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THE WARFARE-WELFARE TRADEOFF: HEALTH, PUBLIC AID AND HOUSING\*

by Kathleen Peroff

University of Maryland

It is a truism that resources devoted to defense are unavailable for non-defense purposes. Investment in defense takes place partly by reducing civilian spending on consumer and capital goods through tax rates that are higher than they would otherwise be and partly by reducing government spending on non-defense programs. The purpose of this paper is to test for the existence and magnitude of the latter tradeoff over the years 1929-1971 in the United States. In particular, the analysis concerns the tradeoff between defense and three social welfare policies: health, public aid and housing. In addition, the analysis examines whether these tradeoffs differ during periods of war and peace.

Theoretical Arguments

One prevailing theory is that no tradeoff occurs between military and welfare expenditures. Proponents of this theory argue that modern society moves toward a warfare-welfare state in which political elites must buy off the populace with welfare goods. One reason is that welfare policy promotes the growth of GNP by contributing to better physical and psychological health for the workers which in turn promotes efficiency and production. (Baran and Sweezy, 1966; Rimlinger, 1971, 59-60; Hecllo, 1974, 89-90). Another argument in favor of this theory is that welfare spending contributes to political order by co-opting the masses and rewards them for fighting wars. (Gouldner, 1970).

In a more pragmatic vein, Eckstein concludes:

I think that historical experience has been that governments are either stingy or they're spenders, and if they're stingy about defense, they're stingy about everything. I would say that the historical record suggests that the association between civilian spending and military spending is positive, not negative. (1963: 1012)

A related argument suggests that defense spending, even if greater than necessary for national security, is not necessarily a waste, since alternative uses of economic resources would be equally "frivolous." For instance, the money might be

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turned back to the taxpayers for personal consumption and not put into other policy areas. If this is the case, the real price of defense is merely the loss of luxuries for middle and upper classes.<sup>1</sup> However, this argument holds only if the income tax is truly progressive. Pechman's (1971) research indicates that effective tax rates are mildly progressive over most of the range of incomes but exhibit regressivity at high levels of income. Thus, the burden of defense is carried to a greater extent by lower income groups. The argument that defense merely displaces frivolous consumption has yet to be empirically supported.

The previous lines of theorizing hold that there is certainly no negative relationship between defense and other policy sectors and that there may be a positive relationship. Other theorists, however, take a contrary position and view defense and welfare policy goals as mutually exclusive. They argue that military burdens drain political, technical and economic resources from domestic programs. Wilensky contends that a foreign policy accenting military action without total and sustained mobilization is inflationary enough to enhance the policy appeal of the position "cut the domestic frills, balance the budget." (Wilensky, 1975, 79-80) Similarly, Russett contests the position that military spending is necessary to maintain overall demand in the modern economy and argues that defense expenditures are now more likely to force tradeoffs than they were thirty years ago. (1970, 133)

A related argument is that heavy defense investment retards the establishment of new welfare or health programs. If a country supports a burdensome defense, other domestic policies or programs may not be introduced or established because policymakers perceive the cost as insupportable given present and anticipated defense sector outlays. This possibility is legitimately a substitution effect although it cannot be empirically supported by examining current expenditure data. In another vein, government funded research and development is primarily concentrated in the defense and space industries while non-defense agencies do not have research and development programs that relate broadly to their entire mission. This continued imbalance in government research efforts also retards innovations in welfare, housing, and health care programs.

#### Existing Empirical Research

Empirical findings to date are mixed. The number of studies which indicate the existence of a tradeoff relationship approximates the number which show that none exists. A review of this research discussion will center on conceptual and methodological problems in these studies which account for some of the confusion.

