Guns, Butter, and Growth: Expenditure Patterns in Four Advanced Democracies*

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Abstract: This paper reports results of research on the so-called "guns/butter" question. Using multiple regression techniques, we estimate the relationship between military and social spending for the United States (1929–72), France (1920–1973), West Germany (1950–1969), and the United Kingdom (1920–1976). Reasoning from theories of budgeting, the controllability of social expenditures, and the effects of economic conditions on government resource allocation, we argue that "guns/butter tradeoffs" are unlikely to appear in short-term expenditure changes. The results generally confirm this hypothesis: only for the United States does a negative association appear between the two types of expenditure. For the other three countries, economic factors seem to be the driving force in social expenditure change.

Introduction

After a period of relative quiet, events have returned the issue of defense spending to the arena of popular and scholarly debate. For supporters and clients of social programs, increasing international tensions and the accompanying commitment to higher defense spending raise the prospect of cuts in social programs. External requirements, they fear, may force a "guns/butter" tradeoff to the detriment of the poor, the retired, and other beneficiaries of social policies.

As briefly reviewed below, this "guns/butter" question has been the topic of considerable research by political scientists, sociologists, and economists. In 1974, the present authors began building on existing research within the context of a broader research project on the role of the military in advanced, industrial democracies (see Kelleher 1978). Support was originally provided by the Center for West European Studies, University of Michigan; at present the project is directed by the senior author at the Center for Political Studies, also at Michigan.

Much of our effort has gone toward the collection of comparable time series on two types of variables: expenditures and policy outputs (doctors, teachers, military force structures). The (maximum) time coverage is the period 1870–1976; at present, we have fairly solid series for the United States, France, the United Kingdom, and Germany. Less complete data exist for Sweden, Japan, Italy, and the Netherlands.

In this article we report preliminary results of our analysis of the relationship between defense and social spending. The analysis, which was presented in more extended form at the Uppsala meetings of the International Sociological Association, is based on four countries: the United Kingdom (1920–1976), France (1920–1974), the United States (1929–1976), and the Federal Republic of Germany (1950–1969). The longer version of the paper, as well as additional information on our larger project, can be obtained from the senior author. Needless to say, we would also be grateful for the comments and criticisms of scholars engaged in similar research.

Previous Research: Summary

Previous research on the guns/butter question has focused on three possible manifestations of tradeoff relationships: relationships among trends in the share of national resources allocated to defense and social programs; relationships among short-term (yearly) fluctuations in these variables; and on evidence that decision makers explicitly "trade-off" the two types of expenditure during budgetary deliberations. The results of these three types of research can be summarized as follows:

Trends in defense and social expenditures are negatively related, especially in wartime and in the period since the Second World War. Moreover, the direction of trends suggests that social expenditures have gained from the declining

* We are grateful to Miroslav Nincic, our collaborator in the larger project from which this report is drawn; and to Jens Alber, whose suggestions considerably improved the present discussion.
share of resources allocated to defense. Scholars have interpreted these findings as evidence that social expenditures have become the “hard priorities” of politics in the advanced, industrial democracies (Russett 1971; Sprout/Sprout 1968; Morse 1975).

Short-term relationships have been less frequently studied, and the number of significant relationships is fewer than is the case in studies of trends. The results indicate that short-term trade-offs occur, if at all, only in states with relatively large defense budgets, and that those which do occur are confined to the controllable side of state expenditures, i.e., to those not channelled through trust funds or semi-autonomous agencies, such as the French Caisses or the German Kassen (Fryor 1968; Caputo 1975).

Tradeoffs in decision-making appear to be almost nonexistent. Due to fragmented participation in budgeting, time constraints, and the difficulty of operationalizing social goals, defense and social expenditures are rarely compared directly in the budgetary process and are even less frequently “traded off” (Crecine 1976; Heclo/Wildavsky 1974).

Previous Research: Evaluation

In attempting to extend existing research, we have addressed ourselves to what we see as three weaknesses. First, we pose the basic theoretical question: why should defense and social expenditures be negatively related? From the results of trend studies, we know that social expenditures have gained while defense has declined, and studies of yearly changes reveal little negative effect of defense on social expenditures. Although some scholars have pondered the theoretical reasons for this divergence of empirical result and popular controversy, most reasoning has been an ex post reaction to null findings. We have therefore attempted to develop a theoretical framework for relating defense and social expenditures, based largely on the question of controllability, styles of budgeting, and the economic environment of spending. Although we cannot review that framework here, we can summarize our major hypothesis: due to the political and administrative noncontrollability of social expenditures, and due to the lack of coherent “trade-off” mechanisms in governmental budgeting, it is unlikely that yearly changes in defense spending will be related to changes in social spending.

