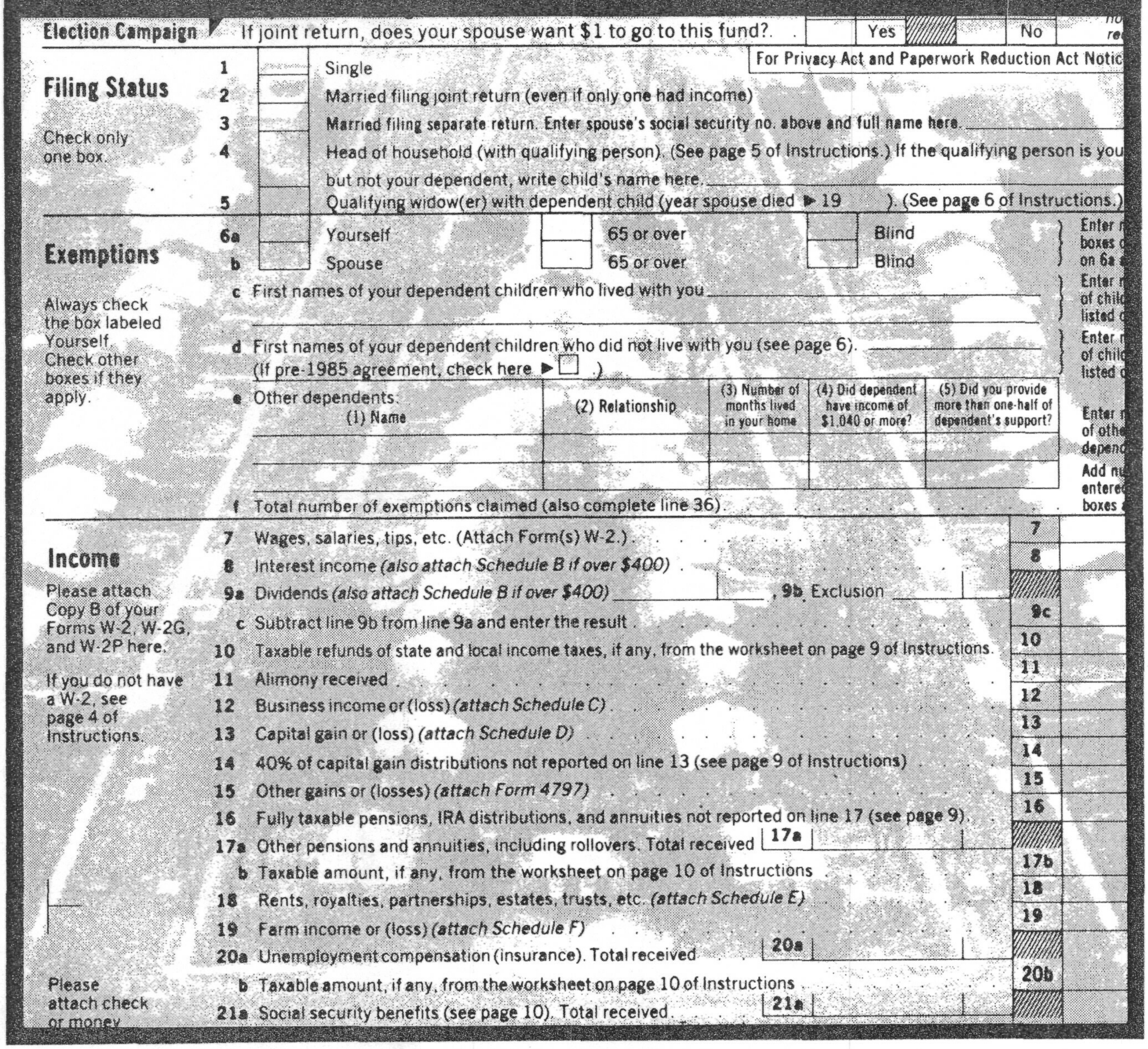
CONGRESS OF THE UNITED STATES
CONGRESSIONAL BUDGET OFFICE

MARCH 1986

Elimination of Double Tax Benefits for Military Homeowners


Election Campaign ▶ If joint return, does your spouse want $1 to go to this fund? . Yes No

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Filing Status

Check only one box.

1 Single
2 Married filing joint return (even if only one had income)
3 Married filing separate return. Enter spouse's social security no. above and full name here.
4 Head of household (with qualifying person). (See page 5 of Instructions.) If the qualifying person is you but not your dependent, write child's name here.
5 Qualifying widow(er) with dependent child (year spouse died ▶ 19). (See page 6 of Instructions.)

Exemptions

Always check the box labeled Yourself. Check other boxes if they apply.

6a Yourself 65 or over Blind
b Spouse 65 or over Blind
c First names of your dependent children who lived with you
d First names of your dependent children who did not live with you (see page 6). (If pre-1985 agreement, check here ▶)
e Other dependents: (1) Name (2) Relationship (3) Number of months lived in your home (4) Did dependent have income of $1,040 or more? (5) Did you provide more than one-half of dependent's support?
f Total number of exemptions claimed (also complete line 36)

Income

Please attach Copy B of your Forms W-2, W-2G, and W-2P here.

If you do not have a W-2, see page 4 of Instructions.

7 Wages, salaries, tips, etc. (Attach Form(s) W-2.) 7
8 Interest income *(also attach Schedule B if over $400)* 8
9a Dividends *(also attach Schedule B if over $400)* , 9b Exclusion
c Subtract line 9b from line 9a and enter the result 9c
10 Taxable refunds of state and local income taxes, if any, from the worksheet on page 9 of Instructions. 10
11 Alimony received 11
12 Business income or (loss) *(attach Schedule C)* 12
13 Capital gain or (loss) *(attach Schedule D)* 13
14 40% of capital gain distributions not reported on line 13 (see page 9 of Instructions) 14
15 Other gains or (losses) *(attach Form 4797)* 15
16 Fully taxable pensions, IRA distributions, and annuities not reported on line 17 (see page 9). 16
17a Other pensions and annuities, including rollovers. Total received 17a
b Taxable amount, if any, from the worksheet on page 10 of Instructions 17b
18 Rents, royalties, partnerships, estates, trusts, etc. *(attach Schedule E)* 18
19 Farm income or (loss) *(attach Schedule F)* 19
20a Unemployment compensation (insurance). Total received 20a
b Taxable amount, if any, from the worksheet on page 10 of Instructions 20b
21a Social security benefits (see page 10). Total received 21a

Please attach check or money

A SPECIAL STUDY

ELIMINATION OF DOUBLE TAX BENEFITS

FOR MILITARY HOMEOWNERS

The Congress of the United States
Congressional Budget Office

PREFACE

Military homeowners currently enjoy double tax benefits: tax-free housing allowances and deduction of mortgage interest and real estate taxes from income taxes. A recent Internal Revenue Service ruling (Revenue Ruling 83-3) disallowed similar double tax benefits to members of the clergy. This study, prepared at the request of the Senate Armed Services Committee, examines the budgetary and distributional effects of extending the ruling to cover military homeowners.

Subsequent to the completion of this study, the House passed a tax reform bill, H.R. 3838, that includes a provision nullifying Revenue Ruling 83-3. Tax reform currently awaits action by the Senate, which could review the effects of applying the ruling to military personnel. In accordance with CBO's mandate to provide objective and impartial analysis, this study offers no recommendations.

Marvin M. Smith of CBO's National Security Division prepared the study under the general supervision of Robert F. Hale and Neil M. Singer. The author gratefully acknowledges the special assistance of Jonathan Woodbury (formerly of CBO) and Elizabeth S. Sterman, both of the National Security Division. Kathleen O'Connell, Larry Ozanne, and Rosemarie Nielsen of CBO's Tax Analysis Division provided valuable cost estimates. The report also benefited from the technical support provided by David Cathcart, Jane Crotser, Michael Dove, Magge Lazanoff, Douglas McCormick, John Perigo, and David Pomeroy of the Department of Defense. (Outside assistance implies no responsibilities for the final product, which rests solely with CBO.) Patricia H. Johnston edited the manuscript, which Dorothy Pompei prepared for publication.

