LEVEL II

12
B.S.

A RAND NOTE

AD A089717

ISSUES IN THE USE OF POSTSERVICE EDUCATIONAL BENEFITS AS ENLISTMENT INCENTIVES

Richard L. Fernandez

July 1980

N-1510-MRAL

Prepared For

The Office of the Assistant Secretary of Defense/ Manpower, Reserve Affairs and Logistics

Rand
SANTA MONICA, CA. 90406

The research described in this note was sponsored by the Office of the Assistant Secretary of Defense/Manpower, Reserve Affairs and Logistics under Contract No. MDA903-77-C-0108.

Published by The Rand Corporation

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE	READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER: N-1510-MRAL	2. GOVT ACCESSION NO.: AD-A089 717
3. RECIPIENT'S CATALOG NUMBER:	
4. TITLE (and Subtitle): Issues in the Use of Postservice Educational Benefits as Enlistment Incentives	5. TYPE OF REPORT & PERIOD COVERED: Interim
	6. PERFORMING ORG. REPORT NUMBER:
7. AUTHOR(s): R. Fernandez	8. CONTRACT OR GRANT NUMBER(s): MDA903-77-C-0108
9. PERFORMING ORGANIZATION NAME AND ADDRESS: The Rand Corporation, 1700 Main Street, Santa Monica, CA 90406	10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS:
11. CONTROLLING OFFICE NAME AND ADDRESS: Office of Manpower, Reserve Affairs and Logistics, Washington, D.C. 20330	12. REPORT DATE: July 1980
	13. NUMBER OF PAGES: 74
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office):	15. SECURITY CLASS. (of this report): UNCLASSIFIED
	15a. DECLASSIFICATION/DOWNGRADING SCHEDULE:

16. DISTRIBUTION STATEMENT (of this Report)

Approved for Public Release; Distribution Unlimited

17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)

No Restrictions

18. SUPPLEMENTARY NOTES

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

Education
Recruiting
Benefit Plans
Incentive Plans
Military Personnel
Veterans

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

See Reverse Side

DD FORM 1 JAN 73 1473 EDITION OF 1 NOV 65 IS OBSOLETE

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

N-1510-MRAL Issues in the Use of Post-service Educational Benefits as Enlistment Incentives. R. Fernandez. July 1980.

In 1976, Congress ended eligibility for GI Bill educational benefits for enlistees entering the active military services after January 1, 1977. The GI Bill was replaced with a contributory assistance plan, the Veterans Educational Assistance Program (VEAP). This note demonstrates the extent of the decline in the present value of benefits resulting from the program change and concludes that the enhancements to VEAP benefits the Army is now offering to certain enlistees should yield only a small response. Alternative incentives should attract more enlistees and be more cost effective. The note also examines veterans' educational benefits from society's viewpoint and concludes that these benefits can play a valuable role in raising Americans' level of educational attainment. A reform that would make VEAP a more effective recruiting tool is to link benefit payment levels to either the consumers price index or an index of educational costs. 74 pp. Bibliog. (Author)

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ISSUES IN THE USE OF POSTSERVICE EDUCATIONAL BENEFITS AS ENLISTMENT INCENTIVES

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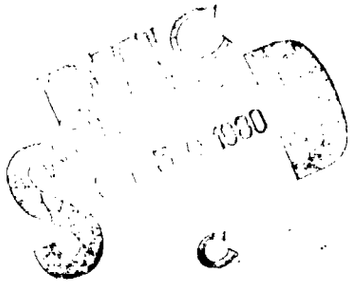

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PREFACE

This note was prepared as part of Rand's Manpower, Mobilization, and Readiness Program, sponsored by the Office of the Assistant Secretary of Defense (Manpower, Reserve Affairs, and Logistics)--OASD(MRA&L). This program is developing new methodologies for examining broad classes of manpower problems and specific problem-oriented research. In addition to analyzing current and future manpower issues, it is hoped the program will contribute to a better general understanding of the manpower problems confronting the Department of Defense.

In 1979, at the request of Congress, the Army, Navy, and Marine Corps began tests of the attractiveness of a two-year enlistment option and enhanced postservice educational benefits as enlistment incentives. These tests became known as the Multiple Option Recruiting Experiment (MORE). This note was prepared as part of Rand's evaluation of MORE. It examines positive and normative policy issues in the use of educational benefits as enlistment incentives.

SUMMARY

Since January 1, 1977, new enlistees into the military services have not been eligible for GI Bill educational benefits. To replace the GI Bill, Congress established the less generous Veterans' Educational Assistance Program (VEAP). To participate in VEAP, a service person must contribute $50 to $75 per month to an educational fund, which is matched on a two-for-one basis by the Veterans Administration when the veteran elects to use his benefits.

A simple undiscounted comparison of GI Bill and VEAP benefits does not indicate the extent of the decline in the value of benefits that resulted from the program change. Proper comparisons must be based on the present discounted values at the time of enlistment of the benefits provided by each program. Such comparisons reveal that VEAP benefits in January 1977 were worth no more than 44 percent, and perhaps as little as 4 percent, as much as GI Bill benefits. Since 1977, inflation has eroded the value of VEAP benefits in two ways: (1) it has directly reduced the purchasing power of those benefits, and (2) it has raised people's expectations about future inflation rates, thus increasing the nominal rate at which they discount future receipts.

A test of the attractiveness of enhancements to the VEAP educational benefit fund has been underway since January 1979 in the Army and since March 1979 in the Navy, as part of the Multiple Option Recruiting Experiment. The enhancements, called VEAP "kickers," are limited to high school diploma graduates (HSDG) in mental categories I-IIIa who enlist in the Army's combat arms or in certain of the Navy's seagoing

engineering ratings. The current Army kicker of $4000 for three-year enlistees nearly doubles the total government contribution to a participant's VEAP fund; but if recruits view the present discounted value of the kicker as an increment to their first-term pay, the $4000 kicker can reasonably be expected to add no more than 6 percent to enlistments of "high-quality" recruits.

Examined from the perspective of the services, the VEAP kicker does not appear to be as attractive an enlistment incentive as might be supposed. Cash enlistment bonuses for three-year enlistees should be more cost effective. Alternatively, eliminating the current mental category restriction of the kicker would raise costs per additional recruit somewhat but should yield a much greater response of well-motivated recruits. It would also reduce the likelihood of discrimination charges being raised against the VEAP kicker program, which disproportionately disqualifies blacks and other minorities.

Veterans' educational benefits can play a valuable role in improving the educational attainment level of disadvantaged young people. They also offer substantial assistance to veterans making the transition to civilian life, although VEAP is less effective in this regard than was the GI Bill. Society as a whole benefits from the enhanced education of some of its members, perhaps even more than do the individuals directly aided. The VEAP kicker, however, appears to be solely a recruiting tool.

Four recommendations for research and policy action emerge from the analysis. First, serious consideration should be given to eliminating the VEAP kicker as a selective enlistment incentive in favor of straight

enlistment bonuses. Second, if the kicker is retained it should be offered to all HSDG combat arms enlistees. Third, the attrition and retention behavior of current kicker participants should be carefully monitored. Finally, to improve the attractiveness of VEAP, interest should be paid on individual and government contributions.

ACKNOWLEDGMENTS

Several Rand colleagues gave generously of their time to help make this note a reality. Glenn Gotz, Dave Grissmer, and Bill Lisowski provided useful comments on an earlier draft. The careful review by Gotz was particularly valuable, and led to several important changes. Special thanks go to Gus Haggstrom for his constant encouragement and thoughtful advice.

Any remaining errors are the author's responsibility.

CONTENTS

I. INTRODUCTION

Near the end of World War II, the federal government first became involved in direct assistance to students when Congress enacted a program of educational benefits for military veterans that soon became known as the GI Bill. Since that time, more than 17 million individuals have received benefits under three GI Bills.[1] In fiscal year 1978, GI Bill outlays totaled $3.1 billion, making the GI Bill, as it had been in previous years, the largest single federal program of student aid.

Eligibility for the present Vietnam Era GI Bill (Public Law 89-358) came to an end on December 31, 1976. Individuals who have begun their military service since that date cannot receive GI Bill educational benefits, but are eligible instead for benefits under a program that operates differently from and is much less generous than the GI Bill, the Veterans' Educational Assistance Program (VEAP). Participants in VEAP must build up an educational fund through monthly contributions while they are in the service. These contributions are later matched two for one by the Veterans Administration. Some have contended that the change in programs led to significantly lower enlistment rates among high school diploma graduates (HSDG) with high mental ability in fiscal years 1978 and 1979.[2] In those years, there were 30 percent fewer

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[1] Almost 17.4 million by April 1978. Veterans Administration (1978), p. 14.

[2] See, for example, Hunter and Nelson (1979), pp. 47-53.

total DoD accessions of "high-quality" males than in the previous two years.[1]

Seeking ways to reverse this decline, and to help the services recruit for the hard-to-fill combat arms specialties and seagoing engineering ratings, Congress in 1978 directed the Secretary of Defense to test the attractiveness of a two-year enlistment option and increased VEAP benefits as enlistment incentives for the Army and Navy. In the resultant test, which became known as the Multiple Option Recruiting Experiment (MORE), the services offered various combinations of the two-year tour and enhanced educational benefits in different areas of the country, generally tied to service in the combat arms in the Army and seagoing engineering skills in the Navy. The Marine Corps also tested a two-year option on a limited basis. All tests were designed to last for one year, the Army test beginning on January 1, 1979, the Navy and Marine Corps tests on March 1, 1979. The Army test was cut short on December 4, 1979, however, when the enhanced benefit option was extended nationwide and the two-year option to all but a small part of the country.

In mandating these tests, Congress explicitly recognized that veterans' educational benefits can play a role in attracting volunteers into military service but implicitly raised the questions of exactly

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[1] Throughout this report, "high-quality" will be taken to mean high school diploma graduates (not holders of GED certificates) in mental categories I, II, and IIIa. These categories are intended to encompass the top half of all service-age young people, as determined by scores on general aptitude portions of the Armed Services Vocational Aptitude Battery (ASVAB).

what that role can and should be. A complete analysis of veterans' educational benefits cannot be performed until the analysis of MORE is finished and until it is possible to observe the in-service behavior of the young men and women attracted to the Army and Navy by the enhanced benefits. This study does examine veterans' educational benefits from the perspectives of the potential recruit, of the military services, and of society as a whole.

The examination of benefits from the perspective of the potential recruit (Section II) poses two questions: (1) how great was the decline in the value to the individual of the educational benefit offering when the services switched from the GI Bill to VEAP; and (2) can enhancements to the educational benefits available under VEAP, in the form of lump-sum contributions by the services (the VEAP "kicker"), be expected to elicit a sizable enlistment response? In answer to the first, the analysis indicates that VEAP provides a much smaller enlistment incentive than did the GI Bill, and that what incentive it does provide is being steadily eroded by inflation. On the second, the VEAP kicker cannot be expected to reverse the decline in enlistments, and in fact should add no more than 6 percent to the supply of high-quality recruits.

Conclusions about the desirability of enhanced educational benefits from the services' perspectives (Section III) are much more tentative. Two separate issues are involved: the cost-effectiveness of the VEAP kicker relative to alternative enlistment incentives and the longer-term personnel management questions of the effects of postservice educational benefits on attrition and retention. If the goal is to attract high-

quality enlistees to the combat arms, the kicker is almost certainly more cost effective than a general pay increase, but its superiority over more selective pay incentives, such as bonuses, is less clear. Two alternative incentives are examined: extending the kicker to lower quality enlistees and offering an enlistment bonus to three-year combat arms enlistees. The current quality restriction is designed to minimize first-term attrition, but the recruits attracted by the kicker--even those of lower quality--probably would be particularly well motivated and therefore likely to complete their first terms. A three-year bonus would attract some recruits who otherwise would enlist for the existing four-year combat arms bonus, but it would also attract as many new recruits as the VEAP kicker at a substantially smaller cost. Retention past the first term should be enhanced by a switch to a bonus, because postservice educational benefits, particularly as they are currently structured in VEAP and the VEAP kicker, provide a strong incentive for participants to leave the service.

