STUDIES IN THE LONG-TERM DEVELOPMENT OF FISCAL SYSTEMS

This series of reprints developed out of a research project financed by the Ford Foundation at the Universities of Edinburgh and London. It is intended to reproduce for private circulation contributions to the study of the long-term development of the tax and expenditure structure in a number of countries and the problems associated with this development.

The contributions are being prepared under the general editorship of Professors Alan T. Peacock and Jack Wiseman of the University of York.

All enquiries should be addressed to The Director, Institute of Social and Economic Research, Heslington, York, Great Britain.

1. The Past and Future of Public Spending (reproduced from *Lloyds Bank Review*, April, 1961) Alan T. Peacock and Jack Wiseman

2. The Growth of Government Expenditure in the United Kingdom since 1790 (reproduced from *Scottish Journal of Political Economy*, Vol. X, No. 1, 1963) Jindrich Veverka

3. A survey of Ghana's Tax System and Finances (reproduced from *Public Finance*, Vol. XVIII, No. 1, 1963) Fuat and Süphan Andic

4. The Growth of Government Expenditure in Germany since the Unification (reproduced from *Finanzarchiv*, January, 1964) Süphan Andic and Jindrich Veverka

5. East and West German Governmental Expenditures (reproduced from *Public Finance*, Vol. XX, No. 3-4, 1965) Frederic L. Pryor

6. Fiscal Surveys and Economic Development (reproduced from *Kyklos*, Vol. XIX, Fasc. 4, 1966) Süphan Andic and Alan Peacock

7. Public Expenditure and Economic G
(reproduced from *Public Finance*, Vol.

Institute of Social and Economic Research
University of York

Public Expenditure and Economic Growth:

A Time-Series Analysis

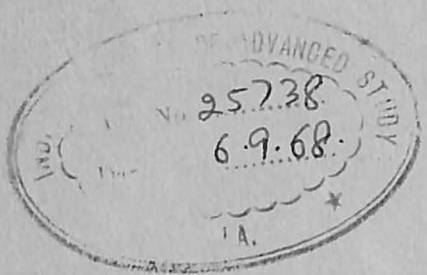
by

Shibshankar P. Gupta

No. 7 IN STUDIES IN THE LONG-TERM DEVELOPMENT OF FISCAL SYSTEMS

Reprinted for private circulation from *Public Finance* Vol. XXII, No. 4, 1967, with the kind permission of the editors

INDIAN INSTITUTE OF ADVANCED STUDY SIMLA



PUBLIC EXPENDITURE AND ECONOMIC GROWTH A TIME-SERIES ANALYSIS *

by

SHIBSHANKAR P. GUPTA **

Although there has been a tremendous growth of public expenditure in many countries in recent years, the interest of economists or specialists in public finance was confined, until recently, almost exclusively to the analysis of the economic effects of budgetary polici and to the development of normative theories seeking to provide criteria which *should* determine the revenue and expenditure policies of a government rather than explain how the revenue and expenditure policies *are in fact* determined. [1] Recently, however, because of the

* This paper is based partly on chapters II, IV and V of the D. Phil. thesis, *The Size and Growth of Government Expenditure, A Time-series and Cross-section Analysis* (University of York, January 1966). The author wishes to express his indebtedness to his thesis supervisors Professor Alan T. Peacock and Professor Jack Wiseman whose help and guidance have been invaluable throughout all the stages of the work. He also wishes to acknowledge the help received from Mr. R. A. Cooper and Mr. J. P. Hutton and his other ex-colleagues of the Department of Economics and The Institute of Social and Economic Research of the University of York. He has also benefitted from discussion with and comments from Professor R. A. Musgrave. The study was undertaken as part of a research project directed by Professors Peacock and Wiseman and was made possible by finance provided by Ford Foundation.

** The author is Lecturer in Economics at the University of Leeds, U.K.

[1] See R. A. Musgrave, *The Theory of Public Finance*, New York/Toronto/London 1959, Chapter 4 and 6; P. A. Samuelson, "The Pure Theory of Public Expenditure", *Review of Economics and Statistics*, Vol. XXXVI, No. 4 (1954); idem, "A Diagrammatic Exposition of the Theory of Public Expenditure", *same Review*, Vol. XXXVII, No. 4 (1955); idem, "Aspects of Public Expenditure Theories", *same Review*, Vol. XL, No. 4 (1958); Julius Margolis, "A Comment on the Pure Theory of Public Expenditure", *same Review*, Vol. XXXVII, No. 4, (1955); G. Colm, "Comments on Samuelson's Theory of Public Expenditure", *same Review*, Vol. XXXVIII, No. 4 (1956); James M. Buchanan, "Fiscal Institutions and Efficiency in Collective Outlay", *American Economic Review*, May

considerable broadening of the impact of the public sector upon the economy, and the growing interest in the problems of economic growth which has conferred considerable significance on this impact, some interest has been directed towards studying the behaviour of government expenditure on the basis of empirical data and historical facts, with a view to discovering if there are generalizations which could be made about its behaviour. It is realized that a growth model, to be of any use for policy purposes, should incorporate some explanation of the behaviour of public expenditure in the general explanation of the process of economic growth. Hence, recently, several empirical investigations concerning its behaviour specifically with relation to the level of economic development and the time-pattern of growth have been attempted; and certain hypotheses have been deduced from such empirical observations. [2]

1964. See also the recent study by J. M. Buchanan and G. Tullock, *The Calculus of Consent, Logical Foundation of Constitutional Democracy,* Ann Arbor 1962, in which the authors have made another attempt to construct a normative "theory of collective choice" analogous to the theory of market.

[2] Studies which have tried specifically to examine the relationship between public expenditure and level of economic development are: A. M. Martin and W. A. Lewis, "Patterns of Public Revenue and Expenditure", *The Manchester School of Economic and Social Studies,* Sept. 1956; H. T. Oshima, "Share of Government in Gross National Product in Various Countries", *American Economic Review,* June 1957; Jeffrey G. Williamson, "Public Expenditure and Revenue: An International Comparison", *The Manchester School of Economic Studies,* January 1961; T. D. Mesmer, *Government Expenditure and Economic Growth — An International Comparative Study,* an unpublished Ph. D. thesis, Wisconsin University, 1961; H. H. Hinrichs, "Determinants of Government Revenue Share among Less-Developed Countries", *The Economic Journal,* Sept. 1965. See also my forthcoming paper, "Public Expenditure and Economic Development, A Cross-Section Analysis", which presents an income hypothesis that government expenditure as a proportion of G.N.P. increases at a diminishing rate with increasing level of economic development.

Studies concerned primarily with the time-pattern of growth of government expenditure in individual countries are: Alan T. Peacock and Jack Wiseman, *The Growth of Public Expenditure in the United Kingdom,* Princeton 1961; J. Veverka, "The Growth of Government Expenditure in the United Kingdom since 1790", *Scottish Journal of Political Economy,* Vol. X, No. 1 (1963); S. Andic and J. Veverka, "The Growth of Government Expenditure in Germany since the Unification", *Finanzarchiv,* January 1964; Koichi Emi, *Government Fiscal Activity and Economic Growth within Japan, 1868—1968,* Tokio 1963; V. X. Pintado, *Public Expenditure and Economic Growth with Special Reference to Portugal,* an unpublished Ph. D. thesis, University of Edinburgh, 1960; G. Blondal, *Development of Public Expenditure in Relation to National Income in Iceland,* an unpublished

In this paper, on the basis of a time-series analysis, which is primarily concerned with studying the time-pattern of expenditure growth, the Peacock-Wiseman "displacement effect" hypothesis in this area is tested more rigorously for a number of countries, not only with regard to World Wars but also with regard to the Great Depression. Furthermore, it is examined whether an upheaval is associated with a change in the rate of growth of government expenditure with relation to economic growth. Specific questions which this paper, therefore, attempts to answer are:

1) Is a major social upheaval (such as a World War, and also the Great Depression in the case of some countries) associated with a shift in the level of government expenditure with relation to economic growth?

2) If such a shift is observed, is that shift statistically *significant* so as to associate it with the respective social upheaval?

3) Is a social upheaval associated with a change in the "income elasticity" of government expenditure (using the term loosely to mean the rate of growth of per capita government expenditure with relation to that of per capita income)?

4) If a change in such a rate of growth of public expenditure is observed, is that change statistically *significant* so as to associate it too with the respective social upheaval?

Section I reviews briefly the inductive hypotheses deduced from the historical (time-series) approach, specifically the Peacock-Wiseman "displacement effect" hypothesis and their explanatory hypothesis based basically on the concept of a "tolerable burden of taxation". Section II describes the statistical techniques used in the study.

Ph. D. thesis, University of London, 1965. The methodology adopted in the above mentioned time-series studies is that of the British study by Peacock and Wiseman. See also E. Höök, *Den Offentliga Sektorns Expansion, 1913—1958,* Stockholm 1962; Frederic L. Pryor, "East and West German Governmental Expenditures", *Public Finance/Finances Publiques,* No. 3/4, 1965.

See also: *L'importance et la structure des recettes et des dépenses publiques en fonction du développement économique,* Papers and Proceedings of the XIVth session of the International Institute of Public Finance, Brussels 1960; H. Timm, "Das Gesetz der wachsenden Staatsausgaben", *Finanzarchiv,* N.F., Band 21 (1961); K. Schmidt, "Zu einigen Theorien über die relative Ausdehnung der öffentlichen Ausgaben", *Finanzarchiv,* N.F., Band 24 (1965); K. Littmann, "Strukturen und Entwicklungen der staatlichen Aktivität in der Bundesrepublik Deutschland 1950—1970", *Schriften des Vereins für Socialpolitik,* N.F., Band 30/II, 1964.

Section III provides the answers to the specific questions asked above in the case of each country included in this study (viz., U.K., Germany, U.S.A., Canada, Sweden), with regard to the effect of social upheaval on the level and rate of growth of government expenditure with relation to economic growth. Finally, in Section IV, some plausible explanations are given. A brief discussion of the statistical procedure and measures adopted for this study and the tables are given in the Appendix.

I. THE HISTORICAL (TIME-SERIES) APPROACH AND THE INDUCTIVE HYPOTHESES

Following the historical approach, towards the end of the last century Adolph Wagner tried to establish generalizations about the behaviour of government expenditure. On the basis of his empirical findings, he deduced his "Law" of increasing state activity, according to which government expenditure must increase at a rate faster than that of national output. His justifications of this "Law" are based on his particular social and political philosophy and on the validity of the organic theory of the state. [3] While rejecting Wagner's conclusions, Peacock and Wiseman adopt his historical approach and study the behaviour of British public expenditure by looking at the relevant time-series data and the historical facts. Wagner was interested only in the secular growth of public expenditure with relation to national output, whereas Peacock and Wiseman are concerned primarily with the time-pattern of expenditure growth. The important finding of Peacock and Wiseman is that "although British government expenditure declines after the wars, it does not return to the pre-war level, ... and the share of government expenditure in national product remains much greater after the wars than it was immediately before them". [4]

[3] For a discussion and criticisms of the organismic theory, see James M. Buchanan, "The Pure Theory of Government Finance", *Journal of Political Economy*, December 1949. For a full discussion of Wagner's Law and the criticisms, see Peacock and Wiseman, *op. cit.*, chapter 2. For an English translation of the most relevant extracts from Wagner's study (*Finanzwissenschaft*, Leipzig 1890, 3rd edition), see Adolph Wagner, "Three Entracts on Public Finance", in R. A. Musgrave and A. T. Peacock (eds.), *Classics in the Theory of Public Finance*, London 1958.

[4] Peacock and Wiseman, *op. cit.*, pp. 25—26.

This upward shift in the level of government expenditure with relation to national output they call the "displacement effect".

Their plausible explanation of the displacement hypothesis is based basically on the concept of the "tolerable burden of taxation". According to them, people's ideas about the tolerable burden can be separated from their notions of the desirable level of public expenditure, and there is likely to be a gap between the two sorts of ideas because the choices made through the political process are inherently different from those made through markets. Thus it is possible for a government to undertake those public expenditures which it may have considered desirable before the social disturbance, but which were not undertaken because the accepted idea of tolerable burden of taxation before the disturbance was too low to permit the financing of those expenditures. Thus a shift in people's ideas about the tolerable burden of taxation due to a social upheaval may give rise to a shift in the level of public expenditure with relation to national output.

It may be accepted that the concept of the tolerable burden of taxation provides some explanation of the time-pattern of public expenditure, if the "shifts" in the level of public expenditure are associated with some social upheaval like war, during which people get accustomed to a higher burden of taxation. But, suppose such a shift is found to be associated with a severe depression (as is shown in Section III in the cases of the U.S.A. and Canada), during which taxes are rather reduced, then one cannot say that such a shift occurred because people got accustomed to a higher burden of taxation. The concept of the tolerable burden of taxation would rather suggest a shift in the downward direction. One has to look at some other relevant factors which could provide some plausible explanation for such a shift after depression.

If some public expenditures are financed by public debt or new money creation during a severe depression, the "burden" or the opportunity costs of financing such expenditures may be considered almost zero during that period. [5] Therefore, although the concept of tolerable burden of taxation cannot explain a shift in the level of public expenditure during a depression, yet one can say that the tolerable burden of financing the government expenditure (i.e.

