4. THE DEMAND FOR MILITARY MANPOWER: FORCE MIX ISSUES

An analysis of the most critical military manpower dilemmas that lie ahead for the Italian military could not be complete without considering the demand side. In addition to stimulating enlistment and effort supply, the Army needs to focus on factors affecting its own manpower requirements. In particular, the Army should explore in more detail the impact that soldier experience—and the overall experience mix—has on force management, effectiveness, and cost.

The chapter is divided into four parts. In order to provide some context for the analysis of experience mixes, the first section discusses some of the most important factors shaping manpower requirements. The second instead discusses previous studies on the impact different experience mixes can have on the military’s productivity and readiness. Section 3 briefly looks at the relationship between quality, military personnel productivity and costs. The fourth section provides current data on the current and planned experience mix for the Italian Army. Since experience and quality mix considerations can vary by different skill requirements and occupation, some limited data on functional/occupational personnel breakdown is also presented. The chapter then concludes with a series of policy issues that are considered further in the modeling effort.

4.1 INTRODUCTION: FACTORS SHAPING MILITARY MANPOWER REQUIREMENTS

Before delving into experience mix issues, it would be helpful to place these tradeoffs into the broader background of manpower demand and requirements. In fact, soldiers’ levels of responsibility, experience, and skill—as well as their total numbers—are a function of several determinants. Among the most obvious influences is the national military strategy (such as Italy’s 1995 New Defense Model). From the objectives and capabilities outlined in these strategies come a series of direct

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73 Quality mix considerations for the Italian Army are not explicitly covered, since data on this has so far been impossible to unearth (indeed, it may not exist in proper format).
demands for combat forces, usually measured in terms of units (divisions or brigades for the Army), and a number of derived demands, including specifications on the size of supporting forces and infrastructure. In turn, these demands shape the kinds of skill and experience mixes necessary to meet the strategic objectives (NDRI, 1994, p.13). Having said that, the service's needs for military manpower are not automatically determined by a specified force structure. As Kirby and Thie (1996) argue, a number of policy levers can be manipulated to alter demand—including changes in productivity, organization, technology, and substitution of one type of manpower for another or of capital for labor.74

These manpower requirement tradeoffs and choices are particularly evident in the Italian context. Indeed, the future requirements of Italian Army will be radically different from the ones that have hitherto been relevant. Not surprisingly, the basic impetus for this change has been the strategic decision to create a smaller but more deployable and able force. As mentioned in Chapter 1, the Army is downsizing, from roughly 175,000 soldiers in 2000 to a planned 112,000 by 2020. Moreover, since the downsizing is taking place alongside a shift from a mixed to an all-volunteer force, it also carries a host of structural and organizational considerations (e.g., who will take over those activities and tasks currently performed by conscripts?). Related to the previous point, the smaller and professional force could become more highly skilled: per soldier spending is expected to increase in order to better compensate, equip and train professional soldiers.

Such changes are likely to lead to substantially different manpower requirements. These in turn will bring to the fore a set of key resource allocation choices. For instance, active-duty force size can

74 Kirby and Thie go on to argue that “[f]or instance, manpower requirements can be affected by changing workload (e.g., more or fewer aircraft sorties per squadron), changing the equipment in units (technological substitution), changing the organization (reducing overhead), changing the mix of active and reserve personnel, or changing assignment and utilization policies that affect the size of the pipeline (e.g., longer tours, fewer unproductive tours, and more efficient training programs lead to smaller personnel requirements)” (Kirby and Thie, 1996, p.27).
shrink in a variety of ways while keeping a certain level of readiness, including: reductions of junior or career enlisted accessions, exits by senior NCO personnel, increased used of reserves and civilians, or introductions of labor-saving technologies.

Figure 4.1 below illustrates this point by indicating that the Italian Army has a series of options for changing the current military labor mix (in terms of experience level, skills, and so on). The first set of options concerns the substitution of one type of military labor for another. Indeed, the current mix can be altered by varying the degree to which the Army relies on junior versus senior personnel, between high and low quality individuals, and/or between men and women. In conjunction with these choices, policy makers must decide to what extent they need military labor on a full-time versus a part-time basis (i.e., through the reserves).

