1966," The Western Political Science Quarterly, vol. 22, no. 2 (June 1969), pp. 285-287.

[68]Henry L. Bretton, The Rise and Fall of Kwame Nkrumah: A Study of Personal Rule in Africa, New York, Frederick A. Praeger, 1966, pp. 15-16, 155. See also Aristide Zolberg, "The Structure of Political Conflict in the New States of Tropical Africa," American Political Science Review, vol. 62, no. 1 (March 1968), pp. 75-76.

[69]Egil Fossum, "Factors Influencing the Occurrence of Military Coup D'Etat," Journal of Peace Research, vol. 4, no. 3 (1967), pp. 228-257. Fossum has been criticized severely and correctly by Hernes. See Gudmund Hernes, "On Rank, Disequilibrium and Military Coups D'Etat," Journal of Peace Research, vol. 7, no. 3 (1969), pp. 65-72.

[70]Fossum, op. cit., p. 236.

[71]Ibid., p. 237.

[72]In his analysis of this later period (1951-1963), Fossum changes his indication of "deterioration year" to a rise or fall in the per capita GNP. He appears then, to accept the proposition that fluctuations in export proceeds and GNP per capita are highly correlated. He does not discuss this, however and assumes significant intercorrelation, when it could have been listed with the data he had available. Unfortunately, he does not present his data on fluctuations in

GNP, nor is the source accessible, so I could not compare them with the trade statistics, which are readily available.

[73] Op. cit., p. 237.

[74] Yearbook of International Trade Statistics: 1967, New York, United Nations Publishing Service, 1967, p. 7.

[75] See Gunnar Mrydal, Asian Drama: An Inquiry into the Poverty of Nations, New York, Random House (Pantheon), 1968, chapter 13 for a discussion of the trade statistics of underdeveloped countries. Oskar Morgenstern demonstrates that the inaccuracies in trade statistics in developed countries can be large however. He stresses the point that error should be estimated not ignored, and warns against "false precision." See Oskar Morgenstern, On the Accuracy of Economic Observations, Princeton, N.J., Princeton University Press, 1963 (Second edition).

[76] G. Udny Yule and M.G. Kendall, An Introduction to the Theory of Statistics, London, Charles Griffin & Company, 1950 (Fourteenth edition), pp. 627-628.

[77] I reanalyzed the Hovland and Sears data using the five year moving averages method described below and found results very similar to those reported by Mintz.

[78] Macbean, Export Instability, p. 36.

[79] The population of countries from which this sample was drawn was defined by membership in the United Nations in 1967 and the availability of trade statistics continuous through 1950-1960 in the United Nations Yearbook of OInternational Trade Statistics, 1967. The more appropriate test would have been to directly compare the values derived by moving averages, with those "log variance" values computed by Coppock. Coppock, International Economic Instability, does present the basic trade data for 1946-1958 but the moving averages method necessitates the loss of two years at the beginning and end of each series. If used on Coppocks data, therefore, the two measures would not be for the same time period.

[80] In some instances a country would not have any losses. Therefore, the losses from export instability impact would be zero. However, because all the variables were transformed ($\log_{10}$) prior to correlation .1 was substituted for the zero value. The distortion introduced is minimal. The $\log_{10}$ transformation "pulled" in extreme scores and brought the distributions closer to normal. The Pearson Product Moment

correlation will be used in the analysis below. Others recommend nonparametric order statistics, however. See Sidney Siegel, Non-Parametric Statistics for the Behavioral Sciences, New York, McGraw-Hill Book Company, 1956. Sanford Labovitz, "The Assignment of Numbers to Rank Order Categories," American Sociological Review, vol. 35, no. 3 (June 1970), pp. 515-24, indicates that for some purposes there is little difference.

[81]For a brief discussion, see Bruce Russett et al., World Handbook of Political and Social Indicators, pp. 149-151; Donald V. McGranahan, "Comparative Social Research in the United Nations," and Erwin K. Scheuch, "Cross National Comparisons Using Aggregate Data: Some Substantive and Methodological Problems," both in Comparing Nations: The Use of Quantitative Data in Cross-National Research, eds. Richard L. Merritt and Stein Rokkan, New Haven and London, Yale University Press, 1966, pp. 525-544 and pp. 131-168, respectively. Also Ashok Mitra, "Underdeveloped Statistics," Economic Development and Cultural Change, vol. II, No. 3, Part I (April 1963), pp. 315-317. Paul Studenski, The Income of Nations: Theory, Measurement and Analysis, New York, New York University Press, 1958 is the definite treatment.