[5] J. M. Buchanan, *Public Principles of Public Debt,* Homewood, Illinois, 1958; J. Wiseman, "The Logic of National Debt Policy", *Westminster Bank Review,* August 1961.

through public debt, money creation, and taxation) largely determines the level up to which the changed ideas about the desirable level of public expenditure could be implemented. Ideas about the desirable level of public expenditure may change during a depression, but the implementation of such ideas is possible because of the possibility of incurring higher expenditures without increasing (or even by lowering) the total burden of financing such public expenditures. Besides, even during normal periods, public expenditures are financed to some extent, in varying degrees in different countries, by deficit financing. Therefore, it seems that if the concept of the tolerable burden is expanded so as to include not only that of taxes but also that of other methods of financing government expenditures, it could provide a better explanation of the growth of public expenditure.

Again, a conceptual separation of the ideas about the desirable level of public expenditure and ideas of the tolerable burden cannot always be made. For example, assume that specific taxes are levied for the financing of old age pensions and that the tax payments for old age pensions are equivalent to the insurance premiums which an individual would pay to a private insurance company if he wished to receive the same amount of benefits during his old age. Such taxes would have zero "burden" for those individuals who would have insured themselves with a private insurance company if the government had not introduced an old age pension scheme. For other individuals, "burden" would be felt only to the extent that they care about their restriction of choice. To take another example, suppose a specific tax is used to give foreign aid, and the individual thinks, rightly or wrongly, that no benefit could accrue to himself; it will entail a burden equal to the utilities thought to be foregone by such tax payments. Thus, ideas about "tolerable burden" are not totally independent of public expenditures. These are a few extreme examples which simply show how there is an interdependence between the two sorts of ideas. This also has been verified recently by Eva Mueller's empirical study, which clearly shows that people are sometimes willing to accept tax increases for an increase in government expenditures which they consider highly desirable. [6]

It is argued above that a conceptual separation between the two sorts of ideas cannot always be made; nevertheless, in almost all

[6] See Eva Mueller. "Public Attitude toward Fiscal Program", *The Quarterly Journal of Economics*, May 1963.

countries most taxes (in varying degrees) are not only compulsory but also do not have any direct *quid pro quo* (because of the indivisible nature of the benefits provided by public expenditures and of redistributive considerations), and it could therefore at the same time be thought reasonable that, to a large extent, people's ideas about the tolerable burden are determined independently of their ideas of desirable public expenditure. When an individual knows that his benefits from public expenditures do not depend on the amount of taxes paid by him, why would his ideas about desirable level of public expenditure depend solely on his ideas about tolerable burden? Thus, there is likely to be a gap between the two sorts of ideas. Eva Mueller's empirical findings, while providing support for the view that a conceptual separation between the two sorts of ideas cannot always be made, also clearly indicate the existence of a gap between them. [7]

Specific comments on the Peacock-Wiseman displacement effect hypothesis are the following. Firstly, the displacement effect hypothesis was deduced from their statistical observations of the time-pattern of growth of public expenditure in the United Kingdom only. Before one can make any generalization, this needs to be tested for a number of countries. Secondly, even in the case of the United Kingdom, no quantitative measurement and test of significance of that effect was attempted. Thirdly, the displacement effect refers only to the shift in the level of government expenditure with relation to national output: no attempt was made to investigate the effect, if any, of a social upheaval on the rate of growth of government expenditure.

In view of the above-mentioned comments, an attempt is made in this paper to test the "displacement effect" hypothesis for different countries not only with regard to the World Wars but also with regard to the Great Depression which could also be considered a major social upheaval for some countries. Some quantitative measurement and test of significance of that "effect" will be made. The countries included are: U.K., Germany, U.S.A., Canada and Sweden, for which time-series data on a comparable basis were readily available. For the first two countries, World Wars are considered to be the major social upheavals. As discussed in Section III in the cases of

[7] The existence of a "gap" between people's ideas about "desirable level" of public expenditure and "tolerable burden" of taxation has also been verified in Germany and Sweden recently by Günter Schmölders (see his *Das Irrationale in der öffentlichen Finanzwirtschaft*, Hamburg 1960).

Canada and the United States, in addition to the Wars, the Great Depression was also a major social upheaval. War and Depression are two different types of social upheaval and their "displacement effects" would require a different interpretation. Sweden neither took a direct part in War nor was affected severely by the Great Depression. The inclusion of Sweden helps to examine the effects of war, if any, on the time-pattern of public expenditure for a country which did not participate in war. It will also be examined whether such an upheaval is associated with a change in the "income elasticity" of government expenditure.

II. STATISTICAL TECHNIQUE

After the necessary statistical series had been obtained for as many years as possible, the whole time-period for each country was divided into different sub-periods depending on the occurrence of major social upheavals in the case of each country during the whole time-period. A separate regression function for government expenditure for each sub-period is fitted, which, as is discussed below, helps to isolate the effects, if any, of the corresponding social upheaval on the level and/or rate of growth of government expenditure with relation to economic growth.

A double logarithmic function of the form:

$$Log\ G_c = Log\ a + b\ Log\ Y_c$$

is fitted for the different sub-periods into which the whole time-period for each individual country is divided.[8] G_c and Y_c denote per

[8] One could compute a single regression for the whole period, using a dummy variable technique. For the same total number of observations the dummy variable technique gives identical regression functions for the different sub-periods. As my two hypotheses relate to the *shift in the level* and *change in the "income elasticity"* of government expenditure during the period after a social upheaval, by using the dummy variable technique, one could estimate:

$$Log\ G_c = \alpha_1 + \alpha_2 X_2 + \beta_1\ Log\ Y_c + \beta_2\ X_2\ Log\ Y_c$$

where

$$X_2 = \begin{matrix} 0 \text{ in period 1 (before social upheaval)} \\ 1 \text{ in period 2 (after social upheaval)} \end{matrix}$$

This single regression for the whole period resolves into exactly the same regression functions for the two different periods which are estimated in a straightforward fashion in this study.

capita total government expenditure other than war-related, and per capita G.N.P. at constant prices respectively. Such a double logarithmic function fitted better than a simple linear function. Besides, the constant b provides a measure of the "income elasticity" of G_c; and, as is discussed below, it also helped to provide some measure of the shift in the level and the change in the "income elasticity" of G_c associated with a social upheaval.

For a measure of the shift in the level of G_c with relation to Y_c, associated with a social upheaval, the level of government expenditure in the year immediately after the shift is calculated with reference to the regression equation for the sub-period prior to the social upheaval. This is then subtracted from the level of expenditure calculated with reference to the regression-equation for the sub-period in which that year lies. The anti-log of the difference provides a measurement of the percentage increase in government expenditure after such a shift took place. It is worth pointing out that the "shift", as discussed above, refers to a change in point of time and must be distinguished from the difference between the intercepts. For a measurement of the change in the "income elasticity" of G_c, the difference in the slopes of the regression functions for the two sub-periods (corresponding to the periods before and after the "shift") is measured.

To test the significance of a shift (or to test null hypothesis No. 1, i.e. that a social upheaval is not associated with positive shifts) the following formula was used:

$$|t| = \frac{Shift}{S^1} \text{ with } \quad v = N_1 - 2 \text{ degrees of freedom}$$

where

$$S^1 = \sqrt{S^2 \left[1 + \frac{1}{N^1} + \frac{(X_{N+1} - \bar{x}_i)^2}{\Sigma(x_i - \bar{x}_i)^2}\right]}$$

To test the significance of a change in the "income elasticity" (or to test null hypothesis No. 2, i.e. that a change in the "income elasticity" of G_c is not associated with the social upheaval) the following formula was used: [9]

[9] One could also use the Chow test to make a joint test on intercept and slope together, but it is not suitable for testing my two hypotheses separately. The further statement of standard errors of regression coefficients, and of r^2, would not add anything of value to the reader, since the tests of significance involved t-statistics calculated according to the rather complex formulae mentioned above; it, therefore, is omitted from this study.

$$|t| = \frac{b_1 - b_2}{\sqrt{\frac{1}{\Sigma(x_i - \bar{x}_i)^2} + \frac{1}{\Sigma(x_k - \bar{x}_k)^2}}} \cdot \frac{\sqrt{N_1 + N_2 - 4}}{\sqrt{\Sigma(y_i - y_i')^2 + \Sigma(y_k - y_k')^2}}$$

The other symbols denote:

$S^2 = \Sigma(y_i - y_i')^2 / N_1 - 2$; y_i and x_i denote the observed value of *Log* G_c and *Log* Y_c respectively during the period before a social upheaval; y_k and x_k denote such values during the period after the shift; y_i' and y_k' denote values of *Log* G_c as calculated from the regression equation for the sub-period before and after the "shift" respectively; b_1 and b_2 provide a measure of "income elasticity" of G_c before and after the social upheaval respectively; N_1 and N_2 denote the number of observations for the sub-periods prior to and after the social upheaval respectively; X_{N+1} stands for the observed value of *Log* Y_c immediately after the shift; $\bar{x}_i = \Sigma x_i/N_1$ and $\bar{x}_k = \Sigma x_k/N_2$.

By referring to the t table with $N_1 - 2$ degrees of freedom for the No. 1 null hypothesis and $N_1 + N_2 - 4$ degrees of freedom for the second null hypothesis, the probability of getting a value as great as or greater than the calculated value is ascertained. If P is less than 0.05 for each calculated value, the shift and change in slope are considered as significant. The corresponding null hypotheses are then very unlikely and are, therefore, rejected. [10]

[10] A limitation of the tests is that they are based on the assumption of an independent normal distribution of "residuals". The assumption is highly doubtful in the case of a time-series analysis. Although it is conventional to accept that assumption as a necessary part of analytical procedure in a cross-section approach, it is a doubtful assumption for cross-section analysis, too. The difference as regards the validity, or rather invalidity of such an assumption in a cross-section and a time-series lies only in degree. Some care, however, has been taken in our time-series analysis in this respect, an attempt being made to eliminate the influences of two important trend factors — namely population and price changes — on our variables. It may, however, be pointed out that recently some tests have been devised for testing the independence of "residuals" in time-series regression models. See for example J. Johnston, *Econometric Methods*, chapter VII, New York/Toronto/London 1963, for a summary of Durbin-Watson d test, and also some alternative tests devised by other econometricians for testing the independence of "residuals" in time-series regressions, and also for the estimation methods when such residuals are not independent. If, e.g., d test shows that the "residuals" are not independent, instead of applying the simple least-square method, the adoption of alternative estimating procedures is not practicable in this study mainly be-

III. GOVERNMENT EXPENDITURE AND ECONOMIC GROWTH — TIME-SERIES STUDIES

A. *The United Kingdom*

The necessary statistical series for the period 1890—1955 are taken from the study by Peacock and Wiseman. The time-period is extended up to the year 1962, on the basis of the same concepts and statistical procedure.

Some years from the period 1890—1962 are excluded either because of the lack of data or for analytical reasons. For the years 1890—1913, the data were only collected at five yearly intervals up to 1910 and for 1913. The missing years in between them are, therefore, excluded. The war years are excluded because such years could be regarded as abnormal from the viewpoint of the growth of public expenditure. These years are also excluded in the study by Peacock and Wiseman. If the exclusion of the war years is justified on the grounds of abnormality, the years before and after the wars also may not be considered normal years in the case of the United Kingdom. It is, of course, a matter of judgement to decide which years are abnormal. Looking at the size of the sample, it is not possible to exclude many years because otherwise the sample would become too small for any statistical analysis. Therefore, only the years immediately before the wars, i.e. 1913 and 1938, and after the wars, i.e. 1920—1922 and 1946 are excluded. [11] Thus, for the pre-First World War period, data refer to the period 1890—1910. The inter-war period and the post-Second World War period refer to 1923—1937 and to 1947—1962 respectively. [12]

cause of the very small size of the sample. The number of degrees of freedom with reference to which the t tests described in the paper can be made, is related to the size of the sample. The usual technique in which new sets of transformed variables are computed until a random set of residuals results, reduces further the number of pairs of observations; and also, therefore, reduces the number of degrees of freedom, by the number of times the estimating procedure is carried out until the "residuals" are independent. The reduced number of degrees of freedom will either be too small for any possible tests, or even if a test is possible, the test will be inconclusive.

[11] Several years after the First World War are excluded because the data for 1918—1920 were not collected and the G.N.P. data for the years 1920—1923 were only crude backward estimates obtained by the simple device of interpolation. See Peacock and Wiseman, *op. cit.*, Appendix, p. 154.

[12] The Great Depression was not considered to be a major social upheaval in the

For the three different periods, the following regression equations of G_c on Y_c are obtained:

(1) 1890—1910: $Log\ G_c = -6.856 + 4.568\ Log\ Y_c$
(2) 1923—1937: $Log\ G_c = -2.617 + 2.087\ Log\ Y_c$
(3) 1947—1962: $Log\ G_c = -0.795 + 1.182\ Log\ Y_c$

Peacock and Wiseman, in their study, explain the time-pattern of the growth of public expenditure in the United Kingdom only in terms of the "displacement effect" of war. A shift in the level of G_c with relation to Y_c (or the "displacement effect") occurred after both World Wars, and such a shift was greater after the Second World War than it was after the First War. After the Second War the shift accounts for about a 72.8 % rise in government expenditure, but only a 27.0 % rise after the First War. But also after each war, the "income elasticity" of G_c diminished relative to that of the pre-war rate. It diminished from the pre-First War rate of 4.568 to 2.087 after the First World War and after the Second World War it diminished from 2.087 to 1.182.