Pryor is the only researcher to apply both cross-sectional and time-series data analyses to this question. His cross-sectional study of seven "capitalist" and seven "socialist" countries reveals no evidence of a substitution effect between non-military (all non-military expenditures are lumped together) and military expenditures for two different years: 1956 and 1962. (1968, 121) However, his time-series analysis for the period 1950-1962 uncovers a more varied pattern. In those countries where defense expenditures are a relatively small

proportion of the GNP, there exists no statistically significant inverse relationship between defense and current public expenditures. When defense expenditures are a relatively more important part of the governmental budget, a significant but small substitution relationship is evident, but only when transfer payments are excluded. When transfer payments are added to current expenditures, there is no substitution effect. (1968, 298) Similarly, in another time-series analysis over the period 1950-1970 for Sweden, the United Kingdom, Australia and the United States, Caputo finds that defense does not undercut welfare expenditures. (1975, 445-446)

Recent research on Latin American countries also indicates no tradeoff between these two expenditures. In an analysis of the relationship between defense and education expenditures, Ames and Goff obtain positive and significant correlations between changes in defense and education outlays and conclude that these two policies are not mutually exclusive. (1975, 181) Examining Brazilian budgetary outlays, Hayes also finds that when correlating levels of defense expenditures with what she terms "social development" expenditures, the correlation is positive. The rapid expansion of both the whole economy and the federal sector in Brazil over the period of her analysis is used to explain these results. Correlating spending ratios (category of expenditures/total federal expenditures), she obtains a negative but insignificant correlation. In sum, her analysis indicates that military spending does not have serious negative consequences for economic and social investment in Brazil. (1975, 33)

Lastly, similar results are found with cross-sectional data on approximately 120 nations reported in the World Handbook of Political and Social Indicators. Defense and health expenditures, each as a proportion of GNP are not inversely correlated. (Hudson and Taylor, 1972, 34)

While the results of these studies do not strongly support theoretical arguments which suggest a positive relation between defense and social welfare spending, neither do they support the substitution hypothesis of an inverse relationship. They do suggest that major decisions about the magnitudes of various public consumption expenditures are made in relative isolation from each other. Other empirical analyses, however, do find an inverse relationship between these expenditures.

In an analysis of defense spending in the United States between 1938 and 1969, Russett concludes that military spending undercut welfare first, then education and then health. (1970, 151) Looking at the post-World War II experience of Great Britain, France and Canada, he again gives a qualified "yes" to the question of substitution effects. (1970, 171-174) Wilensky's findings tend to corroborate those of Russett. Although his cross-sectional analysis indicates that military spending is irrelevant to welfare outlays, his "time-series analysis" shows that in nations with very large military budgets, war and welfare are mutually exclusive goals. He emphasizes the impact of the Cold War period as having the most obvious depressing effect on the growth of social welfare expenditures. In a sample of

sixteen countries, "great increases in military spending in 1950-1952 (military spending/GNP 1952 minus military spending/GNP 1950) are associated with small increases in social security spending for the whole period 1950-1966 ( $r=-.43$ )." (1975, 77-79)

In sum, empirical findings are not very consistent. Those research designs employing cross-sectional data show little or no support for a tradeoff or substitution effect while time-series studies have revealed more complex patterns. In the following section, discussion focuses on certain conceptual and methodological problems which characterize these studies and which cause their different results.

#### Conceptual and Methodological Issues

One source of variation in findings is whether the analysis is based on cross-sectional or time-series data. The argument here is that cross-sectional analysis is simply an inadequate approach to this question. Cross-sectional analysis reveals whether different countries exhibit budgetary tradeoffs at a single point in time. This information is simply not sufficient for rejection or acceptance of the substitution hypothesis which is better tested by examination of budgetary patterns of behavior over time. Results based on cross-sectional data may and have been shown to vary for different but close years for the same group of countries, causing problems in reaching any definite conclusion. (See Pryor, 1968, 231)

A second problem is that of those studies using time-series data, most have relied on relatively small time periods for their analysis. Usually this constraint is due to problems of data availability. However, analysis of very short time-series prevents strong generalizations and precludes empirical tests of oscillations in relationships during significant sub-periods.

