TITLE: ASSESSING SOVIET MILITARY AND CIVILIAN PERFORMANCE

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In this paper we seek to accomplish three things. First, we challenge the hypothesis that performance in the Soviet military sector is higher than in the Soviet civilian sector and argue that, instead, there is no difference in the overall performance levels of units in the two sectors. Second, we identify the differential mix of ingredients, the independent variables, that contribute to changes in performance in the military and civilian sectors respectively. Third, we engage in some initial speculation about the implications of our findings for an understanding of the ways that Soviet military performance could be improved, given the links between the military as an institution and Soviet society overall, as well as for an understanding of civil-military relations in the Soviet Union.

I

Our contention that, overall, the performance levels in the Soviet military and civilian sectors are equivalent stems from the responses to a survey administered in Russian during 1986 to 1113 male former Soviet citizens, now residing in the United States. The sampling frame was based on that of the 1983 Soviet Interview Project General Survey (Anderson and Silver in Millar, ed. 1987, forthcoming). Of those we interviewed, 785 served on active duty. Both servers and non-servers in our sample were almost entirely from the European part of the Soviet Union. They are overwhelmingly Jewish, disproportionately urban, and substantially more educated than the male Soviet population at large—the pool available to the Soviet military.

Of those who served on active duty, 356 were conscripts, 342 were non-coms—sergeants, sergeant majors (starshiny), warrant or petty officers (praporshchiki or michmany), and 87 were officers. All had to have served in
1968 or later. About a quarter (26%) were discharged in 1968 or 1969, and about a third (34%) completed their active duty in 1970, 1971 and 1972. The bulk of the remainder completed their active duty in the early and mid-1970s, though a few served as recently as 1978-80. The active duty experience of those who served turned out to be evenly distributed across combat (32%), support (36%) and rear (32%) units and there was considerable diversity in the respondents' branch of service as well. Slightly more than a quarter served in the ground forces (28%) and a fifth (20%) in the rear services. Of the remainder, the largest numbers were air defense (17%), air forces (11%), and strategic rocket forces (6%), with the navy (4%), border troops, and others completing the list.

In the survey, the respondents served primarily as informants. They were asked several explicitly comparative questions about their military and civilian work experiences as well as a battery of similarly phrased parallel questions that had the effect of embedding comparison of military and civilian experience in the questionnaire.

With respect to the overall assessment of civilian and military performance in particular, our basic measure was a thermometer type question which was asked of all servers concerning their global evaluation of the performance of their basic military unit, usually a squad, platoon, company or battery; the unit above that basic unit--most often a company, battery, battalion, regiment or brigade; their basic civilian work unit comparable to the basic military unit; and the overall place of civilian work. In each instance the respondent was told to "think about the best possible way [the relevant unit] could have performed. That would be 100 percent." and then asked, "Overall, during your stay with that [unit], what percentage would you
"give it for the performance of its mission?" The mean responses of those who answered both the military and civilian thermometer questions for both the basic military and civilian units and the analogous military and civilian higher units were computed. In each instance, the results were the same. The means of the scores for the basic military group (77.8) and the basic civilian group (78.1; n=496) were almost identical. So, too, were the means of the respective next higher military and civilian units. (Both military scores are actually slightly less than the comparable civilian group but in neither instance is the difference in means statistically significant.)

The finding that there is no difference between Soviet military and civilian performance is a remarkable one. There are good reasons for believing that performance in the Soviet military sector is higher than in the civilian sector. Certainly, in comparing the performance of Western pluralist systems and an authoritarian mobilization system such as the Soviet Union, there exists a widely shared view that one area in which the Soviet Union has a comparative advantage is in the use of military power and in providing states with arms and other military aid.

In addition, the military in all societies is a relatively autonomous social system as well as a total institution. The role of the military in foreign policy and as an ultimate arbiter of internal conflict, the differential patterns of socialization, and the relatively insulated internal communication networks—all contribute to making the military somewhat immune to the societal forces and social pathologies that may impede performance in the civilian sector of a country.
Students of Soviet behavior, moreover, have long known that the military is relatively advantaged in the allocation of resources and that quality control in the production of military equipment is higher than that prevailing in the production of civilian goods. Indeed, one element in Mikhail Gorbachev's restructuring (perestroika) seems to be the introduction of a civilian counterpart to the voenpred, a person who would monitor production of civilian goods in the way that the military representative attached to large enterprises currently does for the production of hardware for the military. It is sometimes also claimed that the military gets the pick of the high school crop as a result of its conscription practices.

For all these reasons, it would appear a reasonable hypothesis that overall performance in the Soviet military is greater than it is in the civilian sector. The numbers, however, seem to suggest otherwise.

One possibility, of course, is that our findings are artifactual and do not constitute valid evidence for our conclusion. Readers will be less than surprised to learn that we believe this not to be the case. But to persevere in our claim that Soviet military and civilian performance are similar requires that we address several questions about our respondents and relating to our operationalization of the concept of performance.

One way to challenge our findings involves a set of questions pertaining to our sample. This is an issue that bears on the relevance of our data for any propositions about the Soviet military experience. The Soviet emigrant population from which the sample was drawn is by no means representative of the Soviet military. Our sample is overwhelmingly Jewish. They are more educated and more urban than the pool of military servers.
Beyond those biases of which we are acutely aware, the sample very likely has other, unknown biases. Nevertheless, we believe that, with careful analysis, inferences about some important patterns in political and social attitudes of Soviet citizens can be drawn from interviews of people whose decision to leave the Soviet Union distinguishes them from those who remained behind (Zimmerman and Yarsike, 1986).