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Director

March 1986

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SUMMARY

As part of their compensation, military personnel receive either free government housing or tax-free housing allowances to assist them in obtaining private housing. Under present tax treatment, military homeowners also are allowed to deduct the full amount of their mortgage interest and real estate taxes from their adjusted gross incomes in computing their income taxes, regardless of whether their tax-free housing allowances partially or fully cover such expenses. As a result of a recent Internal Revenue Service (IRS) ruling on similar benefits, attention has been drawn to these "double" tax benefits. In light of the possible loss of these benefits, senior military and civilian officials of the Department of Defense (DoD) have exerted efforts to retain them. At issue are the cost to the government of continuing the double tax benefits and the effect on service personnel of eliminating them.

The Treasury Department is considering--but has not yet proposed--an extension of Revenue Ruling 83-3 to military homeowners. This ruling disallows double tax benefits to members of the clergy who both own homes and receive tax-free housing allowances. Under such a change, which is referred to in this study as the "military homeowners tax plan" (MHTP), military personnel who own their homes would be allowed to deduct only the amount of mortgage interest and real estate taxes that exceeds the sum of their Basic Allowance for Quarters (BAQ) and Variable Housing Allowance (VHA), both of which are tax exempt elements of total military compensation. The decision on whether to extend the ruling to military personnel has been delayed by the Treasury until January 1, 1987. Meanwhile, the House has adopted a tax reform bill (H.R. 3838) with a provision that would overrule IRS Revenue Ruling 83-3. Tax reform will next be considered in the Senate which could reexamine the effect of the application of a Revenue Ruling similar to 83-3 on military homeowners.

CBO estimates that elimination of the double tax breaks would generate about $290 million in net savings to the federal government in fiscal year 1986. Similar savings would be realized in future years. These and other findings in this study assume that, except for changes in the double tax benefits, current tax laws are continued.

EFFECTS OF THE MILITARY HOMEOWNERS TAX PLAN

The decrease in after-tax income of military homeowners resulting from the homeowners tax plan would differ by pay grade and location. Service homeowners in higher pay grades would incur larger after-tax income losses (stemming mostly from their higher tax brackets and larger allowances) than those in lower pay grades, while, within pay grades, the MHTP would be more costly to those stationed in areas where higher housing allowances are paid.

The homeowners tax change would also produce career force losses, but they would be modest. (Career personnel are defined here as those who have completed four or more years of military service.) CBO estimates that, 10 to 15 years after the potential change, the military services would have about 2,500 to 10,500 fewer members in the career force than under the current system. (The lower estimate accounts for the impact on current military homeowners only, while the upper estimate allows for the possible effect on present nonhomeowners who might anticipate owning a home in the future.) These losses, however, would represent only a 0.2 percent to 0.9 percent reduction in the career force. Losses would be modest because only about 22 percent of all military personnel in the continental United States own homes and because many of these owners are senior personnel whose willingness to remain in the military is only slightly affected by changes in annual compensation.

OPTIONS TO MITIGATE CAREER FORCE LOSSES

The Congress could avoid even modest career force losses while eliminating the double tax benefits by providing offsetting increases in basic pay or bonuses. This study examined three alternative plans designed to accomplish this. One plan would involve a raise in basic pay for all personnel (that is, across-the-board raises). The second option would provide targeted pay increases in enlisted pay grades E-5 and E-6 and in officer pay grades O-4 and O-5--the pay grades in which members' after-tax income would be among those reduced most sharply by the MHTP. The third option would provide targeted bonuses for enlisted personnel in hard-to-fill skills at the first- and second-term reenlistment points (about five and nine years of service, respectively).

CBO found that under any of the three options, modest raises would suffice to offset some or all of the MHTP's adverse long-run effects on the size of the career force (see Summary Table 1). These raises would also negate at least some of the budgetary savings from the MHTP. On balance, however, elimination of the double tax benefit could probably be achieved without any net career force losses while contributing modestly to federal deficit reduction (see Summary Table 2).

SUMMARY TABLE 1. PAY RAISES UNDER ALTERNATIVE PLANS TO OFFSET SOME OR ALL OF THE LONG-RUN FORCE MANNING EFFECTS

	Incremental Raises to Offset Losses (in percents)		
Career Force	MHTP with Raise for All a/	MHTP with Targeted Raises b/	MHTP with Targeted Bonuses c/
Enlisted			
Lower bound	0.15	0.30	0.25-2.10
Upper bound	0.70	1.60	1.25-14.00
Officer			
Lower bound	0.25	0.50	0.00
Upper bound	2.05	4.25	0.00

SOURCE: Congressional Budget Office.

a. A raise in basic pay for all active-duty personnel.

b. Targeted basic pay increases for all personnel in pay grades E-5 and E-6 and pay grades O-4 and O-5.

c. Targeted bonuses for active-duty enlisted members at the first- and second-term reenlistment points.

SUMMARY TABLE 2. BUDGETARY IMPACT IN FISCAL YEAR 1986 OF ALTERNATIVE PLANS (In millions of dollars)

Option	Net Annual Savings (+)/Costs(-) Lower Bound	Upper Bound
MHTP with No Offsetting Raise in Basic Pay	+290	+290
MHTP with Raise in Basic Pay for All a/	+207 b/	-210 b/
MHTP with Targeted Raises c/	+233 b/	-124 b/
MHTP with Targeted Bonuses d/	+274 e/	+191 e/

SOURCE: Congressional Budget Office.

a. A 0.15 percent to 0.7 percent raise in basic pay for all enlisted personnel and a 0.25 percent to 2.05 percent raise for all officers.

b. This figure reflects increases in both basic pay and retirement accrual costs.

c. Targeted basic pay raises of 0.3 percent to 1.6 percent for pay grades E-5 and E-6 and 0.50 percent to 4.25 percent for pay grades O-4 and O-5.

d. Targeted bonuses of 0.25 percent to 1.25 percent for active-duty enlisted personnel at five years of service and 2.1 percent to 14.0 percent at nine years of service.

e. This figure reflects increases in basic pay only.

CHAPTER I

THE CURRENT TAX TREATMENT OF MILITARY HOUSING ALLOWANCES, HOMEOWNERSHIP, AND POSSIBLE CHANGES

As part of their government compensation, military personnel receive either free government housing or tax-free, cash housing allowances to assist them in obtaining private housing. Today, about 620,000, or 44 percent, of all military service members in the continental United States live in government housing. The rest receive allowances and either rent private housing (an estimated 34 percent) or own their own homes (an estimated 22 percent).

All those who rent or own their own homes receive Basic Allowance for Quarters (BAQ). 1/ First established in its current form in 1949, BAQ today ranges from $137.50 a month for military personnel in pay grade E-1 (an Army private or Navy seaman recruit) to $680.70 a month for those in pay grade O-10 (a general or admiral). Since 1981, those who own or rent homes in high-cost housing areas also receive additional cash allowances called Variable Housing Allowances (VHA). About 60 percent of all personnel in the continental United States receive VHA payments that, for a general or an admiral stationed in Los Angeles, California, for example, can amount to as much as $440.65 a month. Thus, these high-ranking officers can receive as much as $1,121.35 a month in housing allowances.

Together, these cash allowances will cost the government $4.5 billion in fiscal year 1986. In addition, these allowances are exempt from federal income taxes. Moreover, under present tax treatment, uniformed service members who own homes are allowed to deduct the full amount of their mortgage interest and real estate taxes from their adjusted gross income, regardless of whether their tax-free allowances partially or fully cover such expenses. Thus, military homeowners receive "double" tax benefits: tax-free allowances and tax deductions. 2/

1. Members who live in government quarters judged "substandard" also receive limited cash allowances.

2. Mortgage interest and property taxes are costs of investing in housing. Allowing homeowners to deduct these costs is considered a tax benefit because homeowners exclude from tax much of the income received from the home (in the forms of rental income the homeowner could receive for the house and long-term capital gains). It should be noted that renters benefit from other provisions of the tax code that favor rental housing.