Our analysis thus addresses what we see as a second weakness in previous research: the neglect of short-term relationships. This seems especially important for purposes of informing the policy debate mentioned in the Introduction. Clients and policy-makers, we would argue, are more interested in change from existing levels than in the levels of expenditure themselves.

The third weakness in previous research has been the lack of statistical controls in analysing social expenditure. Although there is a considerable literature on the economic, social, and political determinants of these expenditures (Alber 1979), these are rarely taken into account in defense/welfare studies. We hope to correct this weakness by introducing control variables into our analyses.

To summarize, the analyses presented below attempt to answer two questions:

1. Are short-term changes in defense spending related to changes in social spending?
2. Do such relationships hold in the presence of controls for third variables?

Our analyses are based on yearly changes in defense and total social spending, in constant currency units. The next two sections of this research note contain our results, first in a graphic summary, then in the form of regression estimates predicting the yearly change in social expenditure.

Graphic Analysis

Absolute changes in defense and social expenditures are displayed in Figures I–VI. The similarities among the national patterns are striking, despite the different currency values and the differences in social policy in operation in our four countries. Changes in social expenditure have been remarkably incremental, with few major up- or downslings (West Germany is an exception here). Not surprisingly, defense expenditures fluctuate most in times of war, general or limited, but seem largely to move around a relatively stable trend of increase and decrease. Finally, simple inspection of the graphs does
not allow any clearcut inferences concerning tradeoffs between the two types of expenditure. Rather, the relationship among changes in defense and social spending suggest two "non-tradeoff" patterns:

**Independence** of social and defense expenditure (US 1929–1968; UK 1920–1947; France 1920–1939). In these cases, the two types of expenditure seem to move in response to different stimuli: defense apparently in response to war or international tension, with social expenditures barely fluctuating at all. This pattern points to a generally low priority for social expenditure — perhaps understandable for these earlier periods — and to a "boom or bust" quality in defense budgeting. In any case, there is little indication of a direct tradeoff between the two types of spending.

**Figure 1** Change in U.S. Federal Expenditure for Social Services and Defense: 1929–1976

**Figure 2** Change in U.K. Public Expenditure for Social Services and Defense: 1920–1947

**Figure 3** Change in U.K. Combined Public Authority Expenditure for Social Services and Defense: 1948–1976

**Figure 4** Change in F.R.G. Combined Public Authority Expenditure for Defense and Social Services: 1950–1969

**Figure 5** Change in French Central Government Expenditure for Defense and Social Services: 1920–1939

**Figure 6** Change in French Central Government Expenditure for Social Services and Defense: 1945–1974
Symmetry in expenditure change (UK 1948–1976; France 1967–1973; F.R.G. 1950–1963). In these cases peaks and troughs of our two categories occur simultaneously, suggesting that both are determined by similar stimuli. In the French and British cases, economic difficulties present a plausible explanation for these simultaneous movements. As in the previous case, there is no indication of direct tradeoffs. Rather, the pattern suggests a positive relationship, other things being equal.

The above two “ideal” patterns leave only three potential cases of “tradeoff”: the United States (1969–1977), France (1947–1967), and West Germany (since 1963). In these latter cases, peaks and troughs also occur simultaneously, but in opposite directions, providing the only indication that defense and social expenditure may be in competition for resources.

These “ideal” patterns hide considerable complexity, however, as can be seen by examining each of the national contexts. The graph for the United States shows some of the idiosyncratic aspects of American expenditure experience. Defense changes clearly show the “boom or bust” quality mentioned above, even during the tensions of the Cold War period. The peaks in defense change all correspond to periods of intense mobilization for combat—World War II, Korea, and Vietnam. A “peace dividend” does lead to positive social expenditure change after wars, but increases are hardly proportionate to the previous shift toward defense. Thus our categorization of the United States as largely a case of “independent” expenditure movements.

British expenditure before 1948 suggest different determinants for defense and social expenditure, with perhaps a few periods of marginal tradeoff—such as the dip in social service expenditure as war approached in 1939. The outstanding characteristic of this period, however, is the flat trend in defense changes except in time of war, dramatic evidence of the British tradition of mobilization and procurement only when war has begun or appears virtually certain within months. In short, social expenditures actually appear to be the driving force in this period, unaffected for the most part by defense, which apparently was dependent on external change for dramatic additions to the budget.

