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GOVERNMENT EXPENDITURE IN PAPUA NEW GUINEA

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Foreword

This study is the first that the I.N.A. has done relating to government spending. It has published a number of studies on the other side of the government ledger, that is, taxation. As a result of this first look it is clear that more studies on the economic impact of government expenditure will follow.

Although Papua New Guinea receives aid at very high levels by international standards; although in little more than a decade she has raised external debt that now stands at over 90 per cent of GDP and requires over one-third of exports to service; she has barely seen any movement in average per capita incomes. Since all of the aid and half of the borrowings have been channelled through government, how government spent its revenues may have had a bearing on this poor economic performance.

Professor C. A. Blyth, Professor of Economics at the University of Auckland, New Zealand undertook the work for I.N.A. His study comes at a time when the government is determined to increase its spending to compensate for low non-mining private investment. The question is : will the increase result in increased output as planned; or will government extend itself beyond its level of competence? His findings give us something to think about. Government spending in Papua New Guinea he finds to be essentially a redistributive process which very likely retards growth and benefits mostly the government itself. He suggests a multiplier perhaps less than unity. Blyth makes a plea for systemic monitoring and evaluation of government spending so that government may know that its spending is worthwhile. Pertinently, his research finds that one area of spending that is subject to economic analysis, transport, has lost share in total expenditure over the 1980s. He finds also a need for more liaison between government departments in designing programmes.

The study does show that government spending as a proportion of GDP declined over the first half of the 1980s. On the other hand, government appears to have allowed its wages bill to drift against policy - both numbers and real wages increasing.

I.N.A. thanks Professor Blyth for his contribution towards a better understanding of the economic impact of government spending in Papua New Guinea.

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Executive Summary

This study asks whether government expenditure promotes or hinders economic growth and development in Papua New Guinea.

One firm answer is that because of the very large leakage of any expenditure into imports (along with the leakages into taxes and savings) an increase in government expenditure of a given amount will produce a smaller increase in private output and incomes. Instead of stimulating the economy, the increase in government expenditure will worsen the external balance of payments and weaken the value of the kina. Only if the increased expenditure were matched by increased taxes (which would reduce private spending) would this external constraint be relaxed.

Government expenditure and taxation does, however, have an important redistributive effect in Papua New Guinea. The net burden almost certainly falls on the formal enterprise sector, and the net beneficiary is the informal enterprise sector (the household sector which pays little in the way of taxes), together with the 48,000 national public servants and their families. It is very likely that this redistribution involves a reduction in potential investment and an increase in actual consumption, that is, it retards growth.

There is not enough information available to government for the government to know whether any of its particular activities involving expenditure are necessary or useful. This study uses roading as an example and finds that the methods of evaluating the benefits from roads are unsatisfactory, and provide no guidance as to whether roadworks are productive or not. For other government expenditures there is no evaluation at all undertaken. For no government activity is there any monitoring of results to provide information for evaluation. Government works in the dark. The best that can be said is that many public servants are aware of the issues, but shortage of resources prevents anything being done.

As far as the total size of government in the economy is concerned, Papua New Guinea is one of a small distinctive group of low-income, agricultural, open economies, receiving large amounts of external aid, having relatively high levels of government expenditure, and showing a very poor growth record. There is a strong suspicion that large foreign aid supports "big" government with its large expenditures and unproductive activities.

The main practical conclusion of the study is that the government must continue its present policy of reducing the scale of its activities, concentrating its scarce resources on doing the things that are essential and which it can do best. It should certainly not allow increased revenues to expand the scale of its activities.

Introduction

There are standard questions for an economist to ask about government expenditure in both developed and underdeveloped countries -

- does government expenditure have a multiplier effect on output and incomes, or does it crowd out private expenditures?
- does it raise the productivity of private investment, or does it impose a net burden?
- could government expenditure be increased, reduced, or better allocated, so as to make a greater contribution to productivity and growth? (This implies that each particular kina spent should be assessed for its benefits.).

These questions are being asked by the Papua New Guinean government now, and its present policies show, to some extent, what its answers are.¹ However, the questions are difficult, the answers depend upon what information is available (and the necessary information increases and changes over time), and the translation of the answers into policy proposals is not always obvious and will always be controversial because different groups are affected in different ways. Thus there is need for continuous questioning, not only by government but also by other bodies and other people.

The answers to the questions listed above depend very much on the understanding of the structure and workings of the Papua New Guinean economy. This study's understanding of the structure and workings is a widely held one, but it is worth summarising it here. The economy consists of two basic sectors, the government sector, and the enterprise sector. The government sector consists of the services provided and activities undertaken by government departments and non-commercial statutory bodies. Those services and activities enter into the national accounts on a cost (non-profit-making) basis but, nevertheless, can and should be assessed for their contribution to the profitability of the enterprise sector.