For the purposes of this paper, however, we need not make that claim. The focus here involves either the explicit or embedded comparisons of behaviors observed by our respondents. There are several reasons this reduces our methodological problems.

The technique we adopted minimizes the problems of bias. By framing almost all our questions in the form of explicit or embedded comparisons—the thermometer questions being one such embedded question—we take the weight off the representativeness of the sample vis-a-vis the Soviet Union as a whole.

By focusing on the behaviors our respondents witnessed, moreover, we minimized the likelihood that the reports are different than ones we would have gotten from some potential parallel group of informants in the Soviet Union. Military service is, after all, compulsory in the Soviet Union. Our respondents are reporting on events, situations, and decisions they witnessed prior to the time when they made the decision to migrate. The reports of experiences that others had in the unit in which our respondents served are much less likely to have been influenced by our respondents' subsequent decision to migrate than are, for instance, attitudinal questions. More importantly, the experiences of others in the military or in the civilian workplace are not likely to have affected the respondents' overall impression of the relative performance of the military and civilian units.
Even if, further, our sample of Jewish emigrants had experiences which differentiate them from other Soviet citizens in ways that affect their role as informants, it seems unlikely that they were not subjected to comparable differential treatment in both civilian and military life. Consequently, we would adjure great caution in generalizing to the whole Soviet military from the marginals in our analysis. At the same time, comparisons of civilian and military experience should be unaffected because the reports, if biased at all, are biased in similar degrees on both sides of the comparison, with the result being that valid estimates of the differences between sectors remain possible.

All this would still be unsatisfactory if our respondents had been shunted off into militarily insignificant units or if they were segregated from the military experiences of persons from other ethnic groups, or with differing levels of education, or of different social origins. This turns out not to be a concern. A priori, we might suspect that either the ethnic or educational levels of our respondents would influence their placement in the Soviet military. There may be something to this. Nevertheless, the distribution of our informants across branches of service and across combat, support, and rear units, noted above, is a strong indication that, ethnicity and educational level notwithstanding, the respondents had experiences that render them potentially valuable informants about the Soviet military experience. With the exception of a few cases, they were not segregated on the basis of their ethnicity. Four-fifths of the respondents (81.6%) told us they were in units in which none or almost none of the soldiers in the unit were Jewish; 17.5% said some of the members of the unit were Jewish; only six of the respondents (1%) said that they had been in units where half (three
respondents), more than half (one), or all or almost all (two) of the soldiers were Jewish. We are not reporting the experiences of "Jewish battalions" nor are we reporting the testimony of persons excluded from combat units or from strategically important military roles.

A second line of attack would be to question the utility of our thermometer-style questions as an adequate dependent variable measuring civilian and, especially, military performance. We grant that in some fundamental epistemological sense one never knows how a unit will perform absent the test of battle. In a non-market economy, moreover, we recognize one has reason to wonder what performance judgments imply in the civilian sector as well. These are objections that apply to all efforts to compare Soviet military and civilian performance, including ours. The methodological issues in measuring power in international politics are also legion. In world politics, it turns out, nevertheless, that there are elephants and squirrels and the elephants know who the elephants and squirrels are and so do the squirrels. In like fashion, judgments about strongly and weakly performing units in the Soviet military and civilian sectors are possible.

The real issue is whether our thermometer measure is a valid basis for rendering such assessments. We think it is. Throughout the questionnaire, the response patterns of those interviewed indicate that the responses were carefully uttered. They are neither frivolous nor casual. Rather they have impressive face validity and are internally consistent among themselves.

As a relevant example, consider the seven explicitly comparative questions about component aspects of civilian and military performance that the respondents were asked. The questions took the form "Comparing your basic
civilian group and your basic military unit, on which job did your co-workers work better; in the civilian job, in the military job, or were they about the same." The respondents were asked to compare: the adequacy of equipment, the care of that equipment, the quality of the training of the personnel, the level of job satisfaction, the amount of slacking off, the level of conflict, and whether their co-workers worked better in one or the other domain. Using a three point scale where a response favoring the civilian experience was 1, no difference a 2, and a response favoring the military experience a 3, the grand mean for the seven measures was 1.95, thus reinforcing the impression captured by the thermometer scale that the aggregate judgment of the respondents was that the performance in the two domains is essentially similar.

More importantly, the measure correlates well with notions widespread in the literature as to what produces good performance. A reasonable and parsimonious proposition about performance is that, minimally, performance is the product of good morale and adequate equipment. Conversely, a combination of poor morale and inadequate equipment should produce poor performance. Furthermore, a measure of military performance should apply well to combat units.

It turns out that the relationship is strong when we consider the responses of all who served or when we focus on the smaller number who served in combat units. The Pearson correlation of the variable (MEQADEQ x MMORALE), where MEQADEQ is how often the basic military unit was adequately equipped or supplied in order to carry out its assignment well and MMORALE the responses to the question "Most of the time, how was morale in your basic military unit", with the dependent variable thermometer measure is r = .43; p < .001 (N=598). For combat units, the correlation is r = .47; p < .001 (N=198). When we
focus only on the responses of officers and noncoms, who might be assumed better able to provide informed assessments, the correlation becomes $r = .54$, $p < .001$ (N=340). What this means in practical terms may be seen by Table 1. Of those units receiving failing grades (less than 65), almost three-fifths were described as either having poor or very poor morale and/or being adequately equipped to accomplish their mission "sometimes", "rarely" or "never". Four-fifths of the military units that received numerical scores of 95 or higher were units in which our non-com and officer informants reported that morale was good or very good and that "all the time" or "nearly all the time" they had sufficient equipment and supplies to carry out their assignment well.