British expenditures since the Second World War are more mixed. Cumulative changes in social expenditures are clearly higher than those for defense, which remain remarkably stable despite the much-heralded retreat from empire. Those peaks which do occur are simultaneous—the symmetrical pattern in which available resources drive increases both for defense and for social expenditures.

Expenditure change in West Germany encompasses a much shorter time period, essentially the first two decades of the West German state. The graph indicates that social expenditures are generally favored over defense, as increases and decreases in this category are usually more advantageous than those for defense. Two “tradeoff” periods do appear, both with the same effect: the clear favoring of welfare in the early 1950’s, and the welfare surge of the mid-1960’s. Generally, changes in the Federal Republic move from a symmetrical pattern to a “tradeoff” pattern beginning in the early 1960’s. One might speculate whether this signalled the end of the “Aufschwung” that necessarily greeted all categories as the new German state was established, ending once the major programs had been set in place. In addition, the effect of slower economic growth since the late 1960’s should prove an interesting focus for future work.

French expenditures in the interwar period show the clear effect of war involvement and preparation, but point generally to the independence of the two categories of expenditure. Since 1945, changes in French expenditures exhibit upward shifts in both social and defense. Contrary to the usual interpretation of Gaullist policy, social expenditure change begins to exceed those for defense as early as 1962 and never fall below defense after that point. In terms of interrelation, the data seem to suggest that social and military priorities were somewhat in competition in the period to about 1967; thereafter they appear to move in unison. Since this corresponds approximately to the beginning of economic difficulties in France, the similarity to the United Kingdom since the Second World War would seem of special significance.

In sum, our graphic analyses suggest some answers to the first question posed above: defense
and social expenditures do at some times and in some countries show a relationship. However, this relationship is not always negative. Rather, a positive association appears equally frequent, suggesting a joint dependence on similar determinants. We hypothesize that economic fluctuations and the flow of revenues may be the key variables in this relationship. In the regression analyses to follow, we test this possibility, and extend the analysis further by adding potentially important political determinants of social spending.

Regression Results

As noted in the Introduction, one of our research goals has been to correct a weakness found in previous studies: the lack of controls for third variables. In this section, we present regression estimates of the effect of defense expenditure on social expenditure, with controls for a number of factors which appear potentially important either on theoretical grounds or on the basis of existing social policy research. Here we can provide only a brief explanation of our reasons for including specific variables in our equations.

The analyses described on the following pages include the following variables (in addition to the yearly change in defense expenditure):

Available Resources: This variable is perhaps the most-discussed in the social policy literature, and judging from the results of research in that field, it represents a plausible competitor to defense in explaining fluctuations in social spending. Further, we have seen in our graphic analyses that economic conditions may influence the relationship between defense and social expenditure. We operationalize available resources as the yearly change in constant-price national product (GNP).

Revenues: Although revenue flows are probably correlated with change in available national resources, such revenue elasticities presumably vary across time and country. We might expect revenue flows to lessen the effect of defense expenditures when their elasticity is high, thus avoiding the necessity of hard choice within a slowly growing economic “pie”. We operationalize this variable as government revenues in percent of national product (REVENUE as % GNP).

Unemployment is included in our estimations as a “problem pressure” variable; we expect social expenditures to rise when economic conditions produce the need for unemployment benefits and countercyclical expenditures. This variable is operationalized as the percent of the labor force unemployed (UNEMP. %).

War Involvement, as we have seen, produces both the largest increase in defense and the most noticeable decrease or stagnation in social expenditures. To isolate these war-related effects from normal peacetime budgetary behavior, we have constructed a “dummy” or binary variable for those years in which our four countries were at war (1 = War year; 0 = Peacetime).

Government Intervention: We hypothesize that, the greater the degree of government involvement in the economy (and society), the greater is the expectation, and perhaps the need, for continued or increased intervention. As suggested by the label in the Tables (EXPEND as % GNP), this variable is operationalized as government expenditures in percent of GNP.

Government Ideology has become a prominent variable in the policy studies literature. After initially contradictory results, most recent research has concluded that socialist (or labor) governments do increase government expenditures disproportionately. Our equations therefore include variables to separate partisan influences. In the United States, we have two “party in power” variables (REPUBLICAN PRESIDENT, REPUBLICAN CONGRESS), and for the United Kingdom, we have coded the party in control of Parliament (CONSERVATIVE PM). Of course, for West Germany our dummy variable could be coded only for the year of SPD rule covered by our data (SPD GOVERNMENT). For France, we coded socialist rule for the periods 1924–1927, 1936–1937, and 1946–1947. In addition, we created a dummy variable for the years of De Gaulle’s presidency to examine the effects of the well-known policy of indépendence.