Third, in research based on time-series analysis, either no or inadequate attention has been given to certain statistical problems. Especially noteworthy is the problem of serial correlation in regression and correlation analysis. If not eliminated, serial correlation leads to inaccurate tests of significance which are biased towards rejection of the null hypothesis. Thus, there is a high probability of accepting as true relationships which in fact are spurious. (Hibbs, 1974) In this case, researchers may erroneously infer the existence of a tradeoff when none actually exists.

Fourth, many existing studies have not been especially cautious when defining and operationalizing the expenditure terms. Specifically, the results of empirical analysis for tradeoffs or substitution effects are clearly influenced by the assumptions made about the nature of the allocation game. For instance, no substitutive effects may exist between absolute levels (or percapita amounts) of defense spending and absolute levels (or percapita amounts) of other governmental spending if the allocation process is an expanding-sum game represented by a

growing public sector. Negative shifts in the percentage allocation figures do not necessarily entail negative shifts in the absolute or percapita levels. The example given by Hayes underlines a simple but worthwhile point:

Assume, for example, a government with \$100 to spend in year 1, and \$200 in year 2. If 15% of the budget is allocated to both military and welfare in year 1, each sector gets \$15. In year 2, a one-to-one percentage tradeoff occurs and military gets 20% of the total while welfare gets only 10%. Military receives \$40, a substantial increase, but welfare gets \$20, still an increase over the previous year. (1975, 28)

Thus, welfare appears to be cut only in percentage terms since the absolute levels for both defense and welfare are increasing. However, a substitution effect is in fact occurring; the increase in the level amount for welfare is not as large as it would be if the defense increment was smaller. Simple correlation analysis of the level amounts does not reveal this and may lead the researcher to infer that a substitution effect does not occur. Thus, in the examination of tradeoff relationships, it is important to examine the ratios rather than the level or percapita amounts.

A fifth problem in this kind of research is suggested by a study which shows that tradeoff relations vary over different time periods. (Hollenhorst and Ault, 1971, 760-763) Estimation of a single tradeoff parameter for a long period of time may hide oscillation in the tradeoff relationship during sub-periods and hence bias results. In this case, the significant sub-periods are periods of war during which defense expenditures become more dominant and, as a result, lead to larger substitutions or tradeoffs than during periods of peace.

In sum, these pitfalls suggest the need for new analysis which is based on time-series data over a longer time period in which potential serial correlation is examined, the expenditures are measured as ratios and last, tests are done for changes in the tradeoff relationship in war and non-war years.

#### ANALYSIS

The following analysis tests the tradeoff hypothesis over the years 1929 through 1971 for the United States. Additionally, the analysis tests the possibility of changes in these tradeoff relationships during 1) World War II (1941-1945), 2) the Korean War (1950-1953) and 3) the Vietnam War (1965-1971) versus non-hot-war periods. The large number of years in the sample allows for a good test of variations in tradeoffs during three different types of war as well as a good number of non-war years.

Annual time-series expenditure data at the federal and total (federal, state and local) levels have been collected for the three policy areas: health, public aid and housing.<sup>2</sup> The purpose of this study is to analyze tradeoffs between

defense and domestic policies which are primarily distributive or re-distributive in nature, so education is not included. Also excluded are social security and veterans expenditures; in both cases, beneficiaries have "contributed" either through payroll taxes or military activity. In addition, social security expenditures come from a special fund separate from the normal budget so that the tradeoff notion is not very meaningful.

#### Description of the expenditure data

Health: Public health expenditures cover the following general categories: hospital and medical care, medical research, maternal and child health programs, school health, other public health activities and medical facilities construction.

With the exception of school health and state and locally owned hospitals, federal health spending is funneled into all of the above program areas. While there is no national health insurance covering the entire population, the federal government does provide hospital and medical care for specified groups of beneficiaries: Indians, Alaskan natives, lepers, narcotic addicts, federal prison inmates and smaller miscellaneous groups. The federal government also provides hospital and medical care for military personnel and their dependents and veterans. However, these defense-related expenditures have been excluded from the health figure, since they are more properly regarded as defense related expenditures necessitated by previous wars and maintenance of a peacetime army. Therefore, all defense related health expenditures are included under defense.