**Figure 4.1 Input substitution options**

Military labor can also be substituted with civilian labor—here the most salient breakdown is between civilians employed by the Ministry of Defense and contractors, usually working through an outsourcing agreement. The Army has begun experimenting with outsourcing those support functions that have traditionally been carried with conscripts,

75 To be sure, these are not the only options available to the military (hence the dotted marks in Figure 4.1). But they provide a starting point for thinking about what types of resource allocation choices the Army will have to be making in the transition to an AVF.
and has managed to reap significant personnel savings. Finally, capital can be substituted for military labor.

**Scope of the chapter’s discussion**

Conducting an in-depth analysis of manpower requirements and resource allocation is beyond the scope of this dissertation. However, having recognized that manpower requirement decisions are affected by a series of factors, the remainder of the chapter focuses on the substitution possibilities between different types of full-time military labor. In particular, the focus is on those tradeoffs that have an impact on the experience mix, with some attention being paid to quality.

### 4.2 CHOOSING EXPERIENCE MIXES

The labor economics literature has underscored that worker experience, and different experience mixes within an organization, can have a profound impact on performance. Indeed, the productivity of workers depends not only on intrinsic traits such as dexterity and intelligence or on physical capital. It is also a function of their human capital—that is, the “knowledge and acquired skills a person has that increase his or her ability to conduct activities with economic value” (Milgrom and Roberts, 1990, p. 328). This section focuses on the impact that experience has on productivity and costs in the military context, drawing primarily from the literature developed in the United States. Studies on the relationship between enlisted work force capabilities and characteristics have been conducted since the late 1960s. Experience has been shown to affect productivity both at the individual and unit levels. In addition, experience could have an impact

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76 In fact, the expected savings from better resource management on the part of the Army could reach 20% of the yearly budget, according to a 1995 report by Italy’s General Accounting Office (Corte dei Conti). See Corte dei Conti (1995). For a comprehensive catalogue of the many inefficiencies hampering Italy’s military establishment, also see Nones (1996).

77 The potential for capital-labor substitution is reduced by the long life span of most capital equipment, however (Warner and Asch, 1995, p.370).

78 Related studies carried out in other countries are either non-existent or could not be obtained.
on productivity and costs by affecting turnover rates. Each of these effects is discussed below.

Experience and individual productivity

Almost all research on this relationship has focused on how much more output a person with \( x \) years of service can deliver compared to another individual with \( y \) YOS. Or, put in elasticity terms, what percentage decrease in junior enlisted personnel can occur while keeping overall output/readiness constant if the number of experienced soldiers is increased by 1%? The marginal productivity of career personnel was calculated to be from 1.41 to 2.25 times as high as that of junior personnel. Importantly, Albrecht found that the nature of the work determined the productivity returns of experience: the greater the skill requirement, the higher the relative marginal productivity of careerists (implying a lower elasticity of substitution between junior and senior personnel).

Moore (1981) employed activity analysis to examine the impact that a change in experience mix has on capability. A CBO study extrapolated Moore’s data on completion times for 26 separate groups of commonly-performed tasks in a medium-skill Air Force specialty. The data included the performance of personnel over a full range of YOS. The CBO report presented completion times data by year of service for three task groups deemed as “representative:” periodic inspection, unscheduled maintenance (simple equipment/subsystem), and corrosion control. The data shows that completion times are reduced with length of service, but the rate of decrease is proportional to the difficulty of the task (the more difficult the task, the greater the gains over time). The data show that after 10 years of service, the decreases of completion times as a function of YOS diminish steadily and eventually flatten out for all tasks (CBO, 1987, pp. 23-24).