To eliminate this preferential treatment, the Congress could restructure the compensation system to make all housing allowances taxable while increasing pay rates, thus affecting renters as well as homeowners. Although seemingly an appealing alternative, such an option has been considered on several occasions and rejected in each instance. This approach was initially proposed by the First Quadrennial Review of Military Compensation in November 1967, in part as a response to its findings that the complex military compensation system confused service personnel to the extent that they consistently underestimated the value of their compensation. This underestimation could have influenced some members' decisions not to reenlist. The commission recommended that all allowances be treated as taxable income as part of a military salary system that would be based on grade and years of service but not differentiated by dependency status. The proposal, however, was eventually dismissed by the Department of Defense (DoD) as unworkable and too expensive.

The taxing of military allowances was considered again recently as part of the debate within the Administration on possible tax reform. It was included in the Department of Treasury's November 1984 tax reform plan, but was not proposed in the plan the Administration announced in May 1985. 3/

RECENT TREASURY TAX RULING

Section 265 of the Internal Revenue Code of 1954 (as amended) disallows the deductibility of expenses that are covered by tax-free allowances. For many years, the Internal Revenue Service (IRS) allowed military homeowners, members of the clergy who received similar housing benefits, and others who financed their education with GI Bill or other tax-free educational funds to claim deductions based on expenses that were paid for with their tax-free allowances. In 1983, however, the IRS's Revenue Ruling 83-3 disallowed double tax benefits for members of the clergy who own homes and receive tax-free housing allowances and also disallowed deductions for educational expenses that are financed by GI Bill or other tax-free scholarships. 4/ The ruling, whose implementation has been

3. Department of the Treasury, *Tax Reform For Fairness, Simplicity, And Economic Growth* (November 1984), p. 47; and *The President's Tax Proposals to the Congress for Fairness, Growth, and Simplicity* (May 1985).

4. For details on the ruling, see Internal Revenue Service, Revenue Ruling 83-3, 1983-1 Cum. Bull.

delayed until 1987, did not extend to military homeowners, however. Thus, military homeowners who receive tax-free BAQ or VHA would be treated differently for tax purposes from their clerical counterparts. Press reports indicate that the Treasury, in an attempt to address this inconsistency, is considering extending the ruling to cover military homeowners as well. 5/ Although the Treasury has not yet made any recommendation, the extension of this revenue ruling to military homeowners will be referred to in this study as the "military homeowners tax plan" (MHTP).

Strong opposition by the Secretary of Defense and others has resulted in several postponements in the enforcement of the Treasury's ruling and its possible extension to military homeowners. 6/ The Treasury, initially, set January 1, 1985, as the enforcement date. It was later changed to January 1, 1986, and more recently delayed until January 1, 1987. Meanwhile, the House has passed a tax reform bill, H.R. 3838, with a provision nullifying Revenue Ruling 83-3. But the ruling could still be applied to military homeowners, depending on final action in the Congress.

Effects of the Military Homeowners Tax Plan

Because of varying housing situations, the military homeowners tax plan (MHTP) could have very different effects on the tax deductions of military homeowners. For example, a military member with a combined tax-free allowance (BAQ + VHA) of $5,000 and mortgage interest and real estate taxes of $4,000 is now allowed to deduct $4,000 from his or her adjusted gross income under the current system. Under the MHTP, however, this service member would not be allowed any deduction since the deductible housing expenses are more than covered by tax-free allowances.

Slightly different circumstances, however, could produce other effects. For instance, a service homeowner with housing expenses of $5,000 and a combined tax-free allowance of $4,000 similarly is allowed to deduct the full $5,000 from taxes under the current system. But under the MHTP, the member would be permitted a deduction of only $1,000, the excess of housing costs over his or her tax-free housing allowances. Clearly, application of Ruling 83-3 to the military could substantially reduce and, in many cases, eliminate the tax deduction of mortgage interest and property taxes for military homeowners and hence cut their after-tax incomes.

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5. Paul Smith, *Army Times*, October 22, 1984.

6. Ibid.

PRINCIPAL ISSUES

The potential change in the tax treatment of military homeowners raises a number of questions:

- What would be the impact on members' willingness to remain in the military (military retention) and hence the readiness of U.S. forces?

- Which members would be most affected?

- How could the Congress offset any adverse effects?

- What equity considerations might be involved?

This study estimates the effects that the tax plan for military homeowners could have on costs and retention and discusses other issues. The report also presents options the Congress could implement to offset any adverse effects on retention. The remainder of this chapter briefly discusses the budgetary effects and key force manning issues and also outlines what some see as inequities in current law and the effect of the MHTP on them.

Budgetary Effects

One possible rationale for the MHTP's potential change is to establish consistency in the tax treatment of expenses paid out of tax-exempt income. The implementation of the plan, however, would also have budgetary implications. Military homeowners would experience a loss in the amount of their income tax deductions and, as a consequence, a rise in their income taxes. In the aggregate, these changes could result in some overall reductions in the federal deficit.

CBO estimates that, under the MHTP, the tax deductions that military homeowners would lose in 1986 would generate approximately $290 million in increased taxes or net savings to the government. These revenue increases would be smaller in future years if more people decided to rent homes or if the military proposed and received approval to build more government housing. On the other hand, future revenue increases could be higher if some of the assumptions made here did not hold (for example, if the MHTP induced an increase in outside income or in spouses' earnings). A discussion of the assumptions and methodology underlying CBO's estimate is presented in Chapter II.

Force Manning Issues

The effect of the tax plan for military homeowners on the services' ability to meet manpower goals is at the center of the debate. Opponents of the plan's potential change maintain that its adoption would result in the loss of tens of thousands of highly trained career personnel and, thus, impair military readiness. 7/ Moreover, they argue that the plan would adversely affect the morale of many service members who would remain, since homeownership would no longer be financially attractive to them and their quality of life would be reduced.

Force Manning. Implementation of the MHTP might prompt some military personnel to leave the service. Such career decisions by military personnel depend on the comparison between the entire compensation package available to them in the military and the total compensation they might expect to receive in the civilian work force. The benefits accruing to those members receiving double tax benefits from homeownership represent only one element of their overall military compensation. Even though the loss of these double benefits would negatively affect the attractiveness of military compensation to these service members, what remains in question is the effect of this loss on the service members' retention decisions.

Morale and the Quality of Life. The charge that the elimination of the double tax breaks would diminish homeownership and hence have deleterious effects on the morale of those service members who choose to remain in the military focuses on two general aspects of homeownership: its investment potential and the overall quality of life it affords in comparison with base housing or apartment living. Neither aspect, however, may have effects as severe as some argue.

Service members contend that the return on the investment in their homes is severely limited as a result of their frequent changes in duty

7. *Charitable Contributions and Ministers' and Military Housing Deductions*, Hearings before the Subcommittee on Taxation and Debt Management of the Senate Committee on Finances, 98:2 (1984), p. 52.

stations. 8/ Buying and selling of homes at each duty location can become unprofitable because of repeated transaction costs: mortgage points, forgone interest on equity, and closing costs. Perhaps the greatest financial hardship occurs, however, when the frequent moves compel the service member to enter or leave the housing market at inopportune times in terms of housing prices and interest rate levels.

Apart from financial considerations, many service members argue that adoption of the military homeownership tax change would preclude them from homeownership and, therefore, adversely affect their families' quality of life. 9/ To the extent that the value placed on homeownership is high, it is clear that the tax plan for military homeowners would be detrimental. But although it would tend to discourage homeownership, the MHTP would not necessarily affect service members' choices of living in government or private housing, and thus its impact on quality of life might be mitigated.

