

# ENVIRONMENTAL DETERMINANTS OF OVERSEAS MARKET ENTRY STRATEGIES\*

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This research examines a hypothesis, modified from one originally stated by Isaiah A. Litvak and Peter Banting,<sup>1</sup> concerning the relationship of U.S. companies' entry strategies into overseas country markets and those countries' positions along an environmental "temperature gradient". Although Litvak and Banting's original hypothesis was put forth to explain why international agent middlemen evolve into merchant middlemen, the analytical framework is relevant to explain the evolution of other marketing channel phenomena. The hypothesis is:

A firm will tend to pursue an entry strategy involving greater control over and greater investment in marketing channel activities as the country's environment becomes "hotter" in the Litvak-Banting sense.

("Hot" countries are defined as those which are politically stable; high in market opportunity, economic development and performance, and cultural unity, and low in legal barriers, physiographic barriers and geocultural distance. Definitions of these environmental variables are given in Appendix A).

Apart from the original Litvak and Banting article which has been cited by Lazer<sup>2</sup> as well as Miracle and Albaum<sup>3</sup>, concepts for this project have been gathered from several sources.

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1. Isaiah A. Litvak and Peter M. Banting, "A Conceptual Framework for International Business Arrangements," *Marketing and the New Science of Planning*, ed. Robert L. King (Chicago: American Marketing Association, 1968 Fall Conference Proceedings), pp. 460-467.

2. William A. Lazer, *Marketing Management: A Systems Viewpoint* (New York: John Wiley and Company, 1971), pp. 611-614.

3. Gordon E. Miracle and Gerald S. Albaum, *International Marketing Management* (Homewood, Illinois; Richard D. Irwin, 1971), pp. 397-400, 403-404.

Environmental variables have been selected from those suggested in previous research done by Bartels,<sup>4</sup> Sherbini,<sup>5</sup> Farmer and Richman,<sup>6</sup> Stobaugh,<sup>7</sup> and Rostow.<sup>8</sup> The influence of stages of economic development on channel structure *within countries* has been studied by George Wadinambiaratchi,<sup>9</sup> Susan Douglas,<sup>10</sup> and Reed Moyer.<sup>11</sup> Although channel structure *between countries* is discussed in virtually every international marketing text, empirical analysis of the relationship between the economic, social and political climates of various overseas countries and the international channel strategies pursued by U.S. firms in the respective countries is not readily available.

## METHODOLOGY

Country environmental indicators were gathered from published sources such as Sherbini's comparative analysis,<sup>12</sup> the U.S. Departments of Commerce and State,<sup>13</sup> the United Nations,<sup>14</sup> the International Monetary Fund,<sup>15</sup> and *Business International*<sup>16</sup>) and expert opinion e.g., country specialists from a U.S. Government agency. The countries were grouped through the use of proxy variables representing each of the seven categories

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4. Robert A. Bartels, *Marketing Theory and Metatheory* (Homewood, Illinois: Richard D. Irwin, 1970), Chapter 18, pp. 254-295.

5. A.A. Sherbini, "Classifying and Comparing Countries," in Vern Terpstra, Michael Y. Yoshino and A. A. Sherbini, *Comparative Analysis for International Marketing*, Marketing Science Institute (Boston: Allyn and Bacon, Inc., 1967), Part II, pp. 55-145.

6. Richard N. Farmer and Barry M. Richman, *Comparative Management and Economic Progress* (Homewood, Illinois: Richard D. Irwin, 1965).

7. Robert Stobaugh, "How to Analyze Foreign Investment Climates." *Harvard Business Review* (September-October, 1969), pp. 100-108.

8. Walt W. Rostow, *The Stages of Economic Growth* (Cambridge, England: Cambridge University Press, 1960).

9. George Wadinambiaratchi, "Channels of Distribution in Developing Countries," *The Business Quarterly*, 30 (Winter 1965), pp. 74-82.

10. Susan P. Douglas, "Patterns and Parallels of Marketing Structures in Several Countries," *M.S.U. Business Topics* (Spring 1971), pp. 38-48.

