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The Correlates of Arms Importation

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The Correlates of Arms Importation*

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The Correlates of Arms Importation

Introduction

Why do countries import arms? This seemingly simple and basic question of international security policy is in reality quite complicated. It is one of those questions for which we think we know the answer-- to fight wars; to deter opponents; to satisfy military interests-- but which begins to dissolve into many smaller questions as we attempt an answer. Why do countries import arms at all? Or why do they import as opposed to producing weapons indigenously? Or why do they import as opposed to foregoing military buildup? Why do they import some types of arms and not others? Why do they prefer or choose arms from certain suppliers as opposed to others? Why do they import new as opposed to second-hand arms? All these qualifying questions reveal the variety of arms transfer options, reflecting diverse motives for and perspectives on the acquisition of arms.

Such complexity recently has been seen in the Japanese decision to purchase high performance U.S. jet fighters rather than develop the next generation of Japan's own aircraft. Japan has manufactured U.S. designed aircraft for years. Despite strong military preferences for a domestic design, the Japanese decision to continue seems to have been conditioned in part by Washington's intense pressure to "buy American," pressure associated with the entire trade and protectionism controversy. Such factors may be somewhat peculiar to the close Japanese-American trade and strategic relationship, but various sorts of interdependencies exist among other arms supplier and purchasing states, and must be considered in explanations of arms imports.

Other factors impinging on import decisions, discovered in a prior study of selected arms importers, include: (1) desires to build domestic arms industries, and to use foreign imports as a stimulus for technological advancement and licensed production of foreign designs; (2) economic development prospects and wealth (often oil wealth) in

facilitating arms purchases and generous credits to finance them; (3) strategic relationships and patronage arrangements between supplier and client states; (4) and the impact of threat perception and foreign conflicts. The existence of a military government or foreign military presence in the country seemed somewhat less important in driving arms transfers.

Selection of the type of weapon to purchase has depended primarily on ability to pay, on armed force size and influence, and on alliance involvements (e.g., chief ally's resupply pressures, regional defense role, etc.) as well as threat perception and redefinition. The size of the country being defended, available skilled personnel, and bureaucratic politics influence the choices of products as well. Generally, the twenty leading arms importing nations in the early 1980s nearly all were involved in foreign disputes and/or combat during the period, often had serious domestic disturbances, and usually had a foreign patron assisting in arms purchases through credits and aid.¹

The desire to limit dependency on given suppliers recently has led to greater diversification of arms supply patterns, with concerted efforts to play suppliers off against each other (increased supplier competition has generated a "buyer's market"). Again, available wealth facilitates such diversification.²

Using Africa as an example, arms received during wars generally seem to have been procured to replenish losses from prior major battles rather than to facilitate immediate offensives. Offensives often are staged with weapons received well in advance of combat initiation. Combat resupply frequently has favored the defending state, allowing it to repel an initial onslaught, but not necessarily to conquer its opponent's territory. For example, in Africa most states under attack have been able to find sufficient arms supplies, although seldom of "state of the art" weaponry. Attacking states generally have found it more difficult to gain foreign arms backing. Arms supplies to Third World states also frequently have been precursors of direct combat intervention by the supplier on behalf of the recipient state.³

Prior analyses of arms importer preferences, then, have focused on case studies of particular countries, such as India or Indonesia, on regions such as Africa, on the overall buyer's market, and on opportunity costs when debt-ridden Third World states concentrate their expenditures on weapons acquisition.⁴ Neglected in the process has been systematic consideration of factors correlated with and explaining arms import levels, factors of politics, economics, geo-strategy, and military influence, along with national characteristics and conflict involvements. With the myriad of potentially influential variables, it is important to sort those with the greatest impact on weapons acquisition.

A Regression Model

As an initial step in the development of an explanatory model for arms importation, a group of potentially influential variables are examined here in a regression analysis. Among the factors hypothesized to be associated with weapons imports are the following:

1. National characteristics such as geographical area and population-- since countries with more area to defend presumably need more and different sorts of weapons than smaller countries, especially if manpower levels are lower due to smaller populations (as has been argued about states such as Norway and Australia).
2. Governmental characteristics such as regime type-- with the assumption that military regimes are more sympathetic to defense procurement requests than are democratic regimes.
3. Military characteristics such as defense expenditure levels, number of military personnel, and nuclear weapon status-- assuming that larger military establishments and greater spending generate greater and more effective demands for advanced imported weaponry, but also that nuclear weapon capabilities to an extent offset the perceived need for conventional weapons.
4. Economic characteristics, such as levels of national wealth, international trade, technological development, and indigenous defense production capabilities-- with

the assumption that wealth and trade increase the ability and demand to import weapons, while technological and production capabilities obviate the need to do so.

5. Foreign or domestic conflict involvement, including war involvement-- assuming that greater involvements generate the need for more weapons.

6. Alignment patterns, including alliance orientation--since alliance entanglements and commitments can increase the need for foreign weapons procurement. In this connection, the presence of foreign military bases also can either increase or decrease the need for military buildups.

Each of these sets of variables will be associated with levels of arms importation in linear regression analyses across all countries in the world for a time period covering the late 1970s and early 1980s (because this is the universe of countries in the world or by region, statistical tests are not exactly in order, but will be included in the analysis for indications of the relative strength of findings). The dependent variable will be operationalized alternatively as the percentage of each country's share of world arms imports from 1977 to 1980, and each country's total arms imports from 1981 to 1983.

