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Military Dimensions of Communist Systems

Findings and Implications

Charles Wolf, Jr., Benjamin Zycher

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This report is based on the extensive empirical work reported in R-3593, the underlying hypothesis of which is that Marxist-Leninist systems, compared with non-communist systems, tend to have larger and more developed military sectors relative to nonmilitary sectors. The authors consider the reasons communist systems may be inclined toward more developed military dimensions, summarize the methods and empirical findings of the study, and consider the implications of the analysis for both U.S. policy toward, and further analysis of, communist systems.

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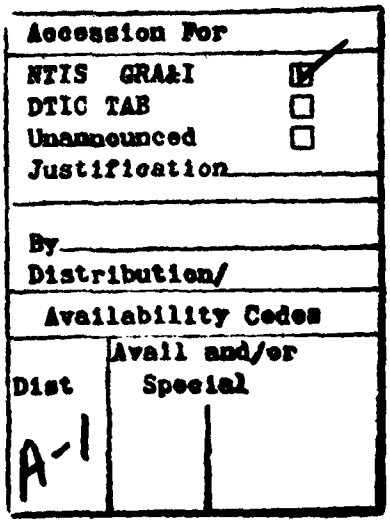
PREFACE

This study is based on a more detailed and heavily empirical RAND report by Benjamin Zycher and Tad Daley, R-3593-USDP, *Military Dimensions of Communist Systems*, June 1988. The present report distills the central hypotheses, findings, and policy implications of that major study.

The analysis has been prepared for the Office of the Under Secretary of Defense for Policy, as part of RAND's research program in International Economic Policy, in the National Defense Research Institute, a Federally Funded Research and Development Center sponsored by the Office of the Secretary of Defense. It should be of interest to individuals and policymakers working in the areas of military spending and economics, comparative economic and political systems, and governmental behavior.



SUMMARY

This report is based on the extensive empirical work reported in Benjamin Zycher and Tad Daley, *Military Dimensions of Communist Systems*, The RAND Corporation, R-3593-USDP, June 1988 (hereinafter called Zycher and Daley), and should be read in conjunction with that larger study. The purpose of the present companion report is two-fold: first, to summarize and simplify Zycher and Daley's principal findings, so they will be accessible to a wider readership; and second, to discuss the implications for both policy and analysis that can be derived from Zycher and Daley.

Apart from systemic quantitative analysis, the crude facts suggest that Marxist-Leninist systems, compared with non-communist systems, exhibit a tendency toward extended and more highly developed military sectors than nonmilitary sectors. The aim of our work is to test this hypothesis in a more quantitative and systematic way than has been attempted previously, and to draw implications from the results for policy toward, and analysis of, communist systems.

We can hypothesize that this characteristic tendency is caused by either or both the preferences of the communist leaderships or the relative efficiency with which Marxist-Leninist systems produce military capabilities rather than civil consumer and producer goods. These contrasting hypotheses may be abetted by the central role force has played in virtually all cases to date of communist acquisition and consolidation of political power, as well as the long-standing belief on the part of communist states in the political value of military power.

In comparing military and nonmilitary dimensions of communist and non-communist systems, Zycher and Daley focus on three quantitative measures and one qualitative indicator for 89 countries—26 communist and 63 non-communist. The three quantitative measures are: military spending as a proportion of gross national product (GNP), military manpower as a proportion of total population, and the relative levels of military and civil technology. The qualitative indicator concerns the character of prevailing civil-military relations. The econometric analysis in effect divides the statistical sample into communist and non-communist groups, and includes eight other explanatory variables that provide finer distinctions among nations than are offered by the simple two-group dichotomy.

The principal substantive result of Zycher and Daley can be plainly stated: when the eight variables have been allowed for, besides the

communist or non-communist character of the system, the residual association between communism and the military spending proportion is positive and statistically significant. The magnitude of the effect on the spending burden attributable to communism varies between 3.4 and 5.0 percent of GNP, depending mainly upon the year from which the data are drawn. Similarly, the association between communism and the military manpower proportion is positive and statistically significant: communist systems tend to have about 0.5 percent more of their population under arms at any given time than do non-communist systems.

With respect to the relationship between military and civil technology in communist and non-communist countries, we have developed an index of military technology for comparison with several measures of civil technology. This index incorporates both quantity and quality. Once again, the ratio of military to civil technology is higher in communist than in non-communist countries, and the ratio is usually statistically significant.

With regard to the texture of relationships between military and civil sectors, our conclusion, though more qualitative, is consistent with the quantitative findings. While the military is no less subordinate to political control by the civilian leadership in communist than in non-communist systems, communist systems tend to provide special rewards and incentives to the military; and the penetration and involvement by the military in the economy and the society as a whole exhibits a characteristic "militarization" that is atypical in non-Marxist-Leninist systems.

Several implications are drawn from these findings:

1. Our understanding of communist systems would be enhanced by analysis modes and models that focus especially on the priority access by the military to high-quality resources, as well as on the adjustments and distortions imposed on the civil economy by military activities. In light of the typically greater degree of "militarization" of communist systems, the phenomena of military penetration and military priority should be accorded an importance in analysis that is rarely acknowledged, let alone displayed.