Federal, state and local financing covers medical research, medical facilities construction, programs for maternal and child health care and other public health activities. The federal contribution is usually larger in all of these program areas. This is especially the case with respect to hospital construction and medical research. Only county/state owned psychiatric, general or tuberculosis hospitals are completely financed by these levels of government.

Public Aid: Public aid expenditures refer to those programs that provide payments in cash or services to individuals and families. Unlike social insurance programs which pay benefits as an earned right, public aid programs rely on a means or income test to determine eligibility. The following programs are included under this expenditure category: Aid to Families with Dependent Children (ADC, AFDC); Old Age Assistance (OAA); Medical Assistance for the Aged (MAA); Aid to the Blind (AB); Aid to the Permanently and Totally Disabled (APTD); Medical Assistance (MA); state and locally financed General Assistance Programs (GA).<sup>3</sup>

Housing: Housing expenditures refer to government sponsored and/or supported programs that specifically aim to assist families in meeting their housing needs. These expenditures cover two broad categories of programs: 1) public housing owned and/or operated by a public body and 2) other housing programs which relate primarily to government programs designed to assist private industry in financing subsidized housing for low-income and moderate-income families. (Department of

Health, Education, and Welfare, 1968, 163)

Government loans for low-rent public housing or for college housing are not included on the grounds that they will be repaid or privately refinanced.<sup>4</sup> Programs providing credit facilities for home-financing institutions and mortgage and loan insurance programs are also excluded. For the most part, they have resulted in no net cost to the government since income from these programs exceeds expenditures. Finally, certain war emergency housing program outlays, primarily intended for the use of defense and wartime workers, have been subtracted from the expenditure series.

#### Estimation Technique

Since the regression equations in this study are estimated from time-series data, there is a potential problem of serial correlation. One of the assumptions of the classical normal linear regression model is non-autoregression in the residuals which implies that the disturbance occurring at one point of observation is not correlated with any other disturbance. This assumption is often violated in models of time-series data. When it is, the properties of the least squares estimators are no longer those of the best linear unbiased estimators. While they are unbiased and consistent, they are not asymptotically efficient (Kmenta, 1971, 278) Thus, conventional formulae for carrying out tests of significance or constructing confidence intervals for the regression coefficients may lead to incorrect inferences.

To solve this potential problem of serial correlation, a variant of Generalized Least Squares estimation is used. The Cochrane-Orcutt Method is employed to estimate the  $\rho$  or autocorrelation coefficient. See Cochrane and Orcutt, 1949, 32-61; Johnston, 1972, 262). This  $\rho$  is then used to transform the original data in the following manner and the equation is estimated via Ordinary Least Squares. Given the following equation,

$$Y = B_0 + B_1X + u$$

the transformed variables are:

$$Y^* = Y_t - \rho Y_{t-1}$$

$$X^* = X_t - \rho X_{t-1}$$

$$B_0^* = B_0(1 - \rho)$$

$$u^* = u_t - \rho u_{t-1}$$

This method of estimation will be used only when serial correlation remains after OLS estimation. If the Durbin-Watson test indicates no significant first-order serial correlation after OLS estimation, then GLS is not used and OLS

estimates are presented. In the more likely case of serial correlation, GLS helps to remove autocorrelation in the residuals and thus allow "safer" conditions for hypothesis testing.