[82]See Morgenstern, On the Accuracy of Economic Observations, pp. 50-61.

[83]Export instability impact values and losses from export instability impact values were computed using three different estimates of GNP. The estimates are for the years 1957, 1960 and 1965. The 1957 estimates can be found in Russett et al., World Handbook of Political and Social Indicators, pp. 152-154. The 1960 and 1965 estimates will appear in the second edition of World Handbook of Political and Social Indicators, New Haven, Yale University Press, 1971 (forthcoming). Mark Zacher provided me with these estimates. The total trade estimates used in the calculation are three year averages, i.e. the 1957 value represents the average of total trade in 1957 and the two adjacent years.

[84]Feierabend and Feierabend, "Aggressive Behaviors Within Polities, 1948-1962"; Feierabend and Feierabend, "Social Change and Political Violence: Cross National Patterns"; Ted Gurr, with and assistance of Ruttenberg, The Conditions of Civil Violence; Ted Gurr, "A Causal Model of Civil Strife"; Ted Gurr, "A Comparative Study of Civil Strife," Violence in America: Historical and Comparative Perspectives, eds. Graham and Gurr, pp. 544-605; R.J. Rummel, "Dimensions of Conflict Behavior Within and Between Nations," General Systems Yearbook, vol. 8 (1963), pp. 1-50; R.J. Rummel, "A Field Theory of Social Action with Application to Conflict Within Nations," General Systems Yearbook, vol. 10 (1965), pp. 183-211; R.J.

Rummel, "Dimensions of Conflict Behavior Within Nations 1946-1959," Journal of Conflict Resolution, vol. 10, no. 1 (March 1966), pp. 65-73; Raymond Tanter, "Dimensions of Conflict Behavior Within Nations, 1955-1960: Turmoil and Internal War," Peace Research Society: Papers 111 (1965), Peace Research Conference (International), Chicago Conference, 1964, pp. 159-183; Raymond Tanter, "Dimensions of Conflict Behavior Within and Between Nations, 1958-1960," Journal of Conflict Resolution, vol. 10, No. 1 (March 1966), pp. 41-64; Herbon Elliott Adams, The Origins of Insurgency, Unpublished Doctoral Dissertation, Department of Operational Research, University of Lancaster, March, 1970.

[85]Tanter, "Dimensions of Conflict Behavior Within Nations, 1955-1960," pp. 159-167 is a major exception.

[86]The conflict data gathered under the auspices of the Dimensionality of Nations Project has been gathered together for more convenient use in Joseph M. Firestone, An Exploration in Systems Analysis of Domestic Conflict, Dimensionality of Nations Project, University of Hawaii, May 1969, Appendix A, mimeo.

[87]Gurr with Ruttenberg, The Conditions of Civil Strife, pp. 40-43 and Gurr, "A Comparative Study of Civil Strife," pp. 600-602.

[88]Feierabend and Feierabend, "Political Violence and Social Change," p. 660.

[89]Gurr with Ruttenberg, op. cit., p. 28.

[90]Ibid., pp. 28-44.

[91]Rummel, "Dimensions of Conflict Behavior Within and Between Nations," pp. 1-50; Rummel, "Dimensions of Conflict Behavior Within Nations, 1946-1959," pp. 65-73; Tanter, "Dimensions of Conflict Behavior Within and Between Nations, 1958-1960," pp. 41-64; Feierabend and Feierabend, "Aggressive Behaviors Within Polities, 1948-1962," pp. 262-269; and Firestone, An Exploration in Systems Analysis of Domestic Conflict.

[92]Ernest A. Duff and John F. McCamant, "Measuring Social and Political Requirements for System Stability in Latin America," American Political Science Review, vol. 62, no. 4 (December 1968), p. 1125.

[93]Gurr, "A Causal Model of Civil Strife," p. 1108.

[94]The classification of press freedom used is described in Raymond B. Nixon, "Freedom in the World Press: A Fresh Approach with New Data," Journalism Quarterly, vol. 42, no. 1 (Winter 1965), pp. 3-14. This is the same classification used by Gurr and the data are for 1965. I took note of the few changes in press freedom Nixon reported since 1960. The values I used are for 1960-1965. See also Raymond B. Nixon, "Factors Related to Freedom in National Press Systems," Journalism Quarterly, vol. 27, no. 1 (Winter 1960), pp. 13-28.