Distributional Issues

The military homeowners tax plan would affect different military personnel in widely varying ways, and these distributional effects are one important part of the debate. Such equity considerations concern not only the tax consequences of the MHTP on military homeowners in absolute terms, but also its relative effects vis-a-vis the tax treatment of others in the civilian and military communities.

Civilian versus Military. Under current tax treatment, military homeowners have a lower tax liability than civilian homeowners who are in the same economic position and have the same ability to pay tax. The tax plan for military homeowners would tend to promote equal tax treatment of economic equals. Service members might be deemed to qualify for special treatment because of the risks and rigors of military life (referred to as the "X-factor"), but the double tax benefits are too limited in their incidence (only 22 percent of military personnel are homeowners) to be justified on this score.

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8. Statement of Sharon Shipe, Vice President For Legislative Affairs, National Military Family Association, before the Subcommittee on Taxation and Debt Management of the Senate Finance Committee, 98:2 (October 15, 1985).

9. Ibid.

Military Homeowners Versus Military Non-Homeowners. Because of the double tax benefits, service homeowners receive disproportionately greater after-tax compensation than military nonhomeowners. Consequently, adoption of the MHTP without any offsetting compensation to homeowners would increase equity within the military by equalizing the incomes of service homeowners and nonhomeowners.

Among homeowners, those in more senior pay grades receive disproportionate advantages from the double tax breaks because they receive larger allowances and are in higher tax brackets. Adoption of the military homeowners tax plan would also eliminate or mitigate this inequity.

CHAPTER II

ALTERNATIVE APPROACHES TO THE CURRENT TAX TREATMENT OF MILITARY HOMEOWNERS

This chapter analyzes the military homeowners tax plan (MHTP), which would eliminate double tax benefits for the military. It considers the impact on the incomes of military homeowners and the effects on military retention. Alternative plans to mitigate these effects also are described and evaluated. Finally, this chapter estimates the budgetary effects that would result from the various approaches.

ANALYTIC METHOD AND KEY ASSUMPTIONS

Several important assumptions underlie the analysis of the MHTP and other options presented in this chapter. All the approaches are evaluated in comparison with the current tax treatment of military personnel. 1/

CBO's analysis relies on the Administration's most recent estimate of the total number of military homeowners, by pay grade, in the continental United States. The analysis uses information supplied by military members on housing-related costs: mortgage principal and interest payments, real estate taxes, and homeowners' insurance. 2/ Because only the mortgage interest payments and real estate taxes are needed to make the calculations in this study, CBO adjusted the reported housing cost figures to derive the necessary estimates (see Appendix A).

To compute the changes in the federal income tax liabilities of military homeowners under the various alternatives, tax liabilities were estimated under current law and under each of the policy options. CBO used these data and other information to estimate aggregate revenue effects

1. None of the changes contained in recent tax reform proposals are considered here. Military members, like other taxpayers, would be affected by several features contained in these proposals. Those aspects of the plans that would affect the tax liability of service personnel include changes in marginal tax rates, the personal exemption, and allowable itemized deductions, to name a few.

2. This information comes from a questionnaire, "Variable Housing Allowance Data Collection Form," which was submitted by military personnel to the Per Diem Travel and Transportation Allowance Committee of the Department of Defense.

under the MHTP and to present illustrative examples of the effect of the various options on service homeowners. (Appendix B presents a more detailed description of this estimation procedure.) These estimates also served as the basis for calculating the aggregate budgetary effects of the alternative approaches and their effect on military retention.

Changes in the size of the career force resulting from the various alternatives were derived from a model developed by the Department of Defense (DoD) but using CBO assumptions. This model--the Annualized Cost of Leaving (ACOL) model--relates members' decisions to remain in the armed forces to their potential military and civilian incomes and their preferences for military service. 3/

Finally, all estimates in this study assume no changes in the quantity of government housing (which the military services might attempt to increase) or in the number of persons who choose to rent housing rather than to buy it. CBO has not estimated the extent of changes in behavior, such as a shift toward more rentals. Therefore, this study does not account for such potential. 4/ But these behavioral changes could occur, and their qualitative effects are discussed.

EFFECTS OF THE MILITARY HOMEOWNERS TAX PLAN

Extending Revenue Ruling 83-3 to eliminate double tax benefits for military homeowners would have several effects, including:

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3. More precisely, the ACOL model relates the reenlistment decision to a comparison between the total pecuniary and nonpecuniary returns to leaving military service (RL) immediately, and the total returns to staying (RS) for a determined number of additional years and then leaving the military. Accordingly, service members will remain in the military if there is at least one period of additional service over which RS is greater than RL. Therefore, all other things being equal, real increases (decreases) in basic pay raise (lower) the cost of leaving military service immediately, thus raising (lowering) the reenlistment rates. For a fuller description of the ACOL model, see Department of Defense, *Fifth Quadrennial Review of Military Compensation, Vol. IB: Supporting Appendixes to Uniformed Services Retirement System* (January 1984).

4. There is a literature on housing tenure choice which might provide a basis for such an estimate. See, for example, Harvey S. Rosen, Kenneth T. Rosen, and Douglas Holtz-Eakin, *Housing Tenure, Uncertainty, and Taxation* (Department of the Treasury, OTA Paper 54, February 1983). The existing models for estimating tenure choice, however, would in all likelihood have to be modified to reflect the factors affecting the housing decisions of military personnel.

- o Lower after-tax income;
- o Increased taxes; and
- o Lower retention of career military personnel.

Impact on Homeowner's Income

The tax plan would lower the after-tax incomes of military homeowners, with the amount differing by pay grade and location. Illustrative examples of the impact of this plan on service homeowners can be calculated by estimating the decrease in tax deductions and the associated increase in taxes. These changes typically will depend on homeowners' pay grades and duty locations. Table 1 presents the percent of military homeowners in different pay grades in locations regarded by DoD as typical of low- and high-cost areas.

For perspective, the MHTP changes in taxes and deductions were compared with a measure of net income across pay grades and local areas under current law. Unfortunately, variations in special pays, allowances, and state and local taxes (to mention a few) make the net income of military personnel difficult to estimate. Moreover, the possible addition of income from a working spouse further complicates the estimation of the net income available to a military household. Some, but not all, of these concerns were addressed in the calculation of the estimates presented in this study. To account for some of the variations in income, CBO used service members' taxable income--basic pay and special and incentive pays--obtained from extracts of the active pay master files of the Joint Uniform Military Pay System.

Thus, in this analysis, the deduction and tax changes were compared with current cash take-home pay that military members receive. This is defined to include taxable income (basic pay and special and incentive pays) plus nontaxable allowances (basic allowance for quarters, variable housing allowance, and subsistence allowance) less federal income and Social Security (FICA) taxes. Cash take-home pay is unambiguous, but it underestimates the income of some military personnel (such as those who have investment or asset income or income from a working spouse) while it overestimates the take-home pay of others (those who pay state and local taxes). 5/ Cash take-home pay also ignores housing and food allowances that some military personnel receive in tax-free income as compensation for living in "substandard" government quarters.

5. It should be noted that many military members claim legal residence in states that do not tax their military pay. Thus, they are able to avoid paying state and local taxes.

TABLE 1. PERCENT OF MILITARY PERSONNEL WHO OWN HOMES, BY SELECTED AREA AND PAY GRADE, JANUARY 1984a/

Selected Area	O-6	O-3	E-7	E-5
Low-Cost Area				
Jacksonville, N.C.				
Owners	84	83	72	44
Nonowners	16	17	28	56
Fort Benning, Ga.				
Owners	83	46	71	30
Nonowners	17	54	29	70
High-Cost Area				
San Diego, Calif.				
Owners	85	42	59	13
Nonowners	15	58	41	87
Los Angeles, Calif.				
Owners	78	31	43	12
Nonowners	22	69	57	88

SOURCE: Congressional Budget Office, from Department of Defense, Defense Manpower Data Center (January 1984).

a. The "O" in pay grades designates officers; the "E" denotes enlisted personnel.