Two equations are estimated for each of the three categories of expenditures:

$$1) Y_1 = B_0 + B_1X + B_2D_1 + B_3Z_1 + B_4Z_2 + B_5Z_3 + u$$

$$\text{and } 2) Y_2 = B_0 + B_1X + B_2D_2 + B_3Z_4 + B_4Z_5 + B_5Z_6 + u$$

where  $Y_1$  = federal health or public aid or housing expenditure/total federal expenditures

$Y_2$  = total health or public aid or housing expenditures/total expenditures of all levels of government

$X$  = real GNP percapita (1958 dollars)

$D_1$  = defense expenditures/total federal expenditures

$D_2$  = defense expenditures/total expenditures of all levels of government

$Z_1$  =  $D_1$  in World War II years only,  
0 for all other years

$Z_2$  =  $D_1$  in Korean War years only,  
0 for all other years

$Z_3$  =  $D_1$  in Vietnam War years only,  
0 for all other years

$Z_4$  =  $D_2$  in World War II years only,  
0 for all other years

$Z_5$  =  $D_2$  in Korean War years only,  
0 for all other years

$Z_6$  =  $D_2$  in Vietnam War years only,  
0 for all other years

$B_2$  is the estimate of the peacetime relationship between the proportion spent on defense and the proportion spent on the other expenditure categories. It should be negative and significant if the prediction of the tradeoff hypothesis is correct. The sum of the coefficients  $B_2$  and  $B_3$  estimates the relationship during the World War II years. The relationships for the Korean and Vietnam wars are the sums ( $B_2 + B_4$ ) and ( $B_2 + B_5$ ) respectively. The estimate  $B_1$  acts as a control for the relationship between GNP/population and the growth of the three expenditures and

should be positive.

In cases where the t value(s) for the interaction coefficients ( $B_3$  through  $B_5$ ) is/are insignificant<sup>5</sup> (i.e., the tradeoff does not appear to change during war years), it is possible that multicollinearity is causing depressed t values. To check out this possibility, the hypothesis is tested that any two or three of the war periods jointly have different tradeoff effects from peacetime years. For example, to test for the joint impact of the World War II and Korean War experiences on the relationship, the following test is constructed:

$$t = \frac{B_3 + B_4 = 0}{\sqrt{\frac{\sigma^2}{B_3} + \frac{\sigma^2}{B_4} + 2 \text{Cov}_{B_3 B_4}}}$$

a significant t allows one to infer that the joint change in the tradeoff relationship during the years of World War II and the Korean War is significantly different from the tradeoff relationship during peacetime years.

### Results

Health: The estimates for both federal and total health expenditures are given in Table 1. Since serial correlation remains after Ordinary Least Squares estimation, Generalized Least Squares, as previously described, has been used to estimate these equations. In both cases, the Durbin-Watson values for the GLS Equations surpass the upper boundary value of 1.58 required to accept the hypothesis of no serial correlation at the .01 significance level.

Overall, the model fares poorly. Although the  $R^2$  is biased due to the use of GLS (Generalized Least Squares), its low value of .11 and the insignificance of all of the estimates (including GNP) suggest the model is inadequately specified for federal health outlays. The evidence points to no defense-federal health tradeoff during either peacetime or periods of war. Nor is there evidence of a joint tradeoff effect during the combined war years.

A significant tradeoff does take place, however, for total health expenditures. With each percentage increase in the defense ratio during years of peace, the health share of total expenditures declines by about .03%. The results indicate no significantly different (larger or smaller) tradeoff during the Vietnam War. However the tradeoff is greater by .003 during World War II and smaller by .005 during the Korean War years. While these changes in the tradeoff are almost significant at the .05 level, they do not represent strong oscillations.

Public Aid: GLS estimates are given for the same equations in Table 2 for federal and total public aid expenditures. Again, the new Durbin-Watson values are large enough to reject the presence of first-order serial correlation. A substantial tradeoff or substitution occurs between public aid and defense for both

Table 1: Health

Dep. Var.	Intercept	X	D <sub>1</sub>	Z <sub>1</sub>	Z <sub>2</sub>	Z <sub>3</sub>	R <sup>2</sup>	RMSSE	Durbin-Watson
Federal health expenditure ratio	.040 (2.178)	-.3-.06 (-1.323)	-.003 (-1.095)	.001 (.785)	.001 (.762)	.002 (.735)	.11	.001	1.79
Total health expenditure ratio	.031 (13.399)	.4-.07 (.390)	-.026 (-6.712)	-.003 (-1.420)	.005 (1.882)	.003 (.838)	.82	.002	2.02