By the statistical tests of significance, described in the previous section, null hypothesis No. 1 is rejected at much less than 1 per cent level of significance for both the First and Second World Wars suggesting that the shifts in the level of government expenditure occurred after each war. The second null hypothesis is also rejected at much less than 1 per cent level of significance. The negative change in the income elasticity of G_c after each war is highly significant in suggesting that this change occurred after each war in the case of the U.K..

case of the United Kingdom. It is apparent from Chart No. 1 and also Table No. 1 that the real income during the thirties was hardly affected by the Great Depression, except for the years 1931 and 1932 in which such income declined by about 6 to 7 per cent in comparison to the level of income reached in 1929. Although the British economy suffered from the adverse effects of the Great Depression, especially during 1931 and 1932, such effects are of much less importance than those in the cases of the United States or Canada, where, as is shown later, the real per capita income during the Great Depression declined to a level reached about thirty years before and did not reach the level of 1929 in any of the years during the thirties. Therefore, further division of the inter-war period and a separate regression analysis for the thirties was not considered necessary in the case of the United Kingdom. However, the two years 1931 and 1932, in which the percentage decline in real per capita income and also the percentage of people unemployed were the highest, are excluded from the regression analysis, because their inclusion would otherwise seriously distort the regression function, based on the simple least-square fit.

B. *Germany*

The statistical data in the case of Germany are taken from the study by Mrs. Suphan Andic and Dr. Jindrich Veverka. Because of the territorial changes after the First and Second World Wars, the estimates before the First World War refer to the old German Reich, and the inter-war estimates refer to the reduced territory which existed after that War. The post-Second War estimates cover only the German Federal Republic, excluding Berlin and the Saar because of the lack of statistical sources. [13]

For the pre-First War period, the necessary data are available only for five years, with major gaps in between these years. For the post-Second War period, the years 1946—1950 are excluded because of the lack of data. Great difficulties, however, arise in the analysis of public expenditure during the inter-war period, which was a period of almost continuous disturbance. The immediate post-First War years, like the years immediately after the Second War, were years of monetary instability and very low per capita income, and could be regarded as the indirect consequences of the war. Estimates of government expenditure prior to 1925, however, are not available, and, therefore, such years must be excluded. Per capita income was rising during the period 1925—1928 (see Table 2). In 1929, also, it was only marginally lower than in 1928. Such a rise in per capita income was checked by the Great Depression: rather, it declined by about 22 per cent between the years 1928 and 1932. Rapid recovery, however, started from 1933, and by 1938 real per capita income reached a level never experienced before. The adverse effects of the Great Depression, though not to be considered as severe as those suffered by the American or Canadian economy (discussed below), were more serious than those suffered by the British economy. As one may guess from the scatter diagram given in Chart No. 1, possibly a shift in the level of government expenditure is associated with the Great Depression in the case of Germany. Unfortunately, it has not been possible to examine the effects of the Great Depression because of the reasons given below. Although rough estimates of total public expenditures during the Hitler regime since 1933 are available in the study by Andic and Veverka, such data are seriously underestimated because

[13] For a discussion of the conceptual and statistical difficulties arising out of the peculiar circumstances specific to Germany, and also the computational procedure and sources of the estimates, see Andic and Veverka, *op. cit.*

many of the functions of the Nazi government were carried out through non-governmental organizations, which were not included for the purpose of their estimation. The exclusion of trading enterprises which were dominated by non-commercial considerations, especially during the Nazi government, also gives rise to underestimation. Besides, even such rough estimates could not be adjusted for the war-related expenditures because of the unavailability of data. Therefore, for the sake of comparability with different time-periods within the same country and with other countries, the period 1933—1938 was excluded. For the three years of the Great Depression before the Hitler regime, i.e. 1930—1932, a separate regression analysis was not considered worth attempting. Thus, the analysis is restricted to a limited number of years (i.e. 1925—1929) for the inter-war period.

For the three different periods, the following regression equations of G_c on Y_c are obtained:

(1) 1881—1913: $Log\ G_c = -3.885 + 2.084\ Log\ Y_c$
(2) 1925—1929: $Log\ G_c = -3.530 + 2.052\ Log\ Y_c$
(3) 1950—1958: $Log\ G_c = -0.854 + 1.132\ Log\ Y_c$

Between the periods to which 2nd and 3rd regression equations relate, the Great Depression, the Hitler regime, and the Second World War all consecutively exerted their influence as major social upheavals; and it is not possible to isolate the effects of one from those of the others. All one can say is that the shift in the level and change in the "income elasticity" of G_c may be due to the combined effect of the Great Depression, the Hitler regime, and the Second World War, i.e. the social upheavals of the thirties and the Second World War.

As shown in Chart No. 1, the "shifts" occurred after the social upheavals in the case of Germany as well. The shift after the First War increased government expenditures with relation to economic growth by about 54.7 %. The second shift which occurred after the social upheavals of the thirties and the Second World War increased government expenditure further by about 24.3 %. Again, as happened in the U.K., the "income elasticity" of G_c after the social upheavals diminished in the case of Germany. It diminished after the First War from 2.08 to 2.02, and after the social upheavals of the thirties and the Second World War it diminished from 2.02 to 1.13. It is interesting to observe almost the same "income elasticity" of G_c in both countries during the inter-war period and also the post-Second War period.

For Germany also, the first null hypothesis relating to "shift" was rejected at a level of significance of 1 % and 5 % for the first and second social upheavals respectively. The second null hypothesis is again rejected at a level of significance of 1 % so far as the social upheaval of the thirties and the Second World War is concerned. But because the change in the "income elasticity" of G_c after the First War is quite small, and the samples are so small that the number of degrees of freedom (i.e. $N_1 + N_2 - 4 = 6$), with reference to which such a test can be made is very small, one cannot reach any significant conclusion. This, however, cannot be construed as an acceptance of the null hypothesis. If the inter-war period is excluded altogether, as a period of political and economic instability and major upheavals, and a comparison is made between the pre-First War and the post-Second War periods, the positive "shifts" and the negative change in the "income elasticity" of G_c are both significant at the 1 % level of significance.

C. *U.S.A.*

The basic public expenditure data for the years since 1932 are taken from *Historical Statistics on Government Finance and Employment*, 1962, published by the U.S. Department of Commerce, Bureau of the Census. [14] Before 1932 only four estimates of total public expenditure, namely those of the years 1902, 1913, 1922 and 1927 are available in the census publications; and, therefore, other sources are used for the missing years only when the quantitative importance of conceptual differences is found to be negligible. In the case of expenditure of state and local governments, for the years 1929, 1930 and 1931, the National Income concept data are taken, and for the missing years (namely 1923, 1924, 1925, 1926 and 1928), the estimates are obtained by straight line interpolations (on a semi-log. graph) between the

[14] The adjustments to census data consist of the conversion to calendar year estimates of fiscal year data, interpolation between biennial estimates until 1950, subtraction of "utility and liquor store expenditures" and of 50 per cent of the expenditures under the items "Non-Highway Transportation" and "Other and unallocable direct general grant expenditure" on the ground that this represents a rough estimation of the expenditures of public corporations and the current expenditures of certain trading services which are included in the government expenditure as defined by the Bureau of the Census. The annual estimates of total public expenditure at current prices until 1956 were made by Mr. Claude Germain, during his stay in the York University in 1964.

available adjusted census benchmarks, the assumption being that the rate of growth of state and local expenditures between those benchmark years has been constant. Although such an assumption does not seem highly unrealistic for a short period of four years, the reliability of estimates diminishes as the time-period lengthens. Therefore, it was not considered proper to obtain estimates for the missing ten years before the First War, i.e. 1902—1913. In the case of Federal Government expenditure, after a comparison of the several available series with the adjusted census series for the years for which the census data are available, [15] the series of Federal Expenditures given by Fabricant and Lipsey was chosen for the years before 1932, i.e. for 1922—1932, as the expenditure series for state and local governments goes back only to 1922. [16] The series of G.N.P. (per head and at 1929 prices) for the period 1923—1955 are taken from the *Historical Statistics of the United States*. The estimates for the period 1956—1961 at 1929 dollars are prepared from the G.N.P. series at 1954 dollars for that period (*source: Statistical Abstract of the United States)*.

In the case of the United States, besides the Second World War, the Great Depression is usually considered a major social upheaval in American economic history. As is apparent from Chart No. 2, and the corresponding Table No. 3, the real per capita income started falling from 1929, and within two years it declined to a level which was even lower than that of 1923, the first year of the chosen time-period. It declined further during the next two years, and in 1933, the real per capita income ($ 590) was lower than that reached in 1906 ($ 625). Although the recovery started from 1934, real per capita income never reached the level of 1929 in any of the years prior to the Second World War. Because of the reasons stated above the Great Depression is considered to be a major social upheaval in the case of U.S.A., and the inter-war period is divided into two sub-periods, viz., 1923—1929 and 1931—1939, and a separate regression function is fitted for

[15] Such a comparison of several available federal government expenditure series computed by Fabricant and Lipsey, Kendrick, Firestone, Copeland (see Solomon Fabricant and Robert E. Lipsey, *The Trend of Government Activity in the United States since 1900*, Washington 1952; M. Slade Kendrick, *A Century and Half of Federal Expenditures*, Washington 1955; John M. Firestone, *Federal Receipts and Expenditures during Business Cycles, 1879—1958*, Washington 1960; Morris A. Copeland, *Trends in Government Expenditure*, Washington 1961) was made by Mr. Claude Germain with the help of several charts.

[16] The conversion to calendar year estimates of government expenditure for the fiscal years 1922—1962 reduces the series by one year from each end.

each period so that the effect of the Great Depression on the time-pattern of public expenditure can be studied.

Thus the whole time-period (1923—1961), is divided into three periods, and the following regression equations of G_c on Y_c are obtained: [17]

(1) 1923—1929: $Log\ G_c = -3.7164 + 1.9322\ Log\ Y_c$
(2) 1931—1939: $Log\ G_c = -0.0502 + 0.7426\ Log\ Y_c$
(3) 1947—1961: $Log\ G_c = -4.5608 + 2.2704\ Log\ Y_c$

Thus, as in the case of other countries which took an active part in the Second War, a shift in the level of G_c occurred after the Second War in the case of the United States. Such a shift increased G_c with relation to Y_c by about 31.6 %. The shift, however, was much smaller than that for the U.K. The shift which is of greater importance for the time-pattern of American public expenditure is associated with the Great Depression, which accounts for about 136 % to 70 % increase in G_c with relation to Y_c. [18] And, when the test of significance is applied, the corresponding null hypothesis No. 1 was rejected at less than 1 % level of significance.

Again, the "income elasticity" of G_c changed after such shifts. It diminished from 1.93 to 0.74 after the shift associated with the Great

[17] The war years and the years immediately after the war, i.e. 1940—1946, are excluded from our analysis for the same reasons as in the case of the United Kingdom. For the analysis of the Great Depression, we have excluded only the year 1930, because as is apparent from the Chart, although the Depression started in 1930, it took some time before the attitude towards public expenditure could change, which enabled G_c with relation to Y_c to reach a new and higher plateau (see the explanation of a shift after the Great Depression in Section IV). Contrary to the usual view that the New Deal was the major step towards increased government spending, the Chart and Table No. 3 show that public expenditure had reached a new and higher plateau long before the New Deal, that is in 1931.

[18] Measurement of the per cent increase in G_c with relation to Y_c on account of the shift associated with the Great Depression varies with the year chosen from the period 1931—1939. If such increase is measured with reference to 1931, the year in which public expenditures had already reached a new and higher plateau, the shift accounts for about a 104.7 % increase. But, if the increase is measured with reference to the year 1934, the first year in which real per capita income showed an increase over the preceding years during the thirties (the real per capita income in 1934, however, was smaller than that of 1931), the shift accounts for about a 136.3 % increase. For 1937, the year in which the real per capita income reached a level only marginally lower than that of 1929 but higher than that of any other year during the twenties, the shift accounts for a 69.2 % increase. Such variation arises because regression functions differ also with regard to the slope.

Depression. It became less than unity, and therefore government expenditure as a percentage of G.N.P. had been decreasing during the thirties. It may be emphasized here that Adolph Wagner's "Law" of Increasing State Activity, according to which government expenditure must increase at a rate faster than that of national output, does not hold good in this case. But this rate of growth of government expenditure, in contrast to that observed in the U.K., increased from the rate of 0.74 to 2.27 after the Second World War in the case of the United States, so that government expenditure as a percentage of G.N.P. has been increasing rapidly during the post-Second War period. The statistical test of significance of the observed changes in the "income elasticity" of G_c associated with the Great Depression and the Second World War was applied and the corresponding null hypothesis No. 2 is rejected at 2 % level of significance and at much less than 1 per cent level of significance for the Great Depression and Second World War respectively.

D. *Canada*

The statistical series in the case of Canada are taken from *Historical Statistics of Canada*, 1965. [19] Besides the Second World War, the Great Depression, as in the case of the United States, was a major social upheaval for the Canadian economy. As can be noticed from Chart No. 2 and the corresponding Table No. 4, the decline in real per capita income started from 1928. In 1929, however, it was only marginally lower than in 1928. By 1931, it declined to a level which was lower than that of 1926, the first year for which such data are available. The decline continued and in 1933 the real per capita income was about 35 % lower than in 1928. Such declines in real per capita income imply mass unemployment. The recovery, however, started from 1934, though the real per capita income did not reach the level of 1929 (or 1928) in any of the years during the thirties. In the above-mentioned respects, there is a close parallel between Canada and the United States. As the Great Depression is considered a major social upheaval in the case of Canada too, the inter-war period is divided into two sub-periods, viz., 1926—1929 and 1931—1939.