2. In conducting foreign relations with Marxist-Leninist systems, it may be no less difficult to bring about a diminished role for the military in these systems than to bring about a diminished role for the Communist Party itself.

3. In conducting arms control and other negotiations with communist systems, it may be more realistic to anticipate a reduction of military efforts toward specific uses than to assume that the principal effect will be a reduction of military efforts as a whole.

4. When considering U.S. or Western policy initiatives toward Marxist-Leninist systems, it may be worthwhile to address the question "What's in it for the military?" because of the military's likely influence in shaping the behavior and reactions of these systems. In cases where the answer is "Nothing" or where the military is an unqualified loser, it is doubtful that the initiative in question will be either practicable or durable.

5. With respect to the tendency of communist systems to overdevelop their military dimensions, the first hypothesis—attributing this tendency to the demands or preferences of the leaderships—leads to quite different policy implications from those associated with the supply-side or efficiency hypothesis. Western support for *perestroika* would be more reasonable if one adhered to the supply-side hypothesis; if, on the other hand, one favors the demand-side hypothesis, such support would contribute to an expansion of communist military power. And if one is agnostic toward both explanations, prudence would suggest a policy of watchful waiting.

ACKNOWLEDGMENTS

The authors are especially indebted to our colleagues, Alexander Alexiev and Scott Cardell, for valuable comments on an earlier draft of this report.

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I. INTRODUCTION

Military planners, strategists, and policymakers are principally, and properly, concerned with the *absolute* quantity and quality of their potential adversaries' military capabilities, and with how these capabilities compare, now and in the future, with their own. That this is the principal concern follows from the primary goal of deterring the use of the adversaries' military forces, and defeating them if deterrence fails.

For other goals, however, there is reason to be interested not in the absolute capabilities, but in their scale *relative to* the adversaries' nonmilitary, civil capabilities. Such relative measures are significant for what they imply about the adversaries' objectives, attitudes, and priorities; for what they portend for the conduct of peacetime relations and negotiations; as well as for what they imply for analysis and acquiring intelligence bearing on the adversaries' economic, political, and social systems.

These considerations motivate our examination of the military dimensions of communist systems. Our aim in this study is to define and to evaluate these dimensions in relation to certain nonmilitary dimensions of communist and non-communist systems. This report is based upon the extensive empirical work reported in Benjamin Zycher and Tad Daley, *Military Dimensions of Communist Systems*, The RAND Corporation, R-3593-USDP, June 1988 (hereinafter called Zycher and Daley) and should be read in conjunction with that larger study. The purpose of this companion report is two-fold: first, to summarize and simplify the principal findings of the larger work, so that they will be accessible to a wider readership; and second, to focus on the implications for both policy and analysis that can be derived from Zycher and Daley.

The underlying hypothesis is that Marxist-Leninist systems, compared with non-communist systems, tend to have larger and more developed military sectors relative to nonmilitary sectors. Our aim is to test this hypothesis more quantitatively and systematically than has been attempted previously.

We begin in Sec. II with a brief consideration of *a priori* reasons why communist systems may be inclined toward a swelling of their military dimensions. Section III summarizes the method and empirical findings of the study; and finally, Sec. IV considers several implications of the preceding analysis for both U.S. policy toward, and further analysis of, communist systems.

II. BACKGROUND

Our hypothesis—that communist systems tend to accord a larger and more prominent role to military relative to nonmilitary dimensions than do non-communist systems—derives support from several different sources:

1. Classic communist writings, especially those of Lenin, on the conduct and consolidation of revolution, focus attention on armed force, weapons, and military power. As one historian has noted:

> Lenin's writings abound in military metaphors: states of siege, iron-rings, sheets of steel, marching, camps, barricades, forts, offensives, mobile units, guerrilla warfare, firing squads. They are dominated by violently activist verbs: flame, leap, ignite, goad, shoot, shake, cease, attack, blaze, repel, weld, compel, purge, exterminate.[1]

Lenin's characteristic emphasis on military force is suggested by the following quotation:

> An oppressed class which does not strive to gain a knowledge of weapons, to be drilled in the use of weapons, to possess weapons, an oppressed class of this kind deserves only to be oppressed, maltreated and regarded as slaves.[2]

2. The central role played by the army in the consolidation of the 1917 revolution, and the priority assigned to military production in the initial and subsequent planning of Soviet industrialization, undergirded the Soviet regime at its inception and provided a model for emulation by other communist regimes, as well.[3]

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[1]Paul Johnson, *Modern Times: The World from the Twenties to the Eighties*, Harper, 1983, p. 55.

[2]Ibid.

[3]See Michael Checinski, "The Economics of Defense in the USSR," *Survey*, Spring 1965. Checinski notes the special importance of Mikhail Frunze, Commissar of Defense and Chief of the Revolutionary Military Council in the early 1920s, in establishing this pattern. As noted by Checinski, Frunze "went so far as to suggest that most nonmilitary industrial products be designed in such a way that they could also be used by the military industry or even the military itself (e.g., metal cutting tools and means of communication and transportation)."