The equations were estimated using either ordinary least-squares techniques or, in the pre-
TABLE 1

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<th>Variable</th>
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$R^2 = .73$  
Durbin-Watson d = 2.03

Ordinary Least Squares Estimation of Change in Total Social Expenditure United Kingdom: 1920–1947

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$R^2 = .83$  
Durbin-Watson d = 1.88


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Durbin-Watson d = 2.37

TABLE 2
Ordinary Least Squares Estimation of Change in Total Social Expenditure France: 1920–1939

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$R^2 = .38$  
Durbin-Watson d = 1.32

Ordinary Least Squares Estimation of Change in Total Social Expenditure France: 1946–1973

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$R^2 = .94$  
Durbin-Watson d = 1.76


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$R^2 = .72$  
Durbin-Watson d = 1.79

sence of heteroscedascity, using generalized least squares (estimation procedures are described more fully in the longer version of the paper cited in the Introduction). All coefficients reported below are unstandardized.

Our results are reported in Tables 1 and 2, which provide the regression coefficients (bets), t-statistics, and significance levels, and in Table 3, which summarizes the results by comparing the partial correlation coefficients from each multiple regression.

The tables contain few dramatic results, but there are a number of interesting findings which, on the whole, fail to support any hypothesis of a general pattern of defense/welfare tradeoffs. First, except for France in the interwar period, the equations predict well, assessed in terms of their goodness of fit ($R^2$). Second, except for the United States, very few of the independent variables show much explanatory strenght; rather, fluctuations in GNP – not defense expenditure – is clearly the strongest variable in predicting fluctuations in social expenditures.

The British case is an exception; for the post-World War II period, GNP is an insignificant effect, although it does come close to statistical significance. However, in a separate estimation
Which did not include the dummy variable for the Wilson years, GNP did prove to be the strongest variable in the equation. The latter were years of general economic instability and employment crises. Taking this latter result together with the overall strength of the GNP variable in our four countries, the general conclusion is that economic factors—GNP, unemployment, revenues—are far stronger than defense spending in accounting for changes in social spending.

Turning to some specific relationships which appear in the results, we see that, in contrast to the equations for France and West Germany, unemployment does affect social spending change in the United Kingdom and the United States. On reflection, this does not seem surprising, given the comparatively higher levels of unemployment in the latter two countries. In addition, this result points to the multidimensionality of “economic variables”; in two of our countries (USA and UK), economic difficulties appear to be major influences on social spending change, while in France and West Germany it may be that economic growth allowed social expenditures to expand.

Only in the United States is there indication of a direct tradeoff between defense and social spending: a significant, negative relationship between the two variables. How one interprets this finding has crucial implications for the research question posed here: do U.S. politicians, in contrast to their European counterparts, allocate resources such that increases in one type of expenditure must be paid for by a decrease in others? Such a result would be significant, since American political institutions are usually characterized as more fragmented than the European, with choices often blurred by the separation of powers and the independence of the bureaucracy in policy-making processes.

Counterintuitive or not, a tradeoff does appear to be present, especially in light of two other variables which are significant in the equation: revenue (negative) and unemployment (positive). These relationships suggest that government social spending has been greatest in times of economic downturn. Higher rates of unemployment have lead both to more individual payments and to public-service programs to ease the effects of economic dislocation. Further, since economic slowdown produces less revenue...
and creates pressure for tax cuts, reduction in defense spending would seem a logical source of flexibility in budgeting.

Finally, we should note that economic downturns in the United States have usually coincided with the termination of wars. The late forties, fifties, and early seventies were all periods of reduced economic growth after demobilization from war.

It is interesting to note that only in the United Kingdom does war involvement come close to a significant negative effect on social spending. British mobilization strategy was clearly more extensive and more dependent on the capture of all available resources than that of the United States. This remains true even though we have controlled for the longer period of British war involvement and for the lower absolute level of GNP.

The least successful of equations is for interwar France. Even our economic indicators — so far the most powerful in all of our analyses — perform weakly, and this in a period of extreme economic difficulty. It may be that the variables we have employed are simply too generally defined to deal with the critical influences of a period of extreme political and economic instability. More critically, it may also be that our data for France require re-examination, since this country poses the most difficult problems in constructing a complete social expenditure variable. If we have underestimated the social category for France, this could be the source of the weak results in the interwar period.

In summarizing the results of our regression analyses, we return to the “ideal” patterns discussed in the graphic presentation. We categorized France (1947–1967) and the Federal Republic (1950–1961) as “symmetric”, i.e., defense and social spending moved in the same direction, possibly due to their dependence on similar influences. The regression results confirm this reasoning: defense is positively related to social spending in these two countries, with the latter determined primarily by changes in GNP. We suspect that defense spending would also be strongly related to GNP in these countries, although we have not yet performed the necessary analyses.

