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ARMS PRODUCTION IN DEVELOPING NATIONS: THE RELATION TO INDUSTRIAL STRUCTURE, INDUSTRIAL DIVERSIFICATION, AND HUMAN CAPITAL FORMATION

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This paper presents empirical research on physical capital, industrial diversification, and human capital developments in arms-producing and non-arms producing developing nations from the mid-1970s to the mid-1980s. Drawing on data from the United Nations and the World Bank, a close relation between arms production potential and actual arms production is found which evokes concern about policy-directions for successful arms control in the third world. The paper closes with brief reflections on third world arms production incentives.

KEY WORDS: Arms production, developing nations, industrialization

1. INTRODUCTION

In the 1980s, numerous monographs and articles dealing with arms production efforts in the third world and its economic consequences appeared.[1] Exceptions notwithstanding, the majority of scholars conclude that arms production by developing nations does not promote industrialization nor does arms production save foreign exchange by circumventing arms imports (e.g., Ball, 1988, ch. 9).

The purpose of this paper is to solidify, extend, and refine these analyses in three ways. First, to produce arms an adequate industrial structure must already be in place (Ball, 1988, p. 358) and, therefore, increases in arms production activity over the last two decades or so are likely to have been associated with increased LDC industrialization (Wulf, 1983, p. 323). However, to explain, in part, the phenomenon of arms production in developing nations as a consequence of increased industrialization one must also study the industrial development of the "control group", the non-arms producers among developing nations. Thus, this paper compares industrial structure, industrial diversification, and human capital formation of developing nations' arms producers (LDC APs) with developing nations' non-arms producers (LDC NAPs).

The second extension of the literature regards differentiation within the group of LDC APs. Most analyses treat the group of LDC APs as a homogeneous block of countries. That, of course, is inadequate (Chan, 1987, p. 29). This paper differentiates among three groups of arms producers: those that only occasionally tinker in arms production, those that consistently produce arms although on a limited scale and sophistication, and those that produce arms at an advanced level, both in quantity and quality.

1. See, e.g., the edited volumes by Ball and Leitenberg (1983), Katz (1984, 1986), and Brzoska and Ohlson (1986).

Third, in developing nations, military expenditures and arms production efforts vary substantially over time. Unfortunately, most analyses to date rely on cross-sectional, single-year data to study arms production in developing nations. Since time-series data are available for the pertinent variables used in this paper, all analyses are carried out with time-series of about ten years in length, covering the mid-1970s to the mid-1980s.

In light of these extensions, the results of this paper are: (a) even if LDC NAPs had politico-military incentives to produce arms indigenously, in general they do not possess the industrial and human capital background to do so; (b) among LDC APs, one observes a close correspondence between *potential* for arms production and *actual* arms production; i.e., the more developed the industrial structure, the more arms LDC APs produce; and (c) the effective sufficiency condition for arms production by developing nations is economic ability, not politico-military incentive.

The paper proceeds as follows: section 2 assesses the industrial capacity of LDCs from the mid-1970s to the mid-1980s, paying special attention to industries relevant to arms production. Section 3 discusses the industrial diversification within the arms production-relevant industries, also for the mid-1970s to the mid-1980s, and section 4 discusses human capital developments, again for the same time period. Section 5 briefly discusses necessary and sufficient conditions for arms production by developing nations.

Analyses are presented in comparative fashion to parcel out developments in four groups of LDCs identified as AP = 0 (the LDC NAPs), AP = 1 (occasional arms production), AP = 2 (consistent arms production at limited sophistication and quantity), and AP = 3 (sizeable and diversified arms production activities). Since the late 1970s are approximately the mid-point of the time-series data used in this paper, the countries' classification into these four AP-levels is taken from Wulf (1983) whose classification refers to the late 1970s. His group of countries is repeated in Table 1 for convenience.[2]