Tax Increases. Two trends emerge from an analysis of the estimated tax increases of military homeowners under MHTP (see Table 2). First, as one would expect, the magnitude of the tax increase tends to grow with the rise in pay grade. For example, taxes for an E-5 homeowner in Los Angeles, California, would increase $608, while an O-6 homeowner in the same location would have an increase of $4,035. 6/ The more senior people have higher allowances and are in higher tax brackets. Even when tax increases are measured as a percent of take-home income, homeowners in senior pay grades would bear the brunt of this change. This finding reflects both the income elasticity of housing expenditures and the progressive nature of the U.S. tax system, which puts those in more senior pay grades in higher brackets and hence makes the loss of the double tax benefits more costly.

6. The "E" in pay grades denoted enlisted personnel; the "O" designates officers.

The effects on senior pay grades are more striking when one considers that those in senior pay grades are more often homeowners. As Figure 1 illustrates, roughly 40 percent or more of the officers in each of the ranks O-3 or higher are homeowners. Likewise, for enlisted personnel, 40 percentof those in ranks E-7 or higher are homeowners (see Figure 2). In the lower ranks, E-5 or below for enlisted and O-1 and O-2 for officers, less than 20 percent of the members in each grade own homes.

Second, within a pay grade, tax increases in most cases would be higher in areas where higher housing allowances are paid, reflecting higher living costs. For example, a service homeowner at the E-7 level in Jacksonville, North Carolina (defined by DoD as a low-cost area) would have

TABLE 2. REPRESENTATIVE HOMEOWNER TAX INCREASES IN FISCAL YEAR 1986 UNDER MILITARY HOMEOWNERS TAX PLAN, BY SELECTED AREA AND PAY GRADE a/

Selected Area	O-6	O-5	E-7	E-5
Low-Cost Area				
Jacksonville, N.C.				
Dollars	2,574	1,033	410	126
Percent b/	5.2	3.3	1.8	0.7
Fort Benning, Ga.				
Dollars	2,607	1,033	326	161
Percent b/	4.6	3.1	1.3	0.9
High-Cost Area				
San Diego, Calif.				
Dollars	2,953	1,505	1,016	573
Percent b/	5.6	4.5	3.9	1.1
Los Angeles, Calif.				
Dollars	4,035	1,736	1,064	608
Percent b/	7.4	4.9	3.9	2.9

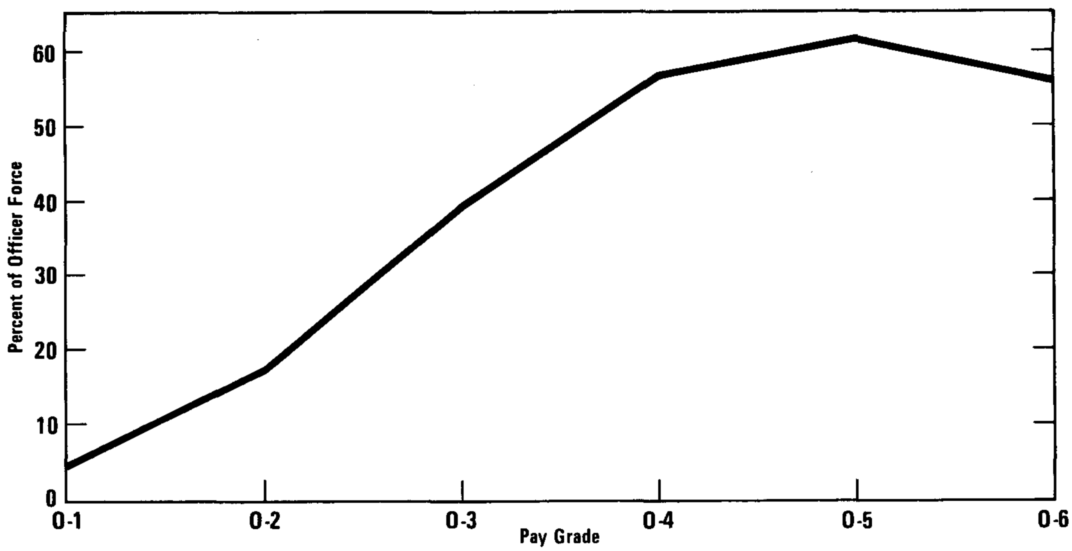
SOURCE: Congressional Budget Office.

a. The "O" in pay grades designates officers; the "E" denotes enlisted personnel.

b. Homeowner tax increase as a percent of military member's income (which includes basic pay, BAQ, VHA, subsistence allowance, and special and incentive pays) less taxes (federal and Social Security).

Figure 1.

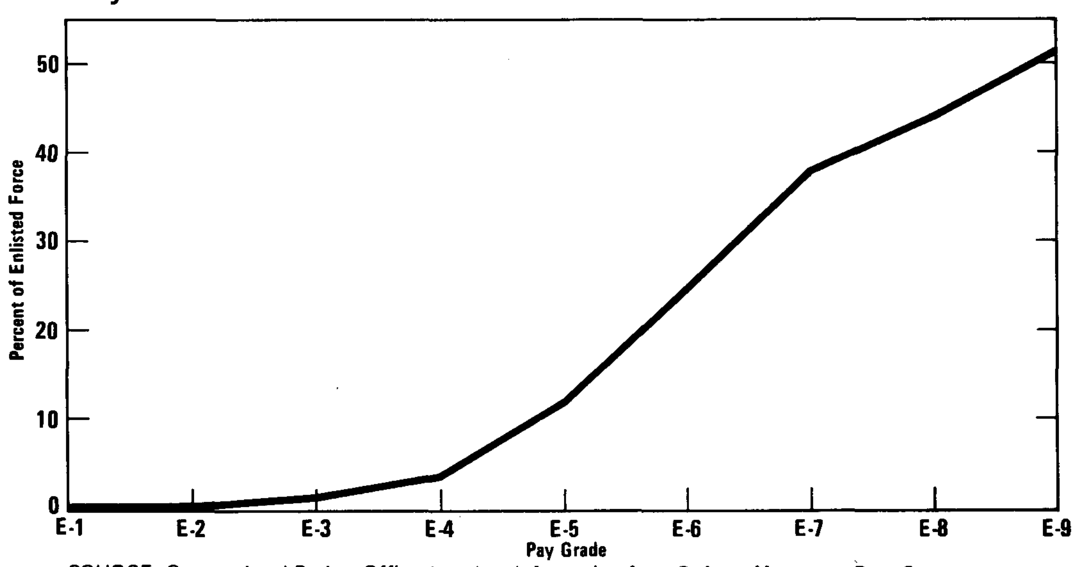
Percentage of Officers Who Own Homes, by Pay Grade, January 1984



SOURCE: Congressional Budget Office, based on information from Defense Manpower Data Center.

Figure 2.

Percentage of Enlisted Personnel Who Own Homes, by Pay Grade, January 1984



SOURCE: Congressional Budget Office, based on information from Defense Manpower Data Center.

a tax increase of $410, compared with an increase of $1,064 borne by his counterpart in Los Angeles (a high-cost area).

Although the numbers in Table 2 suggest that taxes would be higher for the average service member in a particular location and pay grade, increases could be higher or lower depending on circumstances. For example, an O-6 in Los Angeles would experience an increase of $4,035 in taxes (see Table 2). But if other income (for example, a member's outside income or that of a working spouse) placed that O-6 in a higher federal tax bracket (with an assumed taxable income of $100,000), then his or her tax increase could amount to $5,336 rather than the amount depicted in Table 2. Individual losses could also vary depending on local housing market conditions. If, for example, housing was more expensive than average, or if a particular military member chose to spend a larger-than-average percentage of his or her income on housing, then that member's tax increase could be higher than shown in Table 2.