[19] *Historical Statistics of Canada*, edited by M. C. Urquhart and K. A. H. Bukley, Toronto 1965. For estimates of war-related expenditures, the sources used are: *Government Transactions Related to the National Accounts (1926—1951)*, Ottawa 1952, and *National Accounts Income and Expenditure*, Dominion Bureau of Statistics, Ottawa 1961.

Thus for the three different time-periods the following regression equations of G_c on Y_c are obtained: [20]

(1) 1926—1929: $Log\ G_c = -0.953 + 1.027\ Log\ Y_c$
(2) 1931—1939: $Log\ G_c = 1.070 + 0.382\ Log\ Y_c$
(3) 1947—1960: $Log\ G_c = -5.824 + 2.654\ Log\ Y_c$

Thus, a shift in the level of G_c occurred after the Second War in the case of Canada too, and this accounts for about a 33.9 % increase in Government expenditure with relation to economic growth. The shift is not significantly different from that which occurred in the United States after the Second War. The shift which is of greater importance, as in the case of the United States, is found to be associated with the Great Depression, which accounts for about 60 % to 42 % increase in G_c with relation to Y_c. [21] Even with a very small number of pairs of observations for the period prior to the Great Depression ($N = 4$), the null hypothesis with regard to the "shift" was rejected at a much less than 1 % level of significance.

Again, as happened in the United States, the "income elasticity" of G_c diminished after the shift associated with the Great Depression. It diminished from 1.03 to 0.38. It became less than unity in the case of Canada as well. This is another instance which provides evidence against Wagner's "Law" of Increasing State Activity. The similarities between the two countries (the United States and Canada) can also be noticed as regards the observed "income elasticity" of G_c after the Second World War. In the case of Canada, too, the elasticity increased from 0.38 to 2.65. In both countries it was greater than two in the post-Second War period. The null hypothesis that no change in "income elasticity" of G_c occurred after the Second War is rejected at much less than 1 % level of significance. For the decrease in elasticity associated with the Great Depression, the corresponding null hypothesis, however, could be rejected only at about $7\frac{1}{2}$ % level of significance. The increased sampling error and, therefore, the increased level of significance is mainly because of the very small num-

[20] The war years and the years immediately after the war, i.e. 1940—1946, as in the case of other countries, are excluded. For an analysis of the effects of the Great Depression, as in the case of the United States, the year 1930 is excluded from the regression analysis.

[21] Such % increase on account of the shift associated with the Great Depression, as in the case of the United States, varies with the year chosen from the period 1931—1939, because the regression functions differ also with regard to the slope.

ber of the pairs of observations for the period prior to the Great Depression ($N = 4$). It seems, however, highly unlikely that the rate of growth of government expenditure could be as small as 0.38, which implies a continuous decline in government expenditure as a percentage of G.N.P., for the period prior to the Great Depression and after the First War. The plausible conclusion, therefore, seems to be that the "income elasticity" of G_c diminished after the shift associated with the Great Depression in the case of Canada too.

E. *Sweden*

The public expenditure data are taken from the *Den Offentliga Sektorns Expansion* (The expansion of the public sector) by Erik Höök. [22] Such expenditure figures are only available since 1913 as biennial estimates until 1958 in his study. As the data are not readily available for the pre-First War period (except for 1913), and the expenditures in war years are completely disregarded in the case of the other countries (because such years are regarded as "abnormal" years), our analysis is restricted to the inter-war period, i.e. 1920—1938 and the post-Second War period, i.e. 1946—1958.

In the case of Sweden, real per capita income for each year during the thirties was higher than that of any year during the twenties. The rate of increase of real per capita income during the thirties was almost the same as that during the period 1922—1928. The real per capita biennial estimate of income for each year during the thirties is higher than the estimate of this for any previous year, except the year 1932, for which such estimate is only marginally (3.4 %) lower than that of 1930 (see Table No. 5 and Chart No. 2). The scatter diagram also, as is shown in Chart No. 2, does not suggest any change in the level and/or rate of growth of G_c with relation to Y_c to be associated with the Great Depression. Therefore, no further division of the inter-war period and no separate regression analysis for the thirties, as was done in the case of Canada and U.S.A., was considered necessary. Although Sweden did not take a direct part in the war, it could not completely isolate itself from the effects of a war

[22] Erik Höök, *Den Offentliga Sektorns Expansion, 1913—1958,* Stockholm 1962. The sources used for gross domestic products, population, and price index are: *Sveriges National Produkt, 1861—1951,* Meddelanden fra Konjunkturinstitutet, Serie B: 20; *National Accounts, 1950—1964,* National Bureau of Statistics, Stockholm; *Statistisk Arsbok for Sverige* for various years published by Central Bureau of Statistics, Stockholm.

which was fought so near to its territory. Government expenditure, although it did not rise to the extent that it did in those countries which were directly involved in the war, was higher during the war-years than the level reached in any previous year (see Table 5): we consider below whether a shift in the level and/or change in the rate of growth of G_c with relation to Y_c occurred after the Second World War in the case of Sweden.

The following two regression equations of G_c on Y_c are obtained for the inter-war and post-Second War periods:

(1) 1920—1928: $Log\ G_c = -1.778 + 1.331\ Log\ Y_c$
(2) 1946—1958: $Log\ G_c = -4.028 + 2.063\ Log\ Y_c$

A shift in the level of G_c also occurred after the Second World War in the case of Sweden. But the shift was much smaller than in the case of other countries which were directly involved in the war. The shift after the Second War in the case of Sweden increased G_c with relation to Y_c only by about 7.6 %, and, when the same sort of test of significance is applied for the positive shift, it cannot be considered statistically significant, even at a level of significance of 10 %. Therefore, the only plausible conclusion which can be reached is that either *no* such shift occurred after the Second War (the observed shift being too small to reject the null hypothesis), or the shift, if any, was too small to exert any significant impact on the time-pattern of government expenditure in the case of Sweden.

But, as happened in the United States and Canada, the "income elasticity" of G_c increased from the inter-war rate of 1.33 to 2.06 after the Second War. The increase in this rate was found significant at a 5 % level of significance, suggesting that the "income elasticity" of G_c increased after the Second War in the case of Sweden.

IV. PLAUSIBLE EXPLANATIONS FOR THE STATISTICAL OBSERVATIONS AND HYPOTHESES

A. *Explanations for the "Shifts" in the Level of Government Expenditure Associated with War and/or Great Depression*

In the last section the statistical observations suggested a significant positive shift in the level of G_c associated with World War (1st and/or 2nd) in the case of each country (included in this study) which participated directly in the Wars. Such a shift was also observed to

be associated with the Great Depression in the case of the United States and Canada, which were most affected by that social upheaval. What could be the plausible explanations of such shifts?

In Section I it was accepted that the concept of the tolerable burden of taxation provides a plausible explanation for a "shift", if that shift is associated with a social upheaval such as war during which people get accustomed to a higher burden of taxation, which therefore continues even after the disappearance of that upheaval. But, as was argued, the "shift" associated with the Great Depression in the cases of the United States and Canada cannot be explained by that concept.

It seems likely that the "shift" associated with the Great Depression occurred because many "new" expenditures, especially in the field of welfare services, subsidies and assistance, which were previously not considered very desirable, became highly "desirable" due to the "inspection process" generated by the Great Depression. The deficiencies in the social services, of which government and people were not conscious, were brought to direct public notice. The Depression, like the World Wars, produced a feeling of community and thus encouraged an expansion of the public sector which was accepted as a measure to cure the deficiency in aggregate demand and the consequent mass unemployment. Thus there were radical changes in accepted ideas about the proper role of government. [23] A similar shift in the tolerable burden of taxation is unlikely to have occurred during the Depression, the increased expenditure during depression being financed mostly by deficit financing. In other words, it may be said that there was a big increase in the existing gap between the "desirable" level of public expenditure and the "tolerable" burden of taxation during the Depression, since a shift in the desirable level of public expenditure occurred without a corresponding shift in the tole-

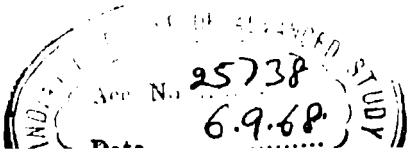
[23] See G. Colm and M. Helzner, "The Structure of Government Revenue and Expenditure in Relation to the Economic Development of the United States", in *L'importance et la structure des recettes et des dépenses publiques*, op. cit. The authors point out, "An increase in government activity or responsibility often depends on events happening which dramatize the need for such measures and help to overcome traditional resistance", pp. 60—61, quoted from Peacock and Wiseman, *op. cit.*, page XXXI. It is also demonstrated in Eva Mueller's study, *op. cit.*, that "certain aspects of the preference system for public goods and services are not clearly crystallised in the consumer's mind; hence these attitudes have elements of inconsistency and may change easily under the impact of new information or new circumstances", p. 211.

rable burden of taxation. An increase in this gap seems to have permitted the acceptance of new taxes and the consequent increase in the tolerable burden (and a consequent decrease in the "gap") after the Depression was over, which partly explains the continuance of a level of public expenditure higher than that before the Depression. Debt financing also contributed to a higher level of public expenditure during the thirties in the case of the United States and Canada.

The "displacement effect" of war also could have occurred due to various factors operating through both the revenue and expenditure sides of the fiscal system. A shift in people's ideas about the tolerable burden of taxation provides opportunities for a government to undertake new expenditures which it would not otherwise dare undertake. But at the same time, the consequences of the changed favourable attitudes towards public expenditures because of the "inspection process" generated by war could not be neglected. Wars have been means of diverting public attention to the deficiencies in public services, such as education and health, of which citizens as well as government were formerly less conscious. The changed ideas about public expenditure undoubtedly facilitated the continuance of higher post-war levels and new methods of taxation, and thus the higher levels of public expenditure.

Thus, the explanations of the displacement effect of war are not incompatible with those of the displacement effect of the Great Depression. [24] A shift in people's ideas about the tolerable burden of taxation is possibly of greater significance for a displacement effect of war; but at the same time, as shown above, the changed favourable attitude towards public expenditure due to an inspection process generated by war cannot be ignored. For the displacement effect of the Great Depression, a shift in people's ideas about the desirable level of public expenditure, through the inspection process generated by Depression, could be considered of greater significance. But, as argued in Section I, the implementation of such ideas was possible because of the feasibility of incurring higher expenditures without in-

[24] It may also be said that, as in the case of Duesenberry's consumption function, there is a *"ratchet effect"* operating also for the behaviour of public expenditure. (See J. S. Duesenberry, *Income, Saving and the Theory of Consumer Behaviour*, Cambridge/Mass. 1949.) Once the government expenditure is shifted to a higher level, due to whatever reasons, it never comes back to the previous level. This *"ratchet effect"* could be due to reasons such as habituation to new tax levels and/or a changed favourable attitude towards public expenditure.



creasing the total "burden" of financing such expenditures. A substantial part of total financing was met by debt financing, the "burden" or opportunity cost of which may be considered almost zero during a period of severe depression. Thus, the forces operating through the revenue and expenditure side of the fiscal system are basically the same in both types of "displacement effect", associated with war and with Great Depression. The difference lies only in degree.

B. *Explanations for Changes in the "Income Elasticity" of* G_c

In Section III a significant change in the "income elasticity" of G_c was also observed to be associated with each major social upheaval. However, with regard to its direction of change, no generalization can be made. It diminished after the shifts associated with World Wars in the cases of the United Kingdom and Germany. It diminished also after the shift associated with the Great Depression in the cases of the United States and Canada. But it increased after the Second War in the cases of Sweden, the United States and Canada.

In what follows, plausible explanations for a decrease in the "income elasticity" of G_c after the shifts associated with World Wars in the cases of the United Kingdom and Germany are discussed first. [25]

First, as was argued in Section I, a gap usually exists between "the desirable level of public expenditure" and the "tolerable burden of taxation". It can also be argued that if such a gap is narrowed, a government, in its self-interest of maximizing its length of life, would have less incentive to raise finance to the extent necessary to maintain the previous rate of growth of government expenditure. It was pointed out above that a shift in people's ideas about the "tolerable burden" is of greater significance for the displacement effect of war. Therefore, it is highly likely that the gap between the desirable level of public expenditure and the "tolerable burden" was narrowed, which therefore suggests, as was observed in the cases of the United Kingdom and Germany, a decrease in the "income elasticity" of G_c.

Second, during the wars, although elastic sources of revenue (e.g. income tax) were utilized as far as possible, it seems that great reliance was also placed on the indirect taxes (e.g. commodity taxes

[25] In the case of Germany, as was shown in Section III (B), the second major shift could be attributed to the consequences of the Great Depression, the Hitler regime, and the Second World War, which all consecutively exerted their influence as major social upheaval.

such as purchase taxes, which were introduced during World War II in the U.K.) which continued after the war. But as most of them are usually less elastic than the direct ones, the income elasticity of the tax structure as a whole became less than it was before the war. Thus "income elasticity" of G_c declined after the war.