11. Reed Moyer, "The Structure of Markets in Developing Economies," *M.S.U. Business Topics*, 12 (Autumn, 1964), pp. 43-60.

12. Sherbini, *op. cit.*

13. For example, *Economic Trends* for each country published annually by the U.S. Department of Commerce and *Background Notes* for each country published yearly by the U.S. Department of State.

14. For example, the U.N. *Monthly Bulletin of Statistics* and the U.N. *Statistical Yearbook*.

15. Specifically, the IMF *Financial Statistics*.

16. Specifically, the *Indicators of Market Size for 130 Countries* (Published in late 1970 and early 1971).

suggested by Litvak and Banting. A hierarchical clustering computer program was used to “objectively” classify countries into similar groups which lie along a “country temperature continuum.”

Questionnaires were sent to the directors of the international divisions of the 750 sales volume listed in *Fortune*. The purpose was to identify, for each country in which the firm’s major product line is sold, the type of market strategy used by the firm.

These entry strategies include indirect methods, such as sales through outside parties like export-import houses, combination export managers, and piggybacking arrangements; more direct methods, such as having wholly or jointly-owned overseas assembly or production facilities or maintaining permanent overseas sales and distribution facilities; or a combination of the above strategies.

For each of the three clusters of countries (“hot”, “moderate” and “cold”) the U.S. firms’ channel strategies were observed to test the central hypothesis.

## RESULTS

### *Cluster Analysis of Countries*

A cluster analysis program compared the 100 selected countries on the basis of 59 characteristics. Each variable was standardized and given equal weight in a hierarchical grouping process explained in Appendix B. At each stage in the grouping process the two most similar countries (or groups of countries) were clustered together. First there were 100 groups, then 99, 98, 97 and so forth until all countries had been combined into a single group. For each state in the grouping process an information loss function was calculated. Jumps in the information loss function starting with the reduction of our groups to three groups suggested that either three or four groups appear to be “optimal” (at least in a heuristic sense).

To simplify the exposition of their research findings, the writers have chosen the three major clusters of countries. Using the Banting and Litvak nomenclature, the clusters have been designated as “hot”, “moderate”, and “cold” countries. A listing of the countries included in each cluster is presented in Table I. An asterisk identifies the 20 countries which merged with the 30 “coldest” countries when the number of groups was reduced from four to three.

TABLE I  
COUNTRIES BELONGING TO THE THREE MAJOR CLUSTERS  
"HOT" COUNTRIES

Australia	Japan
Austria	New Zealand
Belgium-Luxembourg	Netherlands
Canada	Norway
Denmark	Sweden
France	Switzerland
Iceland	United Kingdom
Italy	West Germany

"MODERATE" COUNTRIES

Kuwait	Barados
Lebanon	Brazil
Malaysia	Chile
Mexico	Colombia
Netherlands Antillies	Costa Rica
Nicaragua	Cyprus
Panama	Dominican Republic
Portugal	Ecuador
Singapore	El Salvador
South Africa	Finland
South Korea	Guatemala
Spain	Guyana
Taiwan	Honduras
Trinidad	Hong Kong
Uruguay	Ireland
Venezuela	Israel
Yougoslavia	Jamaica

"COLD COUNTRIES

Afghanistan	*Libya
*Algeria	Malagasy Republic
Angola	Malawi
*Argentina	*Morocco
*Bolivia	Mozambique
*Burma	Nepal
*Cambodia	Nigeria
Cameroon	*Pakistan
*Ceylon	Paraguay
Congo (Now Zaire)	*Peru
*Egypt (U.A.R.)	*Philippines
Ethiopia	Saudi Arabia
Gabon	Senegal
Ghana	Sierra Leone
Greece	*South Vietnam
Haiti	*Sudan
*India	*Syria
Indonesia	Tanzania
Iran	Thailand
*Iraq	Togo
Ivory Coast	*Tunisia
Jordan	*Turkey
Kenya	Uganda
Laos	Upper Volta
Liberia	Zambia

\*Members of the "warmer" group of "cold" countries—which tend to be more developed economically but less stable politically. Companies preferred more direct marketing routes in these countries than in other "cold" countries.