Force Manning Effects

Because the MHTP would reduce take-home pay for homeowners, it would adversely affect the retention of career personnel in the long run. 7/ Career force reductions would be modest over the next five years, because not all those members directly affected by the homeowners tax plan would make reenlistment decisions during this period. But after 10 to 15 years, when the change had had time to affect many career decisions, CBO estimates that the military services would have between 2,500 and 10,500 fewer members in the career force than they would under the current tax treatment of military homeowners (see Table 3). This range represents a reduction of 0.2 to 0.9 percent in the military career force. The lower bound reflects the impact on current military homeowners only, while the upper bound allows for the possibility that nonhomeowners who might anticipate owning a home would also be affected. 8/

Of these losses of career personnel, about 1,350 to 3,830 are projected to come from the officer ranks while 1,150 to 6,670 are estimated to be

7. Career members are defined here as those with more than four years of service.

8. For more detail on the derivation of these estimates, see Appendix C.

enlisted members. Relative to today's levels, this would reduce the enlisted career force by between 0.12 percent to 0.71 percent and the officer force by 0.67 percent to 1.90 percent. 9/ Losses of this magnitude are small in comparison with the annual fluctuations in overall retention. For example, the average annual change in the size of the career force over the past five years has been 3 percent. The estimated change associated with the MHTP would at most be less than 1 percent of the career force and would take 10 to 15 years to occur.

These estimated career force losses contrast with estimates by senior military personnel that "tens of thousands" would leave if the double tax benefits were eliminated. 10/ CBO's estimates are modest because the tax savings from housing allowances are a relatively small part of total military compensation. 11/ Moreover, senior personnel would be most affected by a change in homeowners taxes and they would be less likely to leave military service. Senior personnel are both more committed to their military careers and have strong economic incentives to serve at least 20 years to earn retirement benefits.

The lower and upper ends of the range probably under- and overstate losses, respectively. The lower bound of CBO's estimates assumes that only the fraction of personnel who are homeowners at any one time would alter their retention decisions. In all likelihood, this assumption understates the full effect of the potential change. Members who are now renting or living in government quarters might previously have been homowners and, thus, would be concerned with the MHTP. Other members might anticipate becoming homeowners in the future and, thus, might be more likely to leave the military if their potential tax benefits were reduced. To account for this possibility, a rather strong alternative assumption was made concerning

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9. Estimates of retention effects are sensitive to the income measure used in the calculations. To the extent that the income measure employed here (cash take-home pay) greatly overestimates or underestimates members income, the retention estimates may be biased.

10. *Charitable Contributions and Ministers' and Military Housing Deductions*, Hearings before the Subcommittee on Taxation and Debt Management of the Senate Committee on Finances, 98:2 (1984), p. 52.

11. Total military compensation can be broken down into four categories: (1) regular military compensation (which includes basic pay, allowance for subsistence, allowance for quarters, and tax advantage); (2) special and incentive pays (such as flight pay and submarine duty incentive pay); (3) supplemental benefits (such as medical care); and (4) personnel cost reimbursements (for example, clothing issues and maintenance allowances).

TABLE 3. LONG-RUN EFFECTS OF MILITARY HOMEOWNERS TAX PLAN ON CAREER FORCE

Career Force	Total Under Current System	Incremental Change Under Homeowners Tax Plan	
		Lower Bound	Upper Bound
Enlisted			
Number/increment	935,069	-1,150	-6,670
Percent change		-0.12	-0.71
Officer			
Number/increment	201,731	-1,350	-3,830
Percent change		-0.67	-1.90
DoD Total			
Number/increment	1,136,800	-2,500	-10,500
Percent change		-0.22	-0.92

SOURCE: Congressional Budget Office.

prospective homeownership. All members--both current nonhomeowners and homeowners--were assumed to have equal (non-zero) probabilities of homeownership in the future. In effect, this approach means that all service members would expect to be affected directly by the MHTP.

Current patterns of homeownership in the military show that less than 25 percent of service members in the continental United States are homeowners. Moreover, homeownership is concentrated in senior ranks and is more common among officers than noncommissioned officers. These patterns suggest that many current nonhomeowners are not likely to become homeowners during their military careers. The "upper bound" assumption of equal probabilities of homeownership for all members, thus, seems likely to overstate the losses in the career force as a result of the MHTP.

Moreover, a shift toward more rentals by military personnel could cause the estimates in Table 3 to be too high. If homeownership became more costly because the double tax benefits were eliminated, more persons might rent homes. Depending on local rental prices, such a change could avoid some of the loss in income and so offset the incentive to leave the military. This does not mean that renting is an ideal situation. Many service members may not find renting as desirable as owning homes. 12/ Renters may not feel the same sense of stability and community as homeowners. Also, renters do not benefit directly from increases in housing prices, such as those that have occurred in recent years. A shift toward renting, however, should reduce at least some of the adverse effects on retention from the loss of present or prospective tax deductions.

OFFSETTING CAREER LOSSES

Even though the MHTP would cause only modest reductions in the career force, some of the losses nevertheless might occur in hard-to-fill skills and, therefore, might eventually harm military readiness. This could be especially true if other changes, such as a revision of the military retirement system mandated by the Congress, also tended to reduce retention.

As discussed earlier, the Congress could ameliorate career losses resulting from the tax plan by making all housing allowances taxable while providing offsetting increases in pay. This would, however, entail a complex and far-reaching proposal that the Administration has apparently rejected.

The Congress could also avoid career losses while eliminating the double tax benefits by restructuring housing allowances to provide homeowners more compensation. This option, however, would exacerbate an already complex element of military compensation, and it would be all but impossible administratively to compensate individual members exactly for their lost tax benefits.

Alternative Approaches

This study evaluates three alternative plans for increases in basic pay or bonuses to offset some or all of the career losses that might impair military readiness. The **first option** would offset all losses by providing the requisite increase in basic pay to all service members, whether or not they own homes and regardless of their pay grade. This approach would result in a pay raise of 0.15 percent to 0.7 percent for all active-duty enlisted personnel--with the range reflecting the lower-bound and upper-bound estimates of career losses--and 0.25 percent to 2.05 percent for all officers. The raise for officers is much larger for two reasons. First, officer retention has a lower

12. See statement of Sharon Shipe, Vice President For Legislative Affairs, National Military Family Association, before the Subcommittee on Taxation and Debt Management of the Senate Finance Committee, 98:2 (October 15, 1985).

pay elasticity (that is, the change in retention that can be expected from a change in pay) than does enlisted retention. Second, because the incidence of homeownership is higher for officers, more career personnel would be lost unless the raise was large enough to offset partially the loss in tax benefits.

The **second option** would again offset all career losses by targeting the raises to selected pay grades that would be among those most disadvantaged by the homeowners tax plan. Under this option, an increase of 0.3 percent to 1.6 percent in basic pay would be directed toward pay grades E-5 and E-6, and a 0.5 percent to 4.25 percent increase toward pay grades O-4 and O-5. These particular pay grades are among the ones within which homeowners would tend to incur the largest losses from the MHTP, measured as a percentage of their cash take-home pay. Thus, equity considerations support increased compensation for these personnel. In addition, analysis showed that raises targeted on these pay grades are the least costly way of restoring the career force losses that would result from the MHTP. Although many of the service members in these pay grades already are "locked in" by the military retirement system, the prospective increase in future military compensation apparently serves as an effective retention incentive for more junior personnel as well as those who would actually receive the targeted pay increases.

The **third option** would provide a bonus for enlisted personnel only, targeted on the period during which first-term and second-term reenlistment decisions are made (that is, at five and nine years of service). This alternative would provide bonuses for enlisted personnel equivalent to 0.25 percent to 1.25 percent increase in basic pay at five years of service and 2.1 percent to 14.0 percent at nine years of service. This option represents a more efficient approach to force manning than even the targeted raises, since it would allow pay increases to be targeted on enlisted personnel in hard-to-fill skills at sensitive career points. It would not, however, offset adverse effects on officer manning. Reenlistment bonuses would be harder to implement for officers who do not generally receive such payments. On the other hand, officer force manning problems in recent years have, in general, been less severe than enlisted problems.