See Table 1 page 27

A more subtle issue than whether our measure is tapping performance is whether it may be treated as an interval scale. The individuals were ordering their preferences when they gave an "80" to their military unit and an "85" to their basic civilian unit. It is worth noting that virtually all the responses are divisible by five, so that our argument does not rest on an assumption that highly discrete inter-personal comparisons are possible. Rather the claim is that, for instance, an 85 is the next increment after 80 and the first decrement less than 90 and that the underlying metric is such that the 85 may be thought of as being more or less equally spaced between 80 and 90. The pattern of responses to cross-tabulations of our measure with items such as morale, initiative, and equipment adequacy is such as to lead us to believe that, aggregated across 679 cases, an 80 is less than an 85 and that from 50 up (which represents all but 43 of the cases) on our scale the distances between units are essentially similar. Where the responses do not seem capable of being ranked, much less being thought of as being located on some interval
is at the lower end of our scale. There, responses like 10, 25, and 40 all represent differing ways of saying that the performance in a unit was awful. Finer gradations seem inappropriate. What we have done consequently is to treat all responses of 50 or below as equivalent. (We also recoded the three responses concerning the basic military group and four relating to the basic civilian group over a 100%—"They gave 110%" as a 100.) This has virtually no impact on the relationships we report, changing correlation coefficients by .01 or .02.

In brief, therefore, the measure we have designed reflects the judgment by our respondents that Soviet military and civilian performance is similar. Treating the respondents as informants minimizes bias. They are reporting a wide range of experiences in every branch of the Soviet military and in combat, support, and rear units. Our measures have some relation to the real world and in that world, Soviet military and civilian sector performance are similar.

II

This does not, however, imply that the mix of factors that produces essentially similar end results is the same. We developed a set of almost 40 questions which for theoretical and/or commonsensical reasons seemed likely to bear on performance in the two sectors. These included questions concerning: the effectiveness of supervision and discipline; the economic, social, and ethnic composition of the unit; the quantity and quality of available equipment; the reasons soldiers or workers gave for not following orders or instructions and how often they acted against their better judgment; the level of satisfaction with food, medical care, and housing during their stints in
the military and during their last normal civilian work experience—before
they made known their decision to emigrate; and that powerful intangible, unit
morale. What we could not anticipate in advance was which of the several
aspects of any domain in our set of questions would prove to be crucial for
unit performance in one or the other sector.

We wish to emphasize, however, that while the overall performance
scores were similar, the factors that contribute to and impede performance in
the civilian and military sectors do sometimes differ. There are two
dimensions to this proposition that should be carefully distinguished. One
aspect is the level of a resource or input that is available to the military
or civilian sectors, as indicated by the means of the independent (input)
variables. The other aspect is the relationship between increments in the
available inputs and changes in performance, as evidenced by the slopes of the
input variables. Thus, the military might well receive more of a resource
(expressed in a higher mean value than for the civilian sector) and yet use
the resource less efficiently in performing its mission (as indicated in a
lower slope value for the resource than in the civilian sector). Means for
input variables measuring level of input are displayed in Table 2. The slopes
and the differences in slopes indicative of a difference in the marginal
return for an increment in input are contained in Table 3.

See Table 2 page 28

The levels of various elements that make for performance differs
between the two sectors (See Table 2). Some of these differences are scarcely
surprising. Thus, it is not news that the ethnic mix and social origins
(GPKHZ) of the military units in which our respondents served are more
heterogenous than are the civilian workplace units. The military draws from
the entire male population of the Soviet Union. Most localities in which our
informants had their civilian work experience are more homogeneous than is the
Soviet Union as a whole. Similarly, sergeants come from more humble social
origins than do the civilian supervisors. Both they and their officers are
less well educated than the supervisors of these highly educated informants
from the European regions of the USSR.

It is also well known that the equipment in the military is generally
more adequate than in the civilian sector (EQADEQ). Likewise, there is little
surprise in learning that the levels of satisfaction with food (SATFOOD),
housing, and medicine (SATMED) are lower for our respondents during their
military service than in their civilian experience in the Soviet Union; one
would be suspicious if it were otherwise, especially in the cases of food and
housing.

Other differences in the levels of elements that affect performance are
not as obvious. The level of morale is lower in the military than in the
civilian sector (MORALE). The reported incidence of persons absenting
themselves from their duties is less in the military than in the civilian
sector (GPAWAY) and the punishment—usually extra duty—for being caught
greater in the military than in the civilian sector where a warning is the
modal consequence (PUNLFT). There is a lower level of alcoholism (ALC)
affecting the performance of the unit's task in the military than in the
civilian sector. Persons in the Soviet military act against their judgment
more often than they do in the Soviet civilian workplace (NOTJDG) and their
level of training in handling equipment (including in the military, weapons)
is lower (EQTRN). The officer and the sergeant immediately above our
informants generally had less effect on the performance of the basic military unit than did the supervisors of our informants in their civilian work experience (EFFZ).

Our concern in this paper, however, is more with the consequences that incremental changes from the present situation might produce in Soviet military or civilian performance. To that end, we sought to ascertain whether there are statistically significant differences in the marginal gains to performance for equal additional inputs of various resources. Our general approach to this task involved creating two regression equations based on 22 of the approximately 40 questions with which we began our comparisons of performance in the two sectors. These 22 variables exhibited statistically reliable patterns and were significant at the $p < .10$ level in one or the other, though not necessarily both, of the separate backward regression equations performed initially.