The first cluster (“hot” countries) is made up of the EEC nations, Austria, Denmark, Iceland, Norway, Sweden, Switzerland, United Kingdom, plus Canada, Australia, New Zealand and Japan. These countries are characterized by very stable governments, relatively few restrictions on foreign investment, temperate climates and cultures similar to the United States.

The second cluster of 34 nations which might be called the moderate countries, contains most of the Caribbean and Latin American countries as well as Finland, Hong Kong, Ireland, Israel, Kuwait, Lebanon, Malaysia, Portugal, Singapore, Spain, South Korea, Taiwan, the Union of South Africa and Yugoslavia.

The third set of 50 nations, which might be called the “cold” countries, consists of all the African countries (save South Africa), most of the Middle East, the Indian subcontinent, most of Southeast Asia, plus Argentina, Bolivia, Haiti, Paraguay, Peru, and Greece.

In general, as one moves from the first to the third cluster, the government becomes less stable, the markets become poorer, the economy becomes less stable, cultural homogeneity declines, legal and geographic barriers go up and cultures become different from the U.S.

What makes the second group unique from the third? Most of the countries in the second group have had a longer period of freedom from foreign domination. Thus, they have had an opportunity to strengthen their economies, to become better educated, and to improve their health and material well-being. Their cultures tend to be more homogeneous—especially with respect to language. They also tend to be geographically closer to the U.S. Many of the countries also require local assembly of goods or local sourcing for purchases of components. (See Table II for a more comprehensive view of the similarities versus the differences among the three clusters).

### *Analysis of Company Market Entry Strategies*

Responses from 250 of the 750 firms in the universe resulted in 222 usable questionnaires which were quite representative of the universe of 750 according to company size and industry.

A frequency distribution of company market entry strategies was calculated for each country as well as for the average country in each of the three clusters. Firms using a combination of strategies in a given country were put into one of three categories:

1. Combination of a majority owned plant with one or more other strategies (i.e. strategies involving strong control and relatively high investment by the parent firm.)
2. Combination of direct export through company owned overseas facilities,\* licensing and/or joint venture with one or more other strategies. (i.e. strategies involving strong to moderate control but relatively modest investment by the parent firm.)
3. Combination of direct export through overseas agents or distributors with indirect export (i.e. strategies involving relatively weak control and little or no investment by the parent firm.)

Before comparing company responses with country clusters, the following observations from the data shed light on market entry behavior which may be unique to larger firms:

1) Large companies do not make extensive use of indirect exporting (i.e., exports through outside parties in the U.S.). Indirect exporting was used at a minimum by one per cent of the 222 companies when going to Canada and at a maximum by about 10 percent when when going to South Vietnam.

2) Minority and/or 50:50 joint ventures as well as licensing are not as popular as majority-owned subsidiaries except in countries like Japan and India where majority ownership is forbidden to foreigners in many industries. Licensing agreements are preferred to joint ventures 2:1 in the "hot" and "moderate" countries and 5:1 in the "cold" countries.

TABLE II  
CLUSTER PROFILES OF THE 59 VARIABLES  
FOR THE "HOT", "MODERATE", AND "COLD" CATEGORIES

VARIABLE	"HOT"	"MODERATE"	"COLD"	TOTAL SAMPLE
Cluster Size	16	34	50	100
<b>A. POLITICAL STABILITY</b>				
X1 Political stability of central government <sup>A</sup>	Extremely stable	Stability depends on key persons.	Government in control despite internal factions.	Government in control despite internal factors.
X2 Years since independence <sup>B</sup>	401	55	35	49
X3 Years under current constitution <sup>B</sup>	537	51	12	80
X4 Type of government <sup>A</sup>	Parliamentary	Parliamentary	Benevolent dictator or revisionist	Coalition-parliament
X5 Military vs. civilian control <sup>A</sup>	Civilian 100%	Civilian 100%	Civilian 72% Military 28%	Civilian 86% Military 14%
X6 Dictatorships? <sup>A</sup>	None	None	46% dictatorships	24% dictatorships
X7 Direction of dominant political party <sup>A</sup>	Conservative	Conservative	Liberal	Liberal
X8 Percent of countries having minor riots, insurrections <sup>A</sup>	25%	44%	46%	42%
X9 Percent of countries having major wars, revolutions <sup>A</sup>	0%	6%	26%	15%
X10 Median number of anti-business pressure function <sup>A</sup>	0	1	1	1
X11 Average annual % increase in population <sup>C</sup>	1.1%	2.5%	2.7%	2.4%