[95]Examination of the "raw" data collected by Adams, The Origins of Insurgency, reveals a large amount of missing data. This is most likely the case with Gurr's data. Whether the missing data are systematically distributed has not been examined. This check should be made in future studies using "event statistics."

[96]See Gurr, "A Comparative Study of Civil Strife," pp. 600-602.

[97]Hanan C. Selvin, "Durkheim's Suicide and Problems of Empirical Research," American Journal of Sociology, vol. 63, no. 4 (1958), p. 611. See also Herbert Hyman, Survey Design and Analysis: Principles, Cases and Procedures, Glencoe, Ill., The Free Press, 1955, pp. 295-327 and Paul F. Lazarsfeld, "Interpretation of Statistical Relations as a Research Operation," The Language of Social Research, eds. Paul F. Lazarsfeld and Morris Rosenberg, New York, The Free Press, 1955, pp. 115-124.

[98]Hayward Alker, Jr. "Regionalism versus Universalism in Comparing Nations," World Handbook of Political and Social Indicators, Russett et al., pp. 322-340. Also Hayward Alker, Jr., "A Typology of Ecological Fallacies," Quantitative Ecological Analysis in the Social Sciences, eds. Mattei Dogan and Stein Rokkan, Cambridge Mass., The M.I.T. Press, 1969, pp. 69-86. The type of political system has also been found to make a difference in the strength and direction of a relationship. See John Wilkenfeld, "Domestic and Foreign Conflict Behavior of Nations," Journal of Peace Research, vol. 12 (1968), pp. 56-69.

[99]Greece was classified as Western or European and instead of "forcing" it into a larger category it was dropped from this analysis.

[100]Bruce M. Russett, International Regions and the International System: A Study in Political Ecology, Chicago, Rand McNally & Company, 1967, pp. 14-58, and "Delineating International Regions," Quantitative International Politics: Insights and Evidence,

ed. J. David Singer, New York, The Free Press, 1968, pp. 317-352.

[101]This seems reasonable because Russett's "Afro-Asia" group, despite its name, contains only three African states: Morocco, Algeria, and Mauritius.

[102]Arthur S. Banks and Robert B. Textor, A Cross-Polity Survey, Cambridge, Mass., The M.I.T. Press, 1963; Arthur S. Banks and Phillip M. Gregg, "Grouping Political Systems: Q-Factor Analysis of A Cross-Polity Survey," American Behavioral Scientist, vol. 9 (November 1965), pp. 3-6.

[103]Because of the small number of cases the centrist countries were not analyzed separately. They were, however, combined with the personalist and elitist countries into a "non-polyarchic" or "closed group.

[104]Op. cit., p. 4.

[105]Gurr with Ruttenberg, The Conditions of Civil Strife, pp. 19-26 and Gurr, "A Comparative Study of Civil Strife," Violence in America, pp. 600-605.

[106]Wilkenfeld, "Domestic and Foreign Conflict Behavior of Nations," pp. 56-69.

[107]Russell H. Fitzgibbon, "Measuring Democratic Change in Latin America," Approaches to Measurement in International Relations: A Non Evangelical Survey, ed. John E. Mueller, New York, Appleton-Century-Crofts, 1969, pp. 253-282. (Originally published in The Journal of Politics, vol. 29 (February 1967), pp. 129-166.)

[108]This position is the same as that put forward by Gold, "Statistical Tests and Substantive Significance," pp. 42-46 and Robert F. Winch and Donald T. Campbell, "Proof? No. Evidence? Yes. The Significance of tests of Significance," The American Sociologist, vol. 4, no. 2 (May 1969), pp. 140-143.

[109]Yule and Kendall, An Introduction to the Theory of Statistics, pp. 310-323.

[110]Ibid., pp. 310-311.

[111]William J. Robinson, "Ecological Correlations and the Behavior of Individuals," American Sociological Review, vol. 15, no. 3 (June 1950), pp. 351-357.

[112]The modification of time in a longitudinal analysis, however, would affect the size of the correlations.

[113]See Donald T. Campbell and Julian C. Stanley, Experimental and Quasi-Experimental Designs for Research, Chicago, Rand McNally, 1963, p. 5.

[114]See notes 81, 82 and 83 above.

[115]Op. cit., pp. 18-19.

[116]Ibid., p. 42.

[117]See Arthur L. Stinchcombe, Construction Social Theories, New York, Harcourt, Brace & World, 1968, pp. 28-38; Hyman, Survey Design and Analysis, pp. 138-311 and Travis Herschi and Hanan C. Selvin, Delinquency Research: An Appraisal of Analytic Methods, New York, The Free Press, 1967, pp. 37-89 and 114-141.

