Jour. Soc. Sci. & Humn. 1994/95: 1 & 2, 111-145

DETERMINANTS OF PUBLIC EXPENDITURE IN PAKISTAN

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This is an analytical paper in which we have analysed the public expenditure of Pakistan through regression. We have used time series data for the period 1960 to 1980.

The level of income (GNP), defence expenditure of India, lagged public expenditure and foreign aid are important determinants to total Public expenditures of Pakistan. Disaggregation to total public expenditure into development, non-development, defence and non-defence expenditure shows that the level of Income and total public expenditure have positive influence on them, while foreign aid has positive influence on development and non-defence expenditure and negative one on non-development and defence expenditure.

It is the development expenditures which have been reduced to finance defence expenditure.

The validity of Wagner's Law (The elasticity of public expenditure with respect to Income (GNP) must be greater than Unity

$\Delta E / \Delta GNP \cdot GNP/E > 1$

has been checked and confirmed that the Wagner's Law for total public expenditure has been generally valid.

The study has also thrown some light on the fact that Pakistan has followed the Islamic strategy in making budgetary allocation throughout the establishment of Zakat and Ushr Institutions.

INTRODUCTION

The main purpose of this paper is to investigate as to what are the economic and social factors that influence the public expenditure of Pakistan. A part from observing the impact of her economic factors such as national income, foreign aid and lagged public expenditures of Pakistan, the impact of Indian defence expenditures on the Pakistan economy will also be considered. The analysis will also be extended to check the validity of Wagner's Law with respect to Pakistan's total public expenditure as well as its disaggregated public expenditure including development, non-development,

defence and non-defence expenditure. The analysis will examine Wagner's original proposition that is, that the elasticity of public expenditure with respect to Income is greater than unity in the short-run as well as in the long run. As well, I will look at Peacock-Wiseman's revised version of Wagner's law which holds that elasticity of public expenditure with respect to national income may be less than, equal to, or greater than unity in the short-run but should be greater than unity in the long-run.

As far as the tax effect on public expenditure is concerned, it has been shown that there in no significant change in total revenue. Total revenue has been 10% to 15% of GNP over a period of last 20 years i.e. from 1960 to 1980.(1)

Thus the tax effect will be ignored in the analysis to this paper. Keeping in view the Islamic laws introduced by present regime, we may see that government is spending a special kind of amount from "Zakat and Ushr" for the welfare of poor people. The per household only poorest people, 10% of total population 9.5 million distribution of Zakah and Ushr comes to about Rs.330 per year. No doubt this is a meager amount yet it has created an institution through which the mustahqueen can be helped to some extent.(2)

We will also present the concept of Islamic budget in the review of literature, even though we will not pursue it in the main analysis due to its insignificance for the purpose of the present analysis.

The structure of this paper will be as follows: Section I is Introduction, II deals with the review of literature, III deals with the methodology, IV are data issues, V presents results and discusses them and VI exhibits conclusion derived from the analysis.

II. REVIEW OF LITERATURE

No study on the determents of total public expenditure and its components has so far been conducted in Pakistan. Therefore, to get an insight into the formulation of our model, we have reviewed a number of

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1) Total revenue as a % of GNP of Pakistan from 1960 to 1980. 11.5,12,10,12.6,13,13.7,13.2,15,13,12,12,13.6,12, 12,12.6,13,13.6, and 14%. Pakistan Economic Survey, 1979-80.

(2) See Zakah and Ushr, pp.13, Pakistan Survey 1984-85, see also in appendix.

relevant studies conducted for other countries. The main ideas of some of these studies are discussed briefly below (3) Borcherding (1974) discussed the sources of growth of public expenditures in the United States. He said that "The evidence suggested that the growth of government has been 40 to 50 percent faster than would be predicted just on the basis of changes in relative prices, incomes, population and indices of interdependence". He also commented on Wagner's law, "Now contrary to the widely stated position known as Wagner's Law, it does not appear that the elasticity of public expenditure is greater than 1.0, but a great deal less. My own "guestimeate", based on a survey of the literature and my own research, places it around 0.75".

Goffman-Mahar (1971) Claimed that the primary purpose of theirs was to identify and isolate the basic facts which have influenced the level of aggregate public spending in a sample consisting of Hati, the Dominican Republic, Costa Rica, Panama, Honduras and Guyana. The second goal was to measure conventionally the effects upon absolute expenditure growth of the so called permanent influence such as income, prices and population. Third, and finally, Goffman and Mahar demonstrated that even after these "Permanent influences" have been given due credits, in each of these countries a sizable portion of the growth in public spending still remains unexplained. Further, the pattern exhibited by this growth is the same ratchet pattern observed by Peacock and Wiseman (as well as others) which they termed the "displacement Effect". However, the sources of this "displacement" appear to differ from those observed in developed countries. In their six-countries. Sample some displacements appear to be related to internal revolution and international trade, which, in turn, may or may not have reflected the influences of an external power. Foreign influences may have also had more direct impacts upon the level and composition of spending in developing countries by virtue of a sort of national demonstration effect.

From the Peacock-Wiseman study, however, it was found that the increased role of the government in wartime (World war, I, and II) was not the sole reason for jump in public expenditures. This was illustrated by the fact that, although government expenditure did fall in the postwar years, they did not return to the prewar level. Peacock and Wiseman base their explanation for the Displacement Effect on the observation that under

(3) See the bibligraphy at the end of the project for a fairly complete listing of the available research on the subject.

periods of violent social disturbance, people will tend to revise their previous feelings toward tax levels and revenue-raising methods. After a social disturbance has subsided, however, the people have usually accepted new set so norms concerning public finance and expenditure levels. The displacement in the Peacock-Wiseman study was always upward, but there is no reason to believe that movement in the other direction would not be possible under other conditions.

The findings of Peacock and Wiseman (1961) for the United Kingdom as well as subsequent studies which have been published, clearly relate the displacement of two major phenomena, namely Wars and Great Depression. While developing Countries are not immune to such social upheavals, they are also likely to experience major expenditure shift as a result of social, political, and economic characteristic peculiar to developing countries.

Jhon W.O'Hagan [1980] found in his study that first the evidence for Ireland for the period 1953-76 is not compatible with the hypothesis of a demonstration effect, second the experience of Ireland in the 1974-75 period is not incompatible with the hypothesis that the recession of 1974-75 caused an upward shift in the public sector share, albeit, perhaps temporary.

Hartley-McLean [1981] concluded that defence is a major item of public expenditure which has been relatively neglected by economists. Their paper is an exploratory contribution in which a policy model is developed and tested for the U.K. The model shows that British defence expenditure has been determined by a combination of economic, political and strategic factors. These include income levels, the balance of payments, spending on civil goods, the political competition of the Government, the influence of allies and potential enemies, as well as local wars, the abolition of conscription and technical progress in military production functions. Effectively, the model is a hybrid containing elements of an optimisation approach the economics of politics, a displacement effect, and incrementalims.

An economic theory of democracy which embraces political parties and bureaucracies can be applied to defence and military industrial complex [Breton 1974] and Hartley 1980]. Where voter-preferences are diverse, uncertain and costly to collects, as in defence, then vote-maximising government are likely to be influenced by producer interest groups (weapons firms); the citizens who are best informant on weapons are likely to be those whose income are directly affected. The influence of defence contractors will be reinforced by any budget-maximising aims of the Ministry of Defence and

Services. To maximise its budget, the Ministry of Defence can underestimate costs, over-estimate demand and it can formulate programmes which are attractive to vote-sensitive Governments. Suggestions of a displacement effect" in defence evidence of cost escalation on weapons projects as well as the alleged, but unsubstantiated, technical" from aerospace projects are consistent with the economics of politics. Hartley and Cubitt [1977] and Stockfish [1972]. There are theories of the arms race, incrementalism and the displacement effects, together with Marxist theories which counted that "military expenditure is necessary for the maintenance of Capitalism as a viable international system' [1977] and Hartley and McLean [1978].

Nagarjan [1971] wrote in his paper that econometrics tests for changes in the coefficients as well as shift in the expenditure functions provide support for the displacement effect in the Central Government expenditure in India as a consequence of the Indo-china hostilities of the 1962. A structural break occurred in the way of fiscal decision making process before and after the crises of 1962 and changed the character of central government in India.

Henning-Tussing [1974] found in their study that income elasticity of demand for non-defence government expenditure of USA in the long run was in the range 1.50 - 1.60 although it was low in the short run and on this basis they concluded that Wagner's Law appears to be valid with respect to the United States particularly for period since 1929.

Bird [1971] also explored the significance and implication of Wagner's Law in some detail in his paper. He argued that if Wagner's law appears satisfied by some aspects of past reality, however it does not mean that it has any predictive power for the future. It is merely a philosophical statement of speculation and does not represent a substantive theory.

Gandhi [1971] wrote in his study that for the Wagner's law to hold good two conditions must be satisfied:

(1) income elasticity of public expenditure must be greater than unity.

(2) the per capita quantity of public goods must increase and/or quality of public goods must improve as population grows. The author suggests that while both these conditions may be satisfied for a sample of less developed countries, there are reasons why a sample of less developed countries alone may not fulfill them. He agrees that limited income elasticity of tax revenue, high ratio of non-tax revenues to total government receipts and low income

elasticity of non-tax revenues taken together may cause, a less than unity income elasticity of public expenditure in less developed countries. The relative stagnaion of income and production in these countries may lead to non-fulfillment of the second condition stated above. The author further said that Wagner felt that his law held good as much for the various types of public expenditures as it did for the aggregate of all public expenditures which may not be the case as the author found in his empirical work.

Crowley [1971] put as footnote (13, pp 29) in his study that the Wagner's hypothesis might be mathematically stated as $\Delta G / \Delta Y^*Y/G > 1$ whereas Peacock-Wiseman hypothesis suggested that $\Delta G / \Delta Y^*Y/G \geq 1$ in the short run but $\Delta G/\Delta Y^*Y/G > 1$ in long run.

Faridi [1983] has explained the process and structure of an Islamic budget. The Islamic strategy for economic development requires a basic change in the structure of public budget and its formulation. Since public budgets will be calculated to ameliorate the conditions of masses, and will reflect the values and goals of an Islamic Society, its priorities ought to be determined by a much wider participation of the people than is currently possible in muslim countries. The enlistment of public participation in farming the budgetary priorities and in the determination of its sources of revenue and its implementation is the prerequisite for the successful execution of an Islamic budgetary policy. Some of the characteristically unique sources of public revenue in an Islamic society, without whose contribution, its budgetary plans will fail to take off, involve willing and zealous participation of the community in government effort to tackle effectively the problems of economic development. As illustration, we may cite benevolent loans (Qarz-e-Hasna) and Amanah deposits with the government treasury. But of great significance quantitatively is the Zakah receipts, where the confidence of the payee in honesty and wisdom of the official machinery is of utmost importance. A government whom the people do not trust can scarcely by able to tap Zakah revenue adequately and effectively. In the allocation of public resources also the Islamic community must have a say, in accordance with the Islamic concept of Shura, to arouse confidence, and to experience and effective check on a government's tendency to indulge in low priority, conspicuous and gradiose, publicity oriented schemes-a habit commonly found in many developing countries. The democratization of public budgeting is thus inherent in an Islamic strategy of economic development.

The structure: To place things in correct focus and underline the Islamic

priorities of government budget, it is imperative the conventional classifications of public budgets should be suitably modified to incorporate the Islamic scheme of priorities. A tentative classification that fits the scheme propounded in the present study so offered below:

1. Services Budget
2. Redistributive Budget
3. Tangible Assets Budget

1. Services budget of an Islamic government will encompass current budgeting appropriations that relate to ordinary functions of a modern government, such as administration, police, justice, defence and etc. However, it will also cover an additional dimension of governmental obligation characteristic of an Islamic administration, namely Amr-bi-al Maruf and A,-Nahi Un Almunkar. This is not only an additional dimension of an Islamic administration but its primary duty, the soul of its body politics, and overriding principle to which all its function are subservient. No Islamic budget can afford to be neutral in this respect or delegate this function to the society through supplementary budgetary measures or grants in aid. Instead it will have to devise and implement necessary measures to shoulder this responsibility directly through whatever channels are available to it. On top of it, each and every conventional government function, will have to adjudged in this light- Instruction in Islamic values and precepts is, perhaps, the most important device to implement this objective. Thus even in framing an ordinary budget, seemingly similar to other government budgets, the overriding principle will alter official priorities reduce some expenses, such as those on coercive obedience and increase allocation persuasive educational devices to foster Taqwa and honest, Zealous adherence to social obligations, and promote health and medical facilities.

Such a re-allocation is likely to release sizable resources for more socially useful utilization, avoid wastage on such official apparatus whose only function is to strike terror in the masses and to create distances between the people and the government.

2. Redistributive budget derives its validity from the primary concern of an Islamic Economy, namely equity, symbolized through the institution of Zakah, prohibition of Riba, disapproval of excessive concentration of wealth; laws of inheritance, and the value base of the Islamic society. This budget may be subdivided into two sub-budgets in accordance with source of finance in each case; namely Zakah budget and non-Zakah receipts. The Zakah budget

has to be kept separate in order to enforce the provisions of Shariah strictly with regard to the recipient groups. All other current revenues, earmarked for the elimination of poverty or aiding the poor in cash transfer or payments in kind, may be kept separate in Non-Zakah receipts budgets. The receiving groups of both budgets may not be mutually exclusive. But Zakah budget will provide the minimum spending required by Islamic Shariah for the purpose and no government will be permitted to tamper with it.

3. Tangible Assets Budget : Islam shuns the compartmentalization of development into economic development and social cultural ones. At the same time, it does not deny the significance of the former in fortifying Islamic defences and improvement in the living conditions of the people. In practice, however, the conceptual confusion embedded in development budget has led muslim governments to delegate human resources development to a secondary and inferior position. This classification will serve to accord improvement in consumption standards, skill formation, education, training and health, a deserved importance in the first and second category of budgets, while retaining the priority for investment in tangible assets in the third one. It may however be pointed out, here that the suggested classification of an Islamic governments budget will not only reflect the priorities of an Islamic community but also give direct in to Islamic fiscal operations as distinct form secular ones. The divisions of government resources as between different budgets will be based on the following principles:

1. Priority:

a) Maintenance of law and order and implementation of Amr-bi-al Maruf and Al-Nahi-Un-al-Munkar will get precedence.
b) Redistribution will come next.
c) Tangible Assets creation will come third.

2. Zakah and Sadaqah revenue will be allocated largely to Redistributive budget in normal times of peace. During war, Zakah revenues may be allocated to services budget for defence needs. Benevolent loans may also flow in the same budget.

3. When and if, the creation of essential tangible assets fortifying the defence capability of muslim community against an immanent danger to its territorial integrity, part of Zakah funds may flow into it.

4. In cases of conflict between the demands of various budgets, the above

stated priorities will provide the guidelines for final allocation of public resources as between different budgets.

METHODOLOGY

In our analysis we will be interested to investigate the determinants of aggregated as well as disaggregated public expenditure for development and non-development, defense and non- defence expenditures, Later on this analysis will be extended to check the validity of Wagner's Law with respect to public expenditure of Pakistan. All will be done with the help of regression analysis.

DETERMINANTS OF TOTAL PUBLIC EXPENDITURE

On an a priority basis we expect public expenditure to be related to GNP of Pakistan, foreign aid, population, and India's defence expenditure. We expect that Public expenditure increases as GNP of Pakistan increases. Our expectation based on the Wagner's law. We have also followed Goffman and Mahar's study (4).

They examine three factors which are considered to be permanent influences upon the growth to public spending. They are income, price, and population. Based on these theories we have developed a model, containing economic and strategic factors.

For this we examine income, prices, popuiation foreign aid, lagged public expenditure of Pakistan; We also examine India's defence expenditure as India is considered to be Pakistan's potential enemy.

It is a well-established in the conventional wisdom that the public sector's share of the community's increases with economic development. Originally employed by Wagner (5) the ratio of government expenditure to some measure of aggregate output has been the subject of considerable scrutiny in recent decade. In general, the Wagnerian expectation was found to be supportable, when measured over time. Indeed, as per capita income in a country increased, government spending as a proportion of aggregate output

(4) The Growth of Public Expenditure in selected developing nations: Six Caribbean countries (1940-65). Public Finance, International Quarterly Journal. Vol:26, 1971, pp. 57-74.

(5) In his "Law of Increasing State Activity".i.e.dE/dGNP > O

also increased. That is, the income elasticity of public spending tended to exceed unity (6) Wagner explained this phenomenon as resulting from "the pressure for social progress and the resulting changes in the relative spheres of private and public economy" (7).

He supported his proposition by referring to law enforcement (internal and external), state participation in material production, and public provision of certain economic and social services such as public health and education among others. In each of the above cases he implied that relationship with aggregate output would be positive, both absolutely and relatively.. In the light of above the discussion we expect a positive sign for the GNP coefficient in our public spending equation:

$dE/dGNP > o$

The total effects of population growth on the level of public expenditure are very difficult to ascertain. (8).

Certainly there is no a priori argument for the share of aggregate public spending to rise as population rises Although it is clear that some functional types of public spending such as defence are relatively inelastic with respect to population, others, such as education and health are relatively elastic. The good for which the services are equally available for all people. For example, national defence. The quality of this service remains same. It does not mater, that number of people is low or great. If marginal cost of providing service of any good is zero, that is known as pure public good (9), hence national defence is pure public good, as marginal cost of providing security service is zero. It is the structure of the population which appears to be a dominant factor. The population factor can not help but have influence upon the aggregate level of spending even though its precise effect is uncertain. To

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(6) Actually, the simple ratio of expenditure to GNP,(E/GNP) is not always a satisfactory substitute for the more technical measure of income elasticity. See I.J. Goffman, "On the Empirical Testing of Wagner's Law: A Technical Note". Public Finance XXIII,3/1968.

(7) Adolph Wagner, "Three Abstracts on Public Finance", in classics in the Theory of Public Finance, edited by Richard A. Musgrave and Alan T.Peacock, New York, 1962, p.8.

(8) See Goffman and Mahar (1971).

(9) Professor W.R. Thirsk's class lecture.

estimate the influence, we resoted to the conventional method of converting the data to per capita terms.

Changes in prices are difficult to assess in relation to their impact on the level of public expenditures. Since prices can either rise or fall, although in the case of Pakistan, increases in the general price levels was a increases was to overstate the spending data, since the government was obliged to increase expenditures in current terms just to maintain real levels of purchases and transfers. Other effects of price on the level of public spending are the personal, functional, and sectorial re-distributions of income and their resulting effect on the tax base. For purposes to the present study, the raw public expenditure data in current terms were adjusted for changes in the price level. By deflating the relevant statistics we allowed the information to be analyzed on the basis of a unit of currency with a constant value. For this we followed Goffman and Mahar (1971).

In less developed countries once the public expenditure attains a certain level at one period of time, it becomes difficult to push it down to a low level in the years to come. There are certain development program, for example, construction of highway, which takes more than one fiscal year to be completed. For meeting such necessary development expenditure the government accommodate the current budget through considering last fiscal year budget. This implies that the current public expenditure is very much influenced by the lagged expenditure. For the present study we are assuming one period lag in public expenditure i.e., Et-1

$$Et = f(E\,t\text{-}1.)$$
$$dEt/dEt\text{-}1 > 0$$

The empirical result will show the extent of adjustment in the total public expenditure towards the desired level. Short-run is that time period in which actual expenditures are not equal to desired expenditure. Long-run is that time period in which actual expenditures are equal to desired expenditure. In the present study short-run is that time period in which current expenditure are not equal to lagged public expenditure.. Long-run is that time period in which current public expenditures will become equal to lagged public expenditures. In the light of above explanation positive sign of the coefficient of lagged public expenditure is expected.

Foreign aid is also an important factor in explaining the behavior of public expenditure. Foreign aid is also given for specific purposes known as

tied aid. Until 1980 it was donated for drugs control advancement in Agricultural sector and for research and development. After 1980 it is mainly for Afghan refugees, in the form of food, clothing transportation and medicines.

This is mainly for non-defence purposes. Its effect on total public expenditure is undeterministic. We may expect both negative an positive sign of its coefficient.

If we think of including strategic factors, such as defence expenditure of potential enemies and allies, then following the Hartley and McLean's approach [1981] we consider India's defence expenditure as an influencing factor on Pakistan's defence expenditure. As India's defence expenditure increases Pakistan will increase her defence expenditure. The coefficient of India's defence expenditure is expected to be positive.

We expect total public expenditure increases with the increase in GNP, hence development and non-development expenditure will increase according to Wagner's Law So GNP and total public expenditure have positive influence on development and non-development expenditure. So far as the impact of foreign aid on development and non-development expenditures are concerned, it is expected that foreign aid has a positive influence on development expenditure as donors usually give foreign aid for higher development expenditure. The signs of the coefficients of GNP, and public expenditure in development and non-development expenditure equations are expected to positive. The sign of the coefficient of foreign aid in development expenditure equation is expected to be positive while in non-development expenditure equation is expected to be negative. Further, it is expected that there will be negative relationship between foreign aid and defence expenditure of Pakistan because at the time of conflict when the defence expenditure was higher the foreign aid was topped by the donors and this emerge usually continued until about four to five years after the conflict. Therefore due to the cut in foreign aid the defence expenditure of Pakistan may increase through other alternative sources such as domestic resource mobilization etc. Keeping in view Wagner's Law we expect, that defence expenditure will increase as the GNP of Pakistan increase. However, defence expenditure will increase with an increase in total public expenditure. The expected sign of coefficients of the following variables such as:

(i) Public expenditure to be positive.
(ii) GNP to be positive

(iii) defence expenditure of India to be positive.
(iv) foreign aid to be negative.

It is expected that there will be negative relationship between non-defence expenditure of Pakistan and defence expenditure of India. This implies that as defence expenditure of India decreases, the non-defence expenditure of Pakistan increases through reduction in defence expenditure of Pakistan. However, non-defence expenditure will increase with increases in GNP and public expenditure of Pakistan according to Wagner's Law. We also expect positive influence of foreign aid on non-defense expenditure. So the sings of the coefficients of variable:

(i) Public expenditure is positive.
(ii) GNP is positive
(iii) defence expenditure of India is negative
(iv) foreign aid is positive.

Displacement effect:

Following Peacock and wiseman we will concentrate our discussion on displacement effect when there is an increase in defence expenditure of Pakistan (e.g. in war times, 1965 and 1971). We will see whether the increase in defence expenditure is financed at the cost of development expenditure. For this purpose we will regress the change in defence expenditure on change in development and change in non-development expenditure.

Validity of Wagner's Law in Pakistan

To check the validity of wagner's law of Pakistan, the elasticity of public expenditure with respect to GNP must be greater than unity i.e.

$$\Delta E/\Delta GNP * GNP/E > 1$$

However according to Peacock-Wiseman's hypothesis the elasticity of public expenditure with respect to GNP of Pakistan may be less than or equal to or greater than unity in the short run but it should be greater than unity in the long-run,i.e.

$\Delta E/\Delta GNP * GNP/E \geq 1$ This may be written as

$$\Delta E/\Delta GNP * GNP/E = \hat{a}6 * GNP/E$$

Where a6 is the estimated coefficient of actual data and in this linear form is equal to $\Delta E/\Delta GNP$, thus elasticity will be worked out for each year

for the period 1960 to 1980. This will tell us what has been happening in the short run.

In the long run we may work out an average elasticity of total public expenditure with respect to GNP of Pakistan for the whole (1960 to 1980) from an estimated function.

$$\frac{E}{GNP} = a6^{*}GNP/E$$

and this can be written as $\hat{}a6^{*}$ GNP/E where a6 is the regression coefficient in the equation $E = a5 + a6GNP + U'$

For long-run elasticity public expenditure is regressed on GNP, lagged public expenditure, defence expenditure of india and foreign aid in logarithmic form (10). The double log form, which incorporates a constant elasticity is very common in econometrics. In the present case, we assume that disturbance term is log-normally distributed. To justify the assumption of log-normality of the distribution of the disturbance term, we may call on the Multiplicative Central Limit Theorem: The distribution of the product of N independent random variables tends to log-normality as $N\text{-}\infty$ under very general conditions.

Thus if we think of disturbance term as representing the net effect of a large number of independent multiplicative factors, it is reasonable to assume that it is indeed log-normally distributed. Then the estimates of slope coefficients, in which we are interested, will be unbiased and efficient. (11) Using the same technique, Wagner's Law will be tested for individual components of Public Expenditure.

Based on the mentioned theories we have developed a model containing

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(10) The equation is given as follows:

$E_2 = a_7 + a_8 \cdot GNP_2 + a_9 \cdot EL_2 + a_{10} \cdot DEF_{12} + a_{11} \cdot FA_2 + U_3$ Where, E_2 is log E, GNP_2 is log GNP, EL_2 is log EL, DEF_{12} is log DEFI and FA_2 is log FA. In this a8 is short-run elasticity as we know that in the long-run, actual public expenditure will become lagged public expenditure.i.e.,

$E_2 = EL_2$, $E_2 - a_9 \cdot E_2 = a_8 \cdot GNP_2$,

$E_2(1-a_9) = a_8{}^{*}GNP_2$,

$E_2 = a_8/(1-a_9)\ {}^{*}GNP_2$

where $a_8/(1-a_9)$ is long-run elasticity.

(11) See Goldberge[illegible] pp. 217.

economic and strategic factors such as GNP, total public expenditure, foreign aid, lagged public expenditure and India's defence expenditure.

Thus the linear econometric models desired to be tested for total Public Expenditure, Development Non-Development, Defence, and Non-Defence Expenditure consist of equations given with comprehensive table:

IV. THE DATA

Data on total public expenditure, defense and non-defence development and non-development expenditure for the periods 1960 to 1980 were taken/computed from Pakistan Economic Survey (6) (1980-81) and data on foreign aid were the courtesy of Economic Affairs Division, Government of Pakistan. Pakistan GNP were given in 1959-60 prices and all other data were given in current prices which were deflated by GNP deflator at 1959-60 prices. Data on India's defence expenditure was taken from two sources. (12)

Development and non-development expenditures:

General administration, law and order, community service (road and highways works, water supply, television services, broadcasting services, town planning and development, science and general research and other community services), social services (education, health, population planning manpower management, social security and other welfare measures), and economic services (agriculture and food, irrigation, land reclamation, fuel and power, rural development, construction of building and structure, and transport and communication).

The foreign aid in the form of food, clothing, medicines, transport for Afghan refugees came after 1980 and it is only for this purpose. The government of Pakistan is spending all this aid on Afghan refugees.

(12) Statistical year book of UN(1971 and 1979) for ASIA and Far East for the period 1960-1972 and the data for the remaining period (1972-73 to 1980-81) were taken from Explanatory Memorandum on Central Budget (1981-82) of Government of India. This was converted in 1959-60 prices.

LINEAR ECONOMETRIC MODEL OF TOTAL PUBLIC EXPENDITURE OF PAKISTAN

E = aO + al*GNP + a2*El + a3*DEFI + a4*FA + Ul -(1)

PCE = AO + Al*PCY + A2*PCEL + A3*PCDEFl + A4*PCFA + U2-(2)

PCD = BO + BI*PCFA + B2*PCE + VI -(3)

PCND = CO + CI*PCFA + C2*PCE + V2 -(4)

PCDEF = DO + DI*PDEFI + D2*PCFA + D3*PCE + eI -(5)

PCNDEF = GO + GI*PCDEFI + G2*PCFA + G3*PCE + e2 -(6)

DEV = bO + bl*FA + b2*E + V3 -(7)

NDEV = c0 + cl*FA + c2*E + V* -(8)

DEF = d0 + dl*DEFI + d2*FA + E + e3 -(9)

BDEF = D0 + GL*DEFI + g2*FA + g3*E + e* -(10)

E = a5 + a6*GNP + U' -(11)

DEV = b3 + b4*GNP + V' -(12)

NDEV = c3 + c4*GNP + V*' -(13)

DEF = d4 + d5*GNP + e' -(14)

NDEF = g4 + g5*GNP + e*' -(15)

E2 = a7_a8*GNP2 + a9*EL2 + a10*DEF12 + all*FA2 + U3 -(16)

PCE2 = A5 + A6*PCY2 + A7*PECL2 + A8*PCDEF12 + A9*PCFA + U4 -(17)

where

E = Total public expenditure of Pakistan

DEV = Development expenditure of Pakistan

NDEV = Non-development expenditure of Pakistan

DEF = Defense expenditure of Pakistan

NDEF = Non-defence expenditure of Pakistan

GNP = GNP of Pakistan

El-One period lagged public expenditure of Pakistan

DEFI = Defence expenditure of India

PCE = Per-capita public expenditure

PCD = Per-cpita development expenditure

PCND = Per-Capita non-development expenditure

PCDEF = Per-capita defence expenditure

PCNEF = Per-Capita non-defence expenditure

E2 is log of E

GNP2 is log of GNP

EL2 is log of EL

DEFF12 is log of DEFI

FA2 is log of FA

PCE2 is log of PCE

PCY2 is log PCY
PCEL2 is log PCEL
PCDEF12 is log PCDEFI
PCFA2 is log of PCFA
a7 is log aO
U3 is log Ul
u1, v1, v*, e1, e*, u', v', v*', e', e*'
u2, v2, v3, e2, e3, are error terms.
a0, a1, a2, a3, a4, a5, and a6 = coefficients
b0, b1, b2, b3, and b4 = coefficients
c0, c1, c2, c3, and c4 = coefficients
d0, d1, d2, d3, d4 and d5 = coeffidients
g0, g1, g2, g3, g4 and g5 = coefficients
a1, a2, a3, a4 and a6 > o, implies positive signs
a8, a9, a10, a11, A6, A7, A8 and A9 > 0 implies positive sign
B1, B2, b1, b2 and b4 > 0 implies positive sign
c1 and C1 < 0, implies negative sign
c2, c4 and C2 < 0, implies positive sign
d2 and D2 < 0, implies negative sign
d1, d3, d5 D1 and D3 > 0, implies positive sign
g1 and G1 < 0, implies negative sign
g2, g3, g5, G2 and G3 > 0, implies positive sign

Comprehensive Table I

Determinants of Public Expenditure of Pakistan

Regression results

(t-values in parentheses)

Coefficients of:

Dep Var	GNP	E1	DEFI	FA	E	RSQ	DW
E	.180	.28	.04	.03	-	.96	1.5
	(3.18)	(1.25)	(.55)	(.24)			
E	.25	-	-	-	-	.96	1.4
	(21.2)						
DEV	-	-	-	.18	.37	.97	1.7
				(1.7)	(6.5)		

continued ...

Dep Var	GNP	E1	DEFI	FA	E	RSQ	DW
DEV	.07 (2.7)	-	-	-	-	.97	1.8
NDEV	-	-	-	-.18 (-1.7)	.63 (10.7)	.92	1.8
NDEV	.17 (14.5)	-	-	-	-	.92	1.5
DEF	- -	- -	.013 (.40)	-.111 (-2.1)	.16 (5.13)	.85	1.5
DEF	.05 (2.7)	-	-	-	-	.79	1.3
NDEF	-	-	-.08 (-.63)	.36 (1.7)	.85 (7.28)	.97	2.2
NDEF	.19 (7.1)	-	-	-	-	.96	1.7
PCE	.17 (2.2)	.32 (1.3)	.03 (.43)	.001 (.13)	-	.87	1.6
PCD	-	-	- -	.17 (2.2)	.45 (2.9)	.85	1.7
PCND	- -	- -	- -	-.17 (-2.2)	.56 (3.6)	.85 .85	1.7 1.7
PCDEF	-	-	.02 (.41)	-.08 (-1.6)	.12 (1.8)	.6	1.6
PCNDEF	- -	- -	-.08 (-.61)	.34 (1.95)	.88 (5.2)	.67 -	2.2 -

continued ...

Dep Var	GNP	E1	DEFI	FA	E	RSQ	DW	
GNP2	EL2	DEFI2	FA2	-	RSQ	DW		
E2	.67	.39	.021	.02	-	.97	2.3	
	(2.9)	(1.9)	(0.65)	(1.1)	-			
	PCY2	PCEL2	PCDEFI		PCFA2	-	-	-
PCE2	.77	.38	.02	.03	-	.90	2.01	
	(2.6)	(1.7)	(.65)	(1.4)				

Where:
Dep var. is dependent variables,
GNP is GNP of Pakistan,
E1 is lagged public expenditure of Pakistan,
DEFI is defence expenditure of India,
FA is foreign aid,
E is total public expenditure of Pakistan,
RSQ is R-square,
DW durbin watson statistics,
DEV is development expenditure of Pakistan,
NDEV is non-development expenditure of Pakistan,
DEF is defence expenditure of Pakistan, and
NDEF is non-defence expenditure of Pakistan.
PCE is per-capita public expenditure.
PCEL is per-capita lagged public expenditure
PCFA is per-capita foreign aid
PCY is per-capita GNP
PCE2 is log of PCE
PCY2 is log of PCY
PCEL2 is log of PCEL
PCFA2 is log of PCFA.
PCD is per capita development expenditure
PCND is per capita non-development expenditure
PCDEF is per capita defence expenditure
PCNDEF is per capita non-defence expenditure
E2 is log of E
GNP2 is log of GNP
EL2 is log of EL.
DEF12 is log of DEFI
FA2 is log of FA

that for every one million rupee increase in the total public expenditure during the last fiscal year the total public expenditure of current fiscal year will increase by 0.29 million rupee. This shows the extent of adjustment in the total public expenditure towards the desired level: The marginal rate of increase in total public expenditure of Pakistan is 0.04 as India's defense expenditure raises: The regression coefficient of FA(.03) shows that total public expenditure of Pakistan increased by 3% as foreign aid increased.

Development and non-development expenditure

For development expenditure tow equations were estimated one measuring development expenditure as a function of total public expenditure of Pakistan and foreign aid and other measuring development expenditure as a function of GNP. Both the independent variables are statistically significant significant at 95% of cofiednce level. F-statistic shows that the over all model is significant. The overall explanatory power of the tow equation is also satisfactory. At the same time the model did not exhibit any multicallinearity (15), Initially the Durbin Watson test was inconclusive regarding the equation in which development edxpediture was regressed on public expenditure and foreign aid variable (.89 < 1.027 < 1.27), and the other equation of development expenditure which was regressed on GNP faced the problem of auto-correlation. On the bases of this test we can't accept the hypotheses of no auto-correlation, so we followed Cochrane-Orcutt procedure. Now Dorbin-Watson statistic shows there is no auto-correlation.

The sings of the coefficients are consistant with expectations.

The results suggest that 37% of increase in total public expenditure are going towards the government development expenditure. While the development expenditure increases by 18% as foreign aid rise, the coefficient of GNP(.07) shows that development expenditure will increase by 7% of increase in GNP of Pakistan.

Non-Development Expenditure

Like development expenditure two equation were also estimated for non-development expenditure, one measuring non-development expenditure as a function of total public expenditure and foreign aid and other as a

15) See foot note 14.

function of GNP. All of the explanatory variables are statistically significant at 95% of confidence level. The overall model is quite significant as F-statistics shows. the overall explanatory power of the model is quite strong: the value of Durbin Watson statistics does not show any serious problem of auto-correlatrion (inconclusive range). There is no multicolinearity.

Almost 63% of increase in total public expenditure and 17% of increase in GNP is devoted to non-development expenditure. The marginal rate of decrease in non-development expenditure is (-.18) as foreign aid increases that is as foreign aid increases there is 18% decrease in non-development expenditure. The signs of the coefficients are the same as expected.

Defense and non-defense expenditure

Defence Expenditure is estimated as a function of Defence expenditure of India, Total public expenditure of Pakistan and foreign aid. All the explanatory variables have been found to be statistically significant. Demonstration effect is directly observed in case of defense expenditure of Pakistan as it is positively correlated with the India's defense expenditure. But foreign aid is negatively correlated with defense expenditure of Pakistan.

The level of total public expenditure of Pakistan is an important factor in the determination of the level of defense expenditure: 16% of increase in total public expenditure is going to defense expenditure. The significant negative effect of foreign aid on defense expenditure is explained due to the same fact as discussed before that during and after the war period (1965, 1971) when the defense expenditure was quite high the foreign aid gets stopped or reduced thus leading to the negative correlation between foreign aid and defense expenditure of Pakistan.

We also estimated defense expenditure as a function of GNP of Pakistan. The variable is statistically significant. The overall explanatory power is high.

The results show that 5% of increase in GNP is earmarked for defense expenditure. In both equation the signs of the coefficients are consistent with expectation.

Regarding non-defense expenditure it can be seen that the India's defence expenditure has negative effect on the non-defense expenditure of Pakistan. This is due to the fact that with the increase in the defense expenditure of India the defense expenditure of Pakistan also increase and

given the level of total public expenditure, this increase in defense expenditure of Pakistan is financed by reduction in non-defense expenditure of Pakistan:

The result shows that 85% of increase in total public expenditure is devoted to non-defense expenditure. The foreign aid which had negative effect on non-defense expenditure. The growing inflow of foreign aid has resulted in an increase in non-defense expenditure of Pakistan. The non-defence expenditure equation is also estimated as function of GNP of Pakistan. The coefficient is significant. The result shows that 19% of increase in GNP is earmarked for non-defense expenditure of Pakistan.

Displacement effect

In order to detect the displacement effect of increase in defence expenditure, we regressed change in DEF on change in DEV and change in NDEV. The result is shown in comprehensive table no.II

The result suggest that the change leading to an increase in defence expenditure is negatively corelated with the change in development expenditure and positively corelated with change in non-development expenditure. Thus there is a trade off between development expenditure and defense expenditure i.e. war is financed at the cost of reduction in development expenditure. The increase in non-development expenditure. On the other hand does not have adverse effect on defence expenditure because defence expenditure itself is a part of non-development expenditure. If we keep changes in defence expenditure at zero then there will be trade off between development and non-development expenditure.

Wagner's Law

To test the validity of Wagner's law in case of Pakistan each of the total expenditure, development and non-development defense and non-defence expenditure was regressed one by one one GNP of Pakistan .The result is shown in the comprehensive table.

All the equations have been found to be Statistically Significant. The effect of GNP on government expenditure and its various component have also been found to be significant.

From the computed regression coefficients of GNP variable the elasticity of expenditure with respect to GNP has been worked out for each year as well

as the mean value of expenditure and GNP -- the computed elasticities are presented in Appendix Table III.

For total public expenditure Wagner's law have been found to be true in case of Pakistan for most of the period, as elasticity of total public expenditure with respect to GNP is mostly greater than unity. The elasticity of mean value of total public expenditure with respect to GNP is also greater than unity, (1.02) therefore the Wagner's Law is also true in the long run(16).

For development expenditure the Wagner's Law is not valid for each of the years, except for the years 1971, 1972. and 1973. This was the initial period of civil government, during which special emphasis was laid upon the development expenditure that is why the development expenditure grew proportionately faster than GNP. As far as long run elasticity of development expenditure with respect to GNP is concerned, it has come out to be less than unity. As such the Wagner's Law for development expendituredid not turn out to be turn out true in the long run. Unlike the development expenditure, the Wagner's Law is violated for the period 1971-72 only in the case of non-development expenditure.

As regards defense and non-development expenditure, the Wagner's Law turns out to be invalid for defence expenditure but valid for non-defense expenditure with the exception however of a few year. The same pattern is observed in the long-run.

Thus we conclude that in Pakistan the government expenditure is grown at a rate faster than the rate of Growth in GNP. Moreover since the growing proportion of total public expenditure is going toward non-development expenditure, the growth rate of development expenditure is falling behind the growth rate of GNP. Although both the defense and non-defence expenditure are growing over time, the defense expenditure to GNP ratio's declining over time whereas the non-defence expenditure relative to GNP ratio is increasing.

VI. CONCLUDING REMARKS

The paper analyzes the behavior of public expenditure in Pakistan . As regards total public expenditure, it is observed that the level of income,

(16) b6*GNP'/E' where, GNP'is average value of GNP = 33857.2 E' is average value of E = 8320.82 b6 is estimated value = 0.25 0.25*33857.2/ 8320.82 = 1.017 > 1.

defence expenditure of India, lagged Public Expenditure and foreign aid are the main determinants of total public expenditure of Pakistan. Disaggregation of total public expenditure into development and non-development expenditure shows that both these components increase with the level of income as well as with total public expenditure. Foreign aid has a positive influence on development expenditure and a negative one on non-development expenditure. Disegregation of total public expenditure into defense and non-defence expenditure shows that both these expenditure increase with the level of income as well as with the level of total Public expenditure. Foreign aid inflows have a positive impact on non-defence expenditure and negative on defense expenditure. The demonstration effect in the pattern of total public expenditure is also observed in that the defense expenditure increases at the cost of non-defence expenditure whenever there is an increase in the defense expenditure of India.

The Behaviour of defence expenditure in relation to development and non-development expenditure shows that it is development expenditure which have been reduced to finance defence expenditure. Thus we can say that the burden of defence expenditure has been borne at the cost of development expenditure.

The study also confirms that the Wagner's Law for total public expenditure has been generally valid in case of Pakistan. The law also holds true for non-defence expenditure as well as for non-development expenditure . However for defence expenditure and development expenditure the Law is not generally valid. An important outcome is observed from the annual elasticity of development expenditure. It was during the civil regime in the early seventies that the elasticity of development expenditure with respect to GNP was substantially higher than unity. For all the other periods the elasticity has been less than unity. The study has also thrown some light on the fact that Pakistan has followed the Islamic strategy in making budgetary allocation through the establishment of Zakah and Usher institutions even though the Islamic effect is still not too pronounced to be of any special importance in the present analyses.

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APPENDICES

Table III

Elasticities of total Government Expenditure and its components with respect to GNP.

Year	a_6 GNP/E	b_4 GNP/ DEV	C_4 GNP/ NDEV	d_5 GNP/ DEF	g_5 GNP/ NDEF
1960	1.22	0.74	1.55	0.93	1.33
1961	1.16	0.63	1.60	0.99	1.21
1962	1.19	0.56	1.90	1.13	1.92
1963	1.10	0.57	1.70	1.002	1.14
1964	1.20	0.67	1.60	1.10	1.20
1965	0.98	0.74	1.10	0.53	1.24
1966	0.92	0.45	1.40	0.75	0.96
1968	0.99	0.57	1.30	0.83	1.04
1969	0.93	0.56	1.20	0.84	0.95
1970	1.03	0.69	1.21	0.76	1.12
1971	1.08	1.55	0.93	0.70	1.26
1972	1.14	1.07	1.10	0.73	1.34
1973	1.09	1.00	1.09	0.86	1.17
1974	0.96	0.72	1.05	0.81	1.004
1975	0.97	0.67	1.14	0.81	1.01
1976	1.02	0.63	1.30	0.92	1.04
1977	1.09	0.71	1.30	0.93	1.14
1978	0.99	0.69	1.20	1.007	0.98
1979	0.99	0.78	1.10	0.97	0.99
1980	1.11	0.79	1.25	0.95	1.15

ZAKAT AND USHR

Zakat is one of the fundamental pillars (arkans) of Islam, and accordingly, an essential requirement for an Islamic society. The government of Pakistan (Zia-ul-Haq's government) promulgated the Zakat andUshr Ordinance on June 20, 1980. While Zakat collection was enacted from the date of the Ordinance, because of administrative difficulties, Ushr collection was enacted only from 15th March 1983. The institutional arrangement for the collection of Zakat is spread over all the four provinces and Capital Territory of Islamabad. Since inception an amount of Rs.3,750 million of Zakat has been released so far in ten instalments to the provinces and Islamabad Capital Territory for distribution among deserving persons through zakat committees.The per household distribution of Zakat and Ushr comes to about Rs.330 per year. Zakat funds are also used to design schemes to ensure that those students who have the desire and capability are not deprived of further education for lack of finances. The scholarships are awarded to students on merit at all levels of education: high scholls, colleges, universities and professional programmes. A National Zakat Foundation was set up in 1982 with a capital fund of Rs.100 million to assist the schemes that can bevalidly met out of Zakat. The Foundation has financed 93 institutions for projects related to the rehabilitation of the mustahqueen.

Table IV

Regression results
Equation No.1
(t-values in parentheses)

Dep. variable: E (Public expenditure of Pakistan)

Explanatory variables	Coefficients
GNP (GNP of Pakistan)	0.177 (3.177)
E1 (Lagged public exp. of Pakistan)	0.287 (1.245)
DEFI (Defence exp. of India)	0.038 (0.546)
FA (Foreign aid)	0.0277 (0.236)
RSQ	0.960
DW	1.552

Equation No.12

Dep. variable: E (Public expenditure of Pakistan)

Explanatory variables	Coefficients
GNP (GNP of Pakistan)	0.250 (21.160)
RSQ	0.960
DW	1.340

Table V
Regression results
Equation No.7
(t-values in parentheses)

Dep. variable: DEV (Development expenditure of Pakistan)

Explanatory variables	Coefficients
E (Public exp. of Pakistan	0.370 (6.500)
FA (Foreign aid)	0.180 (1.700)
RSQ	0.970
DW	1.721

Equation No.12

Dep. variable: DEV (Development expenditure of Pakistan)

Explanatory variables	Coefficients
GNP (GNP of Pakistan)	0.067 (2.738)
RSQ	0.970
DW	1.751

Table VI

Regression results

Equation No.8

(t-values in parentheses)

Dep. variable: NDEV (Non-Development expenditure of Pakistan)

Explanatory variables	Coefficients
E (Public expenditure of Pakistan)	0.631 (10.700)
FA (Foreign aid)	-0.180 (-1.700)
RSQ	0.920
DW	1.721

Equation No.13

Dep. variable: NDEV (Non-Development expenditure of Pakistan)

Explanatory variables	Coefficients
GNP (GNP of Pakistan)	0.170 (14.490)
RSQ	0.920
DW	1.485

Table VII
Regression results
Equation No.9
(t-values in parentheses)

Dep. variable: DEF (Defence expenditure of Pakistan)

Explanatory variables	Coefficients
E (Public expenditure of Pakistan)	0.160 (5.124)
DEFI (Defence expenditure of India)	0,013 (0.401)
FA (Foreign aid)	-0.111 (-2.099)
RSQ	0.850
DW 1.441	

Equation No.14

Dep. variable: DEF (Defence expenditure of Pakistan)

Explanatory variables	Coefficients
GNP (GNP of Pakistan	0.050 (2.700)
RSQ	0.790
DW	1.289

Table VIII
Regression results
Equation No.9
(t-values in parentheses)

Dep. variable: NDEF (Non-Defence expenditure of Pakistan)

Explanatory variables	Coefficients
E (Public expenditure of Pakistan)	0.850 (7.277)
DEFI (Defence expenditure of India)	-0.082 (-0.625)
FA (Foreign aid)	0.357 (1.690)
RSQ	0.973
DW	2.171

Equation No.15

Dep. variable: NDEF (Non-defence expenditure of Pakistan)

Explanatory variables	Coefficients
GNP (GNP of Pakistan)	0.194 (7.099)
RSQ	0.960
DW	1.645

Comprehensive Table II

Regression results
(t-values in parentheses)

Dep. variable: Δ DEF (Change in defence expenditure)

Explanatory variables	Coefficients
Δ DEV (change in dev. expenditure)	-0.060 (-0.507)
Δ NDEV (change in non-dev. expenditure)	0.249 . (2.290)
RSQ	.330
DW	2.637

where; dev. is development