The two regression equations related performance to inputs. In one instance, military unit performance—our military performance thermometer (MGPPRF)—was explained by military input variables, such as adequacy of equipment, satisfaction with medical care and the like. In the other regression, we related civilian work group inputs to the civilian performance variable, again a thermometer measure, CGPFRF. The two regression equations cannot be thought of as being independent since the same respondents answered both sets of questions, both those addressing the military experience and those parallel ones for the civilian sector, framed in exactly the same language whenever possible. As a result, the error terms for the two equations are correlated ($r = .12$). By taking this fact into account, the efficiency of the estimates of the regression coefficients can be improved. Econometricians
term the technique for treating this situation "seemingly unrelated regressions" (SUR)\(^1\) because the two equations seem unrelated unless the correlations among the disturbances—the respective error terms for the two equations—are taken into consideration.

The SUR technique, which estimates the military and civilian performance regression equations simultaneously, has an additional benefit. Using SUR permits us to test for differences between corresponding slope coefficients in the two equations. We are thus able to test whether the marginal returns for parallel input variables, training in the use of equipment for instance, are the same in the military and civilian sectors. When a difference in slopes is found, this indicates that the two sectors utilize a resource with different degrees of efficiency in the pursuit of mission performance. This implies that equal additional inputs of a resource would produce statistically significant differences in the increments to performance in the two sectors. More colloquially, we are able to assess which increments in resources would produce comparatively greater rubble for the ruble.

One difficulty we faced was that many of the respondents did not answer the entire set of 22 selected questions. We dealt with the resultant problem of missing data by the following case selection criteria. We took only cases that had valid responses for both of the dependent variables, the military and civilian thermometer performance measures (MGPPRF and CGPPRF). In addition the cases had to contain responses for at least three-fourths of the independent variables as well. This left us with 496 cases. For those cases we inserted mean values computed over all valid cases in this set for a variable in the event there was a missing answer. We did this for 6.5% of the military
responses and 5.9% of the civilian. The vast majority of the substitutions occur in connection with three questions that many respondents were not asked by virtue of the structure of the questionnaire: ordinary soldiers or sailors were not asked whether an officer in their unit was ever punished for a mistake committed by a soldier or sergeant (PUN); respondents were not asked about equipment training (EQTRN) if the performance of the unit did not depend on a major piece of equipment or complex set of tools or equipment; and the respondents were not asked the reaction of their supervisor (JDGRCTZ) when they acted against their own judgment if they never, in fact, so acted. Excluding these three questions, the substitutions of means occurs in 1.9% of the military responses and 1.2% of the civilian. In all instances, the response patterns remain stable with substitutions. This procedure, we recognize, introduces a bias into the estimates. It has the advantage, however, of reducing the error (increasing the power of the test) by roughly doubling the number of total cases available for analysis.

The results of the Seemingly Unrelated Regression analysis are shown in Table 3. SUR coefficient estimates are given in the first column for the military predictors of military performance and in the second column for civilian predictors of civilian performance. Column 3 contains the differences between columns 1 and 2; a t-test of this difference appears in Column 4. Because the variables that were chosen were significant in one and/or the other sector at the $p < .10$ level, column 3 compares coefficient pairs in which at least one of the coefficients was found to be reliably different from zero. The rows contain the independent (predictor) variables in relevant domains for both the military and civilian sectors.
Unit composition

The social backgrounds and talents of the men who comprise a military unit or a civilian work group might plausibly be expected to affect the performance of the unit. In the units which our informants describe, neither higher class composition (as measured here by the proportion of white-collar workers in the unit) nor ethnic origin (the proportion of Muslims in either sector) affected performance in either the military or the civilian sector. As attractive as the hypothesis that ethnic composition influences performance may seem a priori, these data suggest that changes in the ethnic or class composition of the units per se would not alter the performance of the respective unit. When class composition is defined in terms of social origins and as the proportion of persons who were state- or collective-farmers, sovkhozniki and kolkhozniki, in the unit, then the social origins of persons in the civilian unit (GPKHZ) did have an effect on civilian performance: the higher the proportion of persons of rural social origins, the lower its rated performance. We assume this occurs because persons of such background have relatively lower skills relevant to jobs in an urban setting than do persons from urban blue-collar or white-collar backgrounds. The comparison of the two sectors in Column 3 (Column 1 minus Column 2), moreover, shows a reliable difference between sectors. Whereas an increment in the number of soldiers from rural agricultural origins is not related to performance in the military (the slope is not different from zero), a similar increment in such workers in the civilian work groups would have a negative impact on performance (p < .05). This difference is reliable as between the two sectors (t=2.30, p < .05).
Supervision and discipline

The quality of supervision was measured in two ways. One pair of variables asked for direct assessments of officer and civilian effectiveness (OFFEFFZ and SUPEFFZ). Another pair of supervisor assessments were formed by summing a set of nine positive supervisory behaviors characteristic of leaders in each sector (MSUPZ and CSUPZ). The aggregated military supervisor assessment (MSUPZ) and the direct assessment of civilian effectiveness (SUPEFFZ) just exceeded the \( p < .10 \) selection cutoff. Consequently, we decided to include all four variables, military and civilian, in the SUR analysis. The effects (see Table 3) are modest. There is no difference in the assessed quality of unit leadership between the two sectors.

The accountability of unit supervisors in the two sectors does, however, differ. Informants were asked whether their officer in their military unit or their civilian supervisor had ever been punished for the mistakes of subordinates. The coefficient for this variable is significant in the military (\( p < .01 \)) but is not significant in the civilian sector; the difference between the two sectors was highly reliable as well (\( p < .01 \)). The principle of hierarchical responsibility, when applied, in the military seems to represent a clear advantage with respect to performance for the military.