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79 These studies implicitly hold the equipment stock fixed (Warner and Asch, 1995, p.368).
Other studies confirm the positive impact that experience can have on productivity. Marcus (1982) found that the marginal product of the most senior aviation maintenance personnel (E7-E9) was nine times larger of the most junior personnel (E1-E3), and five times that of individuals in the E4-E6 grades. Finally, Hammond and Horowitz (1992) examined how training experience affects pilot productivity, and found that recent training and total career flying time significantly improve pilot performance (Warner and Asch, 1985, p. 369).

Unit productivity

The studies mentioned above show that there could be significant returns to individual experience; however, since most work in the military takes place in a team environment, it is equally important to understand the impact that experience mix has on unit productivity. Doyle (1997) studied the effect of unit experience mix on unit size, and found that when the work mix in an given skill category is adjusted to match the experience mix, units can be staffed with fewer but more experienced soldiers—that is, “[a] more experienced unit will accomplish a given amount of work in less time than a less experienced unit employing the same amount of labor” (Doyle, 1997, p. ix).

That being said, experience imbalances in a unit could hurt productivity. Doyle’s findings point to the fact that the work of overly junior units could be hampered by the fact that relatively few career personnel would have to supervise a relatively high number of junior soldiers. By dedicating a larger share of their time to supervision, experienced personnel would be unable to work on the more complex set of tasks, which would instead be assigned to less proficient junior personnel. Overly experienced units also pose problems—in this case, senior individuals would have to perform functions that could easily be completed with less experience, thereby decreasing that individual’s effective (rather than potential) productivity. Similar observations in a non-military context were made by McDaniel et al.

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(1988), who found that the correlation between job performance and job experience is highest for samples with low mean levels of job experience (the correlation drops as the mean level of job experience increases).

**The impact of experience mix on turnover and costs**

The experience mix can also have an indirect effect on force productivity by affecting turnover rates. A more senior force will have a higher average length of service, and therefore lower turnover rates. In turn, lower turnover rates imply that fewer individuals will be unavailable because of first-year accession training and transit requirements. A smaller training requirement also implies that there will be a reduced demand for trainers, who can contribute to other aspects of the defense mission (Cooper, 1973, p.308). In principle, lower turnover and lower accessions could also help increase quality. When fewer new recruits are needed each year, as would be the case with a more experienced personnel structure, the Army could screen applicants for enlistment more carefully. Higher quality soldiers can have an important impact on effectiveness and costs, as explored in section 4.3.

Lower turnover could also help reduce the costs of a more senior force by placing fewer demands on the recruiting and training infrastructure (Baldwin and Daula, 1984, p.99). And if the relative productivity of career personnel were indeed higher, the incremental costs of seniority such as higher pay and retirement benefits could be balanced by the fact that fewer individuals will need to be employed (Nelson et al., 1974).\(^82\)

**Optimal (cost-effective) mixes**

Few studies have sought to identify mixes of junior and career personnel that are cost effective. Among these is the research by Gotz and Roll (1979) which derived estimates for three Army and Air Force

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\(^82\) On the other hand, the costs of a significantly more senior force could well outweigh the savings reaped through a lower turnover and greater experience, especially if pay and other benefits reserved for career soldiers are greatly superior to those enjoyed by junior personnel. The cost differential would be even more worrisome if the relative productivity of career personnel were not significantly higher than that of more junior soldiers.
specialties ranging from low to high in skill content. They then aggregated these results to produce a single cost-effective ratio for each service (see Table 4.1 for Army results).83

Table 4.1 Optimal Junior/Career Mixes for the U.S. Army as estimated by Gotz and Roll (1979)

<table>
<thead>
<tr>
<th>Specialty</th>
<th>Optimal Junior/Career Mix</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infantryman (Low skill)</td>
<td>59/41</td>
</tr>
<tr>
<td>Auto repairman (Medium skill)</td>
<td>52/48</td>
</tr>
<tr>
<td>Field radio repairman (High skill)</td>
<td>39/61</td>
</tr>
<tr>
<td>Aggregate</td>
<td>56/44</td>
</tr>
</tbody>
</table>

As one would expect, the junior/career mix favors less experienced soldiers in low-skilled occupations, and more experienced soldiers for tasks that instead require greater skill.