[118]You cannot, of course, prove non spuriousness. There may be another variable responsible for the observed relationship. The point is that the onus is on the investigator to eliminate the plausible sources of spuriousness.

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A P P E N D I C E S

APPENDIX 1

Table 1

Export Instability Losses and Political Violence in Latin and Asian Countries: Correlation Coefficients

Time Lag	Export Instability Losses	Political Violence 1961-1963	Political Violence 1961-1965
	Latin Countries		
None	Mean deviations	0.104 (N = 21)	0.201 (N = 20)
	Mean squared deviations	0.214 (N = 21)	0.228 (N = 20)
1 Year	Mean deviations	-0.117 (N = 21)	-0.176 (N = 21)
	Mean squared deviations	-0.155 (N = 21)	-0.183 (N = 21)
2 Years	Mean deviations	-0.229 (N = 20)	-0.216 (N = 21)
	Mean squared deviations	-0.399 (N = 21)	-0.147 (N = 21)
	Asian Countries		
None	Mean deviations	-0.509 (N = 13)	-0.504 (N = 13)
	Mean squared deviations	-0.415 (N = 13)	-0.405 (N = 13)
1 Year	Mean deviations	0.234 (N = 12)	-0.246 (N = 12)
	Mean squared deviations	0.280 (N = 12)	-0.190 (N = 12)
2 Years	Mean deviations	-0.239 (N = 12)	-0.440 (N = 11)
	Mean squared deviations	-0.184 (N = 12)	-0.400 (N = 11)

Table 2

Export Instability Losses and Political Violence in African Countries: Correlation Coefficients

Time Lag	Export Instability Losses	Political Violence 1961-1963	Political Violence 1961-1965
None	Mean deviations	-0.172 (N = 12)	0.124 (N = 12))
	Mean squared deviations	-0.194 (N = 12)	0.134 (N = 12)
1 Year	Mean deviations	-0.190 (N = 8)	0.314 (N = 7)
	Mean squared deviations	-0.143 (N = 8)	0.409 (N = 7)
2 Years	Mean deviations	0.026 (N = 7)	0.734* (N = 7)
	Mean squared deviations	-0.005 (N = 7)	0.730* (N = 7)

* < .05

APPENDIX 2

Table 1

Export Instability Losses and Political Violence in Elitist Countries: Correlation Coefficients

Time Lag	Export Instability Losses	Political Violence 1961-1963	Political Violence 1961-1965
None	Mean deviations	-0.439 (N = 13)	0.005 (N = 13)
	Mean squared deviations	-0.402 (N = 13)	0.061 (N = 13)
1 Year	Mean deviations	-0.085 (N = 10)	-0.598 (N = 9)
	Mean squared deviations	-0.057 (N = 10)	-0.578 (N = 9)
2 Years	Mean deviations	-0.298 (N = 9)	-0.225 (N = 8)
	Mean squared deviations	-0.321 (N = 9)	-0.149 (N = 8)

APPENDIX 3

Table 1

Export Instability Impact and Political Violence in Latin Countries: Correlation Coefficients

Time Lag	Export Instability Impact	Political Violence 1961-1963	Political Violence 1961-1965
None	Mean deviations		
	1957 (N = 21)	0.148	0.225
	1960 (N = 20)	0.052	0.146
	1965 (N = 21)	0.092	0.139 (N=20)
	Mean squared deviations		
	1957 (N = 21)	0.180	0.247
	1960 (N = 20)	0.106	0.203
	1965 (N = 21)	0.141	0.194
1 Year	Mean deviations		
	1957 (N = 21)	-0.299	-0.050
	1960 (N = 20)	-0.396	-0.172
	1965 (N = 21)	-0.306	-0.073
	Mean squared deviations		
	1957 (N = 21)	-0.311	-0.135
	1960 (N = 20)	-0.399	-0.225
	1965 (N = 21)	-0.318	-0.145
2 Years	Mean deviations		
	1957 (N = 21)	-0.317	-0.024
	1960 (N = 20)	-0.412	-0.170
	1965 (N = 21)	-0.333	-0.054
	Mean squared deviations		
	1957 (N = 21)	-0.322	-0.097
	1960 (N = 20)	-0.408	-0.208
	1965 (N = 21)	-0.333	-0.111

Table 2

Export Instability Impact and Political Violence in Asian Countries: Correlation Coefficients