Supervision and discipline are closely related, though the institutional context in which the performing unit is situated doubtless conditions the relationship. We attempted to measure work discipline in the two sectors directly by asking how often members of the relevant basic unit were away from their posts without permission (MGPAWAY and CGPAWAY) and what the typical punishment for such behavior was (MPUNLFT and CPUNLFT). In both
the military and civilian sectors, there is a substantial deleterious effect on performance that results from part-day absences. Punishments for such short absences did not relate to performance in the military sector, but in the civilian workplace, there is a modest effect (p < .10), with the imposition of higher punishments (typically warnings or fines) associated with higher performance. The difference in favor of the civilian sector is quite reliable (p < .0001).

This point is reinforced by the fact that low absenteeism is a further positive factor in the civilian sector (p < .01) whereas desertion at the level of incidence reported by our informants does not affect military performance. (We do not compare the coefficients on these two variables since these two behaviors differ substantially in their consequences and in the frequency of their occurrence in the two sectors. Also, they were measured on different response scales.) The military seems to benefit in comparison with the Soviet civilian sector from its character as a total institution: it has a greater capacity to keep people at their jobs when they are recalcitrant in the execution of their duties.

Social pathologies

A phenomenon closely related to supervision and discipline is rate of social pathology. In the Soviet setting, the most glaring such behaviors are those related to alcoholism. We assessed the impact of alcoholism (M and C ALC) on performance by summing the frequencies with which hangovers (M and C GPHANG) and drunkenness (M and C GPDRK) affected the performance of the unit’s mission in the two sectors. The measure combining hangovers and drunkenness achieved the p < .10 inclusion criterion in the military backward regression.
Once other important factors were controlled for, we found no effect of alcoholism on performance in either sector. We are not stating that alcoholism is irrelevant to Soviet military or civilian performance. We are suggesting that the performance of the military units and the civilian work groups is not incrementally affected by alcoholism over and above problems relating to discipline and supervision. Alcoholism is in our view one of a number of related problems that tend to occur in tandem and jointly affect performance. To a large extent, measures to combat them all involve tighter supervision of the unit and personnel control in both the civilian and the military sector.

Rational work organization

We also analyzed various measures that try to evaluate the rational organization of work in the basic units in the two sectors. One group of measures concerned the bases of promotion in the each sector. In neither the military nor the civilian sector did we find a relationship between unit performance and a reported tendency to promote persons on the basis of loyalty to their supervisors, membership in the CPSU, connections, or ability to organize the work of others. We did find that in the military the tendency to consider nationality in promotion (MPRONATZ) was inversely related to performance ($p < .05$), and this behavior was reliably different from civilian practice ($t = -2.14, p < .05$). We also found a significant tendency in the civilian sector to promote workers on the basis of their job experience (CPROEXPZ), and this factor distinguished to some degree the effects on unit performance of civilian promotion patterns from military ones ($p < .10$). (This finding needs to be treated with some caution. Most of our respondents were in the military for only a few years, and thus had little time to observe whether experience played a role over the course of their tours of duty. On the other
hand, much the same observation obtains for our informants with respect to their civilian job experience, given that their last normal period of work in the civilian sector was also relatively brief.)

In addition, the use of nationality in promotion apparently has greater consequences for performance in the Soviet military than in the civilian sector ($t=-2.14$, $p<.05$). Similarly, the use of experience as a criterion in promotion in the civilian sector has a somewhat greater consequence there than in the military sector ($t=-1.93$, $p<.10$).

Another indication of optimizing performance is the degree to which persons in both sectors have the information to perform their jobs well ($M$ and $C$ JOBINFO). In the military, the lack of information hinders performance ($t=-3.34$, $p<.0001$), whereas such a claim cannot be made for the civilian sector. The negative impact of the lack of needed information is reliably greater in the military sector ($t=-4.08$, $p<.0001$). It seems to be the case that the usual image of military jobs as simple and lacking autonomy may be less appropriate than it was previously. (This is certainly true in the United States.) Possibly, the military now assigns to its members more complex tasks, but is not yet consistently providing them with the levels of day-to-day information needed to perform these jobs well.

If workers know their jobs, they develop judgments about the best ways to perform their tasks in order to perform well. We asked our respondents how often they had to do things against their better judgment ($M$ and $C$ NOTJDG). In the civilian sector a low incidence of acting against their better judgment was associated with higher performance ($p<.10$), but this did not hold in the military. The comparative sensitivity of civilian performance in this regard
was highly reliable ($p < .01$). The reaction of praise for those who used their own judgment in the civilian sector was associated with higher performance. This did not hold in the military, nor was the difference between sectors reliable.

A fourth element in assessing rational work organization involved asking respondents what the reason had been for the times when they had not carried out their instructions. The frequency of response with regard to confusing orders, lack of equipment, or ethnic conflict in the unit did not relate to unit performance in either sector. Workload (FLKLOD) was a negative factor in the military ($p < .05$). There was, however, no similar relationship in the civilian sector, nor was the difference reliable between sectors. Likewise, there was a trend toward dislike of supervisors (FLWDSLK) being a negative factor in the civilian sector ($p < .10$); again, though, there was no difference between sectors.

The single most reliable reason given for not following instructions was low morale ($p < .01$)(FLWMORL). As we also note below, morale has other powerful effects as well.

In short, with respect to work organization, the civilian sector is rational in promoting more experienced personnel, and the military acts irrationally in not ensuring that soldiers have the information they need to perform their duties. In both sectors, when personnel do not follow instructions in ways that affect performance, it appears not to be primarily for reasons directly having to do with the organization of the work but rather for reasons of pervasively low morale in the respective units.
Equipment

One reason we argued in part I that our performance thermometers were sensible and valid indicators of performance was that they correlated highly with known ingredients of unit performance—equipment adequate to do the job and the morale to see the mission through. In analyzing the specific effects of equipment on unit performance we focused on two elements. First, we asked whether the units were adequately supplied with the equipment they needed (M and C ADEQ); second, we examined whether the men were properly trained in the use of the equipment they employed (M and C EQTRN). In both sectors, the supply of equipment was a reliable determinant of unit performance \( p < .001 \) in the military, \( p < .01 \) in the civilian). There was no difference between the coefficients for the two sectors.