Methodological issues

The results reported here should be interpreted with caution for a number of reasons. First, they originated more than two decades ago, and the relationships that were relevant in the 1970s and 1980s may no longer be today given the changes in the nature of military tasks. Second, productivity estimates cannot be easily generalized since they were derived from specialty-specific data--moreover, they should be considered only for experience mixes that resemble the ones used for their estimation. Third, a number of other factors limit the degree to which substantial substitution between junior and career personnel can take place, including: fixed manning requirements (resulting from past decisions on hardware designs), the small numbers of personnel in some work centers,84 and the limited flexibility of manpower systems in responding to such substitution (CBO, 1987, p.30-34). More fundamentally, the static nature of all the studies mentioned here discounts the fact that in the uncertain and dynamic environment of

83 This study as well as its results and methodology are originally cited in Warner and Asch (1995), p. 371.
84 For instance, for a 3-person team, a 10% reduction in total effort given a richer experience mix is not likely to lead to a decrease in the number of personnel employed in that unit.
warfare senior personnel could adjust better given their cross-training and experience (Gotz and Stanton, 1986).\textsuperscript{85}

4.3 PRODUCTIVITY AS A FUNCTION OF QUALITY MEASURES

A number of studies also point to a link between quality measures and productivity. In examining the determinants of downtime in U.S. Navy ships, Horowitz and Sherman (1980) found that this measure is reduced as the number of individuals manning the ship with a higher education level and/or higher aptitude scores increases. Several other studies have shown that higher-quality soldiers perform better on the job than their lower-quality counterparts (Scribner et al., 1986, Orvis, Childress and Polich, 1992).\textsuperscript{86}

The effect of mental ability on performance appears to have a greater degree of importance as the complexity of the task increases. Orvis, Childress and Polich (1992) found Patriot Missile System operators' performance in simulated air combat increases significantly with mental aptitude. They also discovered that increasing mental aptitude of battery operators equals or exceeds the effect in performance that would have been obtained with additional experience and training (Orvis et al., 1992).

Other studies point to an indirect impact of quality on force effectiveness. High-quality personnel have lower attrition rates during their first enlistment and are promoted more quickly.\textsuperscript{87} Since lower attrition and higher promotion rates can positively impact force readiness, one can argue that high-quality personnel make a greater contribution to overall productivity than their lower-quality counterparts (Warner and Asch, 1995).

The impact of quality on costs

Quality’s impact on costs can go beyond personnel expenditures--a number of studies have pointed to the fact that hiring more higher-

quality personnel can actually result in lower equipment and training costs. For instance, Daula and Smith (1992) found that the personnel savings resulting from increased reliance on low-quality soldiers in the U.S. Army tank force would be offset by the need to employ more tanks if one wished to maintain readiness levels constant. Orvis et al. (1992) present a similar tradeoff in the case of Patriot missile battery crews. Their experiments indicate that lower quality recruits on average fired two more missiles than higher-quality crews; given that each missile costs in excess of $500,000 (in 1992 dollars), employing higher-quality soldiers is by far the more cost-effective approach. To be sure, the low-quality recruit’s performance could be improved with additional training, but this does not consider the fact that the same training resources could be devoted to improving the performance of higher-quality soldiers in order to achieve even greater effectiveness (Orvis et al., 1992).

4.4 FORCE MIX: THE ITALIAN EXPERIENCE

As Italian Army planners consider transitioning to a smaller and fully professional military, they will inevitably be faced with choices on the degree of experience (and quality) the future force should have. The modeling phase will explicitly consider the YOS mix as part of the policy analysis, and this section sets the stage by providing data on past and planned experience mixes, as well as estimates of the current YOS distribution for each personnel category. Since experience mix considerations vary between different occupational categories, available (but limited) data on personnel employment by functional area are also included.