2. INDUSTRIAL ARMS PRODUCTION POTENTIAL

Table 2 presents the following data and ideas. In order to produce arms domestically, an industrial base is needed. However, according to the United Nations International Standard Industrial Classification (ISIC), "industry" comprises not only manufacturing activities but also extractive industry (mining, quarrying) and utilities (electricity, gas, water). Thus, a more appropriate measure of arms production potential is given by the value share of manufacturing in overall GDP or the value share of manufacturing activity as a percentage of overall industry activity. Still, even "manufacturing" includes many economic activities not relevant to arms production. These include, for example, processing of food, beverages, and tobacco; wood products; production of textiles and footwear; and so on. Thus, Table 2 only presents data on the value share of the arms production-relevant industries as a percentage of the value of all

2. A few classification adjustments were made. For example, data on Taiwan are not consistently available. Also, in my analyses I include Spain as a developing nation and as an arms producer in the first arms production group (AP = 1). In the late 1970s, for example, Spain's GNP and average life expectancy at birth did not differ markedly from those of Israel, Greece, and Singapore, all of which Wulf included in his list of LDC APs (see *World Development Report 1981*, p. 135). Since then, of course, Spain has advanced considerably both economically and as an arms producer.

Table 1 Rank order of major arms producing developing countries

Rank order	*Country*	*AP-Group*	*Rank order*	*Country*	*AP-Group*
1	Israel	3	16	Iran	1
2	India	3	17	Colombia	1
3	Brazil	3	18	Portugal	1
4	Yugoslavia	3	19	Greece	1
5	South Africa	3	20	Peru	1
6	Argentina	3	21	Thailand	1
7	Taiwan	3	22	Venezuela	1
8	South Korea	3	23	Dominican Republic	1
			24	Nigeria	1
9	Philippines	2	25	Mexico	1
10	Turkey	2	26	Malaysia	1
11	Indonesia	2	27	Burma	1
12	Egypt	2	28	Chile	1
13	North Korea	2	29	Saudi Arabia	1
14	Pakistan	2	30	Sudan	1
15	Singapore	2	31	Zimbabwe	1
			32	Libya	1

Source: Wulf (1983, p. 321).
Note: Wulf splits the first group (AP = 3) into two groups, Israel to Yugoslavia and South Africa to South Korea. The AP-Group column is inferred from Wulf's table.

Table 2 Potential Defence Capacity (PDC) index in developing nations by arms production level, 1976–1984

	PDC value share in total manufacturing (%)			
Year	AP = 0	AP = 1	AP = 2	AP = 3
1976	18.91	30.15	30.06	46.26
1977	19.79	31.06	31.19	46.47
1978	17.76	30.90	32.67	46.73
1979	20.73	30.71	34.43	47.22
1980	20.10	32.12	33.27	44.96
1981	19.19	31.49	32.54	47.56
1982	18.85	32.42	34.40	45.96
1983	17.49	31.97	36.16	44.01
1984	15.40	36.92	39.97	47.35
Average	18.69	31.97	33.85	46.28

Source: United Nations Yearbook of Industrial Statistics, 1980 and 1984 for raw data and own calculations.
Note: Data coverage is uneven. See the appendix for the names of countries covered in this table.

manufacturing industries. This measure is referred to as the Potential Defence Capacity (PDC) index.

The relevant industries are industrial and other chemicals (to account for the production potential for explosives and chemical weapons), iron and steel, non-ferrous metals, metal products, electrical and non-electrical machinery, and transportation equipment.[3] The PDC index data reveal that the contribution of the relevant industries

3. With the exception of the chemical industries, these categories were first used by Gavin Kennedy (1974) and then subsequently by Herbert Wulf (1983), Ron Ayres (1983), and Saadet Deger (1986).

to overall manufacturing is minimal (at or below 20 percent) for the group of LDC NAPs (AP = 0); the contribution for groups AP = 1 and AP = 2 is almost twice as high as that for AP = 0 and runs between 30 percent and 40 percent; another drastic increase in contribution is observed for AP = 3 where the arms production relevant industries contribute between 45 percent and 47 percent of manufacturing value. Descriptively, it is readily apparent that the higher is the arms production potential as measured by the PDC index, the higher also is the incidence of quantity and quality of actual arms production. Note in particular that the group of non-arms producing developing nations (LDC NAPs) possesses little industrial capacity to produce arms even if there was politico-military incentive to do so.