**B. MARKET OPPORTUNITY MEASURES**

X12 Total populationC (in millions)	24,984	10,572	21,641	18,413
X13 Percent adult male literacyC	85.1%	49.6%	22.7%	41.9%
X14 Television/1000D	232	57	11	62
X15 Radios/1000D	310	176	91	155
X16 Telephones/1000D	285	58	13	72
X17 Automobiles/1000D	203	42	16	55
X18 Trucks/1000D	38	13	7	14
X19 Newspapers/1000D	352	123	18	107
X20 GNP annual growth rateC	5.3%	6.3%	7.3%	6.7%
X21 GNP/capitaC	\$2,467	\$782	\$414	\$868

VARIABLE	"HOT"	"MODERATE"	"COLD"	TOTAL SAMPLE
Cluster Size	16	34	50	100

**C. ECONOMIC DEVELOPMENT AND PERFORMANCE MEASURES**

X22 GNP (in billion U.S. dollars)C	\$56,331	\$6,368	\$3,860	\$13,108
X23 Gross private domestic investment as % of GNP	21.5%	17.2%	14.3%	16.4%

TABLE II (Continued)

X24	Average annual % increase in consumer price index <sup>E,C</sup>	5%	18.0%	27.5%	20.5%
X25	Energy consumption per capita as a % of U.S.A. <sup>D</sup>	40.8%	10.3%	5.1%	12.5%
X26	Steel consumption per capita (annual) <sup>D</sup>	.4 metric tons	.07 metric tons	.03 metric tons	.11 metric tons
X27	Cement production per capita (annual) <sup>D</sup>	.5 metric tons	.20 metric tons	.06 metric tons	.18 metric tons
X28	Exports and imports as a % of GNPC	42%	46%	34%	38%
X29	Raw materials as % of exports <sup>C</sup>	38.6%	81.6%	90.5%	79.2%
X30	Male life expectancy at birth <sup>C</sup>	68.5 yrs.	57.4 yrs.	44.6 yrs.	52.8 yrs.
X31	Infant mortality/1000 <sup>C</sup>	21.4 deaths	55.8 deaths	71.2 deaths	58 deaths
X32	Inhabitants/physicians <sup>C</sup>	787	2,256	17,757	9,771
X33	Currency reserves (in billion U.S. \$) <sup>E</sup>	2.7	0.4	0.2	0.7
X34	Trend in 5-year balance of payments <sup>E</sup>	1 year surplus	1 year surplus	2 year deficit	Balance
X35	Currency convertibility <sup>A</sup>	Freely convertible	Less than 10% open/black mkt. differential	Less than 10% open/black mkt. differential	Less than 10% open/black mkt. differential
X36	Development of local capital markets <sup>A</sup>	Open stock exchange	Limited capital market	Limited capital market	Limited capital market

TABLE II (Continued)

VARIABLE	"HOT"	"MODERATE"	"COLD"	TOTAL SAMPLE
Cluster Size	16	34	50	100
<b>D. CULTURAL UNITY MEASURES</b>				
X37 Percent of countries with ethnic homogeneity <sup>F</sup>	50%	47%	28%	38%
X38 Percent of countries with religious homogeneity <sup>F</sup>	93%	71%	54%	66%
X39 Percent of countries with racial homogeneity <sup>F</sup>	100%	41%	82%	71%
X40 Percent of countries with linguistic homogeneity <sup>F</sup>	81%	71%	28%	51%
X41 Percent urban population <sup>C</sup>	61%	42%	19%	34%
<b>E. LEGAL BARRIER MEASURES</b>				
X42 Percent of countries belonging to strong common market <sup>H</sup>	75%	24%	18%	29%
XCapital repatriation policy <sup>A</sup>	Liberal restrictions	Liberal restrictions	Restrictions based on time	Liberal restrictions
X44 Policy towards foreign ownership <sup>A</sup>	100% allowed and welcomed	100% allowed, not welcomed	Some local ownership required	100% allowed, not welcomed
X45 Legal discrimination against foreigners <sup>A</sup>	Equal treatment with locals	Minor restrictions	Some controls on foreigners	Minor restrictions