Veterans' educational benefits will enhance society's welfare (Section IV) if individual investment in education would be less than optimal in the absence of such benefits. Because young people cannot freely borrow against their future earnings, the latter is likely to be the case. Moreover, the disadvantaged youths who seem to be most attracted by VEAP probably face particularly severe difficulties in financing their educations. The value of educational benefits in assisting the readjustment of veterans to civilian life cannot be overlooked. Veterans generally fare better in the civilian economy than do

nonveterans,[1] suggesting that the GI Bill and VEAP may have provided valuable readjustment assistance. Finally, from society's viewpoint the restriction of the VEAP kicker to high-quality recruits may be inefficient, and certainly appears to be inequitable. The restriction is inefficient if the earnings capacities of some of the excluded recruits would be as substantially enhanced by educational assistance as those of kicker-eligible enlistees; it is inequitable because it denies certain individuals equal access to a major federal student aid program. Unequal treatment may be justifiable, but any justification must recognize that blacks and other minorities are overrepresented in the group of enlistees deemed unqualified for the VEAP kicker.

Several recommendations (Section V) emerge from the analysis presented here. First, serious consideration should be given to eliminating the VEAP kicker in favor of an enlistment bonus for three-year HSDG enlistees in the combat arms, if possible on an experimental basis. Second, to make VEAP more attractive, interest should be paid on the individual's VEAP fund, including the two-for-one matching funds and any kicker earned, throughout the life of the fund. Third, if the VEAP kicker is retained it should be extended to high school graduate category IIIb enlistees, and possibly category IVs, unless clear evidence can be found to show that these groups have substantially higher attrition rates in the combat arms than do category IIIas. Fourth, as

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[1] Congressional Budget Office (1978), pp. 9-11. For a more complete examination of this phenomenon see De Tray (1980).

data become available the attrition and reenlistment behavior of basic VEAP and VEAP kicker participants should be monitored carefully.

II. VEAP, THE GI BILL, AND THE INDIVIDUAL

On October 1, 1976, Congress passed Public Law 94-502, the Veterans' Education and Employment Assistance Act of 1976. This act ended the nation's largest federal program of educational assistance to individuals, the GI Bill, by terminating eligibility for benefits under Chapter 34, Title 38, USC, for persons entering active duty in the military services after December 31, 1976. In place of the GI Bill, PL 94-502 established a new Chapter 32, the Veterans' Educational Assistance Program (VEAP). Although similar in purpose to the GI Bill, VEAP differs in many important details of operation from the program it replaced. In particular:

1. VEAP requires the individual to contribute $50 to $75 per month for a minimum of 12 months in order to receive benefits. The GI Bill required no individual contributions.
2. Monthly benefit levels under VEAP are determined by the total amount of the individual's contributions, which are matched on a two-for-one basis by the Veterans Administration (VA). Benefit levels under the GI Bill were set by law and were increased periodically during the life of the program.
3. VEAP provides benefits for a maximum of 36 months. GI Bill benefits could be received for as long as 45 months.
4. Under VEAP the services may offer enhancements to the individual's fund as enlistment incentives for some or all categories of enlistees. The GI Bill was a VA program only,

with no provisions allowing the services to vary the benefits to accomplish personnel management objectives.

To what extent has recruiting suffered as a result of this change in educational benefit programs? This question, of obvious policy import, is unfortunately very difficult to answer. A direct test comparing pre- and post-change time series on numbers of enlistments is not likely to yield a definitive answer because this was not the only change in enlistment policies that took place in 1976-77, and other unknown factors might also have affected enlistments. A partial answer might be obtainable, however, if we could accurately compare the value to the individual enlistee of the benefits provided by the two programs. Because benefit levels under the GI Bill changed periodically throughout the 1960s and 1970s, a time series analysis of enlistment levels might make it possible to assess the effects of changes in individual benefits.

In fact, a monetary comparison of VEAP and the GI Bill is far from straightforward. The differences that are listed above between the two programs mean that not only the benefit level but the time pattern of payments differ between the two programs. This time pattern difference is crucial. If military pay were raised by 1 percent more young people would be inclined to enlist each year. If that increase were combined with a change to paying service members for the month just past, rather than for the coming month, we could no longer be sure that the enlistment rate would rise. It would only if young people will in general give up $1.00 today for $1.01 one month from today. In order to compare the pre- and post-change pay levels, therefore, we would have to compute

the present discounted value (PDV) of each package--their values to the individual at the time of enlistment.

Present discounted value is a useful and commonly used concept where comparisons of differing time streams of payments or receipts are required but computing PDVs requires that values be assumed (or measured) for certain key variables. In particular, one must know the real time rate of discount of the individuals involved--the premium (r) that must be offered to induce them to give up Y dollars today in return for (1 + r)Y dollars one year from today. In a world of changing prices, where one dollar today can buy more (or less) than one dollar a year from now, we must also know the rate (p) at which the individuals expect prices to rise over that year. Y dollars today, then, are equal in value to (1 + r)(1 + p)Y dollars one year from today.

A further complication arises when GI Bill and VEAP benefits are compared because GI Bill benefits were periodically increased. An individual enlisting under the GI Bill could reasonably expect the level of benefits he receives to be higher than that in effect when he enlists. Let b denote the expected annual rate of increase in nominal GI Bill benefit levels. If benefits were paid in a single lump sum (equal to Y dollars in 1976) on the day the individual leaves the service, a person enlisting in 1976 for a three-year tour of duty could have expected to receive benefits with present discounted value at the time of enlistment given by:

$$PDV = Y(1 + b)^3/(1 + r)^3(1 + p)^3$$

A present value comparison of the GI Bill and VEAP requires, therefore, assumptions about the values of three key variables: (1) the real time rate of discount (r) of the individuals of interest, (2) the rate (p) at which they expect prices to rise in the future, and (3) the rate (b) at which they expect GI Bill benefits to rise. For the first there is little information available; we must assume values wide enough to span the true value. For the last two expectations might be formed based on the rates of change prevailing just before the enlistment date; we could also examine the effect of assuming that young people enlisting in the military under the GI Bill were unaware of the history of benefit level increases. The actual courses of inflation in prices and benefit levels after the enlistment date are irrelevant; when a person decides to enlist, he has information only on the past. It is no easier to compute the PDV at the time of enlistment for an individual who enlisted in 1966, whose benefit payments are observable, than for someone who enlisted in 1976.

VEAP COMPARED WITH THE GI BILL

To compare the GI Bill with VEAP, I consider four hypothetical recruits: A, B, C, and D. Each enlists in the Army for a three-year tour, and each expects to undertake a full-time course of institutional study upon leaving the Army, for the maximum benefit period.

- Recruit A enlists on December 31, 1976, thereby becoming eligible for benefits under the GI Bill.
- Recruit B enlists on January 1, 1977, and elects to participate in VEAP by contributing the maximum $75 per month, at which rate

he expects to continue contributing for 36 months.

- o Recruit C enlists on January 1, 1979, but is otherwise identical to B.
- o Recruit D also enlists on January 1, 1979, but enters the Army in an area of the country in which the VEAP kicker, a $3000 Army contribution to his educational benefit fund, is offered. He selects training in one of the combat arms specialties that qualify him for the kicker, and like B and C he expects to contribute the maximum amount allowed under VEAP throughout his tour.

Table 1 contains a comparison of the dollar values of the enlistment incentives provided by educational benefits. The two columns present the simple undiscounted sums of benefits payable to each

Table 1

TOTAL UNDISCOUNTED PAYMENTS AND NET BENEFITS
FOR HYPOTHETICAL THREE-YEAR ENLISTEES
UNDER THE GI BILL AND VEAP

Recruit	Date of Entry	Assistance Program	Number of Dependents	Total Payments	Net Benefits
A	Dec. 1976	GI Bill	0	$13140	$13140
			2	17820	17820
B	Jan. 1977	VEAP	Any	8100	5400
C	Jan. 1979	VEAP	Any	8100	5400
D	Jan. 1979	VEAP with $3000 kicker	Any	11100	8400

individual, and the net benefits after the individual's contributions to the funds are subtracted. For Recruit A, the benefit levels prevailing when he enlisted are used, and two sets of totals are given because GI Bill benefit levels depend upon the number of the veterans' dependents. For simplicity, only the cases of zero or two dependents are considered: less than 20 percent of full-time GI Bill trainees in April 1978 had one dependent.[1]

VEAP is clearly a less generous program than the GI Bill, especially when individual contributions to the VEAP fund are netted out. Most veterans, however, do not use all 45 months of benefits available under the GI Bill. Table 2 reproduces the net benefit totals and introduces totals for 36 months of benefits. Comparisons of the latter

Table 2

FURTHER COMPARISONS OF EDUCATIONAL BENEFITS
UNDER THE GI BILL AND VEAP

Recruit	Date of Entry	Assistance Program	Number of Dependents	Net Benefits	Value Over 36 Months	Value in Jan. 1977 Dollars
A	Dec. 1976	GI Bill	0	$13140	$10512	$10512
			2	17820	14256	14256
B	Jan. 1977	VEAP	Any	5400	5400	5400
C	Jan. 1979	VEAP	Any	5400	5400	4639
D	Jan. 1979	VEAP with $3000 kicker	Any	8400	8400	7216

[1] Veterans Administration (1978), p. 43.

totals naturally make VEAP look better. Recruit D, for example, receives total benefits 80 percent as great as those of unmarried Recruit A. Unfortunately, 1979 dollars were not as valuable as 1977 dollars. In the last column the benefits of Recruits C and D are deflated by the Consumer Price Index (CPI), which rose more than 16 percent between 1977 and 1979.

These naive comparisons implicitly assume that all benefits are paid on the date of enlistment and are the type that might have appeared in the popular press or the service newspapers in 1977 and 1979. All make VEAP appear to be a reasonable replacement for the GI Bill. Recruit B, who enlisted one day too late to be eligible for the GI Bill, would still receive 51 percent of the benefits that an unmarried individual A might have expected to receive, if each intended to attend school for four academic years (36 months) after leaving the service. Inflation eroded that ratio to 44 percent for Recruit C, but the VEAP kicker raised it to 69 percent for Recruit D. The comparisons are less favorable to VEAP if the individuals expect to be married and have children while attending school.

These comparisons are far too generous to VEAP. Three factors, noted above, require a present value comparison: (1) the expectations of the individuals with respect to inflation and to GI Bill benefit levels, (2) the preference of virtually everyone for money now over money in the future, and (3) the requirement that VEAP participants contribute money while in the service that is only returned to them, without interest, after discharge. The PDV calculations reported below are based on the following assumptions:

1. Schooling period: Each veteran begins school in October following his discharge and attends full-time (October 1 through June 30) for four years.
2. Inflation: Each expects that the CPI will rise during the period of his military service and schooling at the average rate at which it rose during the two years immediately preceding his enlistment. For Recruits A and B this rate was 6.4 percent per year: for C and D it was 7.7 percent. It is assumed that they discount future payments by these inflation rates.
3. GI Bill benefit levels: Two alternative assumptions about the expectations of individual A with respect to future increases in the level of GI Bill benefits are examined:
   a. Benefits levels will be increased each October to match increases in the cost of living.[1]
   b. Benefit levels will not change.
4. Discount rate: Three alternative assumptions about the annual real (constant dollar) rate at which the individuals discount future payments are considered: zero percent, 10 percent, and 20 percent.

Both GI Bill and VEAP benefit payments, as well as individual VEAP contributions, are assumed to take place on the last day of the month. All PDVs are computed in January 1977 dollars.

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[1] This expectation is unrealistic, but GI Bill benefit increases have been generally publicized as cost of living increases.

A few comments are in order about the assumptions and their implications. First, the assumption that everyone expects inflation to continue means that all individuals discount the values of future payments, even if they have a zero percent real discount rate. Second, the real discount rates considered were chosen to be as favorable as possible to VEAP; although higher discount rates affect the PDVs of VEAP and GI Bill gross benefits identically, they reduce the net PDV of VEAP benefits proportionately more because VEAP requires that income be forgone during military service. At a sufficiently high discount rate the PDV of VEAP becomes negative, which can never happen with the GI Bill. Discount rates of 20 to 30 percent are common in the literature on enlistment supply estimation.[1] Finally, the assumption that recruits expect annual increases in GI Bill benefit levels to match the expected increases in the CPI (6.4 percent) may be conservative. Increases in GI Bill benefit levels were regular and substantial in the 1960s and 1970s, averaging almost 7.5 percent from 1972 to 1976. Since the date of Recruit A's enlistment, however, benefit levels have been increased only once, by 6.6 percent on October 1, 1977.[2]

Table 3 presents the PDVs calculated for Recruits A, B, C, and D under each of the various assumptions. As is readily apparent by comparison with Table 2, discounting sharply reduces the value of educational benefits to the enlistee. Even at a zero real discount rate,

[1] Cooper (1977), for example, used a nominal rate of 20 percent, Grissmer et al. (1974) a rate of 30 percent.