3. INDUSTRIAL DIVERSIFICATION OF LDC ARMS PRODUCERS

Table 2 presents an *aggregation* of the value share in total manufacturing of eight arms production-relevant industries. Aggregations are informative (here, that LDC NAPs generally do not possess the industrial potential to indigenously produce arms), but they always also hide information. For example, if country A's value share of the eight arms production-relevant industries in total manufacturing value amounts to 34 percent, one does not know how the 34 percent are distributed across the eight industries. If, for instance, most of the 34 percent is contributed by the transportation sector, then one may conclude that much of the electrical/electronic gear necessary for arms production must be imported. Consequently, import dependencies may be assumed to vary in proportion to the variance of production activities across the arms production-relevant industries. Whereas data on *actual* arms component-import dependencies is not publicly available, it is commonly accepted that the more diversified in quantity and quality is arms production, the less import-dependent is the relevant arms producer. In other words, one would expect that the higher the concentration of production in a few of the arms production-relevant industries, the smaller the quantity of, and the less sophisticated are, the arms produced. Conversely, it is hypothesized that the higher the arms production level (AP = 1 being the lowest, and AP = 3 the highest), the more diversified is the production activity across the arms production-relevant industries.[4]

Table 3 summarizes the research and is organized as follows. Nine ISIC categories (at the three-digit level) are entered column-wise and data for 31 LDC APs row-wise. Each cell entry denotes in how many ISIC sub-categories (at the six-digit level) a country was producing items. For example, the three-digit ISIC code 351 (manufacture of industrial chemicals) consists of 74 sub-categories (at the six-digit level) standing for 74 distinct chemical products. Burma produced in 3 of those 74 sub-categories, Saudi Arabia in 2, and Venezuela in 15.[5]

Computing the simple averages (for each arms production group) of the total number of sub-categories in which countries produce, one obtains an average of 55 (out of 282 or 19.5 percent) for AP = 1 countries, a slightly higher average of 59 (or

4. For an example, limited however to a single country for a single year (Turkey, 1977), see Ron Ayres (1983).

5. The data refer to the full 1975–1984 period. For example, Venezuela produced in 15 out of 74 products in the 351-category for the whole 10-year period. It is very rare that a country commences or ceases production in a sub-category during this time period. In the very few cases where production did not take place for the full ten-year period, production in even one year was counted as if it had taken place in all ten years.

Table 3 LDC arms producers' production in ISIC categories, 1975–1984

	351 (*74*)	*352* (*12*)	*371* (*32*)	*372* (*36*)	*381* (*15*)	*382* (*59*)	*383* (*27*)	*384* (*21*)	*385* (*6*)	*Total* (*282*)
AP = 1										
Libya	0	0	0	0	0	0	0	0	0	0
Saudi Arabia	2	0	1	0	0	0	0	0	0	3
Sudan	0	1	1	0	1	1	1	0	0	5
Dominican Republic	0	3	1	2	1	2	4	0	0	13
Zimbabwe	4	0	5	4	0	0	0	0	0	13
Nigeria	1	2	1	4	1	3	2	3	0	17
Malaysia	3	4	5	2	2	0	3	4	0	23
Burma	3	3	2	2	1	6	9	4	0	30
Thailand	9	2	5	3	1	2	5	4	0	31
Venezuela	15	1	10	6	0	0	1	4	0	37
Peru	11	4	4	9	2	4	3	7	0	44
Iran	8	3	2	7	4	10	8	6	0	48
Chile	21	6	10	8	3	6	11	4	0	69
Greece	26	7	10	14	7	21	15	9	0	109
Mexico	47	5	17	22	0	10	10	7	0	118
Portugal	41	8	16	14	3	27	18	14	0	133
Spain	73	10	30	32	11	48	24	14	4	246
AP = 2										
Singapore	3	3	0	0	0	2	3	2	0	13
North Korea	4	0	3	9	0	0	0	0	0	16
Pakistan	11	4	0	0	0	3	4	6	0	28
Egypt	20	2	14	4	2	4	9	8	0	63
Indonesia	16	7	3	5	5	8	10	9	2	65
Philippines	18	4	9	6	4	9	11	6	1	68
Turkey	39	7	23	16	6	29	19	12	0	160
AP = 3										
Israel	17	3	1	0	1	5	5	5	0	37
South Africa	11	6	18	11	2	5	6	5	0	64
Argentina	18	5	17	10	0	7	4	7	0	68
India	55	8	13	22	3	17	10	12	2	142
South Korea	54	8	21	18	6	28	15	11	4	165
Brazil	62	7	22	31	5	41	20	13	4	205
Yugoslavia	50	8	29	19	9	47	26	20	3	211