While it is certainly the case that the military is more adequately equipped than the civilian sector, having the equipment to perform the mission is an equally important factor in unit performance in the two sectors. Similarly, training was a factor in the military \( p < .01 \) and showed a trend in that direction in the civilian sector \( p < .10 \). Again there were no differences between the sectors. Not surprisingly, in either sector, greater training in the use of the equipment is associated with higher levels of overall performance.

Satisfaction with living conditions and morale

The questionnaire included items to assess satisfaction with specific conditions that might affect performance, as well as a global assessment of unit morale. Neither conceptually nor empirically are these the same concepts. Military units could have high morale under the most adverse combat
conditions. On the other hand, a unit could have low morale despite a relatively high level of creature comforts. Indeed, we found performance impacts from both satisfaction and morale. Dissatisfaction with medical care (M and C SATMED) had a small effect in the military sector \( (p < .10) \). Dissatisfaction with food was a hindrance to performance in the military only (MSATFOOD \( p < .05 \)), a difference between the two sectors that was quite reliable \( (p < .0001) \). In peacetime in any event, it seems that dissatisfaction with the conditions of military life is a major factor limiting the fulfillment of military goals.

Morale was a significant factor in both the military \( (p < .05) \) and the civilian \( (p < .01) \) sectors. The higher the unit's reported morale, the higher its reported performance. There was no difference in this regard between the two sectors. The effect of morale, it should be stressed, is observed controlling for all the other seemingly more concrete determinants we have discussed. This is, of course, a proposition that holds for each effect identified but it is worth remembering in this context in particular. Much of the effort to assess Soviet military performance has been framed in terms of the quantity of weapons. It bears emphasizing that morale--"spirit"--occupies an empirically demonstrable position in the overall military performance equation.

III

We began this essay by reporting the important finding that overall levels of performance in the Soviet civilian and military sectors are similar. A major inference that derives from part II of this paper is that many of the factors that foster unit performance are also the same in the military and the civilian sectors in the Soviet Union.
To be sure, there are differences. The two sectors employ their resources in different ways to achieve approximately similar levels of performance. Workers in the civilian sector are promoted on the basis of experience and allowed to use their judgment to a greater extent in the workplace. The Soviet military, like any military, holds officers and sergeants directly accountable for the performance of those under them. Apparently, the Soviet military, as a total institution, needs to grant greater autonomy to soldiers so they can fulfill more complex modern assignments. Ironically, this is an instance in which the Soviet military can improve its performance by becoming more like civilian society—even Soviet society.

On many other counts, though, we are struck by the similarities in the factors that foster unit performance in units in both sectors. These include morale and the way low morale encourages disobedience, the availability of equipment and supplies, and the volume of training in the use of equipment.

This suggests that much of the literature stressing the militarization of Soviet society (Scott and Scott, 1981) takes us only part of the way in understanding civil-military relations in the Soviet Union. Equally important is the extent to which the Soviet military takes on the attributes of the society around it. Indeed, this is a dimension about civil-military relations in the Soviet Union which is only recently getting the emphasis it deserves. Attributes of Soviet civilian society—absenteeism, alcoholism, the pervasiveness of the mentality "They pretend to pay us and we pretend to work"—have taken their toll on performance in the military sector as well. (See also Jones, 1985.) In many respects, the military sector is another domain of Soviet "civilian" society. Just as the political system penetrates
the Soviet military through control mechanisms such as the Main Political Administration and the unit zampolity, so, too, the rotation through of millions of conscripts results in the penetration of a relatively insular world by the problems and social pathologies of the civilian sector as well as by people who have different expectations about housing, food, and medicine than did recruits thirty years ago.

What this means in practice is that the limiting factors on peacetime military performance seem to be the soldiers' dissatisfaction with the conditions of military life and low morale and perhaps the Soviet military's torpor in adjusting to a more complex world in which lack of information has consequences for performance. At the margin, consequently, improvements in Soviet military performance are most likely to come from adjustments that account for expectations about food, medicine, and housing that derive from improvements in the civilian standard of living and from improved morale. The recipe in the Soviet military for improved performance seems to entail a blend of recognizing that low information systems are low performance systems; of heightened work discipline; and of greater availability of "consumer goods" (tolerable food, barracks, and medical care)--a recipe strikingly analogous to what Mikhail Gorbachev is attempting to impose on Soviet civilian society.

---References---


-- Notes --

1. Our thanks to Jan Kmenta for calling this technique to our attention.
Table 1
Thermometer Measure of Performance and Morale and Equipment Adequacy

<table>
<thead>
<tr>
<th>Performance Thermometer</th>
<th>Hi (1)</th>
<th>Average</th>
<th>Lo</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>64 or less</td>
<td>13%</td>
<td>28%</td>
<td>59%</td>
<td>N=68</td>
</tr>
<tr>
<td>65-74</td>
<td>19%</td>
<td>31%</td>
<td>51%</td>
<td>N=48</td>
</tr>
<tr>
<td>75-84</td>
<td>50%</td>
<td>25%</td>
<td>25%</td>
<td>N=88</td>
</tr>
<tr>
<td>85-94</td>
<td>69%</td>
<td>24%</td>
<td>8%</td>
<td>N=54</td>
</tr>
<tr>
<td>95-100 (2)</td>
<td>80%</td>
<td>16%</td>
<td>5%</td>
<td>N=84</td>
</tr>
<tr>
<td></td>
<td>166</td>
<td>82</td>
<td>94</td>
<td>100% =</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>342</td>
</tr>
</tbody>
</table>

1. Column 1 is all those who said that moral was good or very good and that equipment was adequate for the unit to accomplish its assignment well "nearly all the time." Column two is those who said either the morale was good or very good and that the equipment and supplies were "often" adequate or that in a few instances that they were "nearly all the time well equipped" but morale was "poor or very poor" most of the time. Column three includes all those who said morale was poor or very poor and who said that they sometimes, rarely or never were adequately equipped.