[2] GI Bill recipients would receive a 15 percent cost-of-living increase under a bill (S870) passed by the Senate on January 24, 1980. Congressional Quarterly Weekly Report, 38:5 (February 2, 1980), p. 262.

Table 3

EXPECTED PRESENT DISCOUNTED VALUE OF EDUCATIONAL BENEFITS
(January 1977 dollars)

Recruit	Date of Entry	Assistance Program	Number of Dependents	PDV[a] at Real Discount Rate 0%	10%	20%
A1	Dec. 1976	GI Bill	0	$ 7404	4373	2731
			2	10041	5931	3704
A2	Dec. 1976	GI Bill	0	10512	6164	3822
			2	14256	8356	5183
B	Jan. 1977	VEAP	Any	3249	1232	211
C	Jan. 1979	VEAP	Any	2520	911	98
D	Jan. 1979	VEAP with $3000 kicker	Any	4222	1917	727

[a]Recruit A1 expects GI Bill benefit levels to remain unchanged; Recruit A2 expects benefit levels to increase with the cost of living (CPI). All recruits expect prices to continue to rise at their average rate of increase over the two years before enlistment: 6.4 percent per year for A1, A2, and B; and 7.7 percent for C and D.

Recruit A's expectation that inflation will continue causes him to value the benefits he will eventually receive during four years of college not at $10,512 (assuming benefit levels will not change), but at only $7404, or 30 percent less. If Recruit A thinks that GI Bill benefit levels will continue to increase, he will expect eventually to receive $14,843 in benefits, but on the day he enlists he would give up those future benefits for $10,512. Similar comparisons can be made for VEAP participants: B will eventually receive a total of $5400 from the government, but he would trade that $5400 for $3249--only 60 percent as much--in

January 1977. At higher real discount rates, the contrast is even sharper between the total amount of benefits each individual will eventually receive and the value of those benefits to the individual at the time of enlistment.

These comparisons demonstrate how misleading consideration of undiscounted benefits can be to a policymaker concerned with the enlistment incentive provided by educational benefits. The $3000 VEAP kicker might seem to be a rather substantial incentive for enlistment in the combat arms. The value of the kicker to the potential enlistee is much less, however, because he will not receive it until several years later when inflation will have eroded its purchasing power: only $1981 at a zero real discount rate and as little as $733 at a 20 percent rate (both in January 1979 dollars). When the discounting implicitly done by the enlistee is combined with the effect of inflation between January 1977 and January 1979, it is evident that the kicker restored at most $973 (January 1977 dollars) of the educational benefits lost when VEAP replaced the GI Bill (compare B and D) and perhaps as little as $516 if potential enlistees have a strong preference for current over future dollars.

Comparisons between the values of GI Bill benefits and those of VEAP are presented in Table 4. At best, VEAP with the $3000 kicker provides no more that 57 percent of the enlistment incentive of the GI Bill. At worst--if the individual has a high rate of time preference (discount rate), expects to have two dependents while in school, and expects GI Bill benefit levels to continue increasing--the present value of VEAP with the kicker is only 14 percent as great as that of the GI

Table 4

PRESENT DISCOUNTED VALUE OF VEAP BENEFITS
AS PERCENTAGE OF GI BILL BENEFITS
(100 x VEAP / GI Bill)

	Compared With		Real Discount Rate		
Recruit	Recruit	Dependents	0%	10%	20%
B	A1[a]	0	44	28	8
	A1	2	32	21	6
	A2[a]	0	31	20	6
	A2	2	23	15	4
C	A1	0	34	21	4
	A1	2	25	15	3
	A2	0	24	15	3
	A2	2	18	11	2
D	A1	0	57	44	27
	A1	2	42	32	20
	A2	0	40	31	19
	A2	2	30	23	14

[a]Recruit A1 expects GI Bill benefit levels to remain unchanged. Recruit A2 expects benefit levels to increase with the cost of living (CPI).

Bill. Without the kicker, VEAP currently offers little incentive relative to the GI Bill.

These comparisons still do not tell all of the story. Four points in particular should be noted. First, an element of risk is associated with the decision to enlist in order to obtain educational benefits because the enlistee may later decide not to use those benefits, and he does not know exactly what the purchasing power of his benefits will be when he ultimately receives them. Allowing for the latter reduces all present values from the simple PDVs presented in Table 3; incorporating the former reduces the PDV of VEAP more than that of the GI Bill.

Second, the inflation of the last year has further eroded the value of VEAP, not only because the provisions of VEAP fix contributions and benefits (including the kicker) in nominal terms, but also because high rates of inflation raise recruits' expectations about future price increases. Third, the assumptions used in isolating the three VEAP recruits above mask the complexities of VEAP and VEAP-with-kicker. In particular, the Army version of the Multiple Option Recruiting Experiment offers tour lengths of two, three, or four years, with different levels of VEAP kicker available for each. Finally, the VEAP kicker is tied to service in certain combat arms specialties, which tends to reduce its attractiveness relative to basic VEAP. I discuss these points in turn below.

Risk

No young person can be sure when he enlists that he will take advantage of the educational benefits to which he becomes entitled. If he attaches probability P to that outcome, then his expected return is P times the value of the future benefits, assuming there is no cost associated with not using the benefits. By observing such ex post outcomes as the proportion of VEAP participants who use their benefit entitlements, we might infer something about the ex ante probability P, but as it turns out even an exact measurement of P would not permit calculations of the risk-adjusted value of VEAP (or GI Bill) benefits. People are generally risk averse (they will not accept an actuarially fair bet). This means that the value to the typical enlistee of VEAP benefits is less than his expected return (in the mathematical sense).

The cost associated with a later decision not to use VEAP benefits is not zero. The VEAP participant, unlike his GI Bill counterpart, must forgo the current use of some of his military pay. This money is returned to him at the end of his tour of active duty if he suspends participation (or earlier, in cases of hardship). However, inflation and his natural preference for consumption now over consumption in the future make the money worth less to him then than it would have been earlier. As an example, suppose that Recruit C decides on the day he leaves the service that he will never go to college and manages to cut through all red tape and get his $2700 in contributions refunded on the same day. Discounting that $2700 to the day of his enlistment yields a PDV of $1252 to $2163 (20 or zero percent discount rate, plus expected inflation); but he has had to forgo an income stream of $75 per month, the PDV of which at the enlistment date was $1814 to $2414. Thus the present value cost on the date of enlistment of his later decision not to use his benefits is at least $251, and it could be $612 or more. If P is equal to 1--if the individual is certain that he will use his VEAP benefits--this cost is irrelevant. If P is close to zero for some individual, the expected gain from participating in VEAP will be negative, and he will not participate. The GI Bill could act as an enlistment incentive, albeit a small one in many cases, for every potential enlistee; VEAP will attract only those individuals with substantial commitments to pursuing postservice education.

The risk associated with inflation also cannot be ignored. The PDVs in Table 3 incorporated expected inflation rates equal to the average annual increase in the CPI during the two years before the

enlistment date. "Expected" is used here in its mathematical sense: the expected inflation rate is a weighted average of all rates the recruit believes possible, the weights being the probabilities he attaches to each rate. As noted above, however, risk averse individuals do not consider expected returns. If Recruit C arrives at his expected inflation rate of 7.7 percent by attaching equal probabilities of one-half to actual rates of 0 and 15.4 percent, he will place a smaller value on his VEAP benefits than he would if he believes an inflation rate of 7.7 percent is certain (i.e., probability one).[1] Eliminating the recruit's uncertainty about future inflation--for example, by indexing benefits to the CPI--will therefore raise the value of VEAP and thus increase its appeal, even if expected total net benefits are left unchanged.[2]

Effects of Inflation

In 1979 the United States experienced unprecedentedly high inflation. Between December 1978 and December 1979 the CPI rose 12.2 percent. This inflation has affected the present value of VEAP to the potential recruit in two ways. First, it has directly reduced the

[1] In theory, this effect may be offset partially or wholly if the veteran responds to a particularly high inflation rate (a low real value of his VEAP benefits) by deciding not to attend school. In practice, however, the principal determinant of his decision on school attendance probably will be the veteran's beliefs about what his lifetime earnings would be with and without the additional years of schooling that his VEAP benefits would help to finance.

[2] As it probably would be applied in practice, indexing would also increase expected net benefits. To leave expected benefits unchanged, the indexing would have to be accompanied with an offsetting reduction in government contributions.

purchasing power of all VEAP benefits by 12.2 percent. The $114 to $2934 value of VEAP to Recruit C in January 1979 (zero and 20 percent real discount rates) has become $102 to $2615. Second, it has raised people's expectations about future inflation rates. A hypothetical Recruit E enlisting in January 1980, for example, could expect prices to rise in the future at an annual rate of 10.5 percen is real discount rate is zero percent, he would value basic VEAP not at $2615 but at only $2030. If his real discount rate is 20 percent, VEAP would be worth -$70 to him: he would actually have to be paid to participate in VEAP. These values are reported in Table 5 below.

Complexities of VEAP

Three aspects of the current VEAP add complexity that is not considered in the comparisons presented above. First, contributions for as little as one year are sufficient to qualify the recruit for two-for-one matching funds and for the kicker (if eligible), and he may discontinue participation at any time. Second, tour lengths of two, three, or four years are now available, each offering a kicker to qualified enlistees. Third, in the second phase of the Multiple Option Recruiting Experiment, begun on December 4, 1979, the Army increased the amounts of the kickers offered to three- and four-year enlistees.

Consideration of the complexities of VEAP does not alter the basic conclusion reached above that VEAP does not offer a strong enlistment incentive but will, of course, change the precise values calculated. The ability of the individual to discontinue participation will in general reduce the risk associated with the initial decision to

participate, thereby raising the risk-adjusted value of VEAP.[1] The effects of the various tour lengths are less obvious. On the one hand, total benefits available from a two-year tour are substantially less than from a three-year tour, and benefits from a four-year tour are somewhat more if a kicker is included. On the other hand, benefits are received one year earlier if the recruit elects a two-year tour and one year later with a four-year tour, than with a three-year tour. This will substantially affect PDV comparisons at high nominal discount rates. Finally, the recent $1000 addition to the VEAP kicker for three year enlistees has added little or nothing to the value of the VEAP kicker package. It amounts to only 17.7 percent in constant dollars, which is further reduced by the expectations about high future inflation that recruits should now hold.

The effects of varying tour lengths and kicker sizes are shown in Table 5. It introduces four new hypothetical recruits, all of whom enter the Army on January 1, 1980. The first, Recruit E, was discussed above: he does not elect, or is not qualified for, a kicker. Recruits F, G, and H choose tour lengths of three, two, and four years, respectively, receiving kickers of $4000, $2000, and $6000. In addition, Recruit H may choose a military occupational specialty (MOS) qualifying him for a $3000 enlistment bonus,[2] which is assumed to be paid six

[1] Disenrolling from VEAP does not ensure the individual immediate refund of his contributions. Under current regulations, he must demonstrate "hardship or other good reason" to obtain a refund before the completion of his initial tour.

[2] Although most, if not all, of the kicker-eligible MOSs also qualify the recruit for an enlistment bonus if a four-year tour is selected, not all bonuses are paid at the maximum $3000 level.