Time Lag	MeExport Instability Impact	Political Violence 1961-1963	Political Violence 1961-1965
None	Mean deviations		
	1957 (N = 13)	-0.157	-0.053
	1960 (N = 9)	-0.279	-0.152
	1965 (N = 14)	-0.282	-0.256
	Mean squared deviations		
	1957 (N = 13)	-0.279	-0.141
	1960 (N = 9)	-0.448	-0.338
	1965 (N = 13)	-0.375	-0.267
1 Year	Mean deviations		
	1957 (N = 12)	0.403	-0.239
	1960 (N = 9)	0.270	0.219
	1965 (N = 13)	0.285	-0.014
	Mean squared deviations		
	1957 (N = 12)	0.518	0.256
	1960 (N = 9)	0.436	0.287
	1965 (N = 12)	0.437	0.073
2 Years	Mean deviations		
	1957 (N = 12)	0.063	0.094
	1960 (N = 9)	0.161	0.069
	1965 (N = 12)	-0.029	-0.147
	Mean squared deviations		
	1957 (N = 12)	0.175	0.009
	1960 (N = 9)	0.426	-0.015
	1965 (N = 12)	0.112	-0.182

Table 3

Export Instability Impact and Political Violence in African Countries: Correlation Coefficients

Time Lag	Export Instability Impact	Political Violence 1961-1963	Political Violence 1961-1965
None	Mean deviations		
	1957 (N = 9)	-0.104	-0.052
	1965 (N = 12)	-0.173	-0.100
	Mean squared deviations		
	1957 (N = 9)	-0.076	-0.189
	1965 (N = 12)	-0.236	0.006
1 Year	Mean deviations		
	1957 (N = 7)	-0.267	0.416
	1965 (N = 8)	0.490	0.614
	Mean squared deviations		
	1957 (N = 7)	0.380	0.514
	1965 (N = 8)	0.455	0.667*
2 Years	Mean deviations		
	1957 (N = 6)	0.189	0.513
	1965 (N = 7)	0.464	0.819*
	Mean squared deviations		
	1957 (N = 6)	0.338	0.628
	1965 (N = 7)	0.489	0.780*

* < .05

APPENDIX 4

Table 1

Impact of Losses from Export Instability and Political Violence in Latin Countries: Correlation Coefficients

Time Lag	Impact Losses	Political Violence 1961-1963	Political Violence 1961-1965
None	Mean deviations		
	1957 (N = 21)	0.042	0.338 (N=20)
	1960 (N = 20)	-0.053	0.261
	1965 (N = 21)	0.089	0.236 (N=20)
	Mean squared deviations		
	1957 (N = 21)	0.179	0.312
	1960 (N = 20)	0.100	0.263
	1965 (N = 21)	0.141	0.247
1 Year	Mean deviations		
	1957 (N = 21)	-0.037	-0.037
	1960 (N = 20)	-0.069	-0.126
	1965 (N = 21)	-0.045	-0.059
	Mean squared deviations		
	1957 (N = 21)	-0.105	-0.106
	1960 (N = 20)	-0.136	-0.161
	1965 (N = 21)	-0.111	-0.115
2 Years	Mean deviations		
	1957 (N = 21)	-0.284	-0.075
	1960 (N = 20)	-0.236	-0.189
	1965 (N = 21)	-0.298	-0.094
	Mean squared deviations		
	1957 (N = 21)	-0.390	-0.067
	1960 (N = 20)	-0.323	-0.158
	1965 (N = 21)	-0.398	-0.079

Table 2

Impact of Losses from Export Instability and Political Violence in Asian Countries: Correlation Coefficients

Time Lag	Impact Losses	Political Violence 1961-1963	Political Violence 1961-1965
None	Mean deviations		
	1957 (N = 13)	-0.283	-0.158
	1965 (N = 14)	-0.375	-0.354
	Mean squared deviations		
	1957 (N = 13)	-0.327	-0.289
	1965 (N = 14)	-0.413	-0.386
1 Year	Mean deviations		
	1957 (N = 12)	0.005	-0.200
	1965 (N = 13)	-0.011	-0.290
	Mean squared deviations		
	1957 (N = 12)	0.097	-0.181
	1965 (N = 13)	0.091	-0.251
2 Years	Mean deviations		
	1957 (N = 12)	-0.285	-0.231
	1965 (N = 13)	-0.293	-0.379 (N=12)
	Mean squared deviations		
	1957 (N = 12)	-0.258	-0.289
	1965 (N = 13)	-0.253	-0.383 (N=12)