2. In three cases respondents gave scores over 100% "our team gave 110% effort." We coded these as a hundred.
Table 2

Military and Civilian Sector Means

<table>
<thead>
<tr>
<th>Variable</th>
<th>Variable Label</th>
<th>Military Mean</th>
<th>Civilian Mean</th>
<th>Mil-Civ Difference</th>
<th>t-Statistic</th>
<th>2-Tail Prob</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group Performance</td>
<td>Unit Performance</td>
<td>77.83</td>
<td>78.09</td>
<td>-0.26</td>
<td>-0.28</td>
<td>n.s.</td>
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<tr>
<td></td>
<td>GPPRF (a)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social Origins</td>
<td>Unit Composition</td>
<td>3.05</td>
<td>2.22</td>
<td>0.83</td>
<td>13.84</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>GPKHZ (b)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supervisory Effectiveness</td>
<td>EFFZ (c)</td>
<td>2.30</td>
<td>2.15</td>
<td>0.15</td>
<td>3.47</td>
<td>.001</td>
</tr>
<tr>
<td>Count of Supervisory Behaviors</td>
<td>SUPZ</td>
<td>2.55</td>
<td>4.10</td>
<td>-1.56</td>
<td>-7.68</td>
<td>.000</td>
</tr>
<tr>
<td>Supervisor punished for actions of subordinate</td>
<td>PUN (e)</td>
<td>1.58</td>
<td>1.49</td>
<td>0.09</td>
<td>4.73</td>
<td>.000</td>
</tr>
<tr>
<td>Brief absenteeism?</td>
<td>GAPAWAY (f)</td>
<td>2.37</td>
<td>2.96</td>
<td>-0.58</td>
<td>9.66</td>
<td>.000</td>
</tr>
<tr>
<td>Punishment for above</td>
<td>PUNLFT (g)</td>
<td>4.17</td>
<td>2.04</td>
<td>2.13</td>
<td>22.94</td>
<td>.000</td>
</tr>
<tr>
<td>Dissertion/Major Absenteeism</td>
<td>GPDSRT(e)/GPABSNT(f)</td>
<td>1.75</td>
<td>3.15</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Pathology (ALC) (h)</td>
<td></td>
<td>4.60</td>
<td>4.18</td>
<td>0.41</td>
<td>3.84</td>
<td>.000</td>
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<tr>
<td>Work Organization</td>
<td>PRONATZ (i)</td>
<td>-0.56</td>
<td>-0.70</td>
<td>0.14</td>
<td>3.68</td>
<td>.000</td>
</tr>
<tr>
<td>Nationality reasons</td>
<td>PROEXPZ (j)</td>
<td>0.04</td>
<td>-0.06</td>
<td>0.10</td>
<td>1.53</td>
<td>n.s.</td>
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<tr>
<td>Promotion for:</td>
<td>JOBINFO (f)</td>
<td>1.65</td>
<td>1.70</td>
<td>-0.05</td>
<td>-1.00</td>
<td>n.s.</td>
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<tr>
<td>Sufficient Information for job?</td>
<td>NOTJDG (f)</td>
<td>2.83</td>
<td>3.29</td>
<td>-0.46</td>
<td>-6.73</td>
<td>.000</td>
</tr>
<tr>
<td>Act Against Own Judgment?</td>
<td>JDGRCTZ (j)</td>
<td>1.93</td>
<td>1.82</td>
<td>0.11</td>
<td>3.73</td>
<td>.000</td>
</tr>
<tr>
<td>Reaction by supervisor?</td>
<td>FLWKLOD (e)</td>
<td>1.60</td>
<td>1.57</td>
<td>0.03</td>
<td>0.90</td>
<td>n.s.</td>
</tr>
<tr>
<td>Disobedience due to:</td>
<td>FLWDSLK (e)</td>
<td>1.85</td>
<td>1.85</td>
<td>0.00</td>
<td>0.00</td>
<td>n.s.</td>
</tr>
<tr>
<td>work load</td>
<td>FLWMORL (e)</td>
<td>1.78</td>
<td>1.85</td>
<td>-0.07</td>
<td>-3.19</td>
<td>.002</td>
</tr>
<tr>
<td>Equipment Adequate?</td>
<td>EQADEQ (f)</td>
<td>1.75</td>
<td>2.36</td>
<td>-0.61</td>
<td>-9.52</td>
<td>.000</td>
</tr>
<tr>
<td>Training Adequate?</td>
<td>EQTRN (k)</td>
<td>2.12</td>
<td>1.87</td>
<td>0.25</td>
<td>7.49</td>
<td>.000</td>
</tr>
<tr>
<td>Satisfaction &amp; Morale</td>
<td>SATMED (l)</td>
<td>2.48</td>
<td>2.31</td>
<td>0.17</td>
<td>4.17</td>
<td>.000</td>
</tr>
<tr>
<td>Satisfaction with:</td>
<td>SATFOOD (l)</td>
<td>3.08</td>
<td>2.42</td>
<td>0.66</td>
<td>13.76</td>
<td>.000</td>
</tr>
<tr>
<td>Morale</td>
<td>MORALE</td>
<td>2.31</td>
<td>2.14</td>
<td>0.18</td>
<td>5.86</td>
<td>.000</td>
</tr>
</tbody>
</table>
Table 2 cont.

| Respondent's educational level | EDLEVZ | 5.27 | 5.27 | -- | -- |

(a) All performance scores below 50 were recoded to 50 and all performance scores above 100 were recoded to 100. See text for explanation.