Independent variables, from each of the six groups above, will be operationalized as follows: (1) geographical area in thousands of square kilometers, and population in millions in the mid-1980s; (2) presence of either a military or parliamentary regime in mid-1982; (3) military expenditure as a percentage of GNP in 1977 (as a measure of effort to build the military); military expenditure in 1981 in millions of U.S. dollars, and 1981 military expenditures as a percentage of population (also measures of military resources and effort); thousands of military personnel in mid-1982; and nuclear weapon status (ranging from no capability, to capable, to serious risk or suspicion, to possession of nuclear weapons) in 1982; (4) per capita GNP in 1977 (as a measure of national wealth); total foreign trade from 1977 to '80; and indigenous arms production capability in 1979-80 (scored in a range from no capability, to some arms produced, to some major weapons produced and a rank in the top 32 countries, to at least five types of major weapons

produced or design capability demonstrated); (5) presence of a proximate regional international war or intervention between 1975 and 1980 (involving the country itself or neighboring countries); total years at war (foreign and domestic) from 1945 to 1982; number of foreign wars fought from 1945 to 1982; and whether or not the country was at war (foreign or domestic) in 1982; (6) alignment as either a client or ally of the U.S. or U.S.S.R., as opposed to non-alignment in mid-1982; and presence of foreign military bases in mid-1982.⁵ Since several of these variables are scaled ordinally, the regression models will include "dummy" variables reflecting different ordinal categories for a given phenomenon.⁶ In order to control for skewness of the arms import variable, regressions are run both for the import totals themselves and for their logarithmic transformations.

Arms imports were regressed on each cluster of variables in turn, with due notation of and efforts to minimize multi-collinearity. Then the most influential independent variables were identified and included in a final regression model. Alternatively, the entire correlation matrix for the study was examined for all countries and by regions to identify the variables most closely associated with arms import rankings in the late 1970s and totals in the early 1980s, and these were included in the "best" regression models.

Findings

Tables 1 and 2 show that national characteristics such as area and population have very little influence, in the aggregate, on weapons import patterns in either period. Given the potentially complicated defense problems of larger countries, geographic area has a very slight positive impact on imports. Governmental characteristics such as the presence of parliamentary or military regimes also have little impact, although surprisingly, military regimes seem to have a slightly dampening effect on the acquisition of foreign arms.

The cluster with the largest evident impact on both arms import measures consisted of military variables, especially budgetary expenditures and nuclear status-- the latter

presumably indicating level of military technology and aspirations. Increasing nuclear status, therefore, does not appear to obviate the demand for conventional weapons, nor do conventional weapons imports necessarily dampen nuclear developments. In particular, countries spending over ten percent of their GNP on the military and those judged to be on the verge of developing nuclear weapons were prone to considerably higher levels of arms imports in both periods than states at low levels of expenditure or either low or very high nuclear weapon capability. Size of the military and aggregate military spending levels had somewhat less impact on imports. This relatively simple model explained approximately a third of the variance in 1970s import rankings, and slightly more than one third in the 1980s. It would appear that there are certain ambitious states seeking to enhance their regional and military influence, which devote considerable percentages of their resources to military buildups both in the conventional and potentially in the nuclear spheres, and these appear to acquire the most foreign military hardware.

Factors of economic wealth had perhaps less direct overall impact on arms purchases than one might have predicted given all the talk of petro-dollars in the weapons market. Still, though, when dependent variables are logged, this cluster, consisting of foreign trade and indigenous arms production capabilities, explained roughly 15 percent of variance. These findings indicate that states' ability to produce weapons does not necessarily lessen their desires or needs to import weapons or parts for them. High levels of per capita GNP (over \$3000 annually) also showed up as significant (and highly correlated with trade).

Foreign trade levels themselves, then, explained about four percent of arms import variance in the 1970s and 1980s. However, changes in trade had only minute influence on levels of arms imports (as judged by regression coefficients) in both periods. On the whole, trade pressures such as those experienced by the US and Japan, evidently did not rebound very forcefully into the arms sphere.

The conflict cluster explained less than ten percent of arms import variance, although more for the 1980s than the 1970s. It appears that the mushrooming of "brushfire" wars in the Third World began to have a more direct effect in the 1980s on the demand for weapons, presumably for replenishment. Arms imports in both the 1970s and 1980s were related at least somewhat to states being at war (foreign or domestic in 1982), and regionally proximate war or intervention stimulated arms imports as well in the 1980s. Also, among those 60 countries for which data on participation in foreign wars were available, the existence of regionally proximate wars in the late 1970s helped explain about ten percent of the variance in arms imports. Total years at war (domestic and foreign) since 1945 had little effect on weapons acquisition.

Finally, variables representing foreign policy orientation as a separate group also had effects on arms acquisition about equal to those of economic variables (up to about 15 percent of variance). The variable representing a state's client status vis a vis a major power (pro-East or pro-West but not a "core" ally) tended to diminish otherwise expected levels of arms purchases, as compared to non-aligned or core alliance status. Hosting foreign military bases tended to increase import levels somewhat as well, probably reflecting the impact of alliance politics.