3. The prominent role of the military in Marxist-Leninist systems is also associated with the characterization of these systems as "power-maximizing" entities, rather than consumer-oriented, "welfare-maximizing" ones. The power-maximizing view holds that the overriding objective of the Soviet system, and generally of other Marxist-Leninist systems as well, is to maximize the state's political and military power and to expand its influence and control abroad. As a crucial instrument in furthering this objective, the military is typically accorded special emphasis and priority.[4] This is consistent with the central role played by force in virtually all cases to date of communist acquisition and consolidation of political power. This may have been reinforced by the long-standing belief of communist states' leaderships in the political value of military power. The saliency and predominance of the military dimension in power-maximization were tersely formulated by another noteworthy, if currently less-quoted, communist theoretician and practitioner: "Power grows out of the barrel of a gun."[5]

4. Centrally planned and controlled economic systems are relatively effective in activities that involve mobilizing large quantities of resources to be used according to precisely specified, standard operating rules, that is, activities involving technically well-specified production functions and associated with economies of scale. These characteristics tend to be found in the military services, as well as in heavy metallurgical and manufacturing industry producing standard equipment for the military services. Thus, communist systems tend to have a comparative advantage in producing military output and adding to the military dimensions of state power.[6]

5. The other side of the argument is the relative shortcomings of centrally planned and controlled economies in producing a diverse and rapidly changing set of consumer and producer

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[4]See Charles Wolf, Jr., "Extended Containment," in Aaron Wildavsky (Ed.), *Beyond Containment*, Institute for Contemporary Studies Press, San Francisco, 1983, pp. 149ff.

[5]*Selected Works of Mao Tse-tung*, Vol. II, International Publishers, New York, p. 224.

[6]Cf. Oskar Lange's description of the normal, peacetime characteristics of Soviet-type economies as those of "a war economy" ("The Economic Operation of a Socialist-Society," *Contributions to Political Economy*, Vol. 6, March 1987). See also Gregory G. Hildebrandt (Ed.), *RAND Conference on Models of the Soviet Economy, October 11-12, 1984*, The RAND Corporation, R-3322, October 1985.

goods in innovative and adaptive ways. Consequently, centrally planned and controlled systems tend to have large and highly developed military sectors because the opportunity costs of production in these sectors (in terms of the benefits forgone in nonmilitary dimensions of the economy) are relatively low.

In sum, the first three points noted above suggest why the demands and preferences of Marxist-Leninist systems generally favor expansion of military dimensions, while the fourth and fifth points suggest why the supply or production capabilities of these systems tend to move them in the same direction.

Figure 1 summarizes these differences in demand and supply conditions. The communist Production Possibility Locus (PPL) is steeper than the non-communist one, representing the putatively lower relative cost of producing military services ("guns") than nonmilitary goods ("butter") in communist systems. The flatter indifference (preference) curves (I) for the communist states indicate their higher relative valuation of military services than nonmilitary goods, compared with the valuation characteristic of non-communist states. Under such conditions, we would expect to find the military dimensions of communist states to be more highly developed than their nonmilitary dimensions, compared with non-communist states. Thus, the higher guns/butter ratio of the communist state—shown by the G_{com} B_{com} point in Fig. 1—contrasts with the lower guns/butter ratio of the non-communist state—shown by the $G_{non\text{-}com}$ $B_{non\text{-}com}$ point.

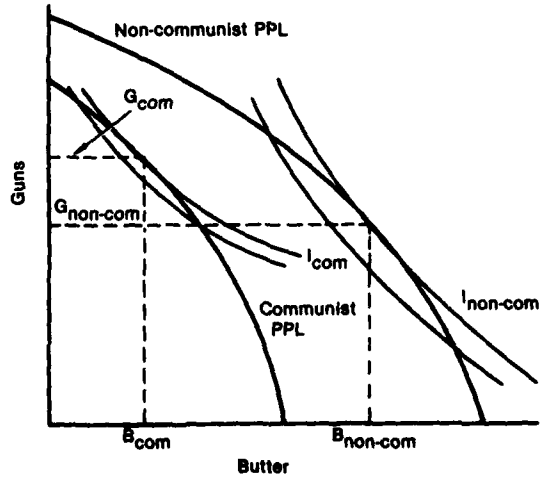

Fig. 1—Guns/butter tradeoffs in communist and non-communist systems

III. METHODOLOGY AND EMPIRICAL FINDINGS[1]

Measurement of the relative development of military and nonmilitary dimensions of communist and non-communist systems is based on four attributes: (1) military spending as a proportion of gross national product; (2) military manpower as a proportion of total population; (3) relative levels of military and civil technology; (4) the character of prevailing civil/military relations.

To apply these four attributes, data were collected for a sample of 26 communist countries and 63 non-communist ones. The communist countries were selected on the basis of their self-classification, while the non-communist countries were selected according to several other criteria: alliance comparability (e.g., the NATO countries were included to balance the Warsaw Pact countries), historical and geographic balance (e.g., South Korea vis à vis North Korea, India vis à vis China), and data availability.[2] Table 1 shows the communist and non-communist countries included in the sample.