Career Force Effects

Table 4 shows the required pay raises needed under the three options to forestall the estimated reductions in the career force that would occur under the homeowners tax plan. The most noteworthy feature about the pay-raise options is that they involve, in most cases, small increases.

Except for the targeted raise for selected officers and the bonus in the ninth year of service that are associated with the upper bound, all the offsetting pay increases are less than about two percent of basic pay.

While all three alternatives would eliminate some or all the adverse effects of the MHTP on the total size of the career force, they would still have distributional influences. Since the increase in basic pay would accrue to service members (either across-the-board or in targeted pay grades) regardless of homeownership, the raise would serve to increase retention rates among nonhomeowners while partially offsetting some of the losses among homeowners.

TABLE 4. ALTERNATIVE PAY RAISES TO OFFSET SOME OR ALL OF THE LONG-RUN EFFECTS OF MILITARY HOMEOWNERS TAX PLAN (MHTP) ON CAREER FORCE

	Incremental Raises to Offset Losses (in percents)		
Career Force	MHTP with Raise for All a/	MHTP with Targeted Raises b/	MHTP with Targeted Bonuses c/
Enlisted			
Lower bound	0.15	0.30	0.25-2.10
Upper bound	0.70	1.60	1.25-14.00
Officer			
Lower bound	0.25	0.50	0.00
Upper bound	2.05	4.25	0.00

SOURCE: Congressional Budget Office.

a. A raise in basic pay for all active-duty personnel.

b. Targeted basic pay increases for all personnel in pay grades E-5 and E-6 and pay grades O-4 and O-5.

c. Targeted bonuses for active-duty enlisted members at the first- and second-term reenlistment points.

Budgetary Effects

The three pay options would not only offset career force losses, but also, in most cases, would generate net savings to the government. Table 5

TABLE 5. BUDGETARY EFFECTS IN FISCAL YEAR 1986 OF ALTERNATIVE APPROACHES TO MILITARY HOMEOWNERS TAX PLAN (MHTP)
(In millions of dollars)

Option	Net Annual Savings (+)/Costs(-)	
	Lower Bound	Upper Bound
MHTP with No Offsetting Raise in Basic Pay	+290	+290
MHTP with Raise in Basic Pay for All a/	+207 b/	-210 b/
MHTP with Targeted Raises c/	+233 b/	-124 b/
MHTP with Targeted Bonuses d/	+274 e/	+191 e/

SOURCE: Congressional Budget Office.

a. A 0.15 percent to 0.7 percent raise in basic pay for all enlisted personnel and a 0.25 percent to 2.05 percent raise for all officers.

b. This figure reflects increases in both basic pay and retirement accrual costs.

c. Targeted basic pay raises of 0.3 percent to 1.6 percent for pay grades E-5 and E-6 and 0.50 percent to 4.25 percent for pay grades O-4 and O-5.

d. Targeted bonuses of 0.25 percent to 1.25 percent for all enlisted personnel at five years of service and 2.1 percent to 14.0 percent at nine years of service.

e. This number reflects increases in basic pay only.

summarizes the impact of the alternative approaches on the federal budget. If the MHTP were imposed without any offsetting pay raises, the net savings that would be realized would be about $290 million in 1986. The alternative plans, on the other hand, would offset some of the savings from the MHTP. Indeed, net costs would be incurred for the across-the-board and targeted pay raise options if career force losses approached the upper-bound estimate.

The pay raises necessary to offset estimated lower-bound losses in the career force under the MHTP would yield net savings under all three options. Across-the-board raises for enlisted and officer personnel in all skills and longevity ranges would result in net savings of $207 million. Alternatively, the option calling for targeted raises for selected pay grades (E-5 and E-6 for enlisted personnel and 0-4 and 0-5 for officers) would give rise to higher net savings totaling $233 million. Savings would be even larger if bonuses are focused only on enlisted personnel in hard-to-fill skills at the first- and second-term reenlistment points; this approach would yield net savings of $274 million.

On the other hand, if the career force losses under the MHTP were closer to the upper-bound estimate, the budgetary impact of the three options would be somewhat different. In that case, a combination of larger steady-state personnel losses and the raises needed to offset them would result in net costs of $210 million under the across-the-board pay raise option. Similarly, the targeted pay raise plan would also involve net costs of approximately $124 million. Only the option providing bonuses targeted on enlisted personnel in critical skills at sensitive career points would yield net savings of $191 million; under this option, however, there would still be officer career force losses.

This analysis has showed that the double tax benefits could be eliminated for military homeowners without substantial impact on the retention of members of the officer and enlisted career forces. But even if compensation were increased, either across-the-board or in selected pay grades, to avert these modest projected losses, net budgetary savings would probably be realized. These savings would fail to materialize only in the upper-bound case of this analysis. But as discussed earlier, there are reasons to believe that the upper-bound estimates overstate the likely effect of the MHTP. On balance, therefore, elimination of the double tax benefit could probably be achieved without any net career force losses while contributing modestly to federal deficit reduction.

APPENDIXES

APPENDIX A

ESTIMATION OF MORTGAGE INTEREST PAYMENTS AND REAL ESTATE TAXES FOR MILITARY HOMEOWNERS

The combined mortgage interest payments and real estate taxes of military homeowners constitute a necessary component of this analysis. Because the figure for housing costs that is reported by military homeowners (through the Variable Housing Allowance (VHA) Survey) also includes principal and insurance payments, an adjustment is required to focus on mortgage interest payments and real estate taxes. CBO accomplished this modification as follows: 1/

$$\text{IT (Military)} = \frac{\text{IT (US)}}{\text{PITI (US)}} \times \text{PITI (Military)}$$

where:

IT (Military) = Estimated mortgage interest payments and real estate taxes for military homeowners by pay grade and location in the continental United States.

PITI (Military) = The reported payments on the principal, mortgage interest, real estate taxes, and homeowner's insurance by pay grade and location in the continental United States.

IT (US) = Typical mortgage interest payments and real estate taxes in the United States as of 1984, based on average characteristics of mortgages outstanding and property taxes. In particular, the mortgage is assumed to be in the fourth year of a 27-year term with an interest

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1. Besides the data from the VHA survey, additional information used in this estimating procedure was derived from three sources: *Federal Home Loan Bank Board Journal*, vol. 17 (April 1984); The National Association of Home Builders, *Economic News Notes*, vol. 29 (February 1985); and Department of Commerce, Bureau of the Census, and Department of Housing and Urban Development, Office of Policy Development and Research, Annual Housing Survey: 1983 (December 1984). Moreover, the resulting estimates for IT (Military) implicitly assume that the real estate tax burden for military homeowners is the same as that for the general population.

rate of 11 percent. The property tax rate is assumed to be 1.2 percent and the mortgage represents 75 percent of the house value when new. House value was updated with the Consumer Price Index (CPI).

PITI (US) = Typical payments on the principal, mortgage interest, real estate taxes, and homeowner's insurance in the United States using the same assumptions as for IT (US). Insurance rates are set at 0.3 percent of house value.

APPENDIX B

ESTIMATED CHANGES IN TAXES FOR MILITARY HOMEOWNERS

The computation of the estimated change in the federal income tax liability of military homeowners under the Military Homeowners Tax Plan (MHTP) is as follows: 1/

$$\Delta T = T_{86}[MP\text{-}PE\text{-}(\hat{TD}\text{-}ZB)] - T_{86}[MP\text{-}PE\text{-}(\hat{OD} + (\hat{IT}\text{-}\tilde{HA})\text{-}ZB)]$$

if $\hat{IT} > \tilde{HA}$

or

$$\Delta T = T_{86}[MP\text{-}PE\text{-}(\hat{TD}\text{-}ZB)] - T_{86}[MP\text{-}PE\text{-}(\hat{OD}\text{-}ZB)]$$

if $\hat{IT} \leq \tilde{HA}$

where:

ΔT = Change in federal income taxes

T_{86} = 1986 tax schedule

MP = Basic pay plus taxable special pays and allowances

PE = Personal exemptions for estimated family size

$\hat{TD}$ = Estimated total deduction $(= \frac{\hat{IT}}{.75})$

ZB = Zero bracket amount for filing status

1. For illustrative purposes in the following specifications, homeowners are assumed to itemize their deductions, which may not always be the case. In the event that they do not itemize deductions, the terms inside each outer bracket--taxable incomes--are computed as though the amounts within the inner parentheses are zero.