Analysis of these clusters gives an initial indication of which variables are most important in accounting for arms imports. Some of these, and particularly the militarization and foreign policy alignment variables, are reflected in the overall "best" equations for arms imports in the 1970s and '80s presented in Table 3. The combination of high levels of military expenditure effort (as a percent of GNP or of population), along with recognized nuclear weapon potential, the presence of foreign military bases in the country along with some indigenous weapons production tended to increase import levels in the 1970s and 80s, while low levels of military spending and major power client status tended to dampen the tendency to import arms. Roughly forty percent of variance was accounted for. High levels of wealth joined those factors tending to increase arms

acquisition levels in the 1980s, as petro-dollars made their impact on the arms trade. Conflict involvement variables did not measurably improve the predictive powers of these equations. Therefore, a combination of military spending and ambition, national wealth, and foreign policy alignment appear to be the main predictors of weapons import levels.

We might ask about the roughly sixty percent of variance not accounted for in these models. Judging by the high correlation between arms import levels in the 1970s and 80s ($r \approx .70$), it would appear that weapons acquisition is especially subject to inertial patterns, whereby past purchases and commitments strongly condition future procurement. When 1970s arms import levels are added to the final regression model (Table 3), the variance explained in 1980s import totals jumps to more than 60 percent. The main predictors of arms imports in the 1980s have been prior import levels and high levels of military expenditure as a percent of GNP, along with the dampening effect of client status.

Additional variance in arms imports also could conceivably be explained by such factors as domestic political and bureaucratic struggles, overall economic productivity, armed forces' procurement cycles, prices and terms on offer, military doctrinal shifts, and regional politics. In an effort to gauge the latter possibility, separate analyses (dependent variables logged) were run by region (Tables 4-8). Certain variables of little significance in the global analysis showed up more emphatically in various regions.

For 22 Latin American and Caribbean countries, the variables with the most distinct impact on arms imports were size of the military (for 1970s imports), and levels of military expenditure and being at war in the 1980s. These variables especially reflected the position of the most war prone Latin states, e.g., Argentina, Cuba, and Chile. The models explained roughly 50 percent of variance in each period. This increased to approximately 70 percent when 1970s arms import levels were added to the model, along with the dampening effects of having a military government in the 1980s (Brazil's reported arms imports were less than Colombia's and Cuba's in the early 80s, perhaps

reflecting the absorption of indigenous Brazilian weapons). Among other variables closely correlated with those in the model were: high levels of indigenous weapons production, military expenditure percentages, nuclear risk potential, population and foreign trade levels.

The pattern varied somewhat in the Middle East, although overall military spending levels (reflected in 1981) again were important in explaining arms imports by the 21 countries. The risk or suspicion of nuclear potential appeared among the most important variables in predicting import levels in both periods. Because Libya was judged by those gathering the data as a nuclear risk, its profile is seen here along with likes of Israel, Iraq, Iran, Egypt, and others. In addition to the 30-40 percent of variance explained by these variables, foreign trade levels also correlated significantly with 1970s arms imports, perhaps reflecting the impact of oil exports. Established arms purchasing relations were crucial in the Middle East as in Latin America, since prior arms imports alone accounted for 70 percent of variance in 1980s imports. Among other important variables related to these were whether the Middle Eastern country was involved in war in 1982, particularly implicating Iran, Iraq, and Libya, the size of its armed forces, and its geographical area.

It was not quite as easy to find particular impetus for Asian and Pacific arms imports partly because of the diversity of the 21 states included. Over 60 percent of variance was accounted for by negative, dampening factors such as beginning levels of indigenous arms production and relatively low military expenditure levels. Again, there was great carry-over in arms import patterns, as 1970s imports alone explained three quarters of the variance in 1980s imports. Variables correlated with Asian arms imports, which did not show up in the best-fit regressions, included nuclear risk potential, military government, high levels of indigenous arms production, and foreign trade. Arms importing states such as India, China, South Korea, Taiwan, Vietnam, Indonesia, and Pakistan led the way on certain of these criteria.

For 31 sub-Saharan African states, the huge impact of South Africa's security policy seemed reflected in the models. Approximately 40 percent of variance in arms imports was accounted for by size of military forces, years at war since 1945, and high per capita GNP. The latter related to the reported reduction of South African imports to only five million dollars in the early 1980s, as indigenous weapons came on line. There was, therefore, greater variation between 1970s and 1980s arms import levels in Africa than in other regions, as 1970s imports, together with per capita GNP, accounted for less than 60 percent of variance. Other variables closely associated with those predicting arms imports were population size, emerging indigenous weapons production capacity, nuclear risk potential (South Africa), being at war in 1982, weapons production capacity, low and moderate GNP (with low levels restricting imports). It seems that the largest and most militarily ambitious states managed to import the bulk of regional arms.

Finally, the impact of bloc politics was most pronounced in European (East and West) arms imports. Larger, industrially advanced European states, able to produce their own weapons, still imported large amounts of foreign arms. Major power client, as opposed to allied status retarded 1970s import levels (allied status was positively correlated with 1980s imports), while hosting foreign bases and spending heavily on the military tended to spur imports in the 1980s. When prior import levels were included in the 1980s model, these variables explained roughly 75 percent of import variance, indicating that in Europe, as in the other regions except Africa, prior arms transfers inexorably led to further business. The importance of the well developed European "military industrial complex" of interests is reflected here. The possession of nuclear weapons was moderately negatively related to arms imports in the 1970s, but slightly positively related in the '80s. The USSR and France imported relatively few weapons or parts, but Britain imported considerable arms in the 1980s. The UK also was at war in 1982, increasing the pressure for such acquisitions. Economic variables such as high

per capita GNP and trade also were moderately correlated with arms acquisition in the latter period.