Table 5

PRESENT DISCOUNTED VALUE OF VEAP BENEFITS
FOR 1979 AND 1980 ENLISTEES
BY TOUR LENGTH
(January 1979 dollars)

Recruit[a]	Tour Length	Kicker	Expected Inflation (Percent)	PDV at Real Discount Rate 0%	10%	20%
C	3 yr.	None	7.7	$2934	$1061	$ 114
D	3 yr.	$3000	7.7	4914	2232	847
E	3 yr.	None	10.5	2030	633	- 70
F	3 yr.	$4000	10.5	4045	1828	680
G	2 yr.	$2000	10.5	2950	1712	953
H	4 yr.	$6000 plus $3000 bonus[b]	10.5	4376 6894	1678 4079	404 2703

[a] Recruits C and D enlist in January 1979; E, F, G, and H enlist in January 1980.

[b] Combat arms cash bonus paid six months after beginning of tour.

months after he begins his tour. All PDVs are in January 1979 dollars.

Three comparisons are particularly striking. First, the $4000 kicker is worth little more than the $3000 kicker of a year earlier. At a 10 percent real discount rate, for example, the $3000 kicker was worth $1171 (compare C and D); the $4000 kicker is worth $1135 (F minus E). Second, VEAP-plus-kicker for a three-year tour is worth substantially less in 1980 than it was in 1979--18 to 20 percent less, depending upon the real discount rate assumed. Third, at high real discount rates VEAP-plus-kicker is worth more to the two-year enlistee (Recruit G) and

less to the four-year enlistee (H) than to the archetypical three-year enlistee (F). Only with the addition of the enlistment bonus to the package received by Recruit H[1] does his total incentive approach that of the GI Bill (compare Table 3, remembering to deflate the Table 5 totals by the 16.4 percent intervening inflation).[2]

The Tie to the Combat Arms

The effect of tying the VEAP kicker to service in certain (presumably unattractive) occupational specialties is just one of a class of problems involved in the analysis of such programs as VEAP. Service in the military involves many benefits and costs, some measurable in money terms (pecuniary), some more subjective (nonpecuniary). In addition to the educational benefits considered here, pecuniary benefits include pay and allowances; pecuniary costs include forgone earnings in the civilian sector. Examples of nonpecuniary benefits are skill training, the enjoyment of travel, free medical care, and the later advantage of having had steady employment; costs might include the unpleasantness of military discipline, the physical discomfort of combat arms service, and the problems of living in a strange country.

It is possible in principle to assign dollar values to nonpecuniary costs and benefits by observing individuals' behavior, but without such direct observation we can only speculate. The VEAP kicker couples a

[1] The $3000 bonus adds only $2518 to the PDV, even at a zero real discount rate, because the totals have been deflated to January 1979 dollars.

[2] Enlistment bonuses were also available in 1976, although to a more limited set of MOSs.

pecuniary benefit, which we have examined here, with a nonpecuniary cost. The extent to which that cost offsets the benefit is the principal determinant of the numbers of enlistees who choose the kicker option rather than service in more attractive specialties. More generally, comparisons of the benefits provided by different programs at different times provide only gross indications because they must ignore the complex interactions of other costs and benefits associated with military service at those times.

EXPECTED RESPONSE TO THE VEAP KICKER

Despite the uncertainties implicit in the issues just discussed, it is worthwhile attempting to answer the questions: (1) What enlistment response can be expected to result from DoD contributions to the educational funds provided by VEAP, and (2) How does the VEAP kicker compare in terms of cost effectiveness with such other incentives as general and selective (bonus) pay increases? The latter will be deferred to the next section because VEAP kickers are commitments to future payments, and an analysis of their cost effectiveness requires explicit consideration of the federal budget decisionmaking process and the discount rate used therein. A partial answer to the first question is possible within the context of individual decisionmaking, however, and is presented below.

Basic to all attempts to assess the likely response to the VEAP kicker is the recognition that educational benefits are simply one part of the total compensation package offered to the potential enlistee. I begin the analysis by assuming that the individual does not differentiate between educational benefits and other elements of the

compensation package, then extend it to consider possible violations of this assumption.

Consider two individuals faced with different educational benefit packages, such as Recruits E and F from the previous analysis. Various measures of the PDV of first term military pay are presented in Table 6, each computed under the assumption that annual increases in pay during the first term will exactly offset the expected inflation in prices. This assumption is probably approximately correct, but in any case slight deviations from it will not materially affect the results. Also presented are the PDVs of educational benefits for the two individuals. All figures are in January 1980 dollars.

Table 6

PRESENT DISCOUNTED VALUE OF PAY AND VEAP BENEFITS
(January 1980 dollars)

	Real Discount Rate		
	0%	10%	20%
Regular military compensation (RMC)	$26981[a]	$23292	$20487
Basic pay	17631	15226	13397
Perceived RMC (0.76 x RMC)	20506	17702	15570
VEAP (Recruit E)	2300	717	- 79
VEAP with $4000 kicker (Recruit F)	4583	2071	770
Perceived RMC plus VEAP (Recruit E)	22806	18419	15491
Perceived RMC plus VEAP (Recruit F)	25089	19773	16340

[a]All discounted pay totals are based on assumed promotion to E-2 after 3 months, to E-3 at the end of the first year, and to E-4 at the end of the second year.

The best available measure of the total "salary" of military personnel is provided by Regular Military Compensation (RMC) (first line of the table), which combines base pay, allowances for quarters and subsistence, and the tax advantage provided by tax free allowances. Base pay is, of course, the most visible portion of RMC. Survey data suggest that military personnel substantially undervalue the less visible portions, so the table also presents "perceived" RMC, which for first-year enlistees averages 76 percent of total RMC.[1] For simplicity, all calculations below will use this last measure.

If VEAP benefits are considered equivalent to base pay, the total discounted first term pay received by Recruits E and F is simply the sum of their perceived RMC and their VEAP benefits. These sums are presented in the last two lines of Table 6. Using these totals, the $4000 VEAP kicker raises pay by 5.5 to 10.0 percent (20 and zero percent real discount rates). Available estimates of the responsiveness of high-quality male enlistments to changes in pay place the pay elasticity somewhere between 0.75 and 1.25. That is, a 10 percent increase in pay should lead to a 7.5 to 12.5 percent increase in enlistments of high-quality males. Multiplying the two extremes of this range by the extreme values for the percentage increase in pay provided by the VEAP kicker yields a preliminary estimate of the response to the kicker of 4.1 to 12.5 percent.

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[1] Unpublished tabulation from the 1976 DoD Personnel Survey, reported in Cooper (1977).

That estimate is preliminary because it ignores a number of factors. First, the combination of assumptions that led to the 12.5 percent figure suggest it should be an extreme upper bound on the response to the kicker. Second, the estimate probably overstates the probable response under these pay elasticity and discount rate assumptions, because it is unlikely that the kicker is treated like other elements of pay. Third, if educational benefits are not considered equivalent to other compensation by all potential enlistees, these percentages should be applied to some subset of total high-quality enlistees--those considering postservice education--rather than to the entire pool.

Assuming lower discount rates tends to raise the expected response to the VEAP kicker, because the individual receives the kicker farther in the future than his military pay, so as the discount rate rises the PDV of the kicker falls faster than does the PDV of first term pay. As noted in the initial discussion of assumptions above, other researchers have typically used discount rates in the 20 to 30 percent range in computing discounted pay levels, suggesting that a zero percent real discount rate is almost certainly too low. Combining this rate with the highest estimate of pay elasticity yields the 12.5 percent increase in high-quality enlistments that should be an extreme upper bound on the likely response to the kicker.

All the estimates probably overstate the probable response, even given their pay elasticity and discount rate assumptions, because of two considerations. First, the potential enlistee would implicitly subtract the nonpecuniary costs associated with service in the combat arms from the PDV of the kicker. Even if educational benefits in general can be

treated as equivalent to other elements of pay, the kicker clearly cannot because it is tied to fairly unpleasant service. Educational benefits probably are not viewed as substitutes for direct pay, however, because of the second consideration: VEAP benefits are tied to school attendance. Just as any food stamp recipient would prefer to be given an equivalent amount in cash, potential enlistees would prefer to be able to receive benefits equivalent to those of VEAP regardless of what they decide to do after leaving the service. Another point noted above in the discussion of the PDV of VEAP also applies here: because the individual knows that he may later decide not to attend school, he will not value the VEAP kicker at its full PDV. For all these reasons, the estimated responses above probably are overstatements.

One factor operates in the opposite direction. Most people view higher education not primarily as a consumption good but rather as an investment whose expected return is increased lifetime earnings. For some individuals, military service may offer the only avenue to the educational assistance without which they could not pursue a higher education because capital markets will not allow them to borrow against their future earnings. These individuals will measure the value of the VEAP kicker as the PDV of the expected increase in their future earnings, which may be much greater than the simple PDV. Although this issue is potentially very important, explicit consideration of it is beyond the scope of this study. It will therefore be lumped with the other unmeasurable costs and benefits of military service and ignored.

Finally, we must recognize that the VEAP kicker is only potentially a part of total compensation. For individuals with no desire ever to pursue higher education or postservice training this potential is not realized. The VEAP kicker may raise high-quality enlistments by 12.5 percent, but only by 12.5 percent of those interested in postservice education. It is difficult to know exactly how large that pool is, but an indication is provided by the proportion of enlisted service members who participate in basic VEAP, a number that is available. In 1978, approximately 40 percent of Army enlisted members in mental categories I through IIIa participated in VEAP; the corresponding figure for high school graduates was approximately 45 percent. Thus 50 percent is a reasonable upper limit on the proportion of new high-quality enlistees who express an interest in postservice education by participating in VEAP. To reflect the size of the pool interested in postservice education, the estimated responses to the VEAP kicker should be reduced by at least half.

Table 7 presents estimates of the probable response to the $4000 VEAP kicker that incorporate the upper bound on the size of the relevant pool but do not reflect the other, less quantifiable considerations noted above. The estimates may be taken, therefore, as upper bounds--

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[1] In fact, of all 1977 enlistees eligible for VEAP, a much smaller proportion, only 14 percent, actually participated and stayed in the service long enough to earn benefits.

Some high-quality recruits may have been discouraged from participating in basic VEAP by negative present values, which would suggest that the potential pool may be larger. The PDV of VEAP is negative only at high real discount rates, however, so the one-half estimate should still be used to calculate the maximum possible response, which results from assuming a zero real discount rate.

Table 7

PROBABLE INCREASE IN HIGH QUALITY MALE ENLISTMENTS
DUE TO $4000 VEAP KICKER IN JANUARY 1980
(Percent)

Pay Elasticity	Real Discount Rate 0%	10%	20%
0.75	3.7	2.8	2.0
1.25	6.3	4.6	3.4

given their assumptions--on the response that can reasonably be expected from the kicker. More recruits may sign up for the kicker if many are attracted from MOSs not eligible for the kicker, but the total increase in high-quality enlistments should not be higher.

The estimates offer little support for the hope that the VEAP kicker, as currently constituted, will attract many additional high-quality enlistees. At the very best, the $4000 kicker might add 6.3 percent to high-quality enlistments. More probable, however, is a response in the range of 2 to 4 percent.

CONCLUSIONS

When Congress replaced the GI Bill with the Veterans' Educational Assistance Program, it reduced the enlistment incentive offered by post-service educational benefits. Measured in present discounted value terms at the time of enlistment, the GI Bill was worth at least two and one-half times, and perhaps ten or more times, as much as VEAP. "Naive"

comparisons of undiscounted benefits--the type most frequently seen--understate the size of this difference because (1) they do not account for the individual's probable expectation that GI Bill benefit levels would continue to be periodically increased as they had been in the past, and (2) they do not recognize the substantial loss experienced by VEAP participants who must set aside $50 to $75 per month that is returned, without interest, several years later.

The static nature of VEAP benefits has resulted in a steady decline in the value of the program to the potential enlistee, relative to both enlisted pay and the prices of goods (CPI). It is particularly important to recognize the role played by inflation: not only does it erode the value of benefits fixed in nominal terms (e.g., the VEAP kicker), but increases in the rate of inflation (such as that experienced in 1979) raise the expectations of individuals about the future levels of prices and so cause them to discount the value of future benefits more than before. These two sources of erosion in the present value of the VEAP-plus-kicker package offered by the Army has been sufficient to make the current $4000 offering actually less attractive than was the $3000 kicker one year earlier.