Source: United Nations Yearbook of Industrial Statistics, 1984 (Volume II, Commodity Production Statistics, 1975–1984).
Note: ISIC codes
351—Manufacture of industrial chemicals
352—Manufacture of other chemical products
371—Iron and steel basic industries
372—Non-ferrous metal basic industries
381—Manufacture of fabricated metal products, except machinery and equipment
382—Manufacture of machinery except electrical
383—Manufacture of electrical machinery, apparatus, appliances and supplies
384—Manufacture of transport equipment
385—Manufacture of professional and scientific, and measuring and controlling equipment not elsewhere classified, and of photographic and optical goods

21 percent) for AP = 2 countries, and an average of over 127 (or over 45 percent) for the AP = 3 countries. Doubtless, because of the strong PDC-manufacturing position of Greece, Portugal, Mexico, and, in particular, Spain, the average for the AP = 1 countries is pulled up considerably. These four countries account for almost two-thirds of the total number of sub-categories in which the AP = 1 countries produce. The AP = 1 average falls to about 26 (or just over 9 percent) when the data for these countries are excluded.

The AP = 2 group, too, shows a disparate mixture of industrial ability in the PDC sectors where both Singapore's and Turkey's positions surprise (the AP = 2 average falls to 42, or about 15 percent, when data for Turkey are excluded). In group AP = 3, the data show that Israel, South Africa, and Argentina are unequal peers with the other members of the AP = 3 group whose industrial production appears substantially more diversified. South Africa and Argentina are on about the same manufacturing level as are Egypt, Indonesia, the Philippines, and Chile; and Israel shares, counting from the bottom (i.e., the least diversified economies) rank 13 (out of 31) with Venezuela. Note that India occupies the sixth-highest rank (after Spain, Yugoslavia, Brazil, South Korea, and Turkey, in that order).

I also tested statistically whether the differences among the three groups of LDC APs are likely due to chance. All LDC APs in Table 3 are ranked (HIGH–LOW of TOTAL column) and the Kruskal–Wallis *H*-statistic, which is distributed as a chi-square, is computed.[6] The test statistic has a value of H = 6.4933 and thus exceeds the critical value (at the five percent level of statistical significance) of 5.99. One may therefore conclude that the differences among the group averages of (AP = 1) = 55, (AP = 2) = 59, and (AP = 3) = 127 are likely not due to chance but systematic. In particular, the statistical significance of the *H*-statistic is due to the advanced position of the AP = 3 group. As was the case in Table 2, note that once again the averages for the AP = 1 and AP = 2 groups are close together whereas the AP = 3 group stands distinctly apart.

It is clear that—in the AP = 1 group—Mexico and the three European countries could produce more weapons than they do. So could Turkey (in AP = 2), and arms production data for the late 1980s indicate that Turkey has made use of its increased industrial potential to produce more arms domestically, as have Greece, Portugal, and Spain (see, e.g., Defense Marketing Services, Inc., 1986). In contrast, in the AP = 3 group, Israel, South Africa, and Argentina apparently strain their industrial resources and abilities. These findings are consistent with descriptive country-study reports, such as those referred to earlier. The missing inter-industry link suggests that the opportunity cost of domestic arms production in these countries is high. Note, however, that these three countries' governments have had internally compelling politico-military incentives to produce arms.