Conclusion

This analysis has highlighted the impact of a military syndrome in explaining arms importation. Particularly important was overall military effort, as reflected by defense spending as a percentage of GNP, with threat perception or military necessities stemming from regional wars of somewhat less consequence. One of the surprising findings here was the pervasive importance of nuclear potential and certain levels of indigenous arms production as related to conventional arms imports, indicating that ambitious governments develop overall aspirations for regional military dominance and the acquisition of high technology. Considerable variance in arms imports also is explained by economic variables such as trade and per capita GNP. Trade's effects on changes in arms importation were not very massive, however, and indigenous arms capabilities seemed to retard imports in some regions and spur them in others. Political alignment also appears to condition weapons acquisition, with major power clients experiencing less, and hosts of foreign military bases and major power allies more evident pressure to import. Prior importation of arms also leads to subsequent imports. Surprisingly, with some regional variation, war involvements have less overall effect on weapons imports than is commonly thought. Evidently wars in the Third World tend to be fought, at least initially, with arms already on hand, or those captured along the way.

In terms of regional variation, Latin American arms imports were almost exclusively a product of militarization and war involvement, although military governments per se were not necessarily great importers. Military ambition along with foreign trade stimulated Middle Eastern armament, while in Asia, low levels of indigenous military production and defense spending retarded such armament. All three regions, along with Europe, were highly inertial in weapon acquisition, with previous purchasers continuing subsequently as regional arms customers. This was less true of Africa, where

South African military and economic resources dwarfed those of other states. Size of armies, wealth levels, and years at war conditioned African imports, with changes in single countries' import patterns showing up strongly due to the dominance of better endowed states. In Europe, better developed military-industrial complexes and alliances ruled the day, as the larger and militarily more ambitious states tended to import the most arms. Thus actual war fighting had its greatest impact on Latin and African arms acquisition, while regionally assertive states, in some cases with developing indigenous arms production, nuclear capability, or alliance ties accounted for much of the Middle Eastern, Asian, and European arms acquisitions.

For those interested in controlling the global arms trade these findings imply a need to concentrate on states' militarization momentum rather than exclusively on international conflict settlement. Evidently, pressures to acquire arms build over long periods, with prior purchases leading to subsequent ones; such pressures seem rooted more in regional and domestic political ambition and power seeking than in the irritations of particular disputes (though Third World disputes obviously can go on for long periods and stimulate militarization). Particular agreements, such as the Nuclear Non-Proliferation Treaty, can address particular correlates of arms acquisition, and inducements to lower military budgets and limit indigenous arms manufacturing (perhaps by developing non-military transfers of high technology) appear to offer hope of relieving the pressure to acquire arms during peacetime. Conceivably, as well, alliance politics and client relations can be shifted in ways that diminish the need for arms, although in some cases the importation of weapons can be seen as a sane substitute for larger domestic procurement budgets. Several of the main variables influencing arms acquisition are highly intercorrelated, so that practical remedies and substitutes for the arms trade are politically controversial and complicated.

TABLE 1

Best Regression Equation for Each Variable Cluster - 1970s

	Coefficient	Std. Error	T-Stat.	2-Tail Sig.
1a. Dependent variable:				
Arms Import % of World Total, Late 1970s (N=129)				
Intercept	.87	.12	7.40	.00
Independent Variable:				
Military Gov't.	-.43	.25	-1.73	.08
R ² = .02 (Adj. R ² = .02) Regression = 1.18 F-Test = 3.01 Standard Error				
1b. Dependent Variable:				
Log of Arms Import % (N=129)				
Intercept	-1.81	.25	-7.29	.00
Independent Variables:				
1. Military Gov't.	-.66	.49	-1.34	.18
2. Area	.00	.00	1.60	.11
R ² = .03 (.02) S.E. = 2.34 F=2.24				
2a. Dependent Variable:				
Arms Import % (N=115)				
Intercept	.68	.12	5.75	.00
Independent Variables:				
1. Military Expenditure 1-2% of GNP	-.51	.24	-2.10	.04
2. Military Expenditure over 10% of GNP	1.11	.34	3.24	.00
3. Nuclear Risk Potential	1.71	.35	4.85	.00
R ² = .31 (.29) S.E. = 1.04 F=16.76*				
2b. Dependent Variable:				
Log Arms Import % (N=112)				
Intercept	-2.19	.23	-9.34	.00
Independent Variables:				
1. Military Expenditure 1-2% of GNP	-1.27	.41	-3.09	.00
2. Military Exp. in 1981 as % of Population	.00	.00	3.11	.00
3. Nuclear Potential	1.69	.40	4.21	.00
4. Nuclear Risk Potential	2.82	.58	4.87	.00
R ² = .38 (.36) S.E. = 1.72 F=16.58*				

Table 1 Cont.