Third, as G/Y increased significantly because of the "shifts", the percentage of population bearing the tax "incidence" increased, and/or people on whom such "incidence" had been hitherto lower were compelled to bear a relatively higher burden of the increase in tax revenue as a share of G.N.P. This was probably so because of the disincentive effects of very high taxation on particular groups of people, and/or because of the strong opposition and political pressure against the non-taxation of other groups, and also because of the increased efficiency in administration and methods of tax collection due to the exigencies of war which enabled the general revision and considerable widening of the tax system. [26]

When G/Y is small, as it was the case in the pre-First War period in the U.K. and also in Germany, an overwhelming majority of voters will prefer rapid increase of public expenditure because the taxes needed to finance such expenditure will not usually be borne by them, and a government in its self-interest of maximizing the length of its life will usually pursue policies of rapid increase in government expenditure. [27] As was shown in the case of the U.K., the "income elasticity" of G_c was even greater than four during the pre-First War period when the ratio G/Y was relatively very small. But after the First War, the ratio G/Y being higher than it was in the pre-First War period, the taxes needed to finance an increase in G/Y were to hit some other people too, who either escaped taxation or on whom the "burden" was relatively lighter. Thus some of those people who supported a rapid increase in G/Y could not support the previous rate of increase because then they probably would have to finance a sub-

[26] In the United Kingdom, for example, as pointed out by Peacock and Wiseman, "experience obtained during World War I in the techniques and administrative problems of assessing lower income groups for income tax provided the foundation for the permanent extension of that tax. Similarly, the pay-as-you-earn system, through which a *considerable proportion of the population* now has income tax deducted at source, was introduced during World War II. It was during this later period that the purchase tax was first introduced", *op. cit.*, pp. 67—68.

[27] See A. Downs, *An Economic Theory of Democracy*, New York 1957, for a discussion of the vote maximization hypothesis.

stantial proportion of that increase. The number of voters supporting the increase, being smaller than during the pre-First War period, and the opposition and disincentive effects being stronger, a government in its self-interest of maximizing its length of life could not pursue the rate of increase in G/Y which prevailed during the pre-First War period, and hence the "income elasticity" of G_c decreased from 4.6 to 2.1. It can be said that for the same reasons, the rate of growth of government expenditure decreased even further after the Second War. The explanation given above could equally apply in the case of Germany.

Fourth, it is argued that the "productivity lag" in the government services, although practically impossible to measure, would account for an important part of the growth of government expenditure with relation to national output when both are deflated by indices of prices of private output, which assumes almost identical productivity changes in both private and public sector. [28] It seems, however, likely that such a lag for government expenditure, as a whole, diminished after each World War mainly for two reasons. First, it seems likely because of technological innovations in the public expenditure field during the wars, due to the urgent need to increase efficiency or minimize costs in the provision of public goods. Second, it seems probable because of the increased share of transfer payments in total public expenditure after the shift associated with war. [29] The concept of "productivity lag" is relevant only for government purchases of goods and services. There is no reason to assume that the people receiving the transfer payments spend them on goods and services for which productivity is lagging behind. Thus, the percentage of total public expenditure for which such lag may operate diminished. On both grounds, therefore, it is likely that the "productivity lag" for government expenditure as a whole, which could account for an important part of the growth of G_c with relation to Y_c, diminished after the wars. This could also be one of the reasons for the decrease in the "income elasticity" of G_c after the wars.

[28] As pointed out by Andic and Veverka, "the 'productivity lag' adds to the relative growth of government expenditure directly through a higher relative cost of providing a given output, and indirectly through a transfer of unprofitable sectors under public control", *op. cit.*, p. 179.

[29] It was shown by Peacock and Wiseman (*op. cit.*, chapter 5) and Andic-Veverka (*op. cit.*, Table A. 13 and Section IV) that the displacement effect for transfer payments was more prominent than for the purchase of goods and services.

The explanations offered above could equally be applicable for a decrease in the "income elasticity" of G_c after the shift associated with the Great Depression in the cases of the United States and Canada.

The first plausible explanation again could be that the gap between the "desirable" level of public expenditure and the "tolerable burden" of taxation was narrowed after the "shift" associated with the Great Depression. As was argued above, the continuance of a higher level of public expenditure after the recovery than that prevalent before the Depression was possibly due to the reason that the favourable attitude towards public expenditure permitted the acceptance of new taxes and the consequent increase in the "tolerable burden", which thus could have decreased the "gap". The reason which seems more important, however, is that with recovery there was an automatic decrease in some "welfare" expenditures (e.g. unemployment benefits, poor reliefs, etc.). Besides, the desirability of public projects, designed specifically to provide employment, or public expenditures undertaken to provide incentives to the private sector, diminished with recovery. Thus, there was some decrease in the "desirable" level of public expenditure with recovery, which again decreased the "gap". A decrease in this gap, as argued previously, might possibly have led to a decrease in the rate of growth of G_c after the shift associated with the Great Depression.

Besides, with recovery, there was a gradual decrease in debt financing. Usually, especially in the United States, as was shown by Eva Mueller in her study, "negative" attitudes towards additional deficits have been prevalent. Because of this gradual decrease in deficit financing, in order to maintain the pre-Depression rate of growth of government expenditure, the rate of growth of tax revenue had to be higher even than the rate during the pre-Depression time-period. Although a favourable change in the attitude towards public expenditure permitted the acceptance of some new taxes, a rate of increase in tax revenue even higher than that during the previous time-period would have imposed a "burden" too high to be accepted by the people at a time when per capita income was still lower than it had been towards the end of the 1920's. Besides, on the grounds of disincentive effects, such taxation could not have been attempted. These, then, are other possible reasons for a decrease in "income elasticity" of G_c after a "shift" associated with Depression in the cases of the United States and Canada.

Again, it seems likely that with a positive "shift" in the level of

public expenditure, associated with Depression, and a gradual acceptance of "new" taxes because of the desirability of many "new" expenditures due to the inspection process, the percentage of people bearing tax "incidence" increased and/or some people on whom such burden had been previously lower were compelled to bear a relatively higher burden of the increase in tax revenue because of the widening of the tax system. This, in conjunction with the hypothesis of maximization of length of life for a government, as explained earlier, also provides a plausible explanation. The concept of a productivity lag may again provide some explanation. It seems likely that such a lag could have diminished for government expenditure as a whole, because of the increased share of transfer payments (particularly social insurance payments) in total public expenditure during and after the Great Depression.

In contrast to the negative change in the "income elasticity" of G_c after the shifts associated with major social upheavals, discussed above for particular countries, there was a positive change in the "elasticity" after the Second World War in the cases of Sweden, the United States and Canada. How could such difference be explained?

In the case of Sweden, which did not participate in the war, there was no "significant" shift in the level of government expenditure after the war. As has been already explained, such a shift was one of the principal causes diminishing the rate of growth of government expenditure in other countries. It may be said that in Sweden, the gap between the desirable level of public expenditure and the tolerable burden of taxation was not narrowed because no shift in the tolerable burden occurred. Sweden did not have the "benefits" of a displacement effect. Rather, the gap seemed to increase due to a "demonstration effect" of the high level of government expenditure in the neighbouring countries, to a change in the attitude towards public expenditures partly due to the Keynesian revolution, and to the acceptance of the ideas of the "Social Welfare State". Thus, the main forces which seemed to decrease the rate of growth of government expenditure in the U.K. and Germany after the wars were either absent or operating in the opposite direction in Sweden. Government expenditures could also increase at a faster rate after the war because of the political stability and the expansion of welfare expenditures (such as old age, unemployment, sickness benefits, medical care, education, etc.) which helped circumvent resistance to increased taxation.

Plausible explanations for the increased "income elasticity" of G_c

after the Second World War in the cases of the United States and Canada are the following.

In both North American countries, in contrast to the United Kingdom and Germany, the "income elasticity" of G_c before the Second World War was much less than unity, i.e. the ratio G/Y was falling with increasing real income. A further decline in the "income elasticity" of G_c would have accelerated the rate of decrease of G/Y. The obvious question which arises is: why did this not happen? Although there was a "displacement effect" of the Second World War in both countries, the "shift" in the level of government expenditure was much smaller than in the case of the United Kingdom; and the ratio G/Y after the "shift" was much smaller in the United States and Canada than the ratio after the Second World War in the cases of the United Kingdom or West Germany. A "demonstration effect" would suggest an increase, rather than a decrease, in this ratio, i.e. an income elasticity of G_c more than one.

Further, the following have helped increase the rate of growth of G_c: (i) comparatively large expenditures on defence, because of the additional costs of the cold war with Soviet Russia — especially in the case of the United States, where approximately two dollars out of three are spent by the Federal Government on defence; (ii) the emergence of new expenditure e.g. on space research and military and economic aid to the newly independent countries, which again could be partly due to the demonstration effect from Russia; (iii) the expansion of programmes of help to old and needy people, hospital and medical care, highways, etc.

As shown by Eva Mueller, a large majority of American people have "favourable attitudes" towards major government expenditures programmes. In addition to an intensification of public concern about national security and "status", providing wide support for the huge expenditures on defence, space research, military aid, etc., the favourable public attitudes for these and other expenditure programmes are closely connected with the "widely held belief" that in order to maintain Keynesian full employment, the level of government expenditure "should" go on increasing. The attitudes of the Canadian people and government towards fiscal programmes should not be very different from those in the neighbouring country. Canadian tax and expenditure policies are likely to be highly influenced by those of the United States, because of the close links between the two countries, both geographical and with regard to trade and social background; and

also because of the great similarities between them as regards economic and socio-political structure.

The increase in the various expenditure programmes making the "income elasticity" of G_c more than two, has been, however, possible because of the higher income elasticity of the tax structure as a whole. During World War II there was considerable broadening of the income tax base and an increase in tax rates, which increased the elasticity of the tax structure as a whole. Even import duties are highly income elastic in Canada because of the high propensity to import (especially investment goods).

The statistical observations for the different countries included in the time-series approach are not found to be identical. One cannot expect the effects of different social upheavals to be identical for each country irrespective of different economic and socio-political structures. The explanations offered above provide some plausible reasons for the differences in findings. It may, however, be observed that the explanations offered are not mutually exclusive: rather, an inter-relationship exists between some of the explanations. For example, the explanations of the "displacement effect" of war and Great Depression, which were shown to be compatible in Section IV (A), are closely linked with some of the explanations offered for a decrease in the "income elasticity" of G_c after the "shifts" associated with World Wars and the Great Depression, particularly the explanation concerning the gap between the "tolerable burden" and the "desirable" level of public expenditure. The explanation of the non-existence of a "significant" shift after the war in the level of government expenditure in Sweden, which did not take part in the war, follows directly from the explanation of the existence of such shifts in those countries which participated in the war, and that of the increase in the rate of growth of G_c in Sweden after the Second World War, is again based basically on the explanation referred to above. The explanations offered for an increase in the "income elasticity" of G_c after a "shift" associated with the Second War in the cases of the United States and Canada, which again emphasize the importance of a favourable attitude towards public expenditure, and the hypotheses of the tolerable burden and the "demonstration effect", are also not incompatible with the explanations offered for other observations. The value of the various explanations in explaining the complex behaviour of government expenditure is, of course, bound to be different for different countries and for different upheavals, depend-

ing upon the economic and socio-political characteristics of the country during the relevant time-period.

The analysis of this paper has been confined only to the aggregate of government expenditure. It is, however, likely that the social upheavals may have changed the nature of public expenditure. Hence, further analysis of government expenditure classified by economic categories, functions and levels of authority is of great importance in discovering how an upheaval affects the character of government expenditure, and would provide further understanding of the behaviour of total government expenditure. Second, the inclusion of peace-time defence expenditure in aggregate government expenditure, on the ground that the "tolerable" burden largely determined the level of public expenditure, may not be completely justified, especially for those countries (e.g. U.S.A.) in which the additional costs of the cold war have necessitated a higher level of public expenditure. An analysis of the effects of defence spending on the level of public expenditure would reveal further facts about the behaviour of public expenditure. Third, depending upon the possibility of some quantitative measurement of other relevant variables, in addition to income, and the availability of the necessary statistical data, a non-linear multiple regression analysis of government expenditure with relation to a number of variables could usefully be pursued, both for the time-series and cross-section approaches, and these could then be integrated to provide a better understanding of the behaviour of public expenditure. The problem of constructing an exhaustive model, by incorporating all possible variables (which is also non-linear in variables, if not in parameters), for the study of the behaviour of government expenditure is, however, highly complex and has not yet been tackled: indicating the need for further research in this field.

APPENDIX

This appendix provides a brief discussion of the statistical procedure and measures adopted in this study. Due to limitation of space, only five tables, one for each country included in this study, are given. The detailed tables, sources, information concerning adjustments made, etc., may be obtained from the author on request.

A. *Definition of Government Expenditure*

The definition of government expenditure adopted for this study is that of the British study by Peacock and Wiseman. It is very similar to the concept used in the National Accounts of the different countries. The conceptual problems connected with the definition of government expenditure are discussed in detail in their study. In general terms, however, the definition of government expenditure used should include expenditure of all levels of government (i.e. of central and local governments in the case of a unitary state and also of governments of regions, namely states or provinces, in the case of a federal state) and of closely associated agencies such as social security funds net of internal transactions and specific fees paid for non-commercial services such as school fees.

The definition of government expenditure includes not only the purchase of goods and services but also transfers and subsidies. The inclusion of transfers and subsidies produces a "false structure quotient", in the sense given to that term by Ohlsson.[1] Their inclusion is, however, justified because they, like the purchase of goods and services, are normally financed by taxes. Both sorts of expenditures are determined by political decisions about allocative as well as distributional objectives, which are equally important for an expansion of the public sector. Following social accounting convention, the expenditures of the public corporations and other public enterprises, whose transactions are not included in government accounts, are excluded. For certain trading services, such as the Post Office, which are financially dependent on government and included in the government accounts, but otherwise little different in economic character from other public enterprises, their current expenditures are considered as self-liquidating and are thus not included, although capital expenditures are included.

A strict adherence to the definition outlined above, however, is not possible in practice because the budgetary systems and accounting techniques vary from country to country, and also over time in the same country. Although several adjustments, wherever possible, are made to ensure comparability as far as possible, only a reasonable approximation to the definition set forth above could be achieved.