The $4000 kicker offered in January 1980 can reasonably be expected to yield only a modest increase in high-quality enlistments. Several considerations suggest that an increase of 6 percent or less would be much more reasonable than the 12.5 percent computed under the most favorable assumptions. The combat arms may experience a larger increase, of course, but only at the expense of fewer high-quality enlistees in other specialties within the Army.

The desirability of a program is not, of course, determined solely by how effective it is in accomplishing its goals. The important question is how cheaply it achieves whatever effect it does have. The next section examines the cost effectiveness of the VEAP kicker, comparing it with two feasible alternatives. The kicker is found to be not markedly superior in cost effectiveness to either one, and both of the alternatives have the potential for attracting substantially larger numbers of quality recruits. In particular, an enlistment bonus for three-year combat arms enlistees offers the very important advantage of being paid "up front" and so involves none of the discounting or uncertainty that plagues deferred payment programs.

If the VEAP and VEAP kicker programs must be retained for whatever reasons, at least one change could be made to improve their appeal significantly. This change is discussed more fully in the concluding section of this note. The programs should be made static, less tied to specific dollar amounts, thereby removing one important concern of the recruit: that the promised benefits will buy very little when the time comes to use them. The size of the kicker can be increased indefinitely, but without fundamental changes in the program, such increases are likely to accomplish far less than hoped.

III. COST EFFECTIVENESS

A principal concern of the services in considering whether to use educational benefits as an enlistment incentive is the cost effectiveness of such benefits: how do they compare with other feasible enlistment incentives in terms of cost per additional man-year? Cost effectiveness is, however, an elusive concept. The results of cost-effectiveness comparisons of alternative programs depend crucially upon what is taken to be the programs' purpose. The goals against which programs are judged can be defined narrowly or broadly and be limited to short term effects or encompass the long term. If the purpose of a program is defined narrowly enough, it can always be made to appear cost-effective (provided, of course, that it has any measurable beneficial effect at all), but to define the purpose too narrowly is to ignore possibly harmful effects.

What is the VEAP kicker, the educational benefit program that has sparked the greatest current interest, supposed to accomplish? Narrowly defined, its purpose is to attract high-quality enlistees to the hard-to-fill combat arms specialties.[1] Broadening the definition raises the question of why high-quality recruits are so important in the combat arms. The answer seems to be that first-term attrition is particularly severe in the combat arms, and high-quality recruits are less likely, as

[1] Even more narrowly, the kicker is apparently designed to attract college bound youths. I have seen no explanation, however, as to why college bound enlistees are particularly desirable and so will not consider this goal.

a group, to leave the service before the end of the first term than are lower-quality recruits. More broadly, then, the kicker is supposed to increase combat arms man-years by both increasing enlistments into the combat arms and reducing the average first-term combat arms attrition rate.[1] If the purpose is to increase man-years, however, this definition is still too narrow; longer term effects, in particular on retention past the first term, must be considered. Ultimately the VEAP kicker and the alternative programs considered must be judged against a goal of increasing total combat arms man-years.

Most feasible alternatives involve the payment of large economic rents (payments to individuals whose actions would not be affected by the program) and attract individuals whose services are not desired, so can be quickly eliminated. A general pay raise would increase high-quality combat arms enlistments, but it would also increase other enlistments, and it would have to be paid both to all new recruits and to current servicemembers. A bonus for all high-quality enlistees would be better, but it would not focus on low attrition categories of personnel. A policy of paying the bonus in installments, however, and aggressively enforcing repayment provisions might not markedly reduce attrition, but it would at least not have the added cost of bonuses paid for little or no useful service received.

Not considered in this analysis are a variety of alternative educational benefit programs, such as the Armed Forces Scholarship Program,

[1] Reducing discipline problems will be subsumed under the heading of reducing attrition.

the Clements Alternative, the Petri Amendment, the Wilson Bill, and various service-proposed alternatives. The lack of experience with programs differing radically from VEAP and the GI Bill would make any analysis largely conjectural, and in any event these programs have received considerable attention elsewhere.[1]

Two less radical changes are examined below. The first is the lifting of the quality restriction on the current VEAP kicker. Although this would open the kicker option to groups of enlistees that have historically exhibited high attrition rates, a case can be made that the kicker would appeal primarily to well-motivated recruits of all mental abilities and educational attainments and would offer a substantial incentive for the successful completion of the first term. The second option considered is an extension of the current combat arms cash bonus to three-year enlistees. Although this would undoubtedly lead some potential four-year enlistees to choose the shorter tour, it could be sufficiently more effective than the VEAP kicker in attracting high-quality recruits to the combat arms to offset the man-years lost through this shift.

Formal cost-effectiveness comparisons of these options with the VEAP kicker are not possible at present. No experimental results are available to tell us how great would be the response to each. The analyses presented below indicate, however, that each option deserves careful consideration.

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[1] See, e.g., OASD(MRA&L) (1980).

QUALITY RESTRICTION

> High-quality recruits make better soldiers. They are less likely to be discharged during their initial enlistment for trainability, motivational, or disciplinary reasons. This limits the turnover of personnel and minimizes the training and replacement costs. It contributes positively to readiness and esprit and promotes the image of the Army as a desirable place to serve.

So stated the Assistant Secretary for Manpower and Reserve Affairs of the Department of the Army in testimony before the Subcommittee on Manpower and Personnel of the Senate Armed Services Committee.[1] High-quality recruits are more likely to complete their first tour than are lower-quality recruits; they may actually perform their military duties better, but that has not as yet been well documented. Thus the apparent rationale for offering the VEAP kicker only to high-quality enlistees is that this group exhibits low attrition rates.

It was hoped that VEAP by itself would attract primarily high-quality recruits. "The (Senate Veterans' Affairs) Committee believes that terminating the GI Bill, without providing an alternative postservice educational benefits program, would impair the military's ability to attract sufficient numbers of quality recruits."[2] Whether VEAP has offered a significant enlistment incentive for any recruits--high-quality or low--is questionable, as the preceding section shows. High-quality individuals may have been most attracted by the limited appeal of VEAP, but actual participation in the program does not support this hypothesis. Among educational attainment groups, VEAP participation

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[1] U.S. Senate (1976), pp. 67-68.
[2] Ibid., p. 68. See also OASD(MRA&L) (1980), pp. 2-11.

DoD-wide in 1978 was highest for those enlistees with some college, as might be expected. The next highest participation rate, however, was exhibited by enlistees with less than two years of high school. A similar picture appears in a breakdown by mental category: category I enlistees have the highest participation rate, but category IVs are next highest.[1]

If VEAP appeals equally to high- and lower-quality recruits, so presumably should the VEAP kicker. Thus self-selection is not sufficient to ensure that a more widely available VEAP kicker option would not be chosen by many lower-quality recruits. Obviously, attracting lower-quality recruits would increase the cost of the VEAP kicker program, but those recruits might prove to be nearly as desirable as their high-quality counterparts.

Why should those lower-quality recruits who choose the kicker not be poor service members? First, they have indicated by their choices that military service for them is, at least in part, a means to a specific end. This suggests that the indication of poor motivation provided by their lack of high school diplomas (to look at one subset of the group) is not accurate. An examination of the attrition behavior of participants in basic VEAP would provide clear evidence on this point, but such an examination is beyond the scope of this study. It is instructive, however, that of the 69,000 enlistees who began VEAP participation in the first 18 months of the program (January 1977 to June

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[1] Veterans Administration and Department of Defense (1979), pp. 95-96.

1978), only 8376 (12.2 percent) had discontinued participation by January 1979 because of separation from the service.[1] Others may have left the service after discontinuing participation for other reasons, of course, but VEAP participants as a group--and remember that they are fairly evenly distributed across mental categories and educational attainment levels--appear to be more likely than most recruits to get through the initial training period, when much of first-term attrition takes place.

A second reason why we should expect lower-quality VEAP kicker recipients to have few disciplinary problems and low attrition rates is that the kicker provides a substantial incentive to remain in the service. In the Army program, enlistees choosing the kicker are credited with $1600 of the total kicker only after they participate in basic VEAP for 12 months and successfully complete basic and advanced individual training. Thereafter they earn $100 for each additional month of service and VEAP participation. These provisions should screen out poorly motivated recruits and provide a continuing incentive to remain in the service. In addition, enlistees who are discharged under either the Trainee Discharge Program or the Expeditious Discharge Program forfeit entitlement to the kicker, as do those who, by reason of dishonorable discharge from the military, are involuntarily disenrolled from basic VEAP. If despite these incentives a recruit presents disciplinary problems after qualifying for all or part of the kicker, the services could at least minimize the cost of losing the recruit early by pressing for a

[1] Ibid., p. 99.

dishonorable discharge whenever justified, thus denying the kicker to the discharged recruit.

These arguments do not make a case, of course, that a VEAP kicker available to all HSDG enlistees in the combat arms would be more cost-effective than the current kicker option. Indeed, the best that can be hoped is that it would be no less cost effective. Given the difficulties that the Army is having in filling its combat arms specialties, and the Navy its marine engineering ratings, a program that is only moderately more expensive per additional man-year than the current VEAP kicker would be desirable if it held the hope of attracting significant numbers of additional well-motivated recruits. Of course, all HSDG recruits choosing the combat arms for other reasons would also elect the VEAP kicker, but only those serious enough to commit themselves to basic VEAP would actually earn the kicker, so the economic rents collected by those who would have enlisted without the kicker should not be excessive. At worst, expanding the VEAP kicker would add very little to the cost of the program; at best it could tap a new market of good, if not "high-quality," recruits.

Finally, expanding the kicker to include lower-quality recruits may be desirable on equity grounds and to avoid charges of de facto discrimination that could be leveled against the current program. Discussion of these points, which are not related to costs, is deferred to Section IV.

THREE-YEAR COMBAT ARMS BONUS

Three key differences between the VEAP kicker program and an enlistment bonus for three-year combat arms recruits makes the bonus, at least potentially, a far more effective recruiting tool. First, the bonus would not be tied to postservice school attendance. The potential recruit need worry only about whether he will complete his initial training, and not about whether he will still want to pursue further education when he leaves the service. Second, the bonus is paid "up front," rather than after the individual leaves the service. This eliminates the potential recruit's uncertainty about how much the kicker will buy when he receives it and reduces the size of the payment required to yield a given enlistment response because of the higher real discount rate of the recruit than of the Defense Department. Finally, the kicker option requires the payment of two-for-one matching funds. Because of the contributory aspect of basic VEAP, these matching funds are worth very little to the potential recruit.

The picture is considerably clouded by the current availability of the Cash Bonus Enlistment Option, which is available to four-year enlistees who have a high school diploma, fall in mental categories I through IIIb, and elect training in certain combat arms specialties. Offering a bonus to three-year enlistees with the same qualifications would undoubtedly reduce the number of four-year enlistments, but it is difficult to estimate how great this reduction would be. To make the comparison of a three-year bonus and the VEAP kicker manageable the analysis proceeds as if no four-year bonus were available. This simplification is dropped in the concluding portion of this section.

The Tie to Postservice Education

At first glance, the linking of the VEAP kicker to postservice school attendance would seem to be irrelevant to a cost-effectivenes comparison with a straight enlistment bonus. The potential recruit, knowing that he may later decide not to use the kicker, will discount its value accordingly. The Defense Department also knows the recruit may not use the kicker, and so similarly discounts its cost. The two should exactly balance: the kicker the recruit expects (in the mathematical sense) to receive is the same as the kicker DoD expects to pay, so both should be willing to trade the kicker for the same sized certain payment.

As should be apparent from the discussion in Section II, however, this analysis is far too simplistic, for at least three reasons. First, and most important, although the kicker costs DoD nothing if the recruit decides not to attend school, the cost to the recruit is not zero. Until he reaches this decision, the recruit will be participating in basic VEAP, thereby incurring the cost of forgone current income. The expected value of the kicker is, therefore, less to the recruit than to DoD. Second, the potential recruit probably will not value the kicker at its expected value because of his uncertainty. Most people are not neutral to risk; they prefer a certain payment to an uncertain payment with the same expected value. DoD can be risk neutral, however, because it is dealing with many individuals whose decisions will tend to balance out. The risk averse potential recruit will value the VEAP kicker--even ignoring the cost of participation in basic VEAP--at less than will DoD. Finally, the expectations of the recruit and of DoD may differ. If

potential recruits consistently overestimate the probability that they will ultimately collect the kicker, they will value it, other things equal, at more than will DoD.