The data on which our empirical findings are based cover the period from 1966 to 1983, while the last 11 years of the period (1973–1983) include the most complete and reliable data.[3]

The first two dimensions (*military spending* as a proportion of GNP, and *military manpower* as a proportion of population) can be compared at a very aggregative level by calculating the unweighted means for the communist and non-communist countries in the sample. For all communist nations over the 1966–1983 period the average military spending proportion is 6.97 percent, while the corresponding proportion for the non-communist countries is 4.2 percent. This 2.7 percent difference is statistically significant at a level of less than 0.1 percent.[4]

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[1]For a more complete discussion of the methodology, data, and empirical results, see Zycher and Daley.

[2]For a more complete explanation and description of the selection of countries, see Zycher and Daley, Sec. III.

[3]The data were collected from a number of different sources including the Arms Control and Disarmament Agency, the Stockholm International Peace Research Institute, the International Institute for Strategic Studies, and other relevant sources. For a more complete description of the data sources used in the study, see Zycher and Daley, Sec. IV and App. A.

[4]Thus, the null hypothesis (no difference between the two means) can be rejected with confidence greater than 99.9 percent.

Table 1

COMMUNIST AND NON-COMMUNIST COUNTRIES
INCLUDED IN THE SAMPLE

Countries Identified as Communist

Europe	Africa	Asia	Latin America
Albania	Angola (beginning 1975)	Afghanistan (beginning 1978)	Cuba
Bulgaria	Benin	Cambodia (beginning 1975)	Nicaragua (beginning 1980)
Czechoslovakia	Congo	China	
East Germany	Ethiopia (beginning 1977)	North Korea	
Hungary	Guinea (before 1980)	Laos (beginning 1976)	
Poland	Guinea-Bissau (beginning 1975)	Vietnam	
Romania	Mozambique (beginning 1975)		
Soviet Union	Somalia (before 1979)		
Yugoslavia	South Yemen		

Countries Identified as Non-Communist

North America, Europe	South America	Africa	Asia	Middle East
Belgium	Colombia	Botswana	Bangladesh	Egypt
Britain	Costa Rica	Burkina	Burma	Iran
Denmark	Dominican Rep.	Cameroon	India	Iraq
Finland	El Salvador	Central African Rep.	Japan	Israel
France	Guatemala	Chad	Korea	Jordan
West Germany	Honduras	Ghana	Pakistan	Libya
Greece	Jamaica	Ivory Coast	Philippines	Syria
Ireland	Panama	Kenya	S. Vietnam	Yemen Arab Republic
Italy		Madagascar	Taiwan	Turkey
Netherlands		Mali	Thailand	
Norway		Nigeria		
Portugal		Niger		
Spain		Senegal		
Sweden		Sierra Leone		
Switzerland		South Africa		
USA		Sudan		
		Tanzania		
		Togo		
		Zaire		
		Zimbabwe		

Similarly, the average manpower proportion for the communist nations is 1.29 percent, while that for the non-communist nations is 0.77 percent. Again, this 0.5 percent difference is statistically significant at a level of less than 0.1 percent.[5]

It is also interesting to compare the military spending proportions of particular countries as they changed between non-communist and communist status. Among ten countries that shifted from non-communist status to communism, six (Afghanistan, Angola, Ethiopia, Guinea-Bissau, Mozambique, and Nicaragua) showed a statistically significant increase in their share of GNP devoted to military spending; two (Guinea and Somalia) showed a statistically significant movement in the reverse direction; and two (Cambodia and Laos) did not display any statistically significant change.[6]

Comparing the means of the military spending and military manpower proportions suggests a general tendency for communist systems to have a higher value of these indicators. However, comparison at such an aggregative level, while interesting and suggestive, does not indicate the magnitude or intensity of this tendency because it fails to allow for other important influences that may affect the relative development of military and civil dimensions. In particular, the communist/non-communist distinction fails to capture important differences among nations, ones which may affect statistical findings.

To address this problem we have developed several analytic models designed to allow for eight sources of influence on military spending and military manpower other than communist or non-communist status. This enables us to more clearly discern the net effect specifically attributable to a communist system. The total influences are: (1) communist or non-communist; (2) presence of internal guerrilla activity; (3) presence of external threat;[7] (4) influence of alliances (a

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[5]For a more detailed comparison of the military spending and military manpower proportions among different pairs of communist and non-communist countries, chosen from the same region and according to generally similar population size, see Zycher and Daley, Sec. IV. The more refined comparison of pairwise means for these two attributes reinforces the results noted above for the entire sample.

[6]The before/after comparisons for military manpower proportions show a more mixed and inconclusive pattern. Four countries shifting to non-communist governments have a lower manpower proportion, two shifting to communism do the same, two others are statistically insignificant, and the two remaining lack the necessary data for making military manpower calculations. See Zycher and Daley, Sec. IV.