	Little or no protection	Minor restrictions Some infant industry protection	Considerable infant industry protection	Some infant industry protection
X46 Tariff protection for local industry <sup>A</sup>	0%	15%	30%	20%
X47 Percent of countries expropriating foreign property (1966-71) <sup>A</sup>				
X48 Percent of countries where local content and/or assembly re- quired <sup>A</sup>	6%	38%	10%	19%
X49 Percent of countries with strong price con- trol or anti-trust pro- grams <sup>A</sup>	56%	50%	58%	55%
<b>F. PHYSIOGRAPHIC BAR- RIER MEASURES</b>				
X50 Road density (road kilometers/sq. kilo- meter) <sup>G</sup>	81	25	5	24
X51 Rail density (rail kilometers/sq. kilo- meter) <sup>G</sup>	7	3	0.6	2
X52 Climate <sup>G</sup>	Temperate	Tropical	Tropical	Sub-Tropical
X53 Population/square kilometer <sup>C</sup>		301	37	142
X54 Land area (million sq. kilometers) <sup>C</sup>	1.3	.6	.8	.8
<b>G. GEOCULTURAL DIS- TANCE MEASURES</b>				
X55 Air distance from Chicago to national capital (in miles) <sup>I</sup>	6,325	5,397	8,268	6,981

TABLE II (Continued)

X56	Percent of countries with ocean port <sup>h</sup>	81%	100%	70%	82%
X57	Percent of countries whose primary language is Germanic <sup>j</sup>	85%	29%	0%	13%
X58	Percent of countries whose primary language is Romantic <sup>j</sup>	19%	59%	10%	28%
X59	Percent of countries where Judeo-Protestant culture is predominant <sup>j</sup>	63%	9%	0%	13%
	VARIABLE	"HOT"	"MODERATE"	"COLD"	TOTAL SAMPLE
	Cluster Size	16	34	50	100

- Sources: A. Country specialists at the U.S. Department of Commerce (opinion survey results).  
 B. National Education Association, *Other Lands, Other Peoples* plus recent newspapers.  
 C. United Nations *Statistical Yearbook, Demographic Yearbook and National Accounts Statistics*.  
 D. Business International *Indicators of Market Size for 130 Countries*.  
 E. International Monetary Fund, *International Financial Statistics*.  
 F. Sherbini *et al.*, *Comparative Analysis in International Marketing*.  
 G. *Oxford Economic Atlas of the World*.  
 H. Cateora and Hess, *International Marketing* (revised edition).  
 I. Examination of a world globe.  
 J. Christian Science Monitor, *World Map Series*.

As shown on Table III, the percent of firms having plants in the typical country in each cluster declines as one moves from Cluster I (“Hot” countries) to Cluster III (“Cold” Countries). Moreover, as firms move from Cluster I to Cluster II, firms substitute direct export for local manufacturing. These findings support the Banting-Litvak hypothesis.

As firms move from “Hot” to “Cold” country clusters, they move away from the use of licensees and joint venture partners while they make significantly greater use of strategies involving decreased control over sales such as overseas agents and distributors as well as U.S. based intermediaries.