[1] See Ingvar Ohlsson, *On National Accounting*, National Institute of Economic Research, Stockholm 1961, pp. 230—235.

B. *Elimination of the Price and Population Effects*

For an analysis of the effects of a social upheaval it is necessary that the effects of "permanent" influences such as population and price changes on government expenditures should be eliminated. As pointed out by Peacock and Wiseman in their study, until the effects of such influences have been eliminated "we cannot be sure either that a displacement exists independently of them or that we know which social disturbances appear to have been productive of expenditure displacement sufficiently important for detailed study". [2] Of course, one can think of a variety of possible general influences on public expenditure, but two of such influences that are likely to be both relevant and capable of statistical interpretation are population and price changes over time and an attempt is made to eliminate their effects.

In order to obtain the series of "real" government expenditure (and also real G.N.P.), estimates at current prices need to be deflated by an appropriate price index. Several problems, conceptual and statistical, arise in this connection. First, there are well known general problems of index numbers. Another set of problems arises because of the lack of market valuations for goods and services provided by a government; and alternative methods have been suggested for the deflation of current estimates of government purchases of goods and services.

One possibility is to regard government as a unitary being in the Pigovian sense, with tastes and preferences like other beings; and thus the prices paid by government in purchasing goods and services may be considered to represent its marginal utilities. An index of prices paid for such goods and services by the government could then be used to obtain the "real" output consumed by government. But many would not accept an organic conception of state and even if one accepts this view of government, crude assumptions have to be made as regards the quality changes of the goods and services consumed by the unitary being. The second possibility is to regard the government as a producer, so that the purchases of such goods and services can be considered as inputs used to produce government output. But then, the problems arise not only with regard to the construction of price index of government inputs, which is usually not available in a country, but also because one has to make some crude assumptions about the change in productivity of such inputs over time, if the purpose is to derive the "real" government output series. The third method suggested is to measure the real government output by the volume of services rendered. In this method, the obvious difficulties are in defining the unit in terms of which the volume of each service is to be measured and also in allowing for quality changes. Another possibility is to value government services with the valuation placed on "comparable" services by the private sector. This again would involve some arbitrary assumptions (e.g. about what constitutes a "comparable" service), and would entail time and resources beyond the limits of this study.

The method adopted for each time-series study is, however, chosen on the grounds of statistical expediency. Wherever possible different components of government expenditure were deflated separately by appropriate price indices and then the deflated components were added to obtain the total at constant prices. In the cases of Canada and the United Kingdom, current and capital expenditures of government were deflated by separate price indices for current goods and services and for capital goods respectively. The transfer payments and subsidies

[2] Peacock and Wiseman, *op. cit.*, p. 31.

were deflated by an index of prices of consumers' goods and services. The use of separate indices obviates, to some extent, the difficulties associated with the change in composition of government expenditure compared with that of national product. Even this refinement was not possible in the case of all countries. In the case of Germany, for the period prior to 1925, the index used is an unweighted geometric average of the index of wholsesale prices and an index of retail prices (both for limited number of commodities, with foodstuffs predominating), and after that date for Germany and for the whole period in the case of the United States, the index used is that implicit in the official estimates of national product at current and constant prices. For Sweden, both the government expenditure and G.D.P. series are deflated by a general wholesale price index. The obvious limitation of the real estimates is that the deflation of current estimates of government expenditures by an index of prices of private output assumes almost identical productivity changes in both the private and public sector.

The elimination of the effects of population changes also raises complex problems. Population changes usually comprise not only changes in total numbers but also changes in the composition of population, both of which are likely to affect government expenditure. However, the analysis in this paper is based on per capita estimates, which assumes in the absence of any better alternative that either the composition of population has not changed or that such changes (if any) have not affected significantly per capita estimates.

C. Exclusion of War-related Expenditures

The expenditures which can be considered as the direct consequences of war, continuing in peace-time are: national debt interest, war pensions, war damage compensations, reparation payments, and so on. The possibility that the displacement effect is solely due to such "accidental" expenditures generated by war can be eliminated by studying the behaviour of government expenditure other than for war-related expenditure. If the residual government expenditure still shows a "displacement effect", it then could be considered the result of the influence of the social upheaval on government behaviour. The war-related expenditures mentioned above are excluded from the total government expenditure for the United Kingdom, Germany and Canada. In the case of the United States, only the interest payments on the Federal debt are subtracted from the total expenditure figures, because of the lack of necessary data on other war-related expenditure. However, it is the interest payment on the national debt, which has been found to be the quantitatively important item relative to other items in the "war-related" expenditure category in the case of other countries. [3]

Following the same analytical procedure, the Great Depression-related expenditure should also be excluded for a country (e.g. the United States and Canada) for which the Depression is considered as a major social upheaval. Public expenditure during the Depression was financed to a large extent by deficit financing. By excluding interest payments on national debt, considered as war-related expenditure, the Great Depression-related debt commitments which continued after the recovery are, however, excluded.

[3] For the reasons for not eliminating defence expenditures, see Peacock and Wiseman, *op. cit.*, pp. 60—61.

D. *Per Capita Income at Constant Prices*

The choice of a measure of national income aggregate for individual countries included in the time-series study is based on the grounds of statistical expediency. For two countries, namely the United States and Canada, we could select the series of G.N.P. at market prices. The series of G.N.P. at factor cost is selected for the United Kingdom and Germany and the G.D.P. at market prices is chosen for Sweden in the absence of any other better alternative series.

From these series, as for that of government expenditure, an attempt was made to eliminate the "population and price effects" in order to obtain the series of real per capita income. The general problems of index numbers also arise for deflation of private output. The specific problems connected with the deflation of government purchases of goods and services equally apply for the computation of G.N.P. series at constant prices because government purchase is one of the main components of national product. However, the series at constant prices, for all countries except Sweden, are obtained from official or other publications, which had been computed by deflating different components by separate price indices. In the case of Sweden, a single index, i.e. the general wholesale price index was used for the deflation of G.D.P. series at the current market price.

TABLE 1

United Kingdom

Gross National Product and Government Expenditure Other Than for War-related Purposes, per Head of Population, at 1900 Prices, 1890—1962

Year	Y_c £	G_c £	Year	Y_c £	G_c £
1890	40.2	3.0	1936	57.7	11.3
1895	42.5	3.8	1937	58.6	12.2
1900	47.2	6.3	1938	59.6	15.0
1905	45.5	5.0			
1910	45.8	5.5	1947	56.4	19.1
1913	49.8	5.8	1948	57.5	19.1
			1949	59.3	19.8
1923	46.4	7.2	1950	60.3	20.0
1924	47.4	7.1	1951	60.8	21.5
1925	48.2	7.7	1952	62.1	22.4
1926	46.5	7.9	1953	64.6	23.0
1927	51.0	8.2	1954	67.9	22.5
1928	50.2	8.2	1955	68.8	22.2
1929	51.8	8.4	1956	70.06	23.3
1930	50.1	9.2	1957	71.05	23.6
1931	48.7	10.0	1958	70.75	24.0
1932	48.1	9.9	1959	72.68	25.6
1933	51.1	9.8	1960	75.64	26.9
1934	53.2	10.0	1961	77.59	28.4
1935	56.2	10.6	1962	77.48	29.4

TABLE 2
Germany
Gross National Product and Government Expenditure Other Than for War-related Purposes, per Head of Population, at 1900 Prices, 1881—1958

Year	Y_c DM	G_c DM	Year	Y_c DM	G_c DM
1881	418.7	36.74	1931	607.3	186.11
1891	476.0	52.06	1932	547.5	176.44
1901	584.5	75.64			
1907	626.2	88.18	1950	781.9	267.51
1913	673.3	101.06	1951	844.9	289.78
			1952	902.0	319.46
1925	597.4	120.60	1953	956.6	327.32
1926	616.5	136.80	1954	1,017.4	348.27
1927	673.1	150.30	1955	1,125.2	373.99
1928	700.5	167.25	1956	1,193.4	410.68
1929	693.4	174.06	1957	1,258.3	459.74
1930	672.0	186.94	1958	1,286.9	496.11

TABLE 3
U.S.A.
Gross National Product and Government Expenditure Other Than for Interest on Federal Debt, per Head of Population, at 1929 Prices, 1923—1961

Year	Y_c Dollars	G_c Dollars	Year	Y_c Dollars	G_c Dollars
1923	766	71.15	1942	1,147	410.81
1924	775	73.74	1943	1,245	568.63
1925	781	75.22	1944	1,327	600.64
1926	821	78.27	1945	1,293	486.02
1927	817	83.37	1946	1,179	370.98
1928	817	83.61	1947	1,149	261.23
1929	857	89.47	1948	1,189	230.19
1930	772	100.20	1949	1,147	256.01
1931	721	119.12	1950	1,233	278.14
1932	611	113.29	1951	1,295	308.98
1933	590	116.72	1952	1,317	360.48
1934	639	118.16	1953	1,349	369.50
1935	718	136.71	1954	1,309	361.30
1936	787	146.55	1955	1,396	358.48
1937	846	140.10	1956	1,400.3	362.34
1938	794	145.04	1957	1,390.0	369.54
1939	847	155.12	1958	1,351.3	384.78
			1959	1,411.9	390.24
1940	916	212.47	1960	1,426.8	400.44
1941	1,040	292.93	1961	1,431.4	423.09

TABLE 4
Canada

Gross National Expenditure and Government Expenditure Other Than for War-related, per Head of Population, at 1949 Prices, 1926—1960

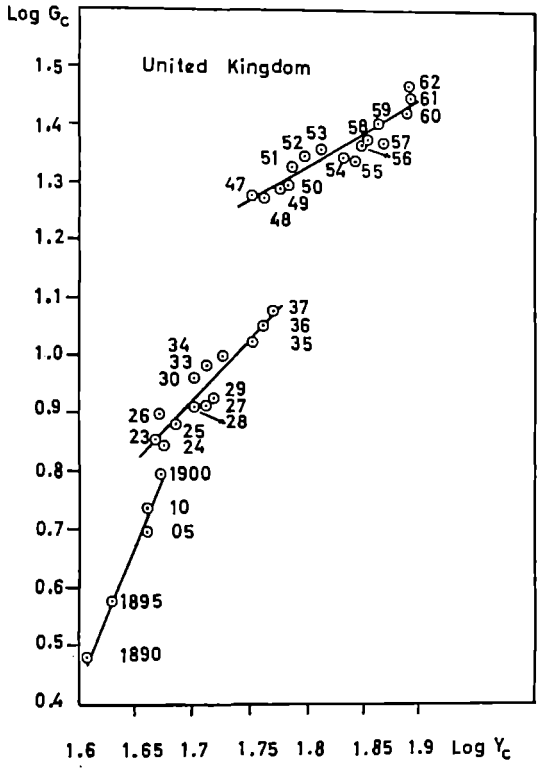
Year	Y_c $	G_c $	Year	Y_c $	G_c $
1926	801.61	106.27	1943	1301.99	545.00
1927	858.24	113.33	1944	1333.25	613.60
1928	918.86	116.79	1945	1288.23	475.20
1929	903.48	128.09	1946	1240.73	332.64
1930	850.22	144.06	1947	1230.66	246.05
1931	729.28	149.47	1948	1227.09	224.86
1932	646.81	143.69	1949	1215.36	236.04
1933	598.04	129.49	1950	1274.14	241.26
1934	663.53	140.68	1951	1323.93	237.88
1935	707.98	146.37	1952	1385.09	330.80
1936	732.60	140.98	1953	1400.74	329.53
1937	798.55	147.63	1954	1320.46	321.40
1938	795.46	157.50	1955	1396.36	327.45
1939	846.37	148.66	1956	1480.69	336.82
1940	958.70	207.38	1957	1451.96	341.14
1941	1085.08	267.90	1958	1428.40	373.72
1942	1271.32	495.86	1959	1443.80	375.39
			1960	1446.50	387.62

TABLE 5
Sweden

Gross Domestic Product and Government Expenditure, per Head of Population, at (1881—1885) Prices, 1920—1958

Year	Y_c (kroner)	G_c (kroner)	Year	Y_c (kroner)	G_c (kroner)
1920	513.64	57.72	1940	1,098.81	338.36
1922	680.94	122.18	1942	1,099.05	334.58
1924	728.12	111.41	1944	1,232.08	337.39
1926	821.75	124.15	1946	1,480.90	297.11
1928	862.52	128.57	1948	1,601.36	380.76
1930	1,130.79	170.77	1950	1,689.38	411.10
1932	1,093.91	211.09	1952	1,558.69	405.41
1934	1,170.52	199.66	1954	1,778.24	492.45
1936	1,231.75	206.15	1956	1,889.91	537.56
1938	1,291.50	229.35	1958	2,074.48	635.59

CHART 1


Log G_c
United Kingdom
1.5
1.4
1.3
1.2
1.1
1.0
0.9
0.8
0.7
0.6
0.5
0.4
62
61
60
59
58
57
56
55
54
53
52
51
50
49
48
47
37
36
35
34
33
30
29
27
28
26
25
24
23
1900
10
05
1895
1890
1.6
1.65
1.7
1.75
1.8
1.85
1.9
Log Y_c