[7]In principle, the threat variable should allow for the degree of hostility, the proximity, and the military capability of neighboring or other adversaries. In practice, the measure that we use is a somewhat contrived and imperfect indicator of these combined influences: namely, the military spending or military manpower proportion of each neighboring country, weighted by the ratio of the neighbor's population to that of the given nation, and by the proportion of the given nation's total borders shared with the neighbor in question. The somewhat contrived character of this measure, and the under-

given nation measured as the proportion of the total population of any alliance of which it is a member); (5) degree of authoritarianism or democracy; (6) wartime or peacetime condition; (7) presence of conscription; (8) effect of the particular region (Europe, Africa, Asia, Latin America, North America, or the Middle East) in which each country is located; and (9) per capita GNP.[8]

In principle, once the separate effects of the eight variables have been allowed for, the remaining differences in the military spending or military manpower dimensions among the 89 countries can, with greater confidence, be attributed to the ninth variable—the communist or non-communist character of the system.

In Zycher and Daley, a total of 402 regressions are reported, involving different combinations of the nine variables.[9] The principal substantive result of this work can be plainly stated: *when the eight other variables are included in the regression analysis, the residual association between communism and the military spending proportion is positive and statistically significant in all years; and the magnitude of the effect on the spending burden attributable to communism varies between 3.4 and 5.0 percent of GNP, depending mainly upon the year from which the data are drawn.* Moreover, this effect of communism on military spending is robust across almost all model specifications and variable combinations that we used.

With respect to the association between communism and the military manpower proportion, again when the eight other variables are included in the regression models, the effect of communism is positive and statistically significant in all years except 1973, and the magnitude of this effect ranges between 0.4 and 0.65 percent of the total population. Thus, after other influences have been allowed for, communist systems will tend to have about 0.5 percent more of their population under arms at any given time than do non-communist systems.

The third dimension of our comparison between communist and non-communist systems focuses on their relative development of

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lying complexity of the concept that the threat variable is intended to capture, probably account for the inadequacy of this variable in the regression models that we have run. See the discussion in Zycher and Daley, pp. 41–47.

[8]Based on two opposed *a priori* hypotheses: (a) higher income levels might enable wealthier countries to indulge a desire for security and military power that poorer countries would be unable to gratify; or (b) once a specified threshold of "security" has been obtained, there may be a diminished propensity to acquire additional units of it, so that wealthier countries might be expected to have a smaller spending proportion or military manpower proportion. For a discussion of the *a priori* reasoning behind each of the other eight variables, see Zycher and Daley, Sec. V.

[9]For a detailed discussion of these different models and their associated results, see Zycher and Daley, Secs. V and VI.

military and civil technology. This part of the analysis presents some special problems, because the term "technology" is hard to define precisely, and entails a degree of complexity, diversity, and ambiguity that is usually unrecognized. Technology signifies quite different things to policymakers, businessmen, engineers, military planners, and economists.

Moreover, not only is the meaning of technology unclear, but its measurement presents formidable difficulties. To develop a crude index of military technology for comparison with the prevailing level of civil technology, we have focused on two proxies that relate to the quality and quantity of tanks and of jet aircraft. The index is based on the number (quantity) and vintage (quality) of each type of item; the "quality" of technology embodied in each unit is assumed to improve at an annual rate of 4 percent for tanks and 5 percent for jets.[10] Thus, the assumed technological level of each tank or jet is discounted more heavily as it ages. The result is an index that combines the quantity of tanks and jets with their respective quality of technology as reflected by vintage.

Tables 2 and 3 show the average values of the communist and non-communist jet and tank indexes for 1975, 1980, and 1985. For these three years, each index for the communist countries exceeds that of the non-communist countries in the sample, by amounts that are statistically significant or marginally significant.[11]

Table 2

AVERAGE INDEXES OF JET AIRCRAFT TECHNOLOGY

Countries	1975	1980	1985
Communist	167.1	134.2	125.8
Non-communist	59.7	60.7	63.4

[10]For a more extended discussion of the basis for these assumptions and the methodology of constructing the two military technology indexes, see Zycher and Daley, pp. 76–86.

[11]The significance levels, as indicated by a difference-of-means test, are:

Year	Jet Index	Tank Index
1975	.018	.003
1980	.090	.022
1985	.106	.123

See Zycher and Daley, p. 79.

Table 3

AVERAGE INDEXES OF TANK TECHNOLOGY

Countries	1975	1980	1985
Communist	658.1	609.5	598.4
Non-communist	242.9	277.3	317.0

To measure the prevailing level of civil technology we have used three equally crude indicators: GNP; numbers of automobiles and commercial vehicles in use; and numbers of telephones. In each case one might expect that the proxy should be scaled according to population. However, since a similar procedure would also be appropriate for the indexes of military technology, and since our aim is to compare the relative levels of military and civil technology, the population number drops out of the ratio between the two.