Past and present force mixes

As Figure 4.2 shows, over the last decade the number of soldiers on short-term contracts (conscripts, VFBs and their pre-1996 equivalents) have been slowly declining relative to those who instead served as career enlisted personnel (VSPs, Sergeants, Marshals and their pre-1996 equivalents). According to unofficial Army plans, the ratio of soldiers on long- to short-term contracts is expected to soar from 0.33 in 2000 to 2.33 in the 2020 steady state. This means that there will be a
radical shift from having 1 long-term soldier for every 3 short-term soldiers to a system where there will be more than 2 long-term soldiers for every short-term soldier. Clearly Army planners are seeking to create a much more experienced force, in which career enlisted personnel will play a critical role.

**Figure 4.2 Army career vs. short-term mix, 1990-2000 and 2020**

source: based on Army General Staff data

The first signs of the shift toward greater reliance on VSPs can be seen in Figure 4.3, which shows the evolution of the Army’s volunteers by categories over the last two years, and the projected breakdown for 2001.
Given the considerable intakes of VFAs, VFBs, and VSPs, the share of the Marshals category has dropped. The VSP stock is destined to grow the most in relative size—indeed, the VSP intake is scheduled to amount to about 7,300 soldiers in 2001, representing a substantial rise from the 2000 level of 12,000. Even assuming a large outflow of VSPs into the Sergeant stock, the planned VSP accessions for 2001 will likely represent more than a one-third increase in VSPs.

Current YOS distributions

This sub-section presents data on YOS distributions for the entire force, and then disaggregates these by category. The YOS distribution was estimated YOS using several (and often discordant) data sets provided by General Staff. The assumptions made for each category are described below.
As Figure 4.4 shows, the force appear to be relatively junior. The spike in the first YOS is made up of newly-entered VFBs and a large number of VFAs. The “double hump” at the 4-10 YOS marks is primarily made by VSPs, although some junior NCOs (Sergeants and Marshals) are also included. The other hump (which appears small on an absolute scale) is concentrated in the mid-career NCO force, at around the 19-25 YOS marks. As mentioned before, the total force profile is likely to change considerably as the transition progresses, so one should not interpret the YOS distribution presented in Figure 4.5 as being the desired steady-state, or a description of survival probabilities as individuals progress in their careers.

**VFA/VFB**

The junior enlisted stocks are made up by VFAs, which cycle through the force every year, and VFBs. The oldest VFBs have 4 years of service (the vast majority of these are awaiting transfer into the VSP stock). Most VFBs have entered the force through the old, Army-specific recruiting channels; only in 2000 did the first sizable contingent of personnel recruited through interservice contests begin service (the ones that took place in 1999—see Figure 4.5). Almost all individuals currently in the VFB stock will be eligible for promotion as VSPs, since those who elected to serve in the military before being transferred to a police force remain a small fraction (and are concentrated in the first YOS).
Figure 4.5 YOS distributions VFA/VFBS

source: based on Army General Staff data

VSP

The data for the VSP stock was more difficult to obtain, since the Army General Staff does not have ready and precise statistics on the YOS of those who entered the career force prior to the mid-1990s. But even under conservative assumptions, the YOS distribution is dominated by junior personnel. Figure 4.6 shows the YOS estimates for the current VSP stock. The planned intake of 7,300 soldiers in 2001 will contribute further toward lowering the average VSP age in the short run, but will have the opposite effect in the medium- to long-run. Figure 4.7 also reveals that a sizable "hump" has been created by admitting into the VSP force a significantly larger number of individuals relative to the steady-state intake. Such intakes took place in order to create a "hard core" of career enlisted soldiers relatively early on during the transition, as well as to increase the promotion opportunities of VFBS.

88 The latest official data on the VFB stock available for this analysis dates back to July 2000. To update the YOS distribution to the end of 2000, it was assumed that those promoted into the VSP stock were promoted first-in-first-out: that is, the promotions as VSP that took place in the second part of the year were subtracted from the VFB totals starting with the oldest VFBs (including those who had sought a renewal). It was also assumed that those entering as VFBS in 2000 have 1 YOS, despite the fact that not all of them entered the force at the beginning of the calendar year.