Note also that the major LDC arms producers are not necessarily "open economies". Yugoslavia and India, but also Brazil, are well-known for their planned or interventionist rather than market-oriented economies. Neither are the major LDC APs necessarily "big" economies. Economies of scale and welcome domestic economic effects are realized not necessarily on account of size but on account of a well-integrated and diversified economy. The economies of scale argument (Neuman, 1984) is perhaps falsely transferred from its microeconomic origin to the macroeconomic scene. Austria, Belgium, and the Netherlands, like Singapore, Greece, and Taiwan, are "small" economies and yet arms production takes place successfully, in part because these economies are well-integrated into domestic and foreign markets.

4. HUMAN CAPITAL DEVELOPMENT

Not only is the installation of physical plant a prerequisite to arms production, but so is

6. For a simple explanation of the Kruskal–Wallis *H*-statistic and its use, see, e.g., Robert S. Witte (1985, pp. 284–288).

human skill. The data for this section are drawn from the issues of the World Bank's *World Development Reports* (1978–1987) and cover enrollments in primary, secondary, and tertiary educational institutions (see Table 4). The country groups are defined as in the previous sections.[7]

Primary school enrollment in LDC NAPs lags about 25 years behind that of LDC APs. Whereas LDC APs now have achieved 100 percent primary school enrollment, in LDC NAPs 20 percent of the primary school-age children still are not enrolled.

Doubtless, the manufacturing sector frequently necessitates skills at least equal to secondary education and often to completed post-secondary degree work. Here, however, the picture worsens dramatically for the LDC NAPs. Whereas in 1960 the difference in secondary school enrollment figures between AP = 0 and AP = 3 stood at about 5 percent, it *increased* to over 17 percent by 1975 and remained at that level until 1984. In fact, the differences become larger as one moves to AP = 2 and AP = 3. The same diverging trend is observed for differences between the combined AP = 1 and AP = 2 groups (whose data largely move in tandem) as compared to AP = 3. In 1960 the enrollment difference for secondary education was about 12 percent; by 1984 it had increased to over 15 percent.

The differences become even more dramatic as regards higher, or post-secondary, education. Again, the data for AP = 1 and AP = 2 generally move together and are intertwined since the mid-1970s whereas those for LDC NAPs (AP = 0) lie substantively below, and those for AP = 3 substantially above those of AP = 1 and AP = 2. And again, the time trends demonstrate that relative to the combined AP = 1 and AP = 2 group, the education picture worsens for AP = 0; but the data for the AP = 3 group of countries are increasingly diverging away from all other groups.

5. CONCLUSION AND DISCUSSION

Industrial and human capital are necessary but not sufficient conditions for third world (or any) arms production. Countries' *ability* to produce armaments indigenously has to combine with *incentive* to produce weapons. For arms production to take place, ability and incentive individually are necessary, and jointly they are sufficient. But what is striking to observe is that in the period under consideration "incentive" can mostly be presumed so that the sufficiency condition for indigenous arms production efforts of developing nations becomes almost entirely a question of economic ability.

This observation is drawn from an examination of Table 5. There, Spearman's rank correlation coefficient between Wulf's listing of actual arms production rank (from Table 1) and my listing of rank of arms production potential (from Table 3) is 0.65 ($p < 0.01$). Exceptions notwithstanding, where there is the ability to produce arms, there one also finds actual arms production commensurate with ability. But why would arms production potential translate so closely into actual arms production, unless arms production incentives can be presumed? Hence my claim that economic ability becomes the effective sufficiency condition for arms production. Indeed, if one were to

7. Enrollment data are treated here as sufficient proxies to measure human capital. Although it is preferable to collect data on the number of scientists, engineers, technicians, and so on in arms production-relevant industries, earlier work by Wulf (1983) employing such measure has revealed substantial data gaps. Additionally, it is not clear that the proxy chosen here is inferior to Wulf's incomplete and therefore restricting measure.