	Coefficient	Std. Error	T-Stat,	2-Tail Sig.
3a. <u>Dependent Variable:</u>				
Arms Import %				
(N=127)				
Intercept	.69	.11	5.99	.00
<u>Independent Variable:</u>				
Trade	.00	.00	2.17	.03
R ² = .04 (.03) S.E. = 1.18 F = 4.72 ⁺				
3b. <u>Dependent Variable:</u>				
Log Arms Import %				
(N=127)				
Intercept	-2.40	.23	-10.29	.00
<u>Independent Variables:</u>				
1. Trade	.00	.00	2.83	.01
2. Significant Indigenous Weapons Production	1.50	.45	3.30	.00
R ² = .15 (.13) S.E. = 2.17 F = 10.68*				
3c. <u>Dependent Variable:</u>				
Log Arms Import %				
(N=120)				
Intercept	-2.29	.24	-9.66	.00
<u>Independent Variables:</u>				
1. Percap GNP Over \$3000	1.17	.47	2.47	.02
2. Significant Indigenous Weapons Production	1.25	.46	2.74	.01
R ² = .14 (.12) S.E. = 2.12 F = 9.19*				
4a. <u>Dependent Variable:</u>				
Arms Import %				
(N=130)				
Intercept	.65	.13	5.14	.00
<u>Independent Variable:</u>				
At War, 1982	.37	.22	1.67	.10
R ² = .02 (.01) S.E. = 1.18 F = 2.78				
4b. <u>Dependent Variable:</u>				
Log Arms Import %				
(N=130)				
Intercept	-2.20	.25	-8.86	.00
<u>Independent Variable:</u>				
At War, 1982	1.06	.43	2.45	.01
R ² = .04 (.04) S.E. = 2.32 F = 5.99 ⁺				

Table 1 Cont.

	Coefficient	Std. Error	T-Stat.	2-Tail Sig.
5a. <u>Dependent Variable:</u> Arms Import % (N=130)				
Intercept	1.20	.17	6.93	.00
<u>Independent Variable:</u> Major Power Political Client	-.65	.21	-3.05	.00
$R^2 = .07(.06)$	S.E.=1.15	F=9.32 ^x		
5b. <u>Dependent Variable:</u> Log Arms Import % (N=130)				
Intercept	-1.27	.39	-3.27	.00
<u>Independent Variables:</u> 1. Major Power Political Client	-1.55	.41	-3.80	.00
2. Host Foreign Bases	1.10	.39	2.80	.01
$R^2 = .18(.17)$	S.E.=2.16	F=13.82*		

*Significant at .001 level
xSignificant at .01 level
+Significant at .05 level

TABLE 2

Best Regression Equation for Each Variable Cluster - 1980s

	Coefficient	Std. Error	T-Stat.	2-Tail Sig.
1a. Dependent Variable:				
Arms Import Totals				
Early 1980s				
(N=141)				
Intercept	819.21	167.16	4.90	.00
<u>Independent Variables:</u>				
1. Military Gov't.	-484.33	337.39	-1.44	.15
2. Area	.08	.06	1.49	.14
$R^2 = .03$ (Adj.)		Regression = 1658.81		
$R^2 = .02$		Standard Error		
		F-Test=2.18		
1b. Dependent Variable:				
Log Arms Import Totals				
(N=127)				
Intercept	5.44	.21	26.50	.00
<u>Independent Variables:</u>				
1. Military Gov't.	-.94	.40	-2.37	.02
2. Area	.00	.00	2.12	.03
$R^2 = .08$ (.06)		S.E.=1.90		
		F=5.26 ^x		
2a. Dependent Variable:				
Arms Import Totals				
(N=126)				
Intercept	393.57	131.70	2.99	.00
<u>Independent Variables:</u>				
1. Military Expenditure	2974.90	446.33	6.67	.00
Over 10% of GNP				
2. Nuclear Risk Potential	1939.96	466.09	4.16	.00
$R^2 = .39$ (.38)		S.E.=1379.17		
		F=38.92*		
2b. Dependent Variable:				
Log Arms Import Totals				
(N=113)				
Intercept	4.81	.22	21.66	.00
<u>Independent Variables:</u>				
1. Military Expenditure	-.93	.37	-2.48	.02
1-2% of GNP				
2. Military Expenditure	1.72	.53	3.23	.00
Over 10% of GNP				
3. Military Personnel	.00	.00	2.21	.03
4. Nuclear Potential	1.42	.37	3.84	.00
5. Nuclear Risk Potential	1.56	.54	2.87	.01
$R^2 = .37$ (.34)		S.E.=1.58		
		F=12.52*		

Table 2 Cont.