(b) 1 = None or almost none; 5 = All or almost all.

(c) 1 = [Made situation] much better; 5 = [Made situation] much worse.

(d) -9 = Exhibited none of 9 supervisory behaviors; 9 = Exhibited all of 9 supervisory behaviors.
   (An average of sergeant and officers for the military.)

(e) 1 = yes; 2 = no.

(f) 1 = Nearly always/Nearly all the time; 5 = Never.

(g) 1 = Did not occur; 7 = Imprisonment/Brig (military) or Termination of employment (civilian)

(h) 2 = Very seriously (both); 8 = Not seriously at all (both)
   (An sum of MGPHANG and MGPDRK for both sectors.)

(i) -2 = Least important; 2 = Most important.

(j) 1 = Praised; 2 = Nothing happened; 3 = Punished.

(k) 1 = Very well trained; 4 = Very poorly trained.

(l) 1 = Very satisfied; 4 = Very dissatisfied.

(m) 1 = Very good; 4 = Very poor.
Table 3
Military and Civilian Sector Regression Coefficient Estimates

<table>
<thead>
<tr>
<th>Explanatory Variable</th>
<th>Explanatory Variable Label</th>
<th>Military Coeff.</th>
<th>Civilian Coeff.</th>
<th>Mil-Civ Difference</th>
<th>t-Statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>Intercept</td>
<td>90.28****</td>
<td>70.33****</td>
<td>19.95</td>
<td>1.55</td>
</tr>
<tr>
<td>Second Origins</td>
<td>GPKHZ</td>
<td>0.21</td>
<td>-1.22*</td>
<td>1.43</td>
<td>2.30*</td>
</tr>
<tr>
<td>Supervisory effectiveness</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>count of supervisory behavior</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supervisor punished for actions of subordinates</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brief absenteeism</td>
<td>GPAWAY</td>
<td>1.49**</td>
<td>2.24***</td>
<td>-0.75</td>
<td>-0.90</td>
</tr>
<tr>
<td>Punishment for above</td>
<td>PUNLFT</td>
<td>-0.19</td>
<td>1.24+</td>
<td>-1.43</td>
<td>-4.58***</td>
</tr>
<tr>
<td>Dissertion/Major absenteeism</td>
<td>PGSRT/GPABSNT</td>
<td>1.42</td>
<td>2.20**</td>
<td></td>
<td></td>
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<tr>
<td>Alcoholism</td>
<td>ALC</td>
<td>0.45</td>
<td>0.11</td>
<td>0.33</td>
<td>1.12</td>
</tr>
<tr>
<td>Promotion for:</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nationality reasons experience</td>
<td>PRONATZ</td>
<td>-1.68*</td>
<td>-0.15</td>
<td>-1.53</td>
<td>-2.14*</td>
</tr>
<tr>
<td>Sufficient information for job?</td>
<td>PROEXPZ</td>
<td>-0.16</td>
<td>1.14</td>
<td>1.30</td>
<td>-1.93+</td>
</tr>
<tr>
<td>Act against own judgment?</td>
<td>JOBINFO</td>
<td>-3.34****</td>
<td>-0.70</td>
<td>-2.64</td>
<td>-4.08***</td>
</tr>
<tr>
<td>Reaction by supervisor?</td>
<td>JDGRCTZ</td>
<td>-1.12</td>
<td>-3.11*</td>
<td>5.00</td>
<td>1.57</td>
</tr>
<tr>
<td>Disobedience due to: workload</td>
<td>FLWKLOD</td>
<td>2.41*</td>
<td>0.52</td>
<td>1.89</td>
<td>1.56</td>
</tr>
<tr>
<td>dislike supervisor overall morale</td>
<td>FLWDSLK</td>
<td>1.54</td>
<td>3.31+</td>
<td>-1.78</td>
<td>-1.04</td>
</tr>
<tr>
<td>satisfactorily?</td>
<td>EQADEQ</td>
<td>-2.28**</td>
<td>-1.55**</td>
<td>0.73</td>
<td>0.87</td>
</tr>
<tr>
<td>Training adequate?</td>
<td>EQTRN</td>
<td>-2.96**</td>
<td>-2.01+</td>
<td>0.93</td>
<td>0.57</td>
</tr>
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<td>Satisfaction with:</td>
<td></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>medical care</td>
<td>SATMED</td>
<td>-1.38+</td>
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<td>-1.14</td>
<td>-1.47</td>
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<td>food</td>
<td>SATFOOD</td>
<td>-1.75+</td>
<td>1.38</td>
<td>-3.13</td>
<td>-4.50***</td>
</tr>
<tr>
<td>Morale</td>
<td>MORALE</td>
<td>-2.76*</td>
<td>-4.29**</td>
<td>1.53</td>
<td>0.85</td>
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<tr>
<td>Respondent Characteristics</td>
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<tr>
<td>Respondent's Educational Level</td>
<td>EDLEVZ</td>
<td>Critical Value</td>
<td></td>
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<td>-------------------------------</td>
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<td></td>
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<tr>
<td></td>
<td>-1.47*</td>
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<td>-0.82</td>
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<td>3.90</td>
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