The enterprise sector consists of the profitable activities of households, private firms and public enterprises, and divides itself into two sub-sectors, the formal and the informal. The formal sector consists of firms and public enterprises, and accounts for most of the resources provided for government by way of taxation. The informal sub-sector consists of the vast majority of households in Papua New Guinea. Most of these households engage in a mixture of subsistence activities and money-making activities (including some wage labour). The size and growth of the output and income of this large informal sub-sector is not well-known. It probably pays only a very small proportion of the total tax bill.

1. For a review of the 1988 Budget and the light it throws on the government's policy see J. Millett : A Commentary on the 1988 Budget and Its Underlying Strategy (I.N.A. Working Paper No. 11, 1987).

The conventional market gross domestic product (GDP) measure, if we exclude the government sector because its contribution is measured at cost, is probably mainly a measure of the output of the formal enterprise sub-sector. Over the last 10 years the trend rate of growth of this output (real enterprise GDP) has been 2.6 per cent per annum, while the trend rate of growth of employment in the formal sub-sector has not been significantly different from zero.² It is not possible to say anything comparable about the large informal sub-sector. Its added value may have grown much faster than that of the formal sub-sector. It pays few taxes, and compared to the formal sub-sector it is a net beneficiary of the activities of government.

It is generally believed in Papua New Guinea that conventionally measured GDP has not increased faster than population over the last decade. Hence real GDP per head has fallen. When the economy and its GDP is dissected as explained above, the picture is not so clear. Government GDP has certainly declined. Formal enterprise GDP per person employed in the sector has certainly grown, and formal enterprise GDP may well have grown faster than population as a whole. However, the picture is complicated because formal enterprise GDP includes the activities of the informal export cash-cropping sub-sector but formal sector employment excludes the labour input to these exports. The informal enterprise GDP is not measured, but why, as the sector pays next to no taxes and is a net government beneficiary, should it not have grown faster than the formal output? An objective observer would guess that it has grown faster.

There, then, are the broad outlines of the structure and workings of the Papua New Guinean economy that form the background to this study, and into which we must fit our analysis of government expenditure. Obviously it is not a very well defined, well understood or well measured background, and consequently the answers to the questions we started with can only be tentative and provisional.

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2. For these statistics, see Appendix 2. In this report all growth rates are average compound rates per annum, measured by fitting a least squares linear trend line to the logarithmic values of the annual observations. This avoids the arbitrariness of choosing initial and terminal years. To draw attention to this method of measurement, the rates are referred to here as trend rates of growth.

Chapter 1

Scope of the study and definitions

What is "government" and what is and is not included in its expenditure?

The simplest way to approach this is to consider the share of GDP (gross domestic product or national income) produced by government. Figure 1.1 splits GDP into two sectors: profit-making sales of goods and services which comprise about 70 per cent of GDP; and non-profit-making services which make up the remainder. Apart from a small amount privately produced (mainly by churches) the non-profit-making services are provided by government departments and agencies: national and provincial departments, local authorities and non-commercial statutory authorities like tertiary education institutions.

The 70 per cent of GDP represented by profit-making sales is produced partly privately (by firms and households), partly by public enterprises (like the Post and Telecommunication Corporation), and partly by joint public-private ventures (like Bougainville Copper Ltd.). Let us call this the enterprise sector, producing the enterprise GDP. It includes both the formal enterprises of firms and corporations, and the informal enterprises of urban and rural households, with their mixtures of money-making and subsistence activities (subsistence activities are not included in Figure 1.1, nor in market GDP).

In the broadest sense, the "public sector" includes government departments and agencies providing non-profit-making services, plus the various public enterprises producing commercially sold goods and services.

This present study is limited in general to the government expenditures recorded in the national government annual "budget". In terms of Figure 1.1, the study is concerned with both current and capital expenditures of the national and provincial government departments and statutory authorities to produce non-profit-making government services like general administration, health, education, defence, police, etc., plus financial payments made by the national and provincial governments to public, private and joint enterprises, by way of current or capital grant (including subsidy), or loan. These financial payments reflect the role of government as a financial intermediary, channelling funds to both private and public enterprises.

We are concerned with the economic impact of government expenditure, i.e. the effects of this expenditure on the enterprise economy, on its growth and on its efficiency. The simplest way to start this inquiry is to consider what proportion of national resources - measured by the annual output of goods and services (GDP for short) - is absorbed or commanded by government expenditure and net lending. Changes in this proportion over time give a preliminary indication of changes in the impact of government spending.

The ways in which the different definitions of government expenditure are related to one another are shown in Table 1.1. The total shown is the total given in the annual budget, that is it includes principal repayments, even though the intention may be to repay them by reborrowing. The item "borrowing" on the receipts side is thus gross borrowing, that is it includes the new borrowing necessary to finance the repayments.

Figure 1.1

Shares of market GDP produced by government
and enterprise sectors