The first figure refers to the unstandardized coefficient. The figure in parenthesis is the t value. RMSSE is the root mean square error for the equation.

expenditure measures. Each percentage increase in the federal defense ratio takes .25% from the public aid share; each percentage increase in the total defense ratio is obtained by taking .15% from the public aid share of total expenditures. This tradeoff does not change in either direction during any of the wars, nor is there any evidence to suggest a joint wartime change in the tradeoff. Lastly, the economic term is not significant, underscoring the lack of a relationship between the success of welfare in the budget and the state of the economy.

In conclusion, while the model does not explain a large proportion of the variance in either expenditure share, the significance and size of the defense term underlines the importance of the tradeoff notion in predicting public aid outlays in the United States.

Housing: Table 3 presents the results for housing policy. The analysis does not favor the tradeoff hypothesis either in years of peace or war for the federal housing ratio. Nor is there any evidence of a combined war tradeoff during World War II and the Korean War. During the Vietnam War years, the relationship is actually positive, contrary to the predictions of the tradeoff hypothesis.

Results from analysis of total housing expenditures are less definitive. While no tradeoff takes place between the total defense and total housing ratios in peacetime, the t values for the interaction terms for World War II and the Korean war years are negative and quite large though not conventionally significant. A test for their joint significance was computed and the new t is -1.47, significant at the .10 level. If significance requirements are relaxed, the analysis suggests that public housing programs were hurt more during World War II and the Korean War than during non-war years when they were not hurt at all. Last, while GNP has no effect on federal public housing policy, it is important to the total housing expenditure share.

#### Conclusion

The substitution or tradeoff hypothesis is supported to different degrees for each of the three policy areas considered. Public aid programs are most undermined by defense. Since these expenditures constitute over time a much larger proportion of both the federal and total U.S. budgets than either health or housing combined, it is not surprising they are more sensitive to defense. In addition, these expenditures are the most explicitly redistributive in nature, and therefore, the most politically sensitive, so they are more likely to suffer when defense spending is rising.

A health-defense tradeoff also occurs in the case of health expenditures by all levels of government. The tradeoff is smaller than that between public aid and defense but nevertheless significant. However, while the substitution effect between actual levels of expenditures on health and defense is smaller than for public aid, the fact that no national health insurance has been enacted may be in part due to the defense burden on the budget. As noted earlier, this is a potential

Table 2: Public Aid

Dep. Var.	Intercept	X	D <sub>1</sub>	Z <sub>1</sub>	Z <sub>2</sub>	Z <sub>3</sub>	R <sup>2</sup>	RMSE	Durbin-Watson
Federal public aid expenditure ratio	.264 (3.115)	-.3-.05 (-.713)	-.256 (-2.563)	.077 (1.327)	.008 (.124)	.019 (.193)	.25	.049	1.71
Total public aid expenditure ratio	.194 (2.764)	-.3-.05 (-.941)	-.149 (-2.412)	.005 (.182)	.007 (.187)	.008 (.125)	.22	.031	1.87

The first figure refers to the unstandardized coefficient. The figure in parenthesis is the t value. RMSE is the root mean square error for the equation.

Table 3: Housing

Dep. Var.	Intercept	X	D <sub>1</sub>	Z <sub>1</sub>	Z <sub>2</sub>	Z <sub>3</sub>	R <sup>2</sup>	RMSE	Durbin-Watson
Federal housing expenditure ratio	.007 (.970)	-.5-06 (-.967)	.013 (.935)	-.006 (-.788)	-.003 (-.358)	.026 (2.059)	.17	.008	1.99
Total housing expenditure ratio	-.6-03 (-.839)	.8-07 (1.835)	-.4-03 (-.287)	-.001 (-1.443)	-.001 (-1.318)	.1-03 (.099)	.33	.0008	1.86

The first figure refers to the unstandardized coefficient. The figure in parenthesis is the t value. RMSE is the root mean square error for the equation.

substitution effect which analysis of actual expenditure data cannot reveal. Given the high level of the existing budget, of which defense is a major contributor, and given the costs of establishing some form of national health insurance, one could argue that enactment of the latter has been delayed (although there are obviously other factors, as well, which have prevented the establishment of national health insurance).