TABLE III  
PERCENT OF U.S. FIRMS SURVEYED  
USING SELECTED MARKET ENTRY STRATEGIES

Market Entry Strategy	Percent if Firms Using Strategy		
	Average* “Hot” Country	Average* “Moderate” Country	Average* “Cold” Country
Majority-Owned Plant	14.5%	6.1%	1.5%
Combination (Majority owned plants plus other strategies)	11.0	2.9	0.7
Export Via Company-Owned Overseas Channels	19.2	29.9	32.4
Joint Venture	3.0	2.2	0.7
Licensing Agreement	7.6	4.2	3.5
Combination (Export via company-owned channels, joint venture, and/or licensee and/or less direct exporting)	16.4	12.8	10.4
Export Via Overseas Agents or Distributors	24.2	35.6	43.4
Combination (Overseas agents, distributors, indirect exports)	0.9	0.7	0.4
Indirect Export	2.9	5.3	6.4

\*Marketing subsidiaries were included as a form of direct export through company-owned overseas facilities.

\*These percents represent the proportion of U.S. firms employing a particular market entry strategy to a typical country in each respective cluster.

\*Preliminary analysis of the data indicates that the larger companies tend to take more control over market entry strategies in all markets than do smaller firms. In fact, respondents in FORTUNE'S TOP 250 were willing to establish some manufacturing facilities in the “Moderate” cluster whereas most of the remainder of the 750 firms would not. The additional resources of the Top 250 firms make it possible for them to take more risks.

## SIGNIFICANCE OF RESEARCH RESULTS

Despite some limitations in the research which are mentioned below, the findings generally support the Banting-Litvak hypothesis that the extent of investment as well as the degree of control exercised by parent firms over distribution channels in other countries is related to the external environment and that the extent of investment and degree of control declines as the environment becomes less favorable. To further support the hypothesis, the writers found that close to two-thirds (60.9 percent) of the firms in the sample sold their goods in the average "hot" country, somewhat under half (43.3 percent) sold in the average "moderate" country; and slightly over one-third (34.4 percent) sold in the average "cold" country. Thus the external environment not only influences channel selection, it also influences whether a firm chooses to enter a market at all.

The method of analysis focuses on macro as opposed to micro behavior. The researchers looked at market entry strategies of a large group of firms in *groups* of country markets. Then they looked at firms' strategies for individual countries in each of the clusters and derived a "profile" of market entry strategies for each group. There were some rather important exceptions. For example, Mexico, Brazil, Colombia, Venezuela, Spain, and South Africa outranked some of the countries in the majority-owned plant. Japan ranked lower (due obviously to its extensive foreign investment restrictions). Argentina, the Philippines, Peru, and India (all in the "cold" clusters) also have significant numbers of majority owned plants.

This suggests that businessmen vary in the weight they give to variables when making decisions about specific countries. For example, geocultural distance factors like common or familiar language and/or distance from the U.S. may be given higher weights by business decision makers than in the grouping process used in this research.

Moreover, the way businessmen weigh the variables probably changes from situation to situation. For example, local legislation requiring local assembly or local sourcing will constrain the firm to a limited number of international channel options. Variations in channel strategy also occurs because of such factors such as firms' organization and policy, the degree of competition from local manufacturers of substitute products, the extent of the firm's financial resources,\* and the nature of the product.

The social sciences, including the study of international business, have yet to develop invariant laws. The Banting-Litvak hypothesis is an example of a hypothesis which has been developed, but not empirically tested until now. This study has employed a multivariate statistical technique, hierarchical cluster analysis, to empirically examine the hypothesis. The authors feel that such an inductive approach is not only useful in testing current theories in international business, but could also be applied to generate additional theories in this field.

## APPENDIX A

### LITVAK - BANTING ENVIRONMENTAL CHARACTERISTICS AND SELECTED PROXY VARIABLES

- 1) *Political Stability* - "A system of government which permits representation of major segments of its society, enjoys the confidence of its people, generates conditions for continuity of business enterprise, and is sympathetic to private enterprise."

Indicators:

- X1—Index of future political stability expected by U.S. Government country experts (20=stable ranging to 0=unstable).
- X2—Number of years since independence.
- X3—Number of years under current form of government or current constitution.
- X4—Type of Government Parliamentary = 1; Coalition Parliamentary = 2; Benevolent Dictatorship = 3; Dictatorship = 4).
- X5—Military vs. civilian government? (1 = military; 0 = civilian).
- X6—Dictatorship vs. parliamentary government? (1 = dictatorship; 0 = parliamentary).
- X7—Direction of dominant political party (moderate to extremist 1 - 6).
- X8—Minor riots or insurrections in the past five years? (yes = 1; no = 0).
- X9—Major wars or revolutions in the past five years? (yes = 1; no = 0).
- X10—Number of pressure groups which could bring change of government (0 - 7).
- X11—Average annual rate of increase in population over last five years.