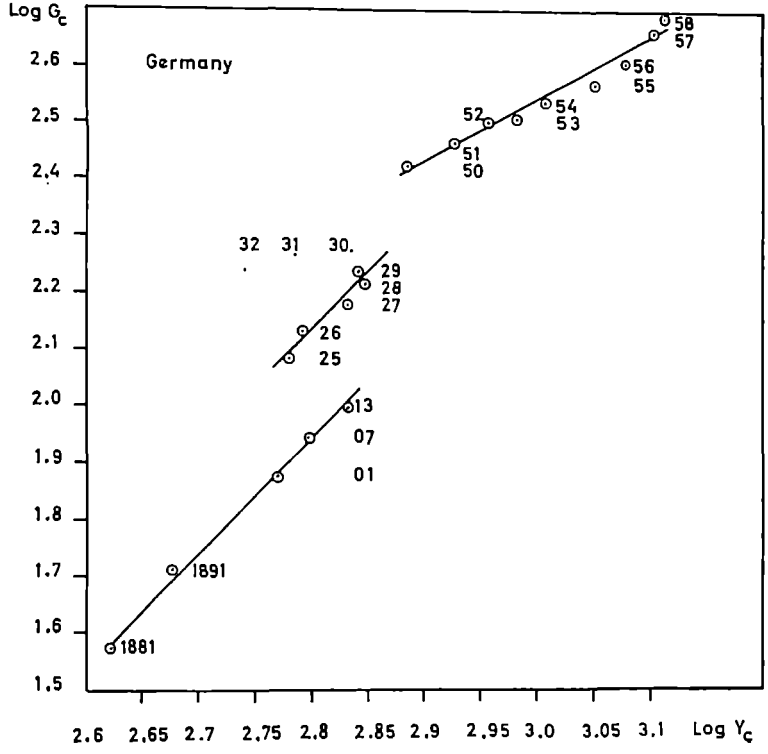
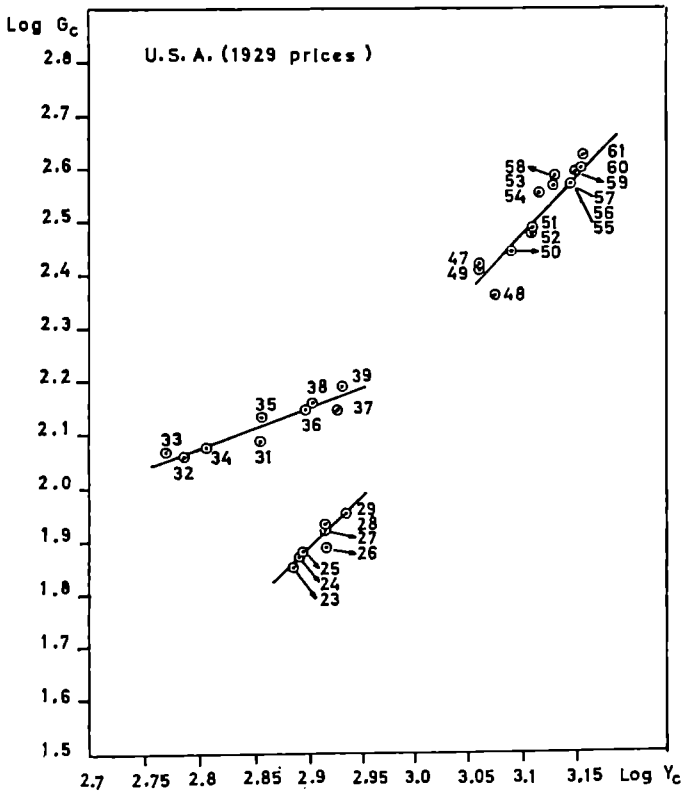
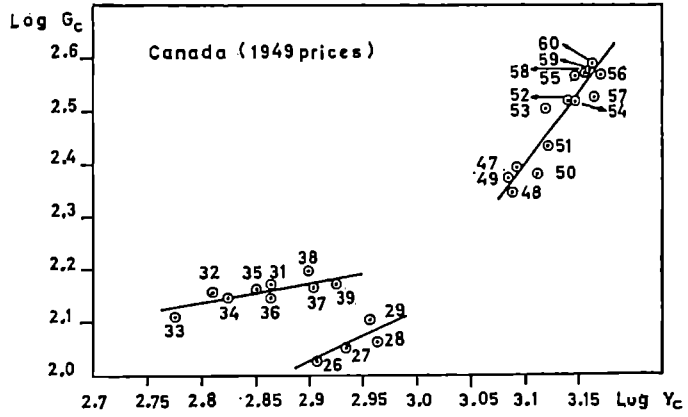
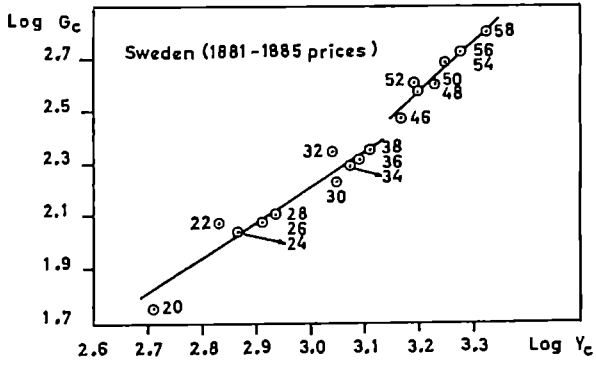

Log G_c
Germany
2.6
2.5
2.4
2.3
2.2
2.1
2.0
1.9
1.8
1.7
1.6
1.5
58
57
56
55
54
53
52
51
50
32
31
30
29
28
27
26
25
13
07
01
1891
1881
2.6
2.65
2.7
2.75
2.8
2.85
2.9
2.95
3.0
3.05
3.1
Log Y_c

CHART 2


Log G_c
U.S.A. (1929 prices)
2.8
2.7
2.6
2.5
2.4
2.3
2.2
2.1
2.0
1.9
1.8
1.7
1.6
1.5
2.7 2.75 2.8 2.85 2.9 2.95 3.0 3.05 3.1 3.15 Log Y_c


Log G_c
Canada (1949 prices)
2.6
2.5
2.4
2.3
2.2
2.1
2.0
2.7 2.75 2.8 2.85 2.9 2.95 3.0 3.05 3.1 3.15 Log Y_c


Log G_c
Sweden (1881-1885 prices)
2.7
2.5
2.3
2.1
1.9
1.7
2.6 2.7 2.8 2.9 3.0 3.1 3.2 3.3 Log Y_c

DEPENSES PUBLIQUES ET CROISSANCE ECONOMIQUE ANALYSE PAR SERIES TEMPORELLES

de

SHIBSHANKAR P. GUPTA

RESUME

Les économistes se sont intéressés au développement de théories normatives. Mais très peu d'hypothèses ont été avancées et vérifiées à propos du comportement des dépenses publiques. Cette étude se propose de fournir quelques éclaircissements relatifs au comportement de ces dépenses.

L'article prend tout d'abord en ligne de compte l'étude d'un modèle temporel de la croissance des dépenses. L',,effet de déplacement" (,,displacement effect") de Peacock et Wiseman était en ce domaine une hypothèse déduite de découvertes relatives au seul Royaume-Uni. On n'essaya pas de mesurer cet effet, non plus que d'en tester la portée. Leurs découvertes se rapportaient principalement au ,,changement" dans le niveau des dépenses publiques en rapport avec le produit national, et associé aux Guerres Mondiales. On n'essaya pas de rechercher s'il y avait ou non un effet dû à un bouleversement social sur le taux de croissance des dépenses publiques.

Dans cette étude, une tentative est faite pour tester l'hypothèse de l'effet de déplacement dans différents pays, non seulement eu égard aux Guerres Mondiales, mais aussi compte tenu de la Grande Dépression, facteur de bouleversement social dans maints pays. Guerre et dépression représentent deux types différents de facteurs de bouleversement social et leur effet de déplacement respectif demande des interprétations séparées. Dans ce but, il faut procéder à des mesures et à des tests de portée de cet ,,effet". En outre on essaie de voir si de tels bouleversements sont liés à une modification dans l',,élasticité-revenu" des dépenses publiques.

Les pays en question sont: le Royaume-Uni, l'Allemagne, les Etats-Unis, le Canada et la Suède. L'analyse suggère qu'il existe un changement positif significatif dans le niveau de G_c (c'est-à-dire les dépenses publiques totales par tête à prix constants, autres que celles concernant la guerre) en relation avec Y_c (PNB par tête à prix constants), associé aux Guerres Mondiales dans le cas de chaque pays examiné, exception faite pour la Suède qui ne participa pas directement à la guerre. On observe aussi un changement positif significatif associé à la Grande Dépression, aux Etats-Unis et au Canada, pays qui furent les plus touchés par ce bouleversement. Ce changement de niveau est quantitativement de plus grande importance que celui qui fut associé à la Seconde Guerre dans ces deux pays. Par ailleurs, on peut observer un changement significatif dans l'élasticité-revenu de G_c avec un important bouleversement. L'élasticité-revenu a diminué après les changements de niveau liés à la Seconde Guerre à la fois au Royaume-Uni et en Allemagne, alors qu'elle était presque identique pour ces deux pays durant l'entre-deux-guerres et après la Seconde Guerre Mondiale. Aux Etats-Unis et au Canada également, elle diminua après le changement de niveau lié à la Grande Dépression, et dans ces deux pays, elle devint très inférieure à l'unité ce qui contredit la Loi de Wagner d'accroissement de l'activité publique. Cependant elle augmenta après la Seconde Guerre Mondiale en Suède, pays qui ne participait pas directement à la guerre et où il ne se produisait pas de changement significatif dans le niveau des dépenses publiques. Elle augmenta aussi après la Seconde Guerre aux Etats-Unis et au Canada. Les explications plausibles de ces indications sont brièvement résumées ci-dessous.

Bien que l'argument de Peacock et Wiseman relatif à la „charge fiscale supportable" („tolerable burden of taxation") soit en mesure de fournir une explication au changement positif du niveau de G_c en relation avec une guerre durant laquelle les gens prennent l'habitude d'un fardeau fiscal plus lourd, un tel concept suggèrerait plutôt un changement de niveau négatif après la Grande Dépression. Il semble probable que le changement associé à la Grande Dépression survenu en raison de nombreuses dépenses nouvelles, particulièrement dans le domaine des services de bien-être, devint fortement „souhaitable" du fait du „processus d'inspection" („inspection process") engendré par la Grande Dépression. Un changement dans la charge fiscale supportable peut être d'une portée plus grande pour un effet de déplacement de guerre; mais la modification d'attitude dans un sens

favorable pour les dépenses publiques due à un processus d'inspection né de la guerre ne peut pas être ignorée. Pour ce qui est de l'effet de déplacement de la Grande Dépression, on pourrait considérer comme plus important un changement dans l'opinion que se font les gens à propos du niveau désirable des dépenses publiques. Mais ce qui rendit possible la diffusion de telles idées, c'est précisément que l'on put procéder à des dépenses plus élevées sans augmenter la „charge" totale de *financement* de telles dépenses. Une bonne part du financement total fut assurée par l'emprunt, dont le „fardeau" ou le coût d'opportunité peut être considéré comme égal à zéro pendant une forte dépression. Ainsi, les forces opérant par le système budgétaire à travers le revenu et la dépense sont substantiellement les mêmes dans les deux types d'effet de déplacement.

Voici comment il est possible d'expliquer de façon plausible une diminution de l'élasticité-revenu de G_c associée aux Guerres Mondiales (Royaume-Uni et Allemagne) et à la Grande Dépression (Etats-Unis et Canada). 1) Il est permis d'avancer que la différence qui existe habituellement entre le niveau désirable des dépenses publiques et la charge fiscale tolérable a été diminuée de telle sorte qu'un gouvernement, dans son propre intérêt qui consiste à rendre aussi longue que possible sa vie, avait moins de tentation d'élargir le budget afin de maintenir le taux antérieur de croissance des dépenses publiques. Les facteurs qui ont pu entraîner une diminution de cette différence entre les deux niveaux sont: un changement particulièrement significatif dans la charge tolérable pendant une guerre, l'acceptation progressive de nouveaux impôts à la sortie de la Grande Dépression, une diminution dans les dépenses de bien-être et le souhait de voir se réaliser des projets publics en vue de stimuler l'emploi lors de la reprise. 2) L'élasticité-revenu de la structure fiscale dans son ensemble devint inférieure à ce qu'elle était avant la guerre, en raison du maintien de la plupart des impôts indirects introduits pendant la guerre. 3) En raison d'une diminution progressive du déficit, afin de maintenir le taux antérieur à la dépression de l'élasticité-revenu de G_c, le taux de croissance du revenu fiscal aurait dû être plus élevé encore que le taux en vigueur pendant la période précédant la dépression. Ceci aurait imposé une charge trop forte pour être acceptée par des gens dont le revenu était encore très bas. 4) Avec un changement positif dans le niveau des dépenses publiques, le pourcentage des gens touchés par l'incidence fiscale augmente; et pour quelques uns de ceux sur qui le fardeau avait été

antérieurement relativement bas, il y a obligation de supporter une part plus lourde de l'augmentation de l'impôt sur le revenu en raison de l'extension du système fiscal. Le nombre de ceux qui étaient partisans d'un rapide accroissement des dépenses publiques est tombé, en conséquence, et un gouvernement dont l'intérêt propre est de rendre aussi long que possible son temps de vie ne pourrait pas maintenir le taux antérieur d'accroissement de G_c. 5) Le décalage de productivité pour le secteur public, qui peut compter pour une part importante dans la croissance de G_c, pourrait avoir diminué en raison de la part accrue des dépenses de transfert dans le total des dépenses publiques, après un changement de niveau associé à un bouleversement.