Table 4 shows the average ratios of each of the two military technology indexes to each of the three civil technology indicators. As Table 4

Table 4

MILITARY/CIVIL TECHNOLOGY RATIOS

Category	1975	1980	1985
Communist jets/GNP	8.2	5.2	4.9
Non-communist jets/GNP	2.3	1.7	2.8
Communist jets/autos	0.346	0.299	0.080
Non-communist jets/autos	0.155	0.117	0.055
Communist jets/phones	0.135	0.300	0.188
Non-communist jets/phones	0.129	0.068	0.047
Communist tanks/GNP	23.3	27.7	24.5
Non-communist tanks/GNP	10.2	9.4	9.6
Communist tanks/autos	0.853	1.19	0.337
Non-communist tanks/autos	0.749	0.611	0.313
Communist tanks/phones	0.614	2.08	1.16
Non-communist tanks/phones	0.477	0.274	0.239

NOTE: GNP is in billions of U.S. 1983 dollars; autos and phones in thousands of U.S. 1983 dollars.

indicates, the averages for the communist countries are greater for each ratio of military-to-civil technology in all years. If the GNP indicator is used to measure prevailing civil technology, the ratio for the communist countries is always significantly higher. For the total of 18 paired ratios shown in the table, the military-to-civil-technology ratio of the communist countries is higher, as well as statistically significant, in 11 of the 18 pairs.

In the specific cases of the United States and the Soviet Union, the crude tank and jet technology indexes are especially inadequate to measure the technology embodied in their large and complex force structures. The Department of Defense, in comparing U.S. and Soviet military technology, has tried to assess the extent to which one or the other country leads in 20 critical military technologies. For 1986, the DoD comparison estimated a U.S. lead in 14 of the 20, while the remaining six showed no lead for either side.[12]

If one shifts to the corresponding civil technology proxies, the U.S. GNP is about 80 percent greater than that of the Soviet Union, while automobiles and phones in use in the United States exceed those in the Soviet Union by at least an order of magnitude. These disparities seem to be considerably larger than those observed in the military technology areas. Thus, on an impressionistic and judgmental basis, it appears that Soviet military technology approaches that of the United States more closely than Soviet civil technology approaches its U.S. counterpart—an inference that is consistent with the numerical results we have derived for the other 87 countries in the sample.

The fourth dimension, *civil-military relations*, that we wish to compare between communist and non-communist systems is at least subject to quantitative treatment. Consequently, we have tried to examine the texture of civil-military relations in communist systems to ascertain what may be distinctive about them compared with the relationships in non-communist systems. Our aim has been to use quantitative

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[12]The source for this DoD estimate is *Allocation of Resources in the Soviet Union and China—1985*, Part 11, Hearing Before the Subcommittee on Economic Resources, Competitiveness, and Security Economics, of the Joint Economic Committee, March 19, 1986, p. 116. The 20 technology areas are: aerodynamics/fluid dynamics; computers and software; conventional warheads (including all chemical explosives); directed energy (laser); electro-optical sensor (including infrared); guidance and navigation; life sciences (human factors/biotechnology); materials (lightweight, high strength, high temperature); micro-electronic materials and integrated circuit manufacturing; nuclear warheads; optics; power sources (mobile) (includes energy storage); production/manufacturing (includes automated control); propulsion (aerospace and ground vehicles); radar sensor; robotics and machine intelligence; signal processing; signature reduction; submarine detection; telecommunications (includes fiber optics). Note that the testimony did not specify the Soviet lags in terms of years, with the exception of computer technology, for which the lag was estimated at 5 to 15 years.

indicators where these are relevant, but to rely mainly on the quality of these relationships to highlight appropriate contrasts.

It is worth noting that the professed supremacy of civil authorities (in particular the Communist Party) over the military is no less characteristic of communist than of Western democratic systems. Bonapartism is equally anathema in communist and in democratic, non-communist systems. Jaruzelski's assumption of political leadership in Poland, as a projection of his prior military command, is a rare departure from communist precepts, rather than a reflection of them. Typically, while communist systems include the military leadership within the ruling Communist Party and the *nomenklatura* elite,[13] the Party's predominance is a firm, general rule.

Moreover, this general rule is reinforced by the insertion within the military structure of Party officers and of the security apparatus, who maintain their separate reporting channels to the political leadership as a constant check on the military itself. Parenthetically, from the numerous precautions and safeguards that communist political leadership takes to prevent Bonapartism, one might infer an omnipresent fear that it might arise precisely because of the prominence and strength of the military dimensions in communist systems.

Civil-military relations in communist systems differ fundamentally from those prevailing in Western democracies, although the difference does not lie in the degree of military subordination to civilian authorities. Rather it is found in a more complex set of relationships. In communist systems, we may conjecture that civil-military relations are characterized by an implicit "contract": on the one hand, the implicit contractual obligation of the military is strict subordination to the political dictates of the ruling party; on the other hand, the implicit contractual obligation of the Party is to accord top priority to meeting the economic and technological "needs" and "requirements" of the military.[14] Furthermore, the contract is typically more cooperative than adversarial. To the extent that expansion of communist power is prominent, if not preeminent, among the objectives of the political leadership, it will wish to accord top priority to the aspirations of the military. And to the extent that the military itself acknowledges the

[13]See Michael Voslensky, *Nomenklatura: The Soviet Ruling Class*, Garden City, New York, 1984, pp. 107–109. See also Michael Sadykiewicz, *Nomenklatura in the USSR and Poland: Components, Strength, and Distribution*, unpublished manuscript, November 1986.