Table 4 Education data for LDC arms producers

Primary school attendance (as % of age group)				
Year	*AP = 0*	*AP = 1*	*AP = 2*	*AP = 3*
1960	52.65	80.72	74.17	88.25
1965	61.58	76.33	84.33	96.43
1975	72.61	93.67	87.33	100.57*
1976	76.36	95.67	87.17	101.83
1977	76.60	99.35	90.17	98.29
1978	75.42	97.50	93.00	97.33
1979	78.47	99.94	92.57	97.17
1980	80.53	102.28	95.00	97.83
1981	80.85	102.11	94.86	98.67
1982	80.97	101.29	93.00	98.33
1983	80.02	103.29	98.50	99.00
1984	81.16	103.24	96.50	99.17
Secondary school attendance (as % of age group)				
Year	*AP = 0*	*AP = 1*	*AP = 2*	*AP = 3*
1960	8.50	13.83	17.50	27.75
1965	12.33	20.50	25.33	33.43
1975	20.16	37.33	35.33	50.00
1976	22.90	40.50	36.50	43.17
1977	23.29	41.94	39,67	57.71
1978	25.56	40.72	40.00	52.83
1979	25.88	42.33	37.00	56.83
1980	27.87	43.11	41.67	59.17
1981	28.42	45.11	44.83	60.50
1982	28.84	45.11	45.00	61.00
1983	28.72	47.94	46.83	64.17
1984	30.61	47.88	48.17	63.50
Higher education (as % of 20–24 year olds)				
Year	*AP = 0*	*AP = 1*	*AP = 2*	*AP = 3*
1960	1.63	2.11	4.83	5.75
1965	2.05	3.44	7.17	9.14
1975	4.02	8.29	8.83	14.43
1976	4.35	9.41	9.83	16.43
1977	4.85	8.59	9.83	18.17
1978	5.60	10.00	10.67	17.00
1979	5.81	9.86	11.20	17.83
1980	—	—	—	—
1981	6.07	10.75	9.83	18.50
1982	6.28	11.00	10.83	20.17
1983	6.04	11.50	11.17	20.50
1984	6.16	12.22	13.33	21.50

Source: *World Development Reports*, 1978–1987 for raw data and own calculations.

Note: * One hundred percent enrollment of relevant age group is exceeded when children outside the age group enroll. See the appendix for names of countries covered. Data availability is uneven for a number of these countries.

argue that the first nine ranked countries in Table 5 (Yugoslavia to Chile) might be fairly described as containing the bulk of the newly industrializing countries among the arms producers (NIC APs) and the remainder largely as non-NIC APs, then the correspondence between potential for arms production (ability) and actual arms

Table 5 Rank comparison of actual *versus* potential arms production

	Actual		*Potential*	
Country name	*Rank from Table 1*	*Arms production group*	*Total score from Table 4*	*Rank from Table 3*
Spain	N/A	1*	246	1
Yugoslavia	4	3	211	2
Brazil	3	3	205	3
South Korea	8	3	165	4
Turkey	10	2	160	5
India	2	3	142	6
Portugal	18	1	133	7
Mexico	25	1	118	8
Greece	19	1	109	9
Chile	28	1	69	10
Argentina	6	3	68	11.5
Philippines	6	2	68	11.5
Indonesia	11	2	65	13
South Africa	5	3	64	14
Egypt	12	2	63	15
Iran	16	1	48	16
Peru	20	1	44	17
Israel	1	3	37	18.5
Venezuela	22	1	37	18.5
Thailand	21	1	31	20
Burma	27	1	30	21
Pakistan	14	2	28	22
Malaysia	26	1	23	23
Nigeria	24	1	17	24
North Korea	13	2	16	25
Dominican Republic	23	1	13	27
Singapore	15	2	13	27
Zimbabwe	31	1	13	27
Sudan	30	1	5	29
Saudi Arabia	29	1	3	30
Libya	32	1	0	31

Note: * Data for Taiwan was not available; Wulf did not include Spain.

production (incentive) is even stronger ($r = 0.80$ and $p < 0.01$ for NIC APs; $r = 0.78$ and $p < 0.01$ for non-NIC APs). Again, ability to produce arms appears to translate smoothly into actual arms production, so that arms production incentives may be presumed.