La Suède n'a pas „bénéficié" de l'effet de déplacement. C'est pourquoi la différence entre le niveau désirable des dépenses publiques et la charge tolérable ne s'est pas rétrécie. On pourrait dire plutôt que cette différence a paru augmenter en raison de l'„effet de démonstration" du haut niveau des dépenses publiques dans les pays voisins, et aussi en raison du changement d'attitude à l'égard des dépenses publiques — changement qui a deux origines, d'une part la Révolution Keynésienne et d'autre part l'acceptation des notions d'un Etat de Bien-être Social. Ces facteurs donnent quelques explications à l'augmentation de l'élasticité-revenu de G_c après la Seconde Guerre Mondiale en Suède.

Aux Etats-Unis et au Canada, l'élasticité-revenu de G_c avant la Seconde Guerre Mondiale était très inférieure à un; et après le changement de niveau, les dépenses publiques en pourcentage du PNB étaient très inférieures à celles du Royaume-Uni et de l'Allemagne. L'élasticité-revenu de G_c a augmenté, aux Etats-Unis et au Canada, en raison de dépenses comparativement importantes en matière de défense. Et ce phénomène a pris encore davantage d'ampleur avec la naissance de nouvelles dépenses publiques (par exemple la recherche spatiale, l'aide économique et militaire aux pays nouvellement indépendants), liées à l'expansion des programmes de bien-être et des dépenses faites pour les grands axes routiers. En plus de cette intensification de la participation du public à la sécurité et au statut national, les dépenses publiques ont augmenté avec l'adhésion croissante aux enseignements de l'économie keynésienne. L'élasticité accrue de la structure fiscale qui est le résultat d'un élargissement considérable de l'assiette de l'impôt sur le revenu, ainsi qu'une augmentation dans les taux d'imposition

pendant la guerre, semblent avoir facilité le taux élevé de croissance de G_c dans les deux pays.

Il est bien évident que la portée des différentes explications rendant compte du comportement complexe des dépenses publiques doit varier suivant les pays et les bouleversements sociaux, en relation avec les caractéristiques économiques et socio-politiques du pays pendant la période considérée.

ÖFFENTLICHE AUSGABEN UND WIRTSCHAFTLICHES WACHSTUM EINE ZEIT-SERIEN-ANALYSE

von

SHIBSHANKAR P. GUPTA

ZUSAMMENFASSUNG

Das Interesse des Wirtschaftswissenschaftlers war in der Vergangenheit weitgehend auf die Entwicklung normativer Theorien gerichtet. Nur sehr wenige Hypothesen sind über die Entwicklung der öffentlichen Ausgaben vorgebracht und geprüft worden. Mit dieser Studie soll versucht werden, einen Beitrag zum Verständnis der Entwicklung der öffentlichen Ausgaben zu leisten.

Der vorliegende Artikel befaßt sich hauptsächlich mit der Untersuchung der zeitlichen Struktur der Ausgabensteigerung. Der Peacock-Wiseman'sche „Niveauverschiebungseffekt" („displacement effect") auf diesem Gebiet wurde nur aus den Ergebnissen beider Autoren für das Vereinigte Königreich abgeleitet; es wurden keine quantitative Bestimmung der Größenordnung und kein Signifikanztest vorgenommen. Ihre Feststellungen beziehen sich hauptsächlich auf jene „Verschiebung" in der Höhe der öffentlichen Ausgaben im Verhältnis zur nationalen Produktion, die mit den Weltkriegen verbunden war. Es wurde nicht versucht, die eventuelle Wirkung einer sozialen Umwälzung auf die Zuwachsrate der öffentlichen Ausgaben zu erforschen.

In diesem Artikel wird der Versuch unternommen, die Niveauverschiebungseffekt-Hypothese für verschiedene Länder nicht nur im Hinblick auf die Weltkriege, sondern auch hinsichtlich der Weltwirtschaftskrise zu testen, die für viele Länder eine größere soziale Umwälzung darstellte. Krieg und Wirtschaftskrise sind zwei verschiedene Arten sozialer Umwälzung, und ihr unterschiedlicher Niveauverschiebungseffekt erfordert eine gesonderte Interpretation.

Zu diesem Zweck werden quantitative Messungen und Tests über die Bedeutung dieses Effektes durchgeführt. Weiterhin wird geprüft, ob eine derartige Umwälzung mit einer Veränderung der „Einkommenselastizität" der öffentlichen Ausgaben verbunden ist.

Die in die Untersuchung einbezogenen Länder sind Großbritannien, Deutschland, USA, Kanada und Schweden. Die Analyse deutet eine signifikante positive Verschiebung im Niveau von G_c (d.h. der gesamten öffentlichen Ausgaben je Kopf für nicht mit dem Krieg zusammenhängende Zwecke zu konstanten Preisen) im Verhältnis zu Y_c (Bruttosozialprodukt je Kopf zu konstanten Preisen) im Zusammenhang mit den Weltkriegen im Falle jedes in die Untersuchung einbezogenen Landes mit Ausnahme Schwedens an, das nicht direkt am Krieg beteiligt war. Eine signifikante positive Verschiebung ist den gemachten Beobachtungen zufolge auch mit der Weltwirtschaftskrise in den Vereinigten Staaten und Kanada verbunden, die durch diese Umwälzung am meisten betroffen waren. Diese Verschiebung ist quantitativ von größerer Bedeutung als die durch den zweiten Weltkrieg in den USA und Kanada bewirkte. Außerdem ist eine signifikante Veränderung der Einkommenselastizität von G_c bei einer größeren Umwälzung zu beobachten. Die Einkommenselastizität sank nach den Niveauverschiebungen im Zusammenhang mit den Weltkriegen in Großbritannien und Deutschland, während sie in beiden Ländern zwischen den beiden Kriegen und nach dem zweiten Weltkrieg fast übereinstimmte. Auch in den Vereinigten Staaten und Kanada sank sie nach der durch die Weltwirtschaftskrise bewirkten Verschiebung. In beiden Ländern sank sie weit unter Eins und widerlegt damit Wagners Gesetz von der zunehmenden Staatstätigkeit. Sie stieg jedoch nach dem zweiten Weltkrieg in Schweden an, das nicht am Krieg teilgenommen hatte und wo keine wesentliche Verschiebung im Niveau der öffentlichen Ausgaben auftrat. Sie nahm auch in den Vereinigten Staaten und Kanada nach dem zweiten Weltkrieg zu. Weiter unten werden plausible Erklärungen für diese Feststellung kurz zusammengefaßt.

Obwohl das Argument von Peacock-Wiseman bezüglich der „tragbaren Steuerbelastung" („tolerable tax burden") eine Erklärung für die positive Verschiebung des Niveaus von G_c in Kriegszeiten liefern kann, während der sich die Bevölkerung an eine höhere Steuerbelastung gewöhnt hat, würde ein derartiges Konzept eher eine negative Verschiebung nach der Wirtschaftskrise ver-

muten lassen. Es scheint wahrscheinlich, daß es zu der im Zusammenhang mit der Weltwirtschaftskrise stehenden Verschiebung kam, weil viele neue Ausgaben, insbesondere auf dem Gebiet der öffentlichen Wohlfahrt, aufgrund des durch die Krise hervorgerufenen „Inspektionsprozesses" („inspection process") höchst „anstrebenswert" wurden. Eine Verschiebung in der Höhe der tragbaren Steuerbelastung ist möglicherweise von größerer Bedeutung für einen durch einen Krieg verursachten Niveauverschiebungseffekt; jedoch kann die veränderte günstige Beurteilung der öffentlichen Ausgaben aufgrund eines durch Krieg bewirkten Inspektionsprozesses nicht unberücksichtigt bleiben. Für den Niveauverschiebungseffekt der Weltwirtschaftskrise könnte eine Änderung in der Auffassung der Bevölkerung über den wünschenswerten Umfang der öffentlichen Ausgaben signifikanter sein; aber die Verwirklichung derartiger Vorstellungen wurde durch die Möglichkeit höherer Ausgaben ohne Erhöhung der Gesamt„last" der Finanzierung derartiger Ausgaben möglich. Ein wesentlicher Teil der Gesamtfinanzierung wurde durch Verschuldung gedeckt, deren „Belastung" oder Alternativkosten in Zeiten großer Krisen mit Null angesetzt werden können. Somit sind die durch die Einkommen- und Ausgabenseite des Staatshaushalts wirkenden Kräfte bei beiden Arten von Niveauverschiebungseffekten im Prinzip die gleichen.

Plausible Erklärungen für ein Abnehmen der Einkommenselastizität von G_c aufgrund der Weltkriege (Großbritannien und Deutschland) und der Weltwirtschaftskrise (USA und Kanada) können im folgenden gesehen werden: 1) Es kann das Argument angeführt werden, daß die gewöhnlich zwischen dem wünschenswerten Umfang der öffentlichen Ausgaben und der tragbaren Belastung bestehende Kluft so schmal geworden sei, daß eine Regierung wegen ihres eigenen Interesses an der Maximierung ihrer Lebensdauer weniger dazu Veranlassung habe, im entsprechenden Maße die zur Beibehaltung der früheren Wachstumsrate der öffentlichen Ausgaben erforderlichen Gelder zu beschaffen. Eine signifikante Verschiebung der Höhe der tragbaren Belastung in Kriegszeiten, eine stufenweise Gewöhnung an neue Steuern bei gleichzeitiger wirtschaftlicher Wiederbelebung, eine Abnahme der Ausgaben für Wohlfahrtszwecke und die Wünschbarkeit der Durchführung öffentlicher Projekte zur Erhöhung der Beschäftigung im Konjunkturaufstieg können diese Kluft verringert haben. 2) Die Einkommenselastizität der Steuerstruktur als ganzes nahm im Verhältnis

zur Vorkriegszeit ab, da die meisten während des Krieges eingeführten Steuern beibehalten wurden. 3) Wegen der stufenweisen Verringerung der Defizit-Finanzierung mußte, um den Vor-Depressionssatz der Einkommenselastizität von G_c beizubehalten, die Wachstumsrate des Steueraufkommens höher sein als in der Zeit vor der Krise. Dies hätte eine zu hohe Belastung bedeutet, als daß sie die Bevölkerung in einer Zeit hingenommen hätte, in der die Einkommen noch sehr niedrig waren. 4) Bei einer positiven Verschiebung des Niveaus der öffentlichen Ausgaben erhöhte sich der Prozentsatz der von der Steuer betroffenen Personen; einige unter ihnen, die in dieser Hinsicht früher verhältnismäßig niedrig belastet waren, hatten jetzt, bedingt durch die Erhöhung des Steueraufkommens aufgrund der Ausweitung des Steuersystems, eine stärkere Belastung zu tragen. Die Zahl der Befürworter einer raschen Erhöhung der öffentlichen Ausgaben sank aus diesem Grunde, und eine Regierung, die an der Maximierung ihres Fortbestehens interessiert war, konnte nicht auf die Beibehaltung der früheren Wachstumsrate von G_c dringen. 5) Der Produktivitätsrückstand im öffentlichen Sektor, der für einen wesentlichen Teil des Anwachsens von G_c verantwortlich sein dürfte, könnte sich aufgrund des gestiegenen Anteils der Transferzahlungen an den gesamten öffentlichen Ausgaben nach einer durch eine Krise bewirkten Verschiebung verringert haben.

Schweden hat nicht die „Segnungen" eines Niveauverschiebungseffektes erfahren. Daher wurde die Kluft zwischen dem wünschenswerten Umfang der Staatsausgaben und der tragbaren Belastung nicht schmaler; diese Kluft schien sich vielmehr wegen des „Demonstrationseffektes" hoher öffentlicher Ausgaben in den Nachbarländern und wegen einer Änderung in der Einstellung gegenüber öffentlichen Ausgaben zu vergrößern, die teils auf die durch Keynes bewirkte Revolution und teils auf die Durchsetzung der Ideen eines sozialen Wohlfahrtstaates zurückzuführen sind. Diese Faktoren liefern eine gewisse Erklärung für das Ansteigen der Einkommenselastizität von G_c nach dem zweiten Weltkrieg in Schweden.

In den Vereinigten Staaten und Kanada lag die Einkommenselastizität von G_c vor dem zweiten Weltkrieg weit unter Eins; nach der Verschiebung waren die öffentlichen Ausgaben in Prozenten des BSP weitaus niedriger als die Prozentsätze in Großbritannien und in der Bundesrepublik. Die Einkommenselastizität von G_c nahm in den USA und Kanada wegen der verhältnismäßig hohen Aus-

gaben für Verteidigungszwecke zu; diese stiegen mit den neu aufgetretenen Staatsausgaben (z.B. für Weltraumforschung, militärische und wirtschaftliche Hilfe an junge, unabhängige Staaten) und zusammen mit der Ausweitung des Wohlfahrts- und Straßenbauprogramms weiter an. Zusätzlich zu dieser Intensivierung der öffentlichen Beschäftigung mit den Problemen der nationalen Sicherheit und des nationalen Status stiegen die Staatsausgaben mit der zunehmenden Zustimmung zu den wirtschaftlichen Lehren Keynes'. Die größere Elastizität der Steuerstruktur aufgrund der beträchtlichen Verbreiterung der Einkommensteuerbasis und einer Erhöhung der Steuersätze während des Krieges scheint die hohe Wachstumsrate von G_c in beiden Ländern gefördert zu haben.

Die Tragweite der verschiedenen Erklärungen für die komplexe Entwicklung der Staatsausgaben ändert sich von Land zu Land und von Krise zu Krise in Abhängigkeit von den wirtschaftlichen und sozialpolitischen Merkmalen des betreffenden Landes im relevanten Zeitraum.