Housing is least affected by defense spending. For most of the time period, no substantial tradeoff has transpired, although tentative evidence suggests that World War II and the Korean War did have limited adverse impacts on public housing programs. To some extent, the lack of a substantial tradeoff here may be due to the minimal share of federal or total expenditures devoted to housing needs. The lower political sensitivity of housing and its small share of the budget may dispose policy-makers to choose other domestic areas to cut for defense purposes. As suggested earlier, only when a policy sector constitutes a "significant" share of the budget, does it appear that its allotment is adversely affected by military needs.

Tests for changes in the tradeoff during periods of military mobilization reveal no substantial differences for the most part. During World War II, the health-defense tradeoff grows by .3% while it declines by .5% during the Korean War. One explanation for this switch is that World War II was more expensive and hence a little more costly in terms of health than was the Korean War. Unmet health needs after World War II stimulated greater health expenditures in the early 1950's in spite of the Korean War. For instance, expenditures under the 1946 Hill-Burton program which initiated federal grants to assist states in hospital construction, increased significantly during years of the Korean War. In the case of total housing expenditures, a very small housing-defense tradeoff takes place during World War II and the Korean War while none occurs during any of the other years. Generally, the lack of substantial oscillations in these tradeoffs is that defense spending did not decline after World War II and Korea due to the beginning of the Cold War. Prevailing heavy defense investment in non-war years during the 1950's and early 1960's contributed to tradeoffs equivalent to those in war years. This suggests that "war" is not a very relevant concept per se in explaining tradeoffs if defense outlays remain almost as high during years of peace as they are in periods of war. Another argument for the lack of substantial tradeoff changes is that tax increases during war periods expand the budgetary pie which allows higher defense outlays without hurting domestic programs more than they are hurt in non-war years.

In conclusion, this analysis has focused on tradeoffs between three domestic public policies and defense programs. Future research is needed on the impact of defense on other public programs. In addition, since the private sector also provides welfare, housing and health services, it is important to know the impact of a heavy defense burden on the private sector levels of these services. For instance, does a heavy defense burden cause a decline in private health consumption of medical care because of higher tax rates (due in part to defense spending) which cause lower personal income? Does defense spending lead to lower levels of private

hospital or housing construction because the government employs deficit financing to support its defense burden and thus competes for loanable funds with private bidders? Answers to these questions would add further information to the extent of the warfare-welfare tradeoff.

#### Endnotes

<sup>1</sup>While this is not Russett's argument, he discusses it in What Price Vigilance, 1970, p. 139.

- <sup>2</sup>Data sources are:
- 1) U.S. Department of Commerce, Bureau of the Census, Historical Summary of Government Finances in the United States, 1902-1957 (Washington, D.C.: U.S. Printing Office, 1959).
  - 2) U.S. Department of Health, Education, and Welfare, Social Security Administration, Office of Research and Statistics, Social Welfare Expenditures Under Public Programs in the United States, 1929-1966, Report No. 25 compiled by Ida C. Merriam and Alfred M. Skolnik (Washington, D.C., 1972).
  - 3) U.S. Department of Health, Education, and Welfare, Social Security Administration, Office of Research and Statistics, Social Welfare Expenditures, 1970-71; 1971-72 compiled by Alfred Skolnik and Sophie R. Dales (Washington, D.C., 1971 and 1972).

<sup>3</sup>Expenditures on the Food Stamp and Commodity Surplus Programs are not included in this series.

<sup>4</sup>However, since these loans are made at below-market interest rates, they could be included in the expenditure series to the extent that a subsidy is being provided the borrower.

<sup>5</sup>Significance is understood to mean the .05 level in this analysis.

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