What will be the net effect of these conflicting factors on the relative sizes of the enlistment bonuses that the potential recruit and DoD would be willing to trade for a VEAP kicker? Probably these factors will make the bonus the individual requires the smaller of the two. It is difficult to estimate how risk averse potential recruits are, or whether and to what extent they may overestimate the probability that they will attend school after leaving the service; but the cost of discontinuing participation in basic VEAP is considerable. Consider, for example, Recruit F of the previous section, who enlists in January 1980, elects the kicker option, and commits himself to contributing $75 per month under basic VEAP. If he decides to disenroll from VEAP one year later, his $900 in contributions will be refunded to him.[1] The present value of that $900 on the day he enlists, however, is from $39 to $96 less (at zero and 20 percent real discount rates) than the present value of the $75 that he gave up each month.[2] The later he decides to disenroll, the greater is the cost of his decision, reaching $323 to $642 if the decision comes the day he is discharged. Of course, the Department of Defense has the use of the recruit's funds until he

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[1] Actually, current regulations allow individual contributions to be refunded before the service member completes his first term only in cases of "hardship or other good reason." For simplicity, I assume that "other good reason" will be construed quite broadly.

[2] The costs of disenrolling are discounted at the 10.5 percent rate of expected inflation in the CPI, accounting for the nonzero cost at a zero percent real discount rate.

disenrolls, but not having the impatience of youth DoD would probably apply a lower real discount rate than would the recruit. The recruit who disenrolls bears costs that are not matched by benefits to DoD, making the expected value of the kicker less to the recruit than the expected cost to the service.

Bonus Paid Up Front

The expected present value of the current $4000 kicker to a recruit entering the Army in January 1980 is at most $2283 (zero percent real discount rate) and perhaps no more than $849 (20 percent rate).[1] The "expected" is not gratuitous: the recruit does not know how much prices will rise before he receives the kicker. Moreover, the recruit is uncertain about whether he will ultimately decide to use his benefit entitlement (see Sec. II). If the recruit is risk averse, as most people are, the actual risk-adjusted present value of the kicker to him will be even less than the $849 to $2283. The Defense Department can ignore individuals' uncertainty about their education plans because the independent decisions of those individuals will tend to balance out. DoD will not wish to ignore the uncertainty about price inflation, but the dollar amount obligated in the kicker program is so small in relation to the total DoD budget that the effect of DoD's risk aversion with respect to inflation would be negligible. The risk aversion of the potential recruit drives a wedge between the present value to him of the

[1] Both totals are in January 1980 dollars and were computed by subtracting the PDV of educational benefits for Recruit E in Section II from that of Recruit F, before deflating to January 1979 dollars.

kicker he may receive and the present value cost, to DoD, of the kicker it expects to pay, even if both apply the same real discount rate.[1]

Two-for-One Matching[2]

Every individual induced to enlist by the VEAP kicker costs the government not only the $4000 kicker (for a three-year enlistee), but also the $5400 in two-for-one matching funds under basic VEAP (assuming three years of contributions at $75 per month). Of those individuals brought into the service by a bonus, only a portion--at most 50 percent among high-quality recruits (see Sec. II)--would elect to participate in basic VEAP. The availability of basic VEAP, therefore, makes the VEAP kicker, with its requirement of VEAP participation, a much more costly recruiting incentive than an equivalent bonus, where cost is measured as total payments to each additional recruit.

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[1] In fact, the discount rate actually used by the potential recruit probably is greater than the rate appropriate for DoD decision-making. Shisko (1976) argues that DoD should use a rate in the range of 8 to 10 percent, while Warner (1979) and Canby (1972) cite estimates of 20 and 28 percent, respectively, for the rates actually used by 19 year-old recruits. If potential recruits do use a higher discount rate than DoD, then a bonus that is equivalent in the eyes of DoD to the $4000 kicker will be larger than the equivalent bonus as viewed by the recruit. The difference between the two kicker-equivalent bonuses is a potential saving that DoD may obtain by switching from the VEAP kicker to a bonus. Whether it is actually realized depends in part upon the attrition behavior of bonus and kicker recipients and upon the bonus recoupment policies of the services.

[2] Under current law, the matching funds in basic VEAP come out of the budget of the Veterans Administration and are not a cost to DoD. The cost may be shifted to DoD, however, if VEAP is continued past its current five-year experimental period. The following analysis implicitly assumes that this shift already has taken place or, alternatively, examines VEAP from the federal budget viewpoint.

Cost Effectiveness of VEAP Versus a Three-Year Bonus

The preceding three points make a strong case that a three-year bonus for high-quality recruits to the combat arms would be more cost effective than the VEAP kicker. The case is not conclusive, however, because all comparisons have been couched in terms of budget outlays to each additional recruit. The appropriate comparison is of total additions to outlays per additional recruit. That is, we must consider the economic rents involved, the payments of bonus or kicker to individuals who would have enlisted in the combat arms were the incentive not available.

Allowing for economic rents does not alter the conclusions. Naturally, every high-quality combat arms enlistee will accept a bonus if it is made available. The VEAP kicker, however, will be chosen by only those recruits planning postservice education. As argued in Section II, a reasonable upper bound on the proportion of high-quality combat arms recruits who would choose the kicker can be inferred from VEAP participation rates, and probably would be no more than one-half. The same reasoning that yields an estimate of economic rents that are one-half as great as for an equivalent (in present value) bonus suggests that the kicker should attract only one-half as many additional recruits as the bonus.[1] Thus the economic rents per additional recruit should be very nearly the same under a bonus as under the kicker.

[1] For a more complete discussion, see Section II.

The total cost per additional recruit is not the same under the two programs, for the three reasons discussed above. Each tends to reduce the magnitude of the "equivalent" bonus from what it is in the eyes of DoD. A bonus that costs DoD no more per recipient, in present value terms, than the $4000 VEAP kicker should elicit a larger enlistment response, both because young people have higher discount rates than DoD and because the bonus saves the recruit the cost of VEAP participation if he later decides not to attend college. A bonus that costs the same as the full cost of the VEAP kicker, including the two-for-one matching funds, should elicit a substantially larger response.

Two cautionary notes must be sounded, but they should not alter the basic conclusion. First, both the kicker and a bonus should attract recruits from other specialties into the combat arms, although perhaps not to an equal extent. The college bound recruit (one attracted by a kicker) might be more willing than the average recruit (attracted by a bonus) to switch to the combat arms, because he would not care about the lack of transferable skills offered in combat arms training. This possible difference in personnel shifts from other specialties should be kept in mind, but probably would not be large.

The second point also relates to personnel shifts, but here the shifts are from the ranks of four-year combat arms enlistees. Most of the MOSs eligible for the VEAP kicker also offer a bonus varying from $1500 to $3000 to HSDG recruits in mental categories I-IIIb who choose a four-year initial tour. If a bonus were offered to three-year combat arms enlistees, it would undoubtedly attract many recruits who would otherwise have chosen a four-year tour, unless the three-year bonus were

much smaller. In fiscal year 1979, 14,000 Army recruits received an enlistment bonus,[1] so the possible adverse effects on first-term man-years are quite substantial. Moreover, the proportion of eligible combat arms enlistees who commit themselves to one extra year in order to receive the bonus is quite high (as great as 80 percent in some MOSs).

The bonus has not as yet been used as a recruiting tool. Surveys indicate that most service-age youths are not aware of its availability. Thus there is considerable scope for increasing combat arms enlistments if a three-year bonus were advertised, perhaps enough to offset the man-years lost through reduced four-year enlistments. A $3000 bonus would add 14 to 17 percent to the present discounted value of first-term pay (perceived RMC) for a three-year enlistee.[2] If the supply response to this increment to pay were the same as to elements not tied to combat arms service, the bonus could be expected to add 10.4 to 20.9 percent to the supply of eligible recruits.[3] In fiscal years 1978 and 1979, Army enlistments of HSDGs in mental categories I-IIIb averaged 57,000, suggesting a possible response of 5,900 to 11,800. Even if every recruit who would have taken the four-year bonus switches to a three-year tour, the additional recruits should be sufficient to offset

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[1] Data provided by Major Michael Bryant, Deputy Director, Enlisted Personnel Management, OASD(MRA&L). Major Bryant also provided the information on bonus awareness and legislative proposals that appears below.

[2] The lower figure assumes a zero percent real discount rate, the higher a 20 percent rate. Because a bonus is paid early in the tour, it raises pay more the higher is the discount rate used.

[3] The lower figure assumes a real discount rate of zero percent and a pay elasticity of 0.75, the higher figure a 20 percent rate and an elasticity of 1.25.

the man-years lost, especially if the reenlistment rate of bonus recipients is substantial.

In fact, the personnel shift would not be complete unless the three-year bonus were the same size as the four-year. Legislation has recently been proposed to Congress that would increase the maximum bonus for four-year enlistees to $5000 and would authorize bonuses for three-year enlistees. If passed, the Army could attract substantial numbers of new three-year recruits by offering a bonus of perhaps $3000, without causing all would-be four-year enlistees to choose the shorter tour.

RETENTION AND ATTRITION

There can be little doubt that postservice educational benefits adversely affect retention of personnel past the first term. VEAP is even worse in this regard than was the GI Bill because VEAP benefits, once accumulated, can only decline in value. GI Bill benefit levels have been raised periodically to keep approximate pace with the cost of living. The effect of educational benefit programs on attrition is less clear. The VEAP kicker may reduce the attrition rates of participants, as argued above, and may attract more highly motivated recruits than even the average high-quality recruit. The latter effect may even be shared by basic VEAP and the GI Bill, programs lacking quality restrictions. The precise effect on retention and attrition of any of the educational benefit programs cannot be known, however, until the full first-term behavior of the early VEAP kicker recipients can be observed.

One attempt was made to determine the retention effect of the GI Bill. In 1975, the Human Resources Research Organization (HumRRO) reported the results of a study of responses to the 1973 Survey of

Enlisted Personnel.[1] It found that among first term enlisted personnel, those who gave GI Bill benefits as the primary reason for their decision to enlist were three times more likely than the average to indicate that they probably would not reenlist. Unfortunately, both questions were asked at a single point: one was retrospective, the other prospective. The response to the question on the reason for enlisting may not reflect the true motive of the respondent at the time he entered the military, and the response to the reenlistment question will be an imperfect predictor of actual reenlistment behavior. The service member who decides not to reenlist so he can go to college, for example, is likely to believe that he entered the military primarily to qualify for GI Bill benefits, even if his true motive was something quite different. Reliance on survey responses is always dangerous, but here the problems are particularly severe. The HumRRO estimate that termination of the GI Bill would increase the pool of potential first reenlistments by 12 percent[2] should be taken as no more than a gross approximation. Attempting to apply their results to predict the retention effects of the VEAP kicker would be unproductive.

Both basic VEAP and the VEAP kicker must have some adverse effect on retention. One proposal for reducing the magnitude of this effect is to allow VEAP benefits to be used while the enlistee is in the service.[3] Two other reforms to increase retention should be considered. First, the VEAP kicker could be replaced by a bonus for HSDG three-year

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[1] Eisenman et al. (1975).
[2] Ibid., p. 40.
[3] OASD(MRA&L) (1980).

combat arms enlistees. Some bonus recipients would have no desire to further their educations, and those who do plan to return to school could at least be watching their bonuses grow in interest-bearing savings accounts. As indicated above, the three-year bonus should also be more cost effective than the kicker for attracting new recruits. Second, the steady loss of purchasing power of the VEAP fund would be reduced or eliminated if interest were offered on the fund, including the VEAP kicker (if any). Other advantages of this proposal are discussed in the concluding section of this note.