As regards policy-implications, therefore, it would appear that with progressing third world industrialization, armament limitation efforts should be concentrated on arms production incentives so as to interrupt the smooth transmission from incentive to actual production via arms production ability, for whereas in the past "incentives" lacked the translating power of "ability", during the 1970s and 1980s this has changed. Here, however, one needs to understand that whereas arms production ability is almost entirely a question of economics only, the arms production incentive can be a manifold combination of its politico-military (e.g., Peleg, 1980), cultural (Payne, 1989), and economic (Brauer, 1990) aspects each of which may need to be addressed differently. During the Iran–Iraq war, for instance, a number of developing nations (e.g., China,

Taiwan, and Brazil) produced and exported arms to the contestants for overt economic motives.

In the past, scholars have tended to address the economic impact of developing nations' arms production ventures (e.g., Deger, 1986). But in light of this paper's findings, I believe that the study of the generally acknowledged negative economy-wide *outcome* of military expenditures in general and arms production in particular could be fruitfully complemented by an exploration of the economic *incentives* for third world arms production.

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APPENDIX
(COUNTRY COVERAGE FOR TABLES 2 AND 4)

Table 2

AP = 0: Afghanistan, Bangladesh, Bolivia, Botswana, C.A.R., Costa Rica, Ivory Coast, Cuba, Ecuador, El Salvador, Ethiopia, Gambia, Ghana, Guatemala, Hong Kong, Jordan, Kenya, Kuwait, Madagascar, Malawi, Mauritius, Nicaragua, Niger, Panama, Papua New Guinea, Rwanda, Seychelles, Somalia, Spain, Sri Lanka, Swaziland, Tunisia, and Uruguay.

AP = 1: Chile, Colombia, Dominican Republic, Greece, Iran, Malaysia, Mexico, Peru, Portugal, Venezuela, and Zimbabwe.

AP = 2: Egypt, Indonesia, Philippines, Singapore, and Turkey.

AP = 3: Brazil, India, Israel, South Africa, South Korea, and Yugoslavia.

Table 4

AP = 0: Afghanistan, Albania, Algeria, Angola, Bangladesh, Benin, Bolivia, Botswana, Burkina Faso, Burundi, Cameroon, C.A.R., Chad, Congo, Costa Rica, Cuba, Ecuador, El Salvador, Ethiopia, Ghana, Guatemala, Guinea, Haiti, Honduras, Iraq, Ivory Coast, Jamaica, Jordan, Kampuchea, Kenya, Kuwait, Laos, Lebanon, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mauritius, Morocco, Mozambique, Nepal, Nicaragua, Niger, Oman, Panama, Papua New Guinea, Paraguay, Rwanda, Senegal, Sierra Leone, Somalia, Sri Lanka, Syria, Tanzania, Togo, Trinidad and Tobago, Tunisia, United Arab Emirates, Uganda, Uruguay, Vietnam, Yemen PDR (Aden), Yemen (Saana), Zaire, and Zambia.

AP = 1: Burma, Chile, Colombia, Dominican Republic, Greece, Iran, Libya, Malaysia, Mexico, Nigeria, Peru, Portugal, Saudi Arabia, Spain, Sudan, Thailand, Venezuela, and Zimbabwe.

AP = 2: Egypt, Indonesia, North Korea, Pakistan, Singapore, Philippines, and Turkey.

AP = 3: Argentina, South Africa, South Korea, Taiwan, Brazil, India, Israel, and Yugoslavia.