	Coefficient	Std. Error	T-Stat.	2-Tail Sig.
3a. <u>Dependent Variable:</u>				
<u>Arms Import Totals</u>				
(N=139)				
Intercept	682.41	153.62	4.44	.00
<u>Independent Variable:</u>				
Trade	.00	.00	1.90	.06
$R^2 = .03(.02)$	S.E.=1668.56	F=3.61		
3b. <u>Dependent Variable:</u>				
<u>Log Arms Import Totals</u>				
(N=125)				
Intercept	4.80	.20	24.30	.00
<u>Independent Variables:</u>				
1. Trade	.00	.00	3.46	.00
2. Significant Indigenous Weapons Production	1.17	.38	3.09	.00
$R^2 = .17(.15)$	S.E.=1.82	F=12.14*		
4a. <u>Dependent Variable:</u>				
<u>Arms Import Totals</u>				
(N=140)				
Intercept	303.17	200.23	1.51	.13
<u>Independent Variables:</u>				
1. At War, 1982	813.86	301.87	2.70	.01
2. Proximate Regional Warfare	557.68	275.76	2.02	.04
$R^2 = .08(.07)$	S.E.=1616.82	F=6.31 ^x		
4b. <u>Dependent Variable:</u>				
<u>Log Arms Import Totals</u>				
(N=127)				
Intercept	4.96	.20	24.45	.00
<u>Independent Variable:</u>				
At War, 1982	1.24	.36	3.48	.00
$R^2 = .09(.08)$	S.E.=1.88	F=12.1*		
5a. <u>Dependent Variable:</u>				
<u>Arms Import Totals</u>				
(N=141)				
Intercept	1153.63	239.33	4.82	.00
<u>Independent Variable:</u>				
Major Power Political Client	-550.09	294.68	-1.87	.06
$R^2 = .02(.02)$	S.E.=1658.10	F=3.48		

Table 2 Cont.

	Coefficient	Std. Error	T-Stat.	2-Tail Sig.
5b. <u>Dependent Variable:</u>				
Log Arms Import Totals (N=127)				
Intercept	5.87	.33	17.65	.00
<u>Independent Variables:</u>				
1. Major Power Political Client	-1.28	.35	-3.68	.00
2. Host Foreign Bases	.80	.34	2.39	.02
	R ² = .17(.15)	S.E. = 1.81	F = 12.38*	
5c. <u>Dependent Variable:</u>				
Log Arms Import Totals (N=127)				
Intercept	4.98	.19	26.80	.00
<u>Independent Variable:</u>				
Major Power Ally	1.67	.39	4.31	.00
	R ² = .13(.12)	S.E. = 1.84	F = 18.54*	

*Significant at .001 level
xSignificant at .01 level
+Significant at .05 level

TABLE 3

Best Overall Regression Equations

	Coefficient	Std. Error	T-Stat.	2-Tail Sig.
1a. <u>Dependent Variable:</u>				
1970s Arms Import % (N=115)				
Intercept	1.01	.16	6.17	.00
<u>Independent Variables:</u>				
1. Major Power Political Client	-.68	.20	-3.46	.00
2. Military Expenditure Over 10% of GNP	1.21	.33	3.70	.00
3. Nuclear Risk Potential	1.73	.34	5.06	.00
$R^2 = .35$ (Adj. $R^2 = .34$)	Regression = 1.01 Standard Error	F-Test = 20.28*		
1b. <u>Dependent Variable:</u>				
Log 1970s Arms Import % (N=112)				
Intercept	-1.34	.32	-4.20	.00
<u>Independent Variables:</u>				
1. Major Power Political Client	-1.24	.34	-3.66	.00
2. Significant Indigenous Weapons Production	1.11	.36	3.06	.00
3. Military Expenditure, 1981 as % of Population	.00	.00	3.47	.00
4. Military Expenditure 1-2% of GNP	-1.13	.40	-2.83	.01
5. Nuclear Risk Potential	2.56	.55	4.64	.00
$R^2 = .43$ (.41)	S.E. = 1.65	F = 16.2*		
2a. <u>Dependent Variable:</u>				
1980s Arms Import Totals (N=126)				
Intercept	233.52	146.11	1.60	.11
<u>Independent Variables:</u>				
1. Military Expenditure Over 10% of GNP	2920.24	438.92	6.65	.00
2. Nuclear Risk Potential	2048.54	460.03	4.45	.00
3. Percipita GNP Over \$3000	678.68	288.23	2.35	.02
$R^2 = .41$ (.40)	S.E. = 1354.38	F = 28.75*		

Table 3 Cont.

	Coefficient	Std. Error	T-Stat.	2-Tail Sig.
2b. <u>Dependent Variable:</u>				
Log 1980s Arms Import Totals (N=113)				
Intercept	5.83	.29	20.39	.00
<u>Independent Variables:</u>				
1. Major Power Political Client	-1.33	.31	-4.32	.00
2. Significant Indigenous Weapons Production	1.00	.33	3.07	.00
3. Military Expenditure 1-2% of GNP	-.85	.35	-2.42	.02
4. Nuclear Risk Potential	1.42	.50	2.83	.01
5. Military Expenditure Oyer 10% of GNP	2.08	.49	4.23	.00
	R ² = .44(.42)	S.E. = 1.48	F = 17.03*	
3a. <u>Dependent Variable:</u>				
1980s Arms Import Totals (N=115)				
Intercept	-25.10	130.76	-.19	.85
<u>Independent Variables:</u>				
1. 1970s Arms Import %	869.84	94.98	9.16	.00
2. Military Expenditure Oyer 10% of GNP	1961.56	397.32	4.94	.00
	R ² = .60(.59)	S.E. = 1160.72	F = 82.95*	
3b. <u>Dependent Variable:</u>				
Log 1980s Arms Import Totals (N=106)				
Intercept	6.65	.18	37.58	.00
<u>Independent Variables:</u>				
1. Log 1970s Arms Import %	.65	.06	11.43	.00
2. Major Power Political Client	-.53	.23	-2.33	.02
3. Military Expenditure Oyer 10% of GNP	1.30	.35	3.71	.00
	R ² = .69(.68)	S.E. = 1.06	F = 75.82*	

* Significant at .001 level

TABLE 4

Best Latin American Regression Models

	Coefficient	Std. Error	T-Stat.	2-Tail Sig.
a. <u>Dependent Variable:</u>				
Log 1970s Arms Import % (N=22)				
Intercept	-3.86	.39	-10.01	.00
<u>Independent Variable:</u>				
Military Personnel	.02	.00	4.80	.00
R ² = .54 (Adj. R ² = .51)				
	Regression=1.37	F-Test=23.05*		
	Standard Error			
b. <u>Dependent Variable:</u>				
Log 1980s Arms Import Totals (N=18)				
Intercept	3.35	.53	6.30	.00
<u>Independent Variables:</u>				
1. At War, 1982	1.54	.66	2.34	.00
2. Military Expenditure, 1981	.00	.00	3.03	.01
R ² = .51(.45)				
	S.E.=1.38	F=7.93 ^x		
c. <u>Dependent Variable:</u>				
Log 1980s Arms Import Totals (N=19)				
Intercept	6.74	.46	14.52	.00
<u>Independent Variables:</u>				
1. Log 1970s Arms Import %	.85	.16	5.24	.00
2. Military Gov't.	-1.15	.50	-2.31	.04
R ² = .71(.68)				
	S.E.=1.08	F=19.85*		

* Significant at .001 level

x Significant at .01 level

TABLE 5

Best Middle Eastern Regression Models

	Coefficient	Std. Error	T-Stat.	2-Tail Sig.
a. Dependent Variable:				
Log 1970s Arms Import % (N=21)				
Intercept	-.76	.36	-2.09	.05
Independent Variables:				
1. Nuclear Risk Potential	1.67	.76	2.18	.04
2. Military Expenditure, 1981	.00	.00	1.97	.07
$R^2 = .35$ (Adj. $R^2 = .28$)	Regression = 1.36	F-Test = 4.94 ⁺		
	Standard Error			
and				
Dependent Variable:				
Log 1970s Arms Import % (N=21)				
Intercept	-.78	.42	-1.86	.08
Independent Variable:				
Trade	.00	.00	2.41	.03
$R^2 = .23$ (.19)	S.E. = 1.44	F = 5.81 ⁺		
b. Dependent Variable:				
Log 1980s Arms Import Totals (N=21)				
Intercept	6.47	.31	21.14	.00
Independent Variables:				
1. Nuclear Risk Potential	1.63	.65	2.52	.02
2. Military Expenditure, 1981	.00	.00	2.36	.03
$R^2 = .43$ (.37)	S.E. = 1.15	F = 6.82 ^x		
c. Dependent Variable:				
Log 1980s Arms Import Totals (N=21)				
Intercept	7.20	.17	41.22	.00
Independent Variable:				
Log 1970s Arms Import %	.76	.11	6.84	.00
$R^2 = .71$ (.70)	S.E. = .80	F = 46.83*		

* Significant at .001 level

x Significant at .01 level

+ Significant at .05 level

TABLE 6

Best Asian - Pacific Regression Models

	Coefficient	Std. Error	T-Stat.	2-Tail Sig.
a. <u>Dependent Variable:</u>				
Log 1970s Arms Import % (N=19)				
Intercept	-.30	.30	-1.01	.33
<u>Independent Variables:</u>				
1. Some Indigenous Weapons Production	-2.23	.73	-3.09	.01
2. Military Expenditure 1.2% of GNP	-2.76	.73	-3.81	.00
	Regression = 1.12 Standard Error		F-Test = 15.13*	
R ² = .65 (Adj. R ² = .61)				
b. <u>Dependent Variable:</u>				
Log 1980s Arms Import Totals (N=18)				
Intercept	6.55	.23	28.71	.00
<u>Independent Variables:</u>				
1. Some Indigenous Weapons Production	-1.90	.68	-2.78	.01
2. Military Expenditure 1.2% of GNP	-1.87	.58	-3.24	.01
	S.E. = .87		F = 13.32*	
R ² = .64 (.59)				
c. <u>Dependent Variable:</u>				
Log 1980s Arms Import Totals (N=21)				
Intercept	6.67	.18	37.70	.00
<u>Independent Variable:</u>				
Log 1970s Arms Import %	.70	.09	7.62	.00
	S.E. = .70		F = 58.06*	
R ² = .75 (.74)				

* Significant at .001 level

TABLE 7

Best African Regression Models

	Coefficient	Std. Error	T-Stat.	2-Tail Sig.
a. Dependent Variable:				
Log 1970s Arms Import % (N=31)				
Intercept	-4.88	.56	-8.76	.00
Independent Variables:				
1. Military Personnel	.02	.01	2.62	.01
2. Years at War Since 1945	.16	.07	2.40	.02
$R^2 = .40$ (Adj. $R^2 = .36$)	Regression=1.95 Standard Error		F-Test=9.50*	
b. Dependent Variable:				
Log 1980s Arms Import Totals (N=28)				
Intercept	3.68	.30	12.46	.00
Independent Variables:				
1. Military Personnel	.02	.00	3.71	.00
2. Percapita GNP \$1000-3000	-3.57	1.39	-2.56	.02
$R^2 = .41$ (.36)	S.E.=1.35		F=8.69 ^x	
c. Dependent Variable:				
Log 1980s Arms Import Totals (N=29)				
Intercept	5.79	.37	15.46	.00
Independent Variables:				
1. Log 1970s Arms Import %	.54	.10	5.56	.00
2. Percipita GNP \$1000-3000	-4.46	1.24	-3.59	.00
$R^2 = .58$ (.54)	S.E.=1.17		F=17.65*	