89 Assuming that the YOS distribution for VSPs is uniform and that the average career length is 30 years in this category, one would expect an inflow of about 1,500 people per year (this equals the steady-state outflow).
The picture for NCOs is significantly different. While the Sergeants stock is nearly empty, professional Marshals have been serving for decades. In fact, this category has a high concentration of soldiers in the mid-career phase.

Following the advice of Army database managers, those entering as VSPs in 2000 were assumed to have 5 YOS: there is a significant lead-time between selection through the contest and actual transfer to a VSP unit (an individual who has completed his/her third YOS as VFB would likely have to serve another year in that stock before obtaining the promotion to VSP). A similar lead time exists for those who are promoted from VSP to Sergeants--those who have been selected to become Sergeants but who have yet to be transferred to active-duty NCO positions were counted as VSPs. The maximum YOS for this stock was assumed to be 9; this implies that individuals that entered in 1996 were at that time beginning their fifth YOS.
Figure 4.7 YOS Distribution: NCOs

source: based on Army General Staff data

Figure 4.7 shows such “hump” going from the 19th to the 25th YOS. The bulk of the individuals in the hump are concentrated in the M3 and M4 grades. This abnormal concentration of personnel in the space of a few YOS was created through unusually large numbers of promotions from the lower ranks.91

Occupational mix

Only limited data on occupational specialties and skills among the force could be gathered during the research effort. What follows is a brief description of currently available information.

Figure 4.8 shows the employment of enlisted and NCO personnel in functional specialties—including combat, combat support (CS), combat service support (CSS), and schools/training. It shows that the proportion of individuals serving in combat and CS specialties decreases with the seniority of the personnel category. This is mainly a function of age—Army planners allocate young personnel to those tasks that require vigor and a high degree of physical fitness. An interesting phenomenon shown by this chart is that there is a very small number of personnel actually dedicated to CSS tasks—in fact, these activities are currently been undertaken by conscripts. The occupational breakdown for

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91 Part of the problem was created in the mid-1990s, when soon after the passage of a new personnel law, many of those employed on a long-term basis (but who were considered too senior to become VSPs) were automatically promoted as Marshals.
the VSP category is likely to change significantly in the future, however. According to Army planners, mid-career VSPs will gradually be transferred from combat assignments and allocated to support/administrative functions.

**Figure 4.8 Functional specialties: share by personnel category**

The final occupational chart provides additional data on the specialization within the VFB and VSP stocks. It shows that the vast majority of the enlisted force is either performing operational or technical tasks; very few of them are dedicated to logistical/administrative duties, and even fewer to the training establishment. This is consistent with Figure 4.8; the relatively large number of individuals in training functions is directly related to the requirements of a conscript military.
4.5 FORCE MIX: KEY ISSUES

The determination of manpower demand—choosing how many individuals are needed in the Army, how experienced they should be (either by grade or YOS) and what of occupation or skill should be emphasized—is possibly the most difficult question facing manpower planners (Kirby and Thie, 1996, p.25). Having said that, the foregoing discussion highlights a series of critical and policy-relevant points:

- Several studies have shown that productivity does indeed rise with years of service; they also indicate that the actual returns to experience vary significantly according to the type of occupation or skill;\textsuperscript{92}
- The relationship between rising YOS and rising productivity is by no means automatic. In fact, actual unit productivity may be lower than potential productivity in cases where the experience mix is either overly skewed towards junior or senior personnel;
- While most research has focused on tradeoffs between first- and second-term personnel, it is plausible that Moore’s (1981) results

\textsuperscript{92} Related to this, the costs to the organization of employee separation also change considerably according to skill set and occupational category.
can be generalized: that is, returns to experience diminish the
easier is the skill set, and the longer the years spent working on
that task.
• Quality can to some extent substitute for experience (and vice-
versa), and should be considered when making tradeoffs because of its
potentially high impact on productivity and costs.