$\hat{OD}$ = Estimated other deductions ($=\hat{TD}-\hat{IT}$)

$\hat{IT}$ = Estimated mortgage interest payments and real estate taxes

$\widetilde{HA}$ = Combined tax-free allowances of Basic Allowance for Quarters and Variable Housing Allowance.

APPENDIX C

DESCRIPTION OF ACOL MODEL AND ITS APPLICATION IN THIS STUDY

This appendix describes the method used to estimate career force losses resulting from the elimination of the double tax benefits for military homeowners. Because the probabilities of future homeownership for service members are not known, it would be difficult to provide a point estimate of the expected future loss in tax benefits, both to current homeowners and to those who do not now own homes. Consequently, the Annualized Cost of Leaving (ACOL) model of the Department of Defense (DoD) was used to provide upper and lower bounds. The lower bound is based on "myopic behavior"; the upper bound is not. Specifically, the low estimate assumes perfect myopia by both owners and nonowners--that is, both groups are assumed to act as if their current ownership status will be permanent. This is represented algebraically as:

$$p(H_1 \mid H_0) = 1, p(N_1 \mid N_0) = 1, \text{ and}$$

$$p(N_1 \mid H_0) = 0 = p(H_1 \mid N_0),$$

where H and N are homeowners and nonowners and the subscripts are time periods.

The high estimate assumes perfect foresightedness--that is both groups are assumed to behave as if they have equal probabilities of homeownership in the future, regardless of their present status. Thus,

$$p(H_1 \mid H_0) = p(H_1 \mid N_0) = p(H_1) \text{ and}$$

$$p(N_1 \mid N_0) = p(N_1 \mid H_0) = p(N_1).$$

The following description begins with an overview of the logic of the ACOL model, and then turns to the two ways that CBO used the model to estimate upper and lower bounds on projected career force losses.

OVERVIEW OF THE ACOL MODEL

The ACOL model relates the reenlistment decision of a service member to a comparison between the present value of the total pecuniary and nonpecuniary returns to leaving military service immediately, the total returns to staying for the optimal number of additional years and then leaving the military, and other factors, such as civilian unemployment rates and members' taste for military service. The optimal additional career is the one that maximizes the net present value of the military career. All things being equal, real increases (decreases) in basic pay bolster (lower) the cost of leaving military service immediately, thus raising (lowering) the reenlistment rates. The change in reenlistment rates can be used to derive new continuation rates which, in turn, lead to a new career force.

The overall process can be represented schematically as follows:

Pay Loss by Year of Service (YOS)

↓

Loss by YOS as Percent of Basic Pay

↓

Into ACOL Model as Decrease in Pay

↓

New Continuation Rates

↓

New Survival Rates

↓

New Force Profile

↓

New (Steady State) Career Force Profile

The basic equation for ACOL involves the logit of the reenlistment rate R and is specified as: 1/

(1) $$\ln\frac{R}{1-R} = \alpha + \beta\,\text{ACOL} + \mu \quad \text{(by YOS)}$$

where:

ln = natural logarithm

R = reenlistment rates for those making retention decisions by YOS

ACOL = annualized cost of leaving values

μ = stochastic error term

ACOL values are calculated for the base case using data on the current career force. Reenlistment rates are supplied by the Defense Manpower Data Center (DMDC). Once this information is substituted into equation (1), α and β can be estimated (hereafter referred to as α^* and β^*). Since only a portion of the force is up for reenlistment at any point in time, account must be taken of those not facing reenlistment decisions at the set time in order to arrive at continuation rates for the entire force.

Thus, with the initial reenlistment rates, overall force continuation rates for the base case can be calculated using the following equation:

(2) $$\text{CONT} = xR + (1 - x)\,(\text{NON-ETS CONT}) \quad \text{(by YOS)}$$

where:

CONT = continuation rates for the force by YOS

x = fraction of the force up for reenlistment by YOS (a constant supplied by DMDC)

R = reenlistment rates for those making retention decisions by YOS

1. The specification may also include nonpecuniary variables, such as the unemployment rate and surrogates for members' taste for military service.

NON-ETS CONT = continuation rates for those not facing reenlistment decisions

The continuation rates can then be used to yield survival rates where the survival rate for a particular year of service is the product of the probability of reaching that year of service and the continuation rate for that year of service. Given the survival rates (by YOS) and a particular end strength target, it is possible to calculate the number of accessions necessary to obtain the specified target as follows:

(3) $$\text{END} = (\text{ACC} \times \text{SURV}_1) + (\text{ACC} + \text{SURV}_2) + \ldots (\text{ACC} + \text{SURV}_{35})$$

$$= \Sigma(\text{SURV}_i \times \text{ACC})$$

thus

$$\text{ACC} = \text{END}/\Sigma\text{SURV}_i$$

where:

END = end strength target

ACC = accessions

SURV_i = survival rate to year i

Once the number of accessions corresponding to the specified end strength are obtained, then the distribution of the force can be calculated, as follows:

(4) $$\text{FORCE}_i = \text{ACC} \times \text{SURV}_i$$

Finally, from the force profile, the steady state (career) force profile under the base case can be obtained by including only those with five or more years of service.

Alternatives to the current compensation system can be evaluated by comparing the resulting career force generated under the particular option with the steady state force under the base case. For example, if an alternative option results in a loss in pay, then new ACOL values are calculated. When the new ACOL values are substituted in equation 1 along with the previously estimated values of α^* and β^*, new reenlistment rates can be estimated. These new reenlistment rates can then be used in equation 2 to estimate new continuation rates, new survival rates, and finally a new career force profile.

APPLICATION OF ACOL IN THE STUDY

As outlined above, the ACOL model can be used to evaluate changes in the steady state career force under various scenarios. However, the application of ACOL in the CBO study required some adjustments: (1) to focus on the direct effect of the MHTP changes in the double tax benefits enjoyed by current military homeowners, and (2) to provide an estimate that takes some account of the probable effect on those who may anticipate becoming homeowners at some point in the future.

The first estimate--the impact on current military homeowners--calls for some deviation from the procedure described above because there is no steady state force consisting entirely of homeowners. Consequently, when the changes in continuation rates by YOS are derived under the alternative that eliminates the double tax benefits, they are multiplied by the distribution of current homeowners (by YOS) rather than by the distribution of the entire current force. This procedure assumes, in effect, that no nonhomeowner would be affected by loss of the double tax benefits, and that homeowners would bear the full brunt of the change. Both groups, therefore, are assumed to respond myopically. (The current distribution of homeownership is also assumed to be stable.) Inasmuch as no nonhomeowners would be affected by the tax change, this estimate may be viewed as a lower bound.

The second estimate also requires some modification in the ACOL procedure in order to include the possible effects of the loss in double tax benefits on those current nonhomeowners who anticipate owning a home during their military career. Ideally, one would like to have longitudinal data on the probabilities of homeownership as well as estimates of the elasticities of retention to different elements of the overall compensation package. In the absence of such data, the estimating procedure used in this study relied on a weighted average of the effects that would be experienced by current homeowners. Specifically, the annual loss for homeowners in each year group was calculated and then the weighted average annual loss for all members in each year group was derived, where the weights were the proportions of owners and nonowners. Then the present value of the compensation stream, reduced by the weighted average annual losses, was calculated. This new compensation stream generated new continuation rates through the use of ACOL. The remainder of the ACOL procedure then proceeded as outlined above. This should provide an upper bound because this use of average reductions, coupled with the logit specification, will overestimate retention effects.