[14]To our knowledge, this notion of an implicit contractual relationship between the Party and the armed forces has not been advanced before, although it derives support from several other sources. See, for example, Voslensky, *Nomenklatura*, pp. 389–390.

goals of Marxism-Leninism as its own, it will want to accord responsibility for policy determination to the Communist Party. In both instances, mutual and reciprocal interest is large.[15]

A narrower, as well as more quantifiable, indicator of civil-military relations in communist systems compared with non-communist ones is pay and perquisites. Although detailed data are hard to come by, officer corps in communist systems seem to receive pay and compensation benefits (including special stores, housing, and access to medical care) that are substantially greater than those realized in nonmilitary careers.[16]

Based on paired comparisons between the United States and the Soviet Union, India and the People's Republic of China, West Germany and East Germany, and South and North Korea, our judgment is that the compensation package as a whole for military officers exceeds that of their civilian counterparts in the communist member of each pair. While it is true that the military may receive higher compensation in some non-communist states (such as the military-authoritarian regimes in Indonesia, Panama, Paraguay, and others), the communist systems in our sample characteristically tend to have relatively advantaged compensation packages compared with the non-communist systems. However, for some communist countries this advantage reflects the poor conditions under which officers serve.

Another facet of civil-military relations in communist systems concerns the typical and high degree of military involvement in the civil economy. Two aspects of this involvement are indicated by the relatively high percentage of GNP devoted to defense, as well as the typically higher proportion of the population serving in the military. However, military involvement, and in particular the potential for military mobilization and surge capabilities, are actually much more pervasive. Examples include: the design of merchant ships to naval standards, as well as the use of merchant and fishing vessels for naval support

[15]It is interesting to note that a knowledgeable historian, Mark von Hagen of Columbia University, ascribes particular significance to the conversion of the October 1917 Revolution from an anti-authoritarian stance to that of a "national security-welfare state" and from anti-militarism to a distinct militarization of the post-revolutionary economy and society. Shortly after the Revolution, the Red Army assumed a central role in protecting its fragile success from both internal and external threats, in the process providing a model for other nascent communist regimes. Moreover, the central role of the army was underscored by the tight linkage between the army and the Party—about 50 percent of the initial core of Communist Party members were in the officer corps of the Red Army. Von Hagen believes Lenin and Frunze became strong advocates of a post-revolutionary industrialization of the Soviet Union that emphasized the central importance of military industry.

[16]See Dale R. Herspring and Ivan Volgyes (Eds.), *Civil-Military Relations in Communist Systems*, Boulder: Westview Press, 1978.

purposes; the use of commercial aircraft for military airlift purposes; the special priority and access which the military receives for high-quality inputs; the extra design features of civilian sector plants to meet military production needs; the location and overbuilding of transportation and other infrastructure facilities to accommodate potential military uses; various military impositions and influences on educational institutions; and so on.

Due to these indirect, but substantial, forms of military penetration and involvement in the civil economy, the usual aggregate measures of military burden and military spending proportions are misleadingly biased on the low side.[17] Moreover, communist systems are also characterized by reverse flows from the military to the civil economy. Military establishments in communist systems often perform functions and make contributions to the civil economy that are not found at all, or only to a much more limited extent, in non-communist systems—for example, providing manpower to help in agricultural harvesting, and using military equipment and engineering assistance in constructing factories, bridges, etc. Although the underestimate of military burdens typically and substantially exceeds the underestimate of military contributions to the civil economy, both sets of interactions lead to a common conclusion: a general tendency in communist systems for the military's involvement in the economy to exceed that found in non-communist systems.

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[17]See Henry Rowen and Charles Wolf, Jr. (Eds.), *The Future of the Soviet Empire*, St. Martin's, New York, 1988. In this connection, it is worth noting that RAND and other specialists on the Soviet economy have been developing "alternative views" of the Soviet economy that focus on "penetration" and "priority" models of the relationship between the military and the civil economy. These models reflect dissatisfaction with most existing models that depict the Soviet economy as more or less a "mirror-image" of a stereotypical Western industrial economy. See Gregory G. Hildebrandt (Ed.), *RAND Conference on Models of the Soviet Economy, October 11-12, 1984*, The RAND Corporation, R-3322, October 1985; and Richard E. Ericson, *Priority, Duality, and Penetration in the Soviet Command Economy*, The RAND Corporation, N-2643-NA (forthcoming).

IV. CONCLUSIONS AND IMPLICATIONS FOR ANALYSIS AND POLICY

The empirical findings summarized in this report provide strong support for our original hypothesis: communist systems tend toward greater development of their military dimensions, relative to corresponding civil dimensions, than do non-communist systems. More specifically, this tendency is substantial and statistically significant with respect to three quantitative measures: the proportion of the GNP represented by military outlays; the percentage of the population in the active military services; and the development of military technology compared with civil technology.