- 2) *Market Opportunity* - "A sufficient number of customers with incompletely satisfied needs and the necessary resources with which to satisfy those needs for the product or service in question."

Indicators:

- X12—Total population
- X13—Percent adult male literacy
- X14—Televisions/1000 population
- X15—Radios/1000 population
- X16—Telephones/1000 population
- X17—Automobiles/1000 population
- X18—Trucks/1000 population
- X19—Newspapers/1000 population
- X20—GNP annual growth rate
- X21—GNP/capita

- 3) *Economic Development and Performance* - "The level of a country's economic growth, efficiency, equity and stability, which shape the environment for private enterprise."

Indicators:

- X22—Level of GNP (in U.S. dollars)  
 X23—Gross private domestic as a % of GNP  
 X24—Percent annual inflation (average annual change in consumer price index for past five years)  
 X25—Energy consumption per capita (as a percent of U.S.)  
 X26—Steel consumption per capita  
 X27—Cement production per capita  
 X28—Exports plus imports as a percent of GNP  
 X29—Raw materials as a percent of total exports  
 X30—Male life expectancy at birth  
 X31—Infant mortality rate/1000 births  
 X32—Inhabitants per physician  
 X33—level of currency reserves in U.S. dollars  
 X34—Trend in balance of payments (number of surpluses vs. deficits for past five years)  
 X35—Index of convertibility of currency (20 = freely convertible ranging to 4 = over 100% open/black market differential)  
 X36—Index of development of local capital markets (10 = well developed ranging to 0 = no capital market and capital flight exists)
- 4) *Cultural Unity* - "The values, goals, social relationships and interactions within a country's people in terms of shared heritage, unassailed by competing groups."  
 Indicators:
- X37—Index of number of ethnic groups comprising one percent of population.  
 1 = 1-6 groups; 2 = 7-9 groups; 3 = 10 or more groups)  
 X38—One religion at least 75 percent predominant? (1 = yes; 0 = no)  
 X39—One major racial stock at least 90 percent predominant? (1 = yes; 0 = no)  
 X40—One common language spoken by at least 85 percent of the adult population? (1 = yes; 0 = no)  
 X41—Percent urban population
- 5) *Legal Barriers* - "A proliferation of public measures in the form of laws and regulations which either deliberately or unintentionally restrict or discourage existing business activities and the future environment for private enterprise."  
 Indicators:
- X42—Regional trading group to which country belongs, (1 = member of EEC, EFTA, CACM or Andean Common Market; 0 = not a member of above groups)  
 X43—Index of liberality of laws affecting repatriation of earnings (12 = no restrictions ranging to 0 = no repatriation)  
 X44—Index of policy towards foreign ownership (12 = 100% allowed and welcomed ranging to 0 = no foreign ownership allowed)  
 X45—Index of legal discrimination against foreign investors (12 = foreigners treated equally as locals ranging to 0 = no foreign investment allowed)  
 X46—Index of tariff protection (8 = extensive protection ranging to 2 = little or no protection)  
 X47—Confiscations and expropriations of foreign owned property in past five years? (1 = yes; 0 = no)  
 X48—Laws requiring local assembly and/or local sourcing of components? (1 = yes; 0 = no)  
 X49—Strong price control or antitrust program? (1 = yes; 0 = no)
- 6) *Physiographic Barriers* - "The obstacles to the development of efficient business operations created by the physical landscape or land forms of the country."  
 Indicators:
- X50—Road kilometers per 100 square kilometers  
 X51—Railroad kilometers per 100 square kilometers

X52—Temperate vs. non-temperate climate (1 = temperate; 2 = sub-tropical; 3 = tropical)

X53—Population per square kilometer

X54—Total land area

- 7) *Geocultural Distance* - "Barriers created by geographical separation, cultural disparities between countries and problems of communication resulting from differences in social perspectives, attitudes and language."