IV. VETERANS' EDUCATIONAL BENEFITS AND SOCIETY

> It is the purpose of this chapter (1) to provide educational assistance to those men and women who enter the Armed Forces after December 31, 1976, (2) to assist young men and women in obtaining an education they might not otherwise be able to afford, and (3) to promote and assist the all volunteer military program of the United States by attracting qualified men and women to serve in the Armed Forces.[1]

This is the stated purpose of the Veterans' Educational Assistance Program. VEAP's purpose is not as broad as that of the GI Bill, which also included "providing vocational readjustment and restoring lost educational opportunities to those men and women whose careers have been interrupted by reason of active duty...and...aiding such persons in attaining the vocational and educational status which they might normally have aspired to and obtained had they not served their country."[2] Nonetheless, this additional goal apparently was intended to be subsumed within (1). In its report on the act establishing VEAP, the Senate Veterans' Affairs Committee affirmed its belief that "the benefits, which will be provided by chapter 32, will facilitate the transition from military to civilian life that each service person must ultimately make."[3]

The purpose of the VEAP kicker is much more narrowly defined: "The Secretary is authorized to contribute to the fund of any participant

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[1] 38 U.S. Code 1601.
[2] 38 USC 1651.
[3] U.S. Senate (1976), p. 61.

such contributions as the Secretary deems necessary or appropriate to encourage persons to enter or remain in the Armed Forces."[1] The kicker is a recruiting tool only, notwithstanding its inclusion in a broad program of educational assistance.

The preceding sections of this report examined only the enlistment incentive aspect of VEAP and the VEAP kicker. This section considers the other purposes. VEAP (or any other program of veterans' educational assistance) offers a number of benefits to society, of which three are preeminent. First, it provides a source of funds to individuals who might not otherwise be able to attend college, or to obtain vocational training, or even to complete high school. Second, military service involves a substantial dislocation in the individual's life, and VEAP assists him in resuming or attaining a position as a productive member of civilian society. Third, educational assistance programs such as VEAP may enhance the welfare of society as a whole and help promote national goals of equality of opportunity. Veterans' educational benefits are not without their costs, however, especially in peacetime, exactly because they are tied to service in the military. After discussing the three areas of benefit, I return to the issue of costs in the final portion of this section.

EDUCATIONAL ASSISTANCE

In fiscal year 1978, GI Bill outlays totaled $3.1 billion, making the GI Bill the largest single federal student aid program. In previous

[1] 38 USC 1622(c).

years the proportion of total federal postsecondary student assistance provided by the Veterans Administration was even larger: the Senate Veterans' Affairs Committee cited a figure of 53 percent for fiscal year 1976.[1] Although this proportion will undoubtedly decline as the shift to VEAP takes effect, the federal government will continue to target a substantial portion of its student aid to veterans.

Have VEAP and the GI Bill been effective in assisting "young men and women in obtaining an education they might not otherwise be able to afford"? There is no question that many veterans have been assisted: almost 17.4 million individuals had received educational assistance under three GI Bills by April 1978,[2] and even though VEAP benefits are much less generous there were more than 85 thousand VEAP participants on active duty in January 1979.[3] Veterans' educational benefits have had, and will continue to have, a substantial effect on the level of educational attainment of the American populace.

There is clear evidence that the GI Bill aided predominantly those who "might not otherwise be able to afford" higher education. O'Neill and Ross have shown that blacks and educationally disadvantaged veterans made substantial use of the GI Bill, and that when mental test score and previous schooling are held constant, black veterans have used their GI Bill benefits proportionately more than have nonblacks.[4] The American

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[1] U.S. Senate (1976), p. 26.

[2] Veterans Administration (1978), p. 14

[3] Veterans Administration and Department of Defense (1979), p. 99.

[4] Voucher Funding of Training: A Study of the GI Bill, PRI 312-76, Public Research Institute, Arlington, Virginia, October 1976; reported in O'Neill (1977).

Council on Education noted that "over the last 3 decades the GI Bill has been one of the most significant factors in extending educational opportunities and advancing career prospects for disadvantaged and minority citizens."[1] We have as yet very little experience with the use of VEAP benefits, but for all services combined the VEAP participation rate in 1978 among non-Spanish whites was substantially lower than among blacks, Spanish whites, and others.[2] r The latter groups are, in addition, overrepresented in the military relative to their proportion of the total youth population. If membership in a racial or ethnic minority group is an indicator of disadvantage, then VEAP is helping most those who need the most help.

Will the VEAP kicker also benefit primarily disadvantaged youths? The answer to this question is less clear. On the one hand, the kicker should appeal most to the same groups who currently make the greatest use of basic VEAP. Moreover, blacks (many of whom are disadvantaged) are overrepresented in the combat arms, the specialties for which the kicker is available. On the other hand, the restriction of the kicker to HSDGs in mental categories I-IIIa disproportionately disqualifies blacks. Blacks have lower high school graduation rates than do whites and tend to receive lower scores on the ASVAB.

The VEAP kicker is, of course, not the only benefit of military service that is disproportionately available to whites. Cash enlistment bonuses are similarly restricted to HSDGs in mental categories I-IIIb,

[1] U.S. Senate (1976), p. 63.

[2] Veterans Administration and Department of Defense (1979), p. 94.

and specialties that offer training in skills transferable to the civilian economy generally have high quality standards. Nonetheless, the de facto discrimination of the VEAP kicker presents a more substantial equity question because it is tied to an educational program, the purpose of which is far broader than simply attracting recruits. VEAP may appeal primarily to the groups of enlistees most in need of educational assistance, but the kicker--a substantial addition to the benefits available under basic VEAP--is limited to those who are, in some respects, least in need of it.

There can be no arguing about the intent of Congress in authorizing the kicker, but in tying the kicker to VEAP it opened the entire program to charges of inequity. Separating the kicker from VEAP by replacing it with a straight cash bonus, or opening it to a wider group of combat arms enlistees, would do much to counter this criticism.

READJUSTMENT ASSISTANCE

Facilitating the return to civilian life of military veterans was a major purpose of the GI Bill, one that has been deemphasized, but not forgotten, in VEAP. The GI Bill has had a significant effect in improving the job prospects of its participants. One study estimated that postservice vocational training of GI Bill recipients raised their earnings by 10 percent.[1] On the question of whether readjustment assistance was needed the evidence is less clear: the well-publicized high unemployment rate of Vietnam era veterans has been predominantly a

[1] O'Neill (1977), p. 436.

characteristic of younger veterans.[1] VEAP may be a less generous program than the GI Bill, but with the end of hostilities in Vietnam and of the draft, readjustment assistance probably is much less necessary today than it was previously.

As a source of readjustment assistance VEAP has one serious flaw. It presupposes that the individual is both aware that he will need assistance when he leaves the service and willing to make sacrifices while in the service in order to obtain that assistance. Those who are most seriously disadvantaged may be least able to make those sacrifices. One point in the favor of the VEAP kicker is that it does enable individuals in military occupations with no civilian counterparts to acquire a substantial readjustment fund while making only the minimum individual contribution allowed under VEAP. Again, of course, the quality restriction on the kicker disqualifies many of those who may be most in need of readjustment assistance.

BENEFITS TO SOCIETY

Does society have an interest in providing a higher education to some of its members, and if so, why? As pointed out at the beginning of this section, Congress did not intend VEAP (and the GI Bill) to be merely an enlistment incentive. To complete the analysis of veterans' educational benefits, we must answer this question.

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[1] See, e.g., Congressional Budget Office (1978), p. 11; or, for an earlier view, Employment and Training Report of the President, (1976), pp. 179-182.

State support of higher education is well established in this country. This suggests that the first part of the question can be answered affirmatively. There are undoubtedly many reasons why we have collectively chosen to make a higher education fairly inexpensive, but in the context of VEAP three are particularly important. First, capital markets do not in general allow individuals to borrow against their future earnings to finance college. Even though they could expect a college education to enhance their earnings by more than the cost of that education, many individuals without substantial financial resurces of their own or their parents to draw upon would be precluded from seeking that education if they had to pay its full cost. Second, the individual may not capture all of the benefits of this education; some benefits may accrue to other members of society. Third, state support of higher education helps make a reality of the ideal of equality of opportunity by ensuring that young people need not have wealthy parents in order to obtain a college degree.

In deciding whether to attend school for one more year, an individual will compare the discounted lifetime earnings he can expect to receive after that additional year of education with the discounted sum of his expected earnings without that additional year. If the difference between the two is greater than the cost of the year's education (including forgone earnings), he will want to invest in the additional year. If his earnings reflect his contribution to national output, this investment will also be desirable from society's viewpoint. The individual may be unable to make the investment if he must rely on private capital markets for funding. Making the cost of higher education to the

individual less than its full cost in terms of resources expended will tend to improve society's welfare, as well as that of the individual. Historically these costs have been reduced through subsidies to state and private schools, through guaranteed and subsidized student loans, and through direct grants of aid to individuals. The GI Bill is an outstanding example of the last, and VEAP offers the same advantages.

Programs that reduce the individual cost of higher education can yield an additional benefit when there are unemployed resources in the economy. The increase in the individual's earnings resulting from the additional years of education made possible by veterans' educational benefits constitutes a fiscal stimulus. If there are unemployed resources available the economy can respond to this stimulus with an even larger increase in output, just as it does to government spending programs and to the investments of private industry in plant and equipment. In times of full employment, of course, this stimulatory aspect of VEAP, the GI Bill, and other student aid programs may be inflationary.

These two sources of gain to society were recognized by the Senate Veterans' Affairs Committee in its 1976 deliberations. It noted that "for each dollar spent in educational benefits...the Federal Government has received from $3 to $6 in additional revenues from veterans whose education has given them increased earning capacity."[1] Although this estimate is of undiscounted revenues, it indicates the size of the gain in productivity that GI Bill benefit payments have induced. In

[1] U.S. Senate (1976), p. 26.

addition, the increase in tax revenues or national output per dollar expended under VEAP should be even greater than under the GI Bill. Because VEAP requires the recruit to make sacrifices while he or she is in the service, it should appeal most to those who feel they have the most to gain from further education.

Finally, programs that reduce the individual cost of higher education help ensure equality of opportunity in education. As noted above, the GI Bill has been claimed to be a major avenue for improvement of career prospects among disadvantaged citizens in general and minority group members in particular. Participation rates by race under VEAP indicate that this new program may also play a significant role in improving the opportunities of American minorities.

Examined against these three goals that educational assistance programs might be expected to achieve, the VEAP kicker does not fare so well. The "high-quality" youths singled out for assistance under the kicker program may yield a greater return to society's investment in their education than would lower-quality youths, but this has not been demonstrated. The high participation rates of non-high school graduates in basic VEAP indicate that they, at least, believe they have much to gain from further education.[1] It is in its treatment of black HSDG enlistees, however, that the VEAP kicker is least attractive. The quality restriction of the kicker disqualifies 89 percent of all black

[1] Although it has been convenient to couch the preceding discussion of educational assistance in terms of higher education, the arguments apply equally well to the vocational training, adult education, or other programs that non-high school graduates might pursue.

recruits, compared with only 70 percent of nonblacks,[1] yet Ross and O'Neill have shown that "black veterans gained much more than nonblack veterans from the vocational training they chose under the GI Bill."[2] Although this by no means proves that the quality restriction leads to an inefficient use of society's educational resources, it is suggestive and indicates the need for further research on the issue. Finally, the VEAP kicker does little to advance the goal of equality of opportunity in education and in fact appears to do just the opposite.

CONCLUSIONS

Apart from the VEAP kicker, veterans' educational benefits seem to provide a substantial benefit to society. What justification, then, is there for tying them to service in the military? If those individuals who take advantage of veterans' benefits are such "deserving young persons,"[3] why are they forced to give up two or more years of their lives in order to obtain an education that the children of more affluent families receive at much less personal cost? The only answer to these questions seems to be that the services as currently structured require substantial numbers of high-quality individuals in their enlisted ranks. Because the services require high-quality enlistees, through the use of the educational assistance incentive they recruit them from the ranks of

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[1] In contrast, opening the kicker to mental category IIIb recruits would drop the disqualification rate to 55 percent for black recruits and to 51 percent for nonblacks. Allowing any HSDG recruit to choose the kicker option would result in the disqualification of only 36 percent of blacks, and 46 percent of nonblacks. All percentages are based on Army accession totals for fiscal year 1979.

[2] O'Neill (1977), p. 438.

[3] 38 USC 1651 (GI Bill: "Purpose").

those disadvantaged youths least able to afford a higher education otherwise, just as the rest of accessions requirements are filled by those young people whose civilian job prospects and earnings potentials are particularly poor. In a draft environment veterans' educational assistance can reasonably be justified as compensation for the disruption in individual lives caused by involuntary service. In the All-Volunteer Force it is first and foremost--loftier stated purposes notwithstanding--a recruiting tool.