* Significant at .001 level

x Significant at .01 level

TABLE 8

Best European Regression Models

	Coefficient	Std. Error	T-Stat.	2-Tail Sig.
a. Dependent Variable:				
Log 1970s Arms Import % (N=25)				
Intercept	-.35	.24	-1.46	.16
Independent Variable:				
Major Power Political Client				
	-3.19	.70	-4.57	.00
$R^2 = .48$ (Adj. $R^2 = .45$)	Regression = 1.14	F-Test = 20.89*		
	Standard Error			
and				
Dependent Variable:				
Log 1970s Arms Import % (N=25)				
Intercept	-1.27	.36	-3.49	.00
Independent Variable:				
Significant Indigenous Weapons Production				
	1.34	.58	2.33	.03
$R^2 = .19$ (.16)	S.E. = 1.41	F = 5.42 ⁺		
b. Dependent Variable:				
Log 1980s Arms Import Totals: (N=24)				
Intercept	4.52	.35	12.96	.00
Independent Variables:				
1. Host Foreign Bases	1.28	.31	4.13	.00
2. Military Expenditure as % of Population	.00	.00	2.56	.02
3. Population	.01	.00	2.34	.03
$R^2 = .63$ (.57)	S.E. = .72	F = 11.15*		
c. Dependent Variable:				
Log 1980s Arms Import Totals (N=24)				
Intercept	5.10	.32	15.74	.00
Independent Variables				
1. Log 1970s Arms Import %	.37	.10	3.50	.00
2. Host Foreign Bases	.82	.28	2.94	.01
3. Military Expenditure as % of Population	.00	.00	2.87	.01
4. Population	.01	.00	2.74	.01
$R^2 = .77$ (.72)	S.E. = .57	F = 16.13*		

* Significant at .001 level

+ Significant at .05 level

Notes

1. Frederic S. Pearson, "The Priorities of Arms Importing States," in The Dilemma of Third World Defense Industries: Supplier Control and Recipient Autonomy, ed. by Kwang-il Baek, Ronald D. McLaurin, and Chung-in-Moon (Inchon, Korea: Center for International Studies, Inha University, forthcoming 1988).
2. Michael Brzoska and Thomas Ohlson, "The Future of Arms Transfers: The Changing Pattern," Bulletin of Peace Proposals, vol. 16, no. 2 (1985), pp. 129-137.
3. Frederic S. Pearson, Robert A. Baumann, and Gordon N. Bardos, "Arms Transfers: Effects on African Interstate Wars and Interventions," paper presented to the Annual Meeting of the American Political Science Association, Chicago, September 1987.
4. See for example, Stockholm International Peace Research Institute (SIPRI), The Arms Trade with the Third World (London: Paul Elek, 1971); J.S. Mehta, ed., Third World Militarization: A Challenge to Third World Diplomacy, (Austin: L. B. Johnson School of Public Affairs, 1985); Michael Don Ward and A.K. Mahajan, "Defence Expenditure, Security Threats, and Governmental Deficits: A Case Study of India, 1952-1979," Journal of Conflict Resolution, vol. 28 (September 1984), pp. 382-419; Michael Brzoska and Thomas Ohlson, Arms Transfers to the Third World (Oxford: Oxford University Press, and Stockholm International Peace Research Institute, 1987); Stephanie G. Neuman, Military Assistance in Recent Wars: The Dominance of the Superpowers, Washington Papers, 122 (New York: Praeger, and Center for Strategic and International Studies, Georgetown University, 1986); and Arms Transfers in the Modern World, ed. by Neuman and Robert E. Harkavy (New York: Praeger, 1979).
5. Most of the data are derived from Michael Kidron and Dan Smith, The War Atlas (London: Pan Books, 1983); U.S. Arms Control and Disarmament Agency, World Military Expenditures and Arms Transfers 1985 (Washington: U.S. Government

Printing Office, 1986); Stephanie Neuman, "International Strategy and Third World Military Industries," International Organization, vol. 38 (Winter 1984); and Herbert Wulf, "The Arms Sector in Developing Countries," Development and Peace, vol. 5 (Spring 1984).

6. Included among these dummy variables are levels of per capita GNP (four variables corresponding to categories 2-5 in ACDA data); military expenditure as a percentage of GNP (also four variables); nuclear weapon status (three variables reflecting mounting levels of risk); political alignment (two variables reflecting either client or core ally status in relation to a major power); and indigenous arms production capability (three variables reflecting at least some non-zero level of production). Interpretation of such dummy variables in a regression model centers on their effect on the linear intercept, magnifying or diminishing overall scores, rather than on the rate of their impact on the dependent variable. See Thomas and Ronald Wonnacott, Econometrics, 2nd ed. (New York: Wiley, 1979).