Our third “symmetrical” case, the United Kingdom (1948–1976), also shows a positive relationship between defense and social spending, but the correlation of social spending with unemployment suggests that economic difficulties underlie movements in the two categories. As in the case of France and West Germany, specification of these interrelationships awaits the analysis of defense spending as a dependent variable.

The U.S. case, although unique among our four countries, may well be the most relevant for the future; here a tradeoff occurred, under conditions of declining military outlays, slowing of economic growth, and increasing social expenditures. If we compare this “constellation” to the conditions currently prevailing in the industrial democracies (increasing defense, economic slowdown, and high expectations for continued social spending), it would appear that the circumstances for difficult “guns/butter” choices may indeed have arrived. But this must remain speculation for the present. In order to improve our ability to specify the conditions under which such hard choices will arise, we have outlined a program of continuing research. We plan both improvements and extensions, as described in the closing section.

Future Plans

One of the challenging aspects of reporting preliminary research results is the opportunity to expose future plans to the comments and criticisms of others. In this section we briefly list those steps (most already underway) which we feel will most improve our understanding of the relationship between defense and social priorities.

Most urgent is the need to develop a more satisfactory data base. In the best of all possible worlds, definitions and categories of policy activity, revenue collection, national accounts, and economic indicators would be constant across national boundaries. Unfortunately, this is rarely the case. In our data, for example, revisions of expenditure definitions for the United Kingdom required an undesirable division of the time-series; data for the post-World War II period have also been changed in successive retro-
perspectives. As noted above, the French data may also be underestimated.

We are encouraged by the promised availability of several new data collections in the near future (particularly those of Peter Flora and Jürgen Kohl at Cologne, and those of the American National Bureau of Economic Research). However, as others have discovered, public expenditure series can at best serve as indicators, not as absolutely verifiable values for discrete policies. Thus, in connection with data limitations, we think some thought should be given to conducting intensive case analysis of budgetary processes, specific decisions, or specific periods (such as economic or international crises). In this way, we may be able to link our quantitative models to the more perceptual milieu of the resource allocation process.

Even within the more quantitative mode of investigation, additional work will have to be devoted to improving the statistical models used in estimating expenditure change. The use of a single equation, as we have done here, obviously involves a simplification of the process which generates increases and decreases in public expenditures. More realistic would be a system of equations which specify at least some of the more prominent of the interactions and joint determinants of the relevant variables. Of course, improvement of statistical models could in many cases be aided by close attention to other research methods, such as the case studies mentioned above.

Unquestionably, we must also begin to look more specifically at social expenditures themselves. Instead of the aggregate social expenditure variable examined here, each of the component social programs could be studied — health, education, social assistance, or even subsidies to individuals or groups. It is obvious, of course, that trends and change in these subcategories are not determined by the same political, economic, and social factors. However, the theoretical work required to specify those determinants, and the implications for the relation with defense spending, should not be underestimated.

Research on social policy suggests that attention to demographic change should be increased. Detailed analysis of school-age populations, size of the labor force, and change in the old-age population would be relevant explanatory variables for the detailed analyses suggested here.

Our treatment of revenues also deserves additional attention. Because public expenditures are funded from a variety of revenue types (i.e., direct/indirect: payroll tax/general revenue), which are levied on different categories of income earner (households, corporations), changes in different revenues may vary in their impact on the expenditures under investigation. In short, the question of who pays for what is highly relevant.

Our treatment of "political variables" requires the most additional work. The mere inclusion of a handful of "dummy" variables does little to illuminate the specific workings of the political ideology of governments or the array of interest groups and populations which maintain them in office. Yet the difficulty in conceptualizing, let alone operationalizing, these aspects of institutions, individuals, and groups accounts in part for their absence here. Nonetheless, additional work in this area will probably produce fruits of far greater value than extended search for better expenditure data. And as is the case in specifying theoretical relationships, a variety of research methods will probably be required to illuminate the workings of these "political" factors.

Finally, it is clear that the present model performs well only in the sense of producing a high value in terms of "variance explained". The true test of such techniques, however, lies in their ability to inform forecasts of future trends. We have made one hesitant step in this direction above, but we would be remiss to place too much faith in such first-cut analysis. Nonetheless, when political controversy suggests that a "guns/butter" dilemma is of concern to mass and elites alike, such empirical evidence can inform the discussion by providing estimates of the likely incidence and timing of societal "tradeoffs".
References:


