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Long Swings in the Role of Government: An Analysis of Wars and Government Expenditures in Western Europe since the Eleventh Century

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Queen's Economics Department Working Paper No. 26

LONG SWINGS IN THE ROLE OF GOVERNMENT: AN ANALYSIS OF WARS AND GOVERNMENT EXPENDITURES IN WESTERN EUROPE SINCE THE ELEVENTH CENTURY

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ABSTRACT

Long Swings in the Role of Government: An Analysis of Wars and Government Expenditures in Western Europe Since the Eleventh Century

by

Ronald W. Crowley

In 1914, Henri Pirenne argued that beginning in the eleventh century, Western European capitalism can be characterized by alternating periods of laisser-faire and public control. This paper attempts to judge the validity of Pirenne's hypothesis.

Existing theoretical and empirical literature on long term government growth is critically examined and the evidence is found to be generally consistent with Pirenne's interpretation. An association between wars and public expenditures is developed and conflicts in Western Europe are examined to determine whether there exists a cyclical pattern.

The paper concludes that researchers concerned with long term growth in government should be cognizant of the possibility of declines in the role of government.

ABSTRACT

Long Swings in the Role of Government: An Analysis of Wars and Government Expenditures in Western Europe Since the Eleventh Century

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Ronald W. Crowley

In 1914, Henri Pirenne, the eminent Belgian economic historian, argued that beginning in the eleventh century, Western European capitalism can be characterized by alternating periods of laisser-faire and public control. While substantial attention has been given to theories of long term growth in government (particularly "Wagner's Law" and the "Peacock-Wiseman hypothesis"), Pirenne's contribution appears to have been overlooked. This paper attempts to judge the validity of Pirenne cycles in government growth.

Existing theoretical and empirical literature on long term government growth is critically examined and the evidence is found to be generally consistent with Pirenne's interpretation. The relationship between wars and public expenditures is explored and a case is developed to support the proposition that war-like activities are associated with growth in public expenditures. A system of weighting different types of conflicts is outlined as a basis for examining the number and significance of Western European wars. Although the turning points do not always correspond to Pirenne's periods, it is apparent that there is a cyclical pattern which is consistent with his hypothesis.

The conclusion is that researchers concerned with long term growth in government should be cognizant of the possibility of declines in the

role of government. Existing theories, based primarily on nineteenth and twentieth century data, are likely to be in error if extrapolated to the past or future.

LONG SWINGS IN THE ROLE OF GOVERNMENT: AN ANALYSIS OF WARS AND GOVERNMENT EXPENDITURES IN WESTERN EUROPE SINCE THE ELEVENTH CENTURY

Ronald W. Crowley*

Discussion Paper No. 26

LONG SWINGS IN THE ROLE OF GOVERNMENT: AN ANALYSIS OF WARS AND GOVERNMENT EXPENDITURES IN WESTERN EUROPE SINCE THE ELEVENTH CENTURY

Ronald W. Crowley *

A. Background

Public finance economists have long been concerned with growth in government activity. Observation in the latter part of the nineteenth century led Adolph Wagner to suggest a hypothesis which has since had wide currency, viz., as per capita output increases in industrializing nations, the proportion of output devoted to government activities also increases.[1] Unfortunately, the substantial attention devoted to this "law" has not been paralleled in the case of Henri Pirenne's consistent, but basically different, hypothesis of cycles in the long run growth of government.[2] Before analyzing Pirenne's hypothesis, let us briefly examine the other major hypotheses on government growth.

Although Wagner's hypothesis was intended to apply to industrialized societies, a number of interpreters have applied it more generally and incorrectly.[3] In essence, the theory might be interpreted as postulating an income elastic demand for publicly provided goods, subject to the constraint that the percentage increase in population is less than the percentage increase in income. Wagner's rationalization that "social progress" leads to growth in government functions has considerable intuitive appeal.[4] He argued that this would be due primarily to increasing interdependence[5], increasing unprofitability

in the private sector and an increasing role for natural monopolies among those goods characterizing social progress.

This is obviously a long run theory of government intended to apply to specific circumstances. Even within these bounds, however, it suffers from an incomplete analytical framework. It largely ignores non-economic factors. It ignores the "time pattern" of public expenditures. It is based on a teledogical or deterministic view of the state.[6] Wagner's hypothesis is one of the early generalizations concerning the role of government[7], but without better specification of the relevant causal factors it is incomplete. Solomon Fabricant's pioneering study of government growth partially fills this gap.[8] His results are consistent with the Wagner hypothesis if his independent variables are interpreted as income elastic.[9]

If Wagner's hypothesis were taken to its logical extreme, government would continue to grow until it accounted for 100% of output. Noting this, other authors have suggested limits to the proportion of output devoted to government. Colin Clark is probably the most prominent spokesman for this point of view.[10] However, his predicted limit of 25% of GNP in taxes has long been surpassed by various governments without the suggested deleterious results. One variant which leaves unspecified the limit is Herber's.[11] Arguing that Wagner's hypothesis applies to only industrializing nations, he postulates a slower growth in the relative share of government in both pre-industrial and post-industrial stages of economic growth. Unfortunately, Herber does not rigorously support his position.

In contrast to the Wagner hypothesis, the other main body of literature concerned with long term government growth revolves about a hypothesis originally suggested by Peacock and Wiseman.[12] Instead of a constantly increasing proportion of GNP devoted to government, they suggest that a step-like increase with periods of consolidation when the government proportion may decrease.[13]

The rationale of this relationship is that during major social disturbances (war, depression) taxation is not as great a constraint as in other periods.[14] While there can be little doubt that historically revenue has played an important role, it should be noted that in the context of Keynesian economics there is no reason why expenditures should be constrained to tax revenues.[15] As well, it is not obvious that a major disturbance is necessary to remove the revenue constraint even if one did exist. A revenue structure can have built-in income elasticity or elasticity achieved from what appear to be administrative changes.[16]

In contrast to, but not inconsistent with, both the Wagner and Peacock - Wiseman hypotheses, the grand categorization by the eminent Belgian historian, Henri Pirenne stands out. His hypothesis suggests not continuing growth in the role of government but rather successive periods of increasing and decreasing government activity. Intuitively, a Hegelian scheme seems appealing and reasonable. Hegel's thesis that any action produces a counteraction has widespread support in the physical sciences.

In his numerous books, Pirenne argued for a laisser-faire government-control dichotomy dating from the eleventh century. Table 1 presents his identification of these epochs.

TABLE 1

Pirenne's Categorization of the Great Epochs of Business

Laisser-faire	Public Control
11th - 12th Centuries	13th - 14th Centuries
15th - 16th Centuries	17th - 18th Centuries
19th Century	20th Century

Source: R. Eels and C. Walton, Conceptual Foundations of Business, (Homewood, 1963), p. 28; Pirenne, "The Stages..."

Similar to the other studies cited above, Pirenne's findings are inferences drawn from historical evidence. It is somewhat surprising that they have gone largely unnoticed by public finance economists. However, this probably reflects a problem common to all historical hypotheses. For an empirically-oriented discipline such as economics, testing has been extremely difficult.

The hypothesis also is not without some inherent difficulties. There is obviously a problem in interpreting what is meant by public control and its relationship to the relative size of government. As Fabricant notes,

> "...government activity and government regulation are not identical, nor are all types of government regulation similar in their effects. And lags are involved: decline in government regulation can be a cause of economic growth; in turn, the growth can -- later -- cause a return to government regulation and increase in, government activity generally." [17]

It seems reasonable to presume that increased public control also implies increased public expenditures, particularly if, as we shall argue below, control has been associated with war activity. Increased public expenditures in turn imply an increased relative role for government if government expenditures have been a substitute for private production;[18] if they have been complementary, the direction of relative change is not definable since it depends upon the marginal and average ratios of government expenditure to private production. However, since increases in per capita output were small until the nineteenth century, we may conclude that any notable increase or decrease in government activity suggests a relative change in the same direction.[18a]

The second major limitation is that there is no identification of the causal factors. In this respect, it is similar to the Wagner hypothesis. Nevertheless, it is possible to use the rationale of Peacock-Wiseman that the absence or presence of wars is the critical factor. In a completely separate context, George Stigler has commented:

> The dominant era of the free market place was in the Nineteenth Century. I believe... that the absence of major wars in this century - the only peaceful century in history - was related to this reign of liberty.[19]

But if less government control is associated with a reduced number of wars, what does this tell us about the relative share of government? Peacock-Wiseman argued that war eases the constraint that governments face in raising tax revenue. Hence, during wars expenditures rise; however, in the context of their analysis, expenditures do not decrease after the war (or crisis) to the pre-war level. What might cause a reduction in the government's relative share is either (1) a relatively rapid increase in the non-government sector as Veblen suggests:

> In so far as it is guided by the exigencies of trade, the objective end of warlike endeavor is the peace and security necessary to an orderly development of business.[20]

or (2) the level of expenditures justified by war loses its "legitimacy" and an opposition to high expenditures causes a relative decline.[21]

Since tax revenues for most of recorded history have been based on per capita levies essentially unrelated to production, there could be no automatic growth in revenue without changes in tax rates. If inflation is generally coincident with or follows war activities, the real values of tax revenues based on per capita levies must decrease. Thus, government expenditures (constrained by revenues) will decrease relative to private production until war activities again permit tax rates to increase.

A similar conclusion follows if it is assumed that during laisser-faire government goods are primarily complements to privately produced goods, but during periods of government control primarily substitutes. As the public sector grows relative to the private sector, it becomes relatively less efficient and the "price" of public goods becomes higher, thus causing the populace to switch to private substitutes. Similarly, as the private sector increases, relatively higher prices in turn cause a shift back to the public sector, and so on. In terms of Veblen's argument above, if the purpose of war is to increase the "productivity" of the private sector, then a decrease in war activity will signal a period when the relative price of privately produced goods is low.

Finally, the theory is subject to the severe methodological criticisms which have been directed towards all stage theories.[22] In particular, for our purposes, Pirenne's criteria for distinguishing periods are never made explicit and hence cannot be verified. Similarly, the fact that the periods are limited to centuries with no more detailed breakdown, suggests that the author intended them as general quides rather than precisely defined epochs.

These criticisms withstanding, it is our intention to examine existing evidence and to attempt an indirect test to determine the extent of substantiation, if any, for Pirenne's hypotheses.

B. Empirical Studies of Long Term Government Growth

It is not surprising that the evidence which has been marshalled on long term government growth is far from conclusive in support of any of the hypotheses described above. In the absence of historically reliable

data for most economic variables, it is difficult to conceive of a rigorous test which could be unambiguously interpreted. Indeed, there is not even a "best" measure of government activity or of the share of output devoted to government activities.[23]

Most researchers have interpreted their findings in support of the Wagner hypothesis. Not only has the elasticity of total expenditure with respect to national income been found consistently greater than one but as well the components of total expenditure appear roughly to approximate what one would expect, i.e., higher elasticities for social and environmental services.[24] As well, the evidence appears to support the Peacock-Wiseman proposition of a "displacement effect". Although there are problems in interpreting these data,[25] they generally suggest that each of the two wars in this century and the depression of the 1930's resulted in a discontinuous jump in public expenditures.[26]

Now, what does this evidence suggest when brought to bear on the Pirenne hypothesis. We have already suggested that both the Wagner and Peacock-Wiseman propositions are consistent with Pirenne. The former applies to only industrializing nations and hence may thus represent one phase of a longer phenomenon. Similarly, the latter deals with twentieth century data and post-crisis "consolidation" during which expenditures decrease (from the crisis high but not to the pre-crisis level) could be amended easily to accommodate longer run declines of greater magnitude. For example, an absence of crises may result in a loss of impetus (and ultimate decline) in the relative role of government.

Although data earlier than the twentieth century is generally unavailable, a number of studies do cast some evidence on Pirenne's position.

Data for the United Kingdom are available for a longer period of time than for any other country. Over the period 1790 - 1890, Veverka determined that government expenditures grew on average, only 1.9% annually while national income grew 2.3%.[27] The estimated elasticity coefficients are 0.95 for 1790 - 1830, 0.76 for 1850 - 90 and 2.11 for 1910 - 61. This, then, suggests that relative to income, government's share declined from 1790 until some time close to the end of the nineteenth century and then increased.[28] Since Pirenne argued a smaller role for government in the nineteenth century, this is consistent with his hypothesis.

The second strand of evidence is the result of cross-section studies. Observing the relationship between the Government expenditure ratio and per capita income for thirty-three countries, Gupta concluded that there was a "diminishing rate of increase of G/Y with an increasing level of development."[29] Pryor also concluded that the "share of public consumption expenditures in the GNP appears to be declining."[30]

Thus, there is some evidence that the share of public expenditures declined in the nineteenth century, increased in the twentieth century, and may now be beginning a decline.

C. The Experiment

If, as we previously argued, there is an association between wars and growth of government, then we would expect to find cycles of wars which correspond to Pirenne's categorization of business epochs. While

this is not a "strong" test, positive results at least suggest that Pirenne's hypothesis has merit.[31]

We based our study on the experience of Western Europe (British Isles, France, Holland, Belgium, Italy, Spain, Portugal).[32] These roughly correspond to the nations referred to by Pirenne in making his generalization. From historical tables, we obtained a listing of all conflicts in which these nations had been involved.[33] We then classified the conflicts into internal (local uprisings), external with a country closely related,[34] and external, and assigned weightings of 1, 1 1/2 and 2, respectively, for each year, or part, that the conflict continued. When more than two countries were involved, each additional country was assumed to magnify the points proportionally. Thus, if four countries were involved in a one-year war, the points assigned would be six. We then aggregated these for twenty-year periods from A.D. 1000 to 1960. We also made a separate set of calculations excluding purely internal uprisings. (See Table 1).

Two reservations are in order. We have accepted uncritically the information from the historical tables. It is probable that early observations are less accurate than later ones due to less accurate sources. Unless there are abrupt changes or inconsistent biases, this will not critically affect our analysis, though it might incorrectly suggest an upward trend. Secondly, the point system we have used is biased due to changes in the political structure of the nations involved. Since independent constituencies are more likely to engage in war (and receive a

TABLE 1

Wars in Western Europe

Period	Number of Internal Conflicts	Number of Contiguous Wars	Number of External Wars	Total Points	Points Excluding Internal Conflicts
1000-1019	3	1	3	28.5	25.5
1020-1039	2	2	2	15	13
1040-1059	6	5	0	13.5	7.5
1060-1079	13	4	2	23	10
1080-1099	6	7	4	29.5	21.5
1100-1119	5	2	4	26.5	21.5
1120-1139	4	1	1	10.5	5.5
1140-1159	4	4	1	12	8
1160-1179	1	2	3	10	9
1180-1199	4	3	6	22.5	18.5
1200-1219	3	3	4	23	20
1220-1239	0	4	1	12	12
1240-1259	3	2	2	10	7
1260-1279	2	5	3	15.5	13.5
1280-1299	6	2	2	17	11
1300-1319	1	5	3	25	24
1320-1339	1	5	5	22.5	21.5
1340-1359	1	4	6	23	22
1360-1379	1	5	8	34.5	33.5
1380-1399	3	3	2	21	18
1400-1419	7	1	4	36.5	29.5
1420-1439	1	0	1	12	11
1440-1459	3	1	2	23.5	17.5
1460-1479	3	6	2	21.5	17.5
1480-1499	8	3	4	23.5	15.5
1500-1519	0	1	6	20.5	20.5
1540-1559	0	4	7	24	24
1560-1579	13	1	3	32.5	11.5
1580-1599	3	2	8	40	29
1600-1619	9	1	2	14.5	5.5
1620-1639	6	1	4	35	28
1640-1659	2	4	5	42.5	35.5
1660-1679	0	1	6	68.5	68.5
1680-1699	0	1	3	93.5	93.5
1700-1719	3	1	6	68	51
1720-1739	0	0	3	11	11
1740-1759	2	0	4	59	57
1760-1779	0	0	4	36	36
1780-1799	2	0	9	76	74
1800-1819	2	0	12	62	60
1820-1839	4	0	5	16	12
1840-1859	11	1	8	38.5	25.5
1860-1879	5	0	3	19	10
1880-1899	1	0	0	1	0

TABLE 1 (Continued)

Wars in Western Europe

Period	Number of Internal Conflicts	Number of Contiguous Wars	Number of External Wars	Total Points	Points Excluding Internal Conflicts
1900-1919	4	1	2	97.5	92.5
1920-1939	7	0	6	43	34
1940-1959	0	0	1	110	110

Source: Computed from S.H. Steinberg, Historical Tables, 58 B.C. - 1965 A.D. (London, 1966).

higher number of points) than parts of a nation state, one would expect higher numbers of points in the earlier eras, other things equal. On the other hand, due to changing technology, improved transportation and so on, war is more general and likely to involve more nations in 1960 than in 1000. On a priori grounds, there is no way of saying which effect will predominate. Also, it should be noted that the weighting system does not take account of varying real costs in the conduct of war.

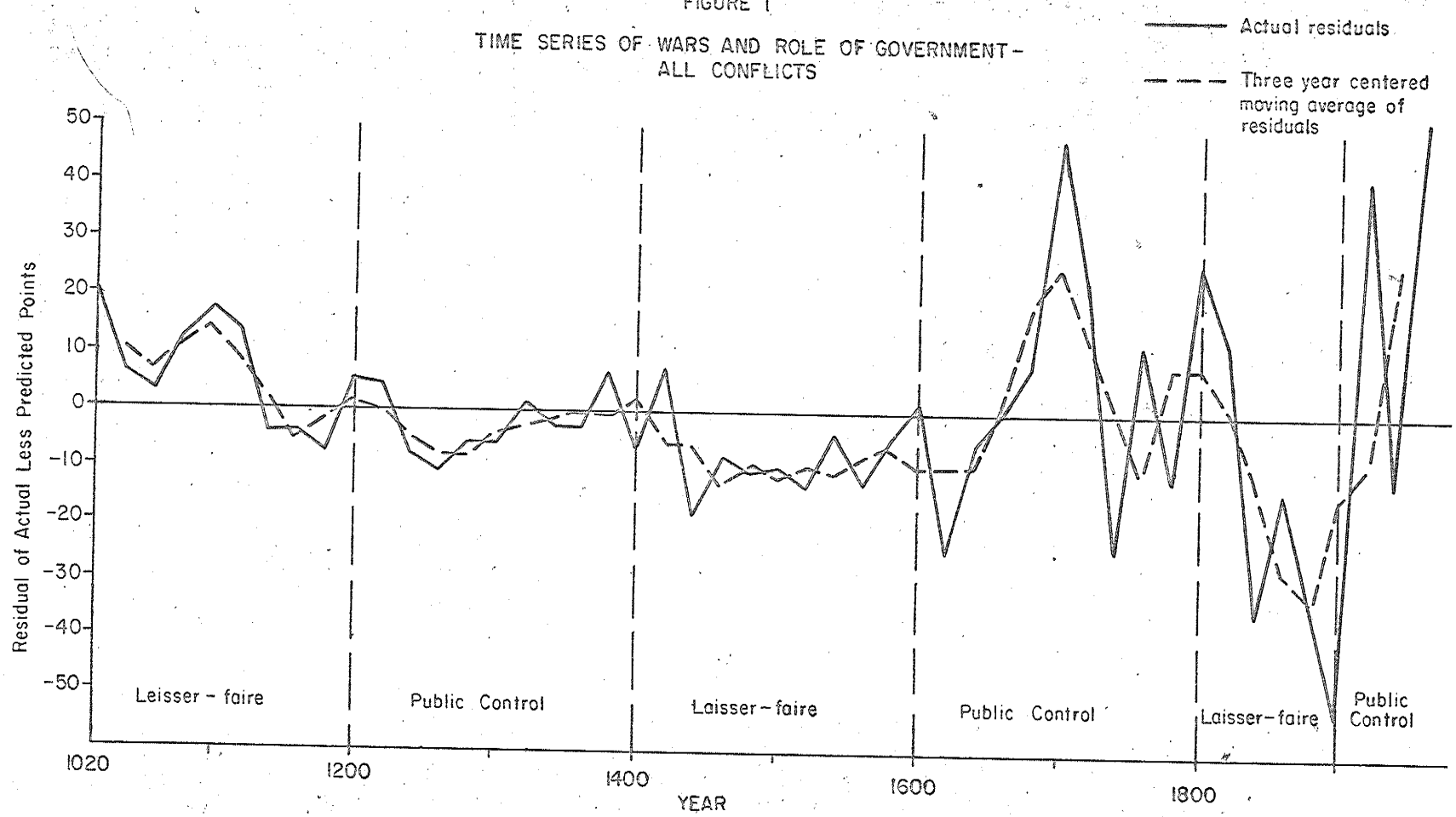
When the points were plotted against time, it was apparent that an upward trend existed. Since we were interested in cyclical phenomena, we examined variability about a computed trend line. For these purposes, we calculated a simple linear regression, $Y = a + bT$, where Y is assigned points and T is time, and a log regression, $\ell n\ Y = a + bT$, where the symbols are similarly identified. Since the two lines were similar, we report our results only for the linear expression.[35]

Figure 1 presents the residuals for each twenty-year period (actual points minus points predicted by our regression equation) and the residuals based on a three-period moving average (the period in question and the preceding and following periods). In Figure 2 the same information is presented for computations excluding internal conflicts.

It is readily apparent that there is indeed a cyclical pattern to the incidence of wars in Western Europe over the period. However, it is not clear that the "peaks and troughs" of these cycles always occur in the predicted periods.

FIGURE I

TIME SERIES OF WARS AND ROLE OF GOVERNMENT-
ALL CONFLICTS



Editor, This note should be put at the bottom of Figure 1:

Residuals are the difference between actual assigned points (see text) and predicted points from equation $Y = 7.12 + 1.06T$. Values for twenty year periods are plotted at the end of the period.

Editor,

This note should be put at the bottom of Figure 2:

Residuals are the difference between actual assigned points (see text) and predicted points from equation Y = 3.26 + 1.05T. Values for twenty year periods are plotted at end of the period.

Particularly on the basis of the three period moving average, therefore, one would have to conclude that the direction of the change supports the Pirenne hypothesis.[36] During periods of laisser-faire, the incidence of wars appears to decline and it increases during periods classified as government control.

Conclusion

The evidence that we have examined suggests that the relative share of government has alternately increased and decreased. If this is correct, then Wagner's "law" of increasing government is applicable only to one phase of a longer phenomenon. Unfortunately, the factors underlying the relationship remain unclear, and it is possible that our link between tax constraints and limits on the growth of government is invalid. Nevertheless, these findings suggest that researchers examining long-term government growth should be cognizant of the possibility of turning points in the growth of government.

FOOTNOTES

* Assistant Professor of Economics, Queen's University, Kingston, Ontario, Canada. I wish to thank D. Vardy and J. Chant for comments on an earlier draft of this paper and S. McRoberts for research assistance in the calculations of Section C.

1. Adolph Wagner, Finanzwissenschaft, (Leipzig, 1890), cited in B.P. Herber, Modern Public Finance, (Homewood, 1967) and A.T. Peacock and J. Wiseman, The Growth of Public Expenditures in the United Kingdom (Princeton, 1961). An English summary is in R.A. Musgrave and A.T. Peacock, Classics in the Theory of Public Finance (London, 1958), pp. 1-8. For an excellent summary and discussion, cf. R. Bird, The Growth of Government Spending in Canada (Toronto: Canadian Tax Foundation, 1970), especially Chapter 4.

2. See H. Pirenne, Economic and Social History of Medieval Europe, (New York, 1937), pp. 91, 216-19; A History of Europe, (New York, 1939), pp. 610-12; "The Stages in the Social History of Capitalism", American Historical Review, XIX (April, 1914), pp. 494-515. Cited in R. Eels and C. Walton, Conceptual Foundations of Business, (Homewood, 1963). A classification error is to be noted in the Eels and Walton summary.

3. I.J. Goffman, "On the Empirical Testing of Wagner's 'Law' ", Public Finance, XXIII, (1968), pp. 359-64. For example, an incorrect testing has been cross-sectional analysis since the "law" does not imply necessarily that high income states will have higher government shares in output than low income states, but rather that over time government's share will increase in each industrialized state. Musgrave and Gupta have made incorrect inferences on this basis. See R. Musgrave, Fiscal Systems (New Haven, 1969), Chap. 4 and S.P. Gupta, "Public Expenditures and Economic Growth". Public Finance, XXII (1967), pp. 423-61. Bird, The Growth ... discusses this problem, pp. 76-81.

4. Herber draws attention to the similarity in viewpoints expressed on this issue by Smith, Mill, Bentham and others. See also the argument of J.K. Galbraith, The New Industrial State (New York, 1968).

5. This is characterized by regulative and protective activity resulting from increased complexity of legal relationships and communications, population density and urbanization.

6. Peacock and Wiseman have made the second and third criticisms in particular.

7. There are, of course, a number of other earlier generalizations, but the rate of growth and relative size of government was left implicit. For example, various stage theories of economic history have implicit notions of this nature.

8. S. Fabricant, The Trend of Government Activity in the United States Since 1900, (Princeton, 1952).

9. See especially Fabricant, pp. 150-51. One of Fabricant's variables is per capita income.

10. To attempt a greater proportion then 25%, he argued, would result in a decrease in the aggregate supply of goods and inflation. C. Clark, "Public Finance and Changes in the Value of Money". Economic Journal, XL, (December, 1945), pp. 371-89; and "Long Run Effects of Taxation on the Value of Money", in The Limits of Taxable Capacity (Princeton, 1953) pp. 141-150. See also C.E. Forget, International Tax Comparisons, Study Number 14 for the Royal Commission on Taxation (Canada), 1966.

11. Herber, p. 149.

12. Peacock and Wiseman.

13. The Wagner hypothesis might be mathematically stated as $dG/dY \cdot \frac{Y}{G} > 1$ (where G is government and Y national income); whereas the Peacock-Wiseman hypothesis suggests that $dG/dY \cdot \frac{Y}{G} \gtreqless 1$ in the shortrun and $dG/dY \cdot \frac{Y}{G} > 1$ in the longrun.

    Bird, pp. 107-117, presents a cogent documented criticism of the Peacock-Wiseman hypothesis. In particular, he notes a change in emphasis in the second edition of their book to changing character of public expenditures rather than total public expenditures. One of the main problems in their approach is that Peacock and Wiseman generally neglect demand considerations by not explaining why government expenditures should increase up to the constraint established by revenues. The increased expenditures are consistent, of course, (and not facetiously) with Parkinson's famous law that expenditures increase to "consume" the available revenues.

14. Peacock and Wiseman, p. 25. Wagner also draws attention to this factor, but he did not believe it to influence long-term trends.

15. Lerner's "functional finance" is the clearest expression of this point of view. Cf. A. Lerner, Everybody's Business (Lansing, 1961).

16. For example, increased trade occurring with industrial growth can provide an easily taxed base. Cf. H. Oshima, "Share of Government in Gross National Product for Various Countries", American Economic Review, 47, (June , 1957) pp. 381-90.

17. Fabricant, pp. 150-151.

18. This seems reasonable if the result of war activity is to draw farmers from the land, a plausible assumption in early labour-intensive economies in which war did not contribute directly to national output. In modern economies, this relationship is not clear but authors concerned only with the twentieth century do not clarify it.

18a. The concept of progress with discernable increases in per capita income is no more than two centuries old. Cf. A.J. Youngson, Possibilities of Economic Progress, (Cambridge, 1959).

19. G. Stigler, The Intellectual and the Market Place, (Glencoe, 1961), p. 98. Incidently, as shown below, Stigler was incorrect in saying that the nineteenth century was the only peaceful century in history. Many economists have identified wars with increased government activity. Cf. Fabricant, p. 150.

20. T. Veblen, The Theory of Business Enterprise (New York, 1904, 1958), p. 140.

21. Kenneth Boulding has stressed the importance of - and the relative lack of knowledge concerning - the concept of "legitimacy". Cf. K. Boulding, "Economic Libertarianism" in Beyond Economics: Essays on Society, Religion, Ethics (Ann Arbor, 1968), pp. 43-54.

22. See Z.Y. Hershlag, "Theory of Stages of Economic Growth in Historical Perspective" Kyklos, XXII, 1969, pp. 661-690.

23. For a summary of the literature and general review of the available measures, cf. Bird, pp. 197-208.

24. See J. Veverka, "The Growth of Government Expenditures in the United Kingdom Since 1790", in A.T. Peacock and D.J. Robertson (eds.), Public Expenditure: Appraisal and Control (Edinburgh, 1963), pp. 111-27; S. Andic and J. Veverka, "The Growth of Government Expenditure in Germany Since the Unification", Finanzarchiv, 23, (January, 1964), pp. 189-278; Erik Hook, "The Expansion of the Public Sector - A Study of the Development of Public Civilian Expenditures in Sweden during the Years 1913-1958", Public Finance, XVII (1962) pp. 289-312; K. Emi, Government Fiscal Activity and Economic Growth in Japan 1868 - 1960, (Tokyo, 1963); G. Colm and M. Helzner, "The Structure of Government Revenue and Expenditure in Relation to the Economic Development of the United States", L'importance et la structure des recettes et des depenses publiques, (Brussels, 1969); J. Hartwick, "Public Expenditures in Federal States", unpublished, Department of Finance, Ottawa, 1967 ; Bird, pp. 46ff, 73.

25. Musgrave, p. 88.

26. S.P. Gupta, "Public Expenditures and Economic Growth - A Time Series Analysis", Public Finance, XXII (1967), pp. 423-61 and "Public Expenditures and Economic Development - A Cross-Section Analysis", Finanzarchiv 27, (1968), pp. 26-41; Emi; Veverka; Andic and Veverka.

27. Veverka.

28. Bird notes that the relative share of the social services and administration components of expenditures increased throughout and hence supports Wagner. Environmental services, however, followed the same pattern as total expenditures. Cf. Bird, p. 73-74.

29. Gupta, p. 37.

30. F.L. Pryor, Public Expenditures in Communist and Capitalist Nations, (London, 1969), p. 63.

31. It should be noted, however, that the results of this test might yield significant results that are meaningless if Pirenne based his classification on the number of wars in the period. Though undoubtedly a factor in his calculus, there is no evidence that it was the only consideration.

32. For periods before their unification as individual nation states, we examined the constituencies now included in these nations.

33. S.H. Steinberg, Historical Tables 58 B.C. - 1965 A.D., (London, 1966).

34. This was considered to be a conflict between parts of present-day nation states or conflicts (a) within the British Isles and (b) between Portugal and Spain. Alternative bases for rating multinational conflicts did not change the nature of the results.

35. The computed lines were as follows:

	Simple Regression	R^2	Log Regression	R^2
All Wars	$Y = 7.12 + 1.06T$	.394	$\ln Y = 2.61 + .028T$	.392
Internal conflicts excluded	$Y = 3.26 + 1.05T$	.355	$\ln Y = 2.30 + .032T$	.340

The relatively low values for R^2 are what one would expect if cycles are present. The period 1880-1899 presented difficulties because of the absence of wars. Since we were interested only in eliminating trend in our assignment of points, we averaged the period before and after for a value in computing the regression equations. This resulted in a considerably better fit.

36. Although the regression coefficients for lines fitted to each period are generally not significant, it is interesting to note that the sign of the coefficient is consistent with our interpretation, i.e., negative for periods of laisser-faire and positive for periods of public control.

Period	Regression Coefficients	
	All Wars	Internal Conflicts Excluded
11th-12th centuries	- .8 (-.2)	- .6 (-.7)
13th-14th centuries	1.4 (1.7)	1.5 (1.7)
15th-16th centuries	1.2 (.2)	.4 (1.0)
17th-18th centuries	3.1 (2.4)	3.5 (2.0)
19th century	-11.9 (-5.0)	-12.2 (-4.4)
20th century	6.3	8.8

Data in brackets refer to regression lines fitted to three year moving averages.