These findings are particularly relevant for the Italian Army, since
it is beginning a transition to what by all accounts appears to be a
much more senior force than today’s, especially in the enlisted ranks.
As was first mentioned in Chapter 3, Army planners have yet to face the
full impact of many of the tradeoffs they are making today. Decisions
on the experience mix, and the allocation of individuals to different
occupational categories based on their experience, have not generated
great stress in part because the force remains relatively young:
volunteers are in combat or combat-related positions, and conscripts are
being staffed in support and administrative positions. But stresses
and pitfalls on these fronts could also emerge in the future. Three
potentially problematic issues are particularly relevant:

• The Marshals category could face significant experience mix
  imbalances before 2020;
• Increasing the stock of VSPs will diminish yearly VFB accession
  requirements, but it raises a host of unresolved issues
  (especially in terms of occupational/skill assignments);
• Personnel characteristics such as quality are under-investigated
  yet important issues for Army manpower planning.

These are briefly discussed below, and are further explored in the
following chapters.

**The Marshals category could face significant experience mix problems**

Were the spike shown in Figure 4.9 to be a permanent wave that will
continue to affect the stock until most individuals in it reach the
retirement age at around 37 YOS, it would be a cause of concern. Over
time, such imbalance would lead to a progressively more senior NCO force, potentially blocking further inflows into this category. In fact, inflows have already been reduced to a trickle: the 2000 Marshals contest made 210 slots available, out of a total stock size of approximately 27,000. To make it worse, many of those in the "hump" are concentrated in the M3 and M4 categories, implying that such individuals will have to remain in the terminal grade for a considerable portion of their career (thus putting to the test the potential shortcomings of the compensation and promotion systems, as discussed in Chapter 3).

The lack of new entrants also has an impact on the skill distribution of the Marshals category. A new Army plan is seeking to transform soldiers in the Marshals grade as both operational commanders (of platoons) and highly skilled technical workers. However, during conversations with Army officials it has become apparent that it will be difficult to retrain relatively senior Marshals in either of the new specialties. Therefore, a very senior Marshal stock may hamper plans to alter the distribution of skills and occupations in the force.

**Increasing the stock of VSPs will diminish yearly VFB accession requirements, but it raises a host of unresolved issues**

One advantage of a more experienced enlisted force is the reduction in personnel turnover at the junior ranks. This could facilitate the tasks of the recruiting establishment, lower training costs, and possibly add greater predictability to the manpower planning process. To be sure, the benefits also include a potentially more productive and cross-trained force.

It is difficult to confirm that the benefits of a more senior VSP force will be worth the additional costs, however. Such costs not only include higher pay and additional entitlements given to career soldiers, but also the inflexibility introduced in the personnel system by hiring individuals virtually for life. Opportunity costs could also be significant were senior VSP personnel assigned to tasks for which experience does not produce a significant return—a real possibility if VSPs will be used as substitutes for conscripts in support/administrative functions once they reach the mid-career point.
Another set of factors could further exacerbate the potential problem, and reverberate through the system for decades. By the end of 2001, nearly 20,000 soldiers will be in the VSP stock with a range of years-in-stock going from 1 to 5. This means that 44% of the steady-state level of soldiers (45,000) is be concentrated in 17% of the projected years one could spend as a VSP (30). To be sure, some of these individuals will exit the stock via natural attrition or promotion into the NCO ranks, but the threat of a hump in the latter years is real. A long-lived spike could have deleterious effects on personnel management and even overall force productivity, especially if the work intended for older VSPs does not necessarily require much experience to be performed satisfactorily, and if the groups of soldiers in such a spike prove to be of inferior quality.

**Personnel characteristics such as quality are under-investigated yet important issues for Army manpower planning**

The previous and current chapters have underscored the importance of quality and occupational assignments in determining personnel productivity and cost. Yet the manpower planning process does not seem to be placing enough weight on this and other relevant individual characteristics. More attention is being placed on the need to meet short-term numerical targets, without fully exploring the impact that these actions will have on the composition of the force in the long run. The VSP promotion policy is a case in point: promotions into this category during the last six years have virtually been open to all of those who were willing to join. This could be particularly problematic given that the initial entry requirements for these cohorts were not necessarily selective enough, and that VSPs will serve in the force for decades.
PART 2: MODEL-BASED POLICY ANALYSIS