With regard to the characteristic texture of relationships between military and civil sectors, our conclusion, though more impressionistic and judgmental, is consistent with the quantitative findings. On the one hand, the military in Marxist-Leninist systems is no less subordinate to political control by the civilian leadership than in democratic ones, and quite definitely more subordinate than in most non-communist authoritarian systems. On the other hand, Marxist-Leninist systems tend to provide more special rewards and incentives to the military, in the form of generally higher pay and perquisites relative to their civilian counterparts, than one finds in non-communist systems, except where the latter are military dictatorships. Furthermore, Marxist-Leninist systems exhibit a degree of military penetration and involvement in the economy and the society as a whole—a characteristic "militarization" of these sectors—that is atypical in non-Marxist-Leninist systems, with the same exception of military dictatorships.

While these empirical findings are entirely consistent with our initial hypothesis, and with the reasoning that underlies it, other explanations for the findings can be advanced as well. We initially advanced a plausible but not exclusive explanation: the *demand* for military development looms especially large in communist systems because power-maximization is at the core of their political commitment; at the same time the *production* or supply of military goods and services constitutes a field in which centrally planned systems are relatively efficient and in which the opportunity costs in forgone nonmilitary output are less than in non-communist systems.

As an example, overdevelopment of the military dimensions of communist systems might be explained as a reaction to a perceived and

relentless external threat. Although this explanation may lose some force in the cases of partitioned countries (such as East and West Germany) and countries that have shifted from non-communist to communist status (such as Ethiopia), it can be argued that sufficient belief in an external threat, whether that threat actually exists or not, can lead to a self-fulfilling premise: military efforts ostensibly intended to defend against perceived external threats may themselves be regarded as offensive in nature, thereby activating latent, but previously absent, threats.

The salience of the military dimensions of communist systems suggests that our understanding of these systems would be enhanced by analysis modes that focus on the priority access by the military to high-quality resources and on the adjustments and distortions imposed on the civil economy by current or potential military activities. In light of the much more extensive involvement of the military in communist economies and societies—indeed, the typically greater degree of militarization—these aspects should be accorded an importance in analysis that is rarely acknowledged, let alone displayed.

With respect to conducting relations and negotiations with Marxist-Leninist systems in general, and the Soviet Union in particular, certain inferences and conjectures may be drawn from our findings:

(1) If one infers from our empirical findings that a marked emphasis on the military is a genetic characteristic of Marxist-Leninist systems, then substantially altering this characteristic would prove nearly as difficult as effecting a fundamental change in the systems themselves.

(2) When specific weapons or forces in communist countries are subject to restriction or reduction, it would be reasonable to examine explicitly which other military fields and technologies might be considered or even encouraged for further development and reallocation. That is, it may be more realistic to anticipate the redirection of communist military efforts than to assume that reductions in one military sphere will mean reductions in aggregate military efforts. In the case of the Soviet Union, resources saved from reductions in nuclear forces might be reallocated for the modernization of conventional forces, and resources saved from conventional forces might be directed toward enhancement of projection forces or toward additional military deliveries to countries elsewhere in the Soviet empire.

(3) It is especially important to consider the impact of foreign policy on the military of communist systems. We have discussed the military's likely influence in shaping communist system behavior and the implicit "contract" between the political leadership and the military. These factors mean that it would be realistic to expect the military to achieve benefits and significant "externalities" from foreign policies of other countries, even though those policies may be intended to help and advance only the nonmilitary dimensions of communist systems. Thus, the expansion of foreign trade, credits, joint ventures, technology cooperation, and other relationships in nonmilitary domains may ramify and affect both the quality and quantity of resources available to the high-priority military claimants in communist systems. In simulating the behavior of communist systems, it would be worthwhile to include in the design explicit allowance for a military perspective. In particular, when U.S. or Western policy initiatives are under consideration, it may be worthwhile to address the question, "What's in it for the military?" In cases when the answer is "Nothing" or the military is an unqualified loser, it is doubtful that the policy in question will be either practicable or durable.

(4) Our alternative demand and supply hypotheses carry sharply differing policy implications.[1] For example, if communist systems in fact tend systematically to demand or prefer greater military services than do non-communist systems (the "demand-side" hypothesis), then we should not be willing to encourage or support the *perestroika* process in the Soviet Union. A successful economic restructuring would provide more resources with which greater military demands could be satisfied, unless the restructuring process itself reduced this demand. On the other hand, if the supply-side hypothesis is correct—if the observed behavioral pattern stems from the relatively greater efficiency of communist systems to produce military than nonmilitary output—then we should encourage and support the *perestroika* process, because greater economic efficiency would, in effect, raise the price of military services in the Soviet Union and thereby tend to promote civil, rather than military, output.

[1]We are indebted to Scott Cardell of The RAND Corporation for calling this point to our attention.

(5) Since we cannot be sure which hypothesis is correct—or, if both are correct, which dominates, or how durable either is—it probably would be prudent to avoid Western support for *perestroika*. This is particularly true since, even if we were reasonably confident of the supply-side hypothesis, it is by no means certain that the *perestroika* policy will last. Should it not last, U.S. concessions in trade policy and the like could result in indirect support of Soviet military expansion.