V. CONCLUSIONS AND RECOMMENDATIONS

The Veterans' Educational Assistance Program was intended to be a reasonable replacement for the GI Bill, but the benefits it actually provides are commonly overstated. It was hoped that the VEAP kicker would attract large numbers of high-quality recruits into the military, but the probable response to the kicker is quite modest. The VEAP kicker might appear to be cost effective, but there are at least two alternatives that should be superior. Veterans' educational benefits fulfill a useful role when viewed from the standpoint of society as a whole, but that role is subverted by the VEAP kicker.

Simple comparisons of total undiscounted benefits substantially understate the deline the value of veterans' educational benefits that took place when VEAP replaced the GI Bill. Proper comparisons must be based on the present discounted values of the benefits available under each program. Unfortunately, we cannot unequivocally assign a PDV to each program: assumptions must be made about the extent to which young people prefer current over future income (their time rates of discount) and about their expectations with respect to inflation and future increases in GI Bill benefit levels. Thus, comparisons of the benefits provided by the two programs must be expressed as ranges.[1] A typical

[1] One important implication of this fact is that a time series analysis cannot measure the change in enlistment rates due to the shift to VEAP. Although possible in principle, it would be very difficult in practice to construct a time series measure of the value of educational benefits that spans the change in programs.

three-year enlistee entering the Army in January 1977 could expect to receive educational benefits from VEAP worth no more than 44 percent, and perhaps little as 4 percent, as much as those received by his counterpart who enlisted one month earlier and so qualified for GI Bill benefits.

The static nature of VEAP--its benefits levels are fixed in nominal terms--combined with the accelerating inflation of recent years, has caused the present value of veterans' educational benefits to decline even further since 1977. Inflation erodes the value of VEAP benefits in two ways: (1) it directly reduces the constant dollar value of benefits fixed in nominal terms; and (2) accelerating inflation raises recruits' expectations about future price increases, and therefore also raises their nominal discount rates. One result of the operation of these two factors is that the present discounted value of basic VEAP may now be negative; and even at a zero real discount rate, a potential recruit would value the $5400 in government contributions at no more than $2030. A second result is that the Army offering of a $4000 kicker combined with basic VEAP is worth less, in present value terms, than was the $3000 kicker offered one year earlier. Also interesting are the relationships among the values of VEAP-plus-kicker for various tour lengths: at low real discount rates the four-year package is worth more than the three-year, which is worth more than the two; at high real discount rates, however, the order is reversed.

The uncertainties of potential recruits about whether they will use the educational benefits for which they qualify, and about how much those benefits will be worth when they receive them, reduce the values

of VEAP benefits below the PDVs calculated here. Most individuals are risk averse, valuing a risky return at less than what they can expect (in the mathematical sense) to receive. Again the static nature of VEAP is in part the culprit. Recruits enlisting under the GI Bill could look forward to cost-of-living increases in the level of GI Bill benefits.

The probable response to the current VEAP kicker is quite modest. A $4000 kicker for a three-year enlistee adds only 5 to 10 percent to the present value of his first-term "perceived" RMC plus basic VEAP. If educational benefits were viewed as exactly equivalent to other elements of pay by potential recruits, this pay increment might yield a response by high-quality recruits of at most 12.5 percent. Educational benefits probably are not viewed as equivalent to pay, however, especially by the more than half of current high-quality enlistees who show that they have little interest in postservice education by not participating in basic VEAP. Thus the 12.5 percent maximum response rate should be applied to the smaller pool of college bound potential recruits, yielding a maximum response of 6.2 percent. Because even this rate is based upon the most favorable assumptions about discount rates and pay elasticities, a more probable response is 2 to 4 percent.

Even a small response would be worth pursuing if the VEAP kicker were more cost effective than other feasible incentive programs. The same response could be achieved at lower cost, however, if a bonus were offered to three-year HSDG combat arms enlistees. A bonus equal in present value (as viewed by the recruit) to the VEAP kicker would eliminate the effect of the recruit's uncertainty about his post-service plans and about inflation. In addition, because DoD would use a much

lower real discount rate in computing the cost of future payments than would the typical recruit in computing their value, the equivalent bonus from the point of view of the recruit would be much smaller than from the viewpoint of DoD. For this and other reasons detailed in Section III, the cost per additional recruit should be significantly lower with a bonus program than with the VEAP kicker.

A second alternative enlistment incentive program would be marginally less cost effective than the current VEAP kicker but should yield a much larger response of well-motivated recruits. That program simply eliminates the restriction of the kicker to mental category I-IIIa recruits, which would open the program to many recruits who, although not of high quality as defined here, should still exhibit low first-term attrition rates. Lower-quality recruits enlisting for the kicker would be demonstrating their commitments to completing their obligated tours, and current provisions for crediting the kicker to the individual's VEAP fund would provide a continuing incentive for recruits to successfully complete their first tours. In addition, lowering the quality standard for the kicker would defuse charges of discrimination, which could be raised against the kicker program because the current standard disproportionately disqualifies blacks and other minorities.

Veterans' educational benefits can help to raise the level of educational attainment of the American populace. Educational benefits can also ease the transition to civilian life that each service member must make, although with the advent of VEAP the enlistee must realize while he is still in the service that he will later require readjustment assistance.

Society has an interest in improving the education of its members. Without state subsidies, such as those provided by veterans' educational benefits, individual investment in higher education probably would be less than optimal. Moreover, if there are unemployed resources in the economy the benefits accruing to society as a result of a veteran's decision to further his education will exceed those accruing to the individual: the fiscal stimulus provided by his enhanced earnings will induce further increases in national output. Finally, educational assistance can help further the national goal of equality of opportunity.

It is exactly because society as a whole gains from the educational assistance provided by programs such as the GI Bill or VEAP that the desirability of requiring service in the military as a precondition for receiving benefits can be called into question. Why is military service required? The only answer seems to be that the services need substantial numbers of the sort of well-motivated enlistees who are attracted by educational benefits. VEAP may accomplish other national goals, but it exists primarily because of the need for quality enlisted men and women.

The current VEAP kicker program has no justification except as a recruiting tool. It is limited to the approximately 25 percent of recruits who are probably least in need of the assistance it provides. Unlike many of their lower-quality fellow enlistees, most of the high-quality recruits eligible for the kicker could probably pursue successful civilian careers without the assistance of the VEAP kicker. Moreover, linking the kicker to basic VEAP opens the entire program to

charges of inequity. This most generous feature of a major program of educational assistance is closed to a majority of the youth population based only on their supposed "quality," a basis that is used in no other major federal student assistance program. That the excluded group is made up disproportionately of blacks and other minority group members leaves the program open to charges of discrimination.

Four recommendations for research and policy action follow from these conclusions. First, serious consideration should be given to abandoning the VEAP kicker program in favor of straight enlistment bonuses. Second, if the kicker is retained it should be extended to all HSDG combat arms enlistees. Third, the attrition and retention behavior of current VEAP kicker participants should be carefully monitored. Finally, interest should be paid on VEAP funds, including the two-for-one matching funds and any kicker, at a rate linked to prevailing rates in the civilian economy.

The arguments supporting the first two recommendations have already been covered at length. The results of the examination of the retention and attrition behavior of kicker participants should lend added weight to the arguments for a switch to enlistment bonuses. It will probably be found that recruits choosing the kicker will reenlist at very low rates. If in addition their attrition behavior is found to be no better than that of other high-quality combat arms enlistees, it will become even clearer that the VEAP kicker is at best a short run solution to recruiting difficulties.

One possibility to improve the attractiveness of basic VEAP is to increase the rate at which individual contributions are matched, from

two for one to three or four for one. Although this would undoubtedly increase VEAP's appeal, it would do nothing to correct the more fundamental problems with the program that result from its static nature. Benefits to be paid in the future that are fixed in nominal terms simply do not appear very attractive in a world of rising prices.

The solution to the problems resulting from inflation is to allow the individual's VEAP fund to grow--to pay interest on the fund. At what rate should interest be paid? Even a low fixed rate, such as that available on passbook savings accounts, might be quite appealing. Although this would be largely a cosmetic change, it would at least make VEAP look more like the savings plan it was intended to be.

A more fundamental and effective reform would be to link the interest paid to a rate that is not fixed by law--as the passbook rate is--and that can therefore rise and fall with the rate of inflation. One obvious rate to choose is the rate of increase in the CPI; perhaps more acceptable politically would be a link to some measure of the cost of higher education. Whatever rate is chosen, three beneficial effects would result. First, the cost associated with a recruit's decision to disenroll from VEAP would be largely eliminated: the money refunded to him would buy as much as what he had contributed. Second, one source of the strong incentive to leave the service at the end of the first term would largely disappear because the value of the VEAP fund would no longer be eroded by inflation during a subsequent tour. Finally, the link would reduce or eliminate the recruit's uncertainty about the ultimate value of his educational benefit fund. For the typical risk averse

recruit, this feature could greatly increase the attractiveness of the program.

Static programs such as the Veterans' Educational Assistance Program stand little chance of success in the dynamic, inflationary economy of today. Not only the actual erosion of purchasing power of the VEAP fund but the expected future erosion make enlisting in the military for the purpose of obtaining educational assistance a rather unappealing prospect now for all but the most disadvantaged young person. Periodic increases in benefits, such as the increase in the three-year VEAP kicker from $3000 to $4000, can stem the actual erosion. They do little, however, to ease the potential recruit's fears that the two years of college he could finance if he had the $5400 government contributions to VEAP now will be only one year or less when he leaves the service. If promises of future payments are to be used as enlistment incentives--and much of the analysis of this study suggests that they should not be--the promises must be expressed in terms of what can be bought with the benefits and not in terms of current dollars.

BIBLIOGRAPHY

Canby, Steven L., Military Manpower Procurement, D. C. Heath and Company, Lexington, Massachusetts, 1972.

Congressional Budget Office, Veterans' Educational Benefits: Issues Concerning the GI Bill, Washington, D.C., October 1978.

Cooper, Richard V. L., Military Manpower and the All-Volunteer Force, The Rand Corporation, R-1450-ARPA, September 1977.

De Tray, Dennis N., Veteran Status and Civilian Earnings, The Rand Corporation, R-1929-ARPA, March 1980.

Eisenman, Richard L., et al., Educational Benefits Analysis, Human Resources Research Organization, SR-ED-75-25, Alexandria, Virginia, November 1975.

Employment and Training Report of the President, Washington, D.C., 1976.

Grissmer, David W., et al., An Econometric Analysis of Volunteer Enlistments by Service and Cost Effectiveness Comparison of Service Incentive Programs, General Research Corporation, OAD-CR-66, McLean, Virginia, October 1974.

Hunter, Richard W., and Gary R. Nelson, "The All-Volunteer Force: Has It Worked? Will It Work?" paper presented at the Hoover Institute Conference on the All-Volunteer Force, December 1979.

Office of the Assistant Secretary of Defense (Manpower, Reserve Affairs, and Logistics), Educational Incentives Study, Washington, D.C., February 9, 1980.

O'Neill, Dave M., "Voucher Funding of Training Programs: Evidence from the GI Bill," Journal of Human Resources, 12:4 (Fall 1977), pp. 423-445.

Shisko, Robert, Choosing the Discount Rate for Defense Decisionmaking, The Rand Corporation, R-1953-RC, July 1976.

U.S. Senate, "Senate Report No. 94-1243," September 16, 1976, reported in U.S. Code Congressional and Administrative News, 74th Congress, 2nd Session, No. 5, 1976, pp. 5241-5373.

Veterans Administration, Veterans Benefits Under Current Educational Programs, IB 04-78-3, Washington, D.C., April 1978.

----- and the Department of Defense, Implementation of the Post-Vietnam Era Veterans' Educational Assistance Act of 1977, an annual joint report submitted to the Committee on Veterans' Affairs, U.S. House of Representatives, Washington, D.C., July 5, 1979.

Warner, John T., Alternative Military Retirement Systems: Their Effects on Enlisted Retention, Center for Naval Analysis, CRC 376, Arlington, Virginia, February 1979.