Indicators:

X55—Distance (by air) from Chicago (representing center of U.S. business) and capital city of country.

X56—Landlocked or coastal boundaries? (1 = coastal; 0 = landlocked)

X57—Germanic language? (1 = Germanic; 0 = otherwise)

X58—Romance language? (1 = Romance; 0 = otherwise)

X59—Judeo-Protestant culture predominant? (1 = Judeo-Protestant; 0 = Otherwise)

## APPENDIX B

### HIERARCHICAL GROUPING: A NUMERICAL TAXONOMY TECHNIQUE

The central hypothesis asserts that countries lie along a "temperature continuum" and that a firm's market entry strategy for a particular country will be influenced by the country's position on the continuum. The objective of the hierarchical grouping program is to cluster similar countries together with the hope that these clusters would differ in "temperature" from "hot" to "cold."

The grouping problem of numerical taxonomy is essentially the following. Given a set of  $n$  objects (persons, species, countries, etc.), each measured on several variables, one may ask to what extent there exists natural groupings among the objects. Theoretically, an optimum grouping of the objects can be defined for each number of groups from 2 to  $n-1$  which maximizes the average inter-group distance and minimizes the average intra-group distance. However, the computational burden for calculating the optimum grouping from a problem with only 20 objects is prohibitive even with the aid of a computer.

Ward, however, proposed a compromise.<sup>17</sup>

- 1) To reduce the number of groups from  $n$  to  $n-1$  in a manner that would minimize the loss and to repeat the process until the number of groups was systematically reduced from  $n$  to 1, if desired, and
- 2) To evaluate loss in terms of whatever functional relation best expressed an investigator's criterion for grouping.

Thus, Ward's heuristic rule of defining the previous groupings at each stage of the basis for determining the next reduction makes possible a solution which is an approximation of the theoretically optimal solution.

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17. Joe H. Ward, Jr., "Hierarchical Grouping to Optimize an Objective" *Journal of American Statistical Association*, 59, (March, 1963), pp. 236-244.

The choice of a proximity measure as the criterion for grouping from the many available is not an easy one.<sup>18</sup> A popular measure is some form of Euclidean distance. Utilizing the squared Euclidean distance measure as the proximity criteria with the Ward algorithm allows one to compare each country in the sample according to its "profile" across m variables with every other country's "profile". Hence, we can group the countries into their naturally proximate cluster (in n space) according to some loss function.

Given  $x_{ik}$ , where k is the subscript representing the m variables measured for each of the countries (i=1, . . . , n), we can standardize the variables,

$$Z_{ij} = \frac{x_{ij} - \bar{x}_j}{\sigma_j}$$

The Euclidean squared distance between country i and country j measured across m standardized variables can be expressed as

$$\Delta_{ij}^2 = \sum_{k=1}^m (Z_{ik} - Z_{jk})^2$$

The resulting n by n matrix,  $\Delta_{ij}^2$ , is then used to determine which two countries (defined as groups) are most alike vis-a-vis their profiles on the m variables. These two countries (groups) are then combined and the matrix, is then adjusted. The now (n-1) by (n-1) matrix can be re-analyzed to determine which two groups of countries should be combined. The process can be continued in stepwise fashion so that within-cluster variation is minimally increased at each stage until all countries are in a single group.

The sequence through grouping stages of the error-sum-of-squares (within cluster variation) is used to determine the number of clusters that is optimal in a variance (information-loss) sense. Examination of the error-sum-of-squares series (as a function of the number of clusters) reveals the number of clusters at which the slope of the series becomes intolerable in an information-loss sense.<sup>19</sup>

18. Paul E. Green and V. R. Rao, "Note on Proximity Measures and Cluster Analysis", *Journal of Marketing Research*, 6 (August, 1969), pp. 359-364.

19. Donald J. Veldman, *FORTTRAN Programming for the Behavioral Sciences* (New York: Holt, Rinehart, and Winston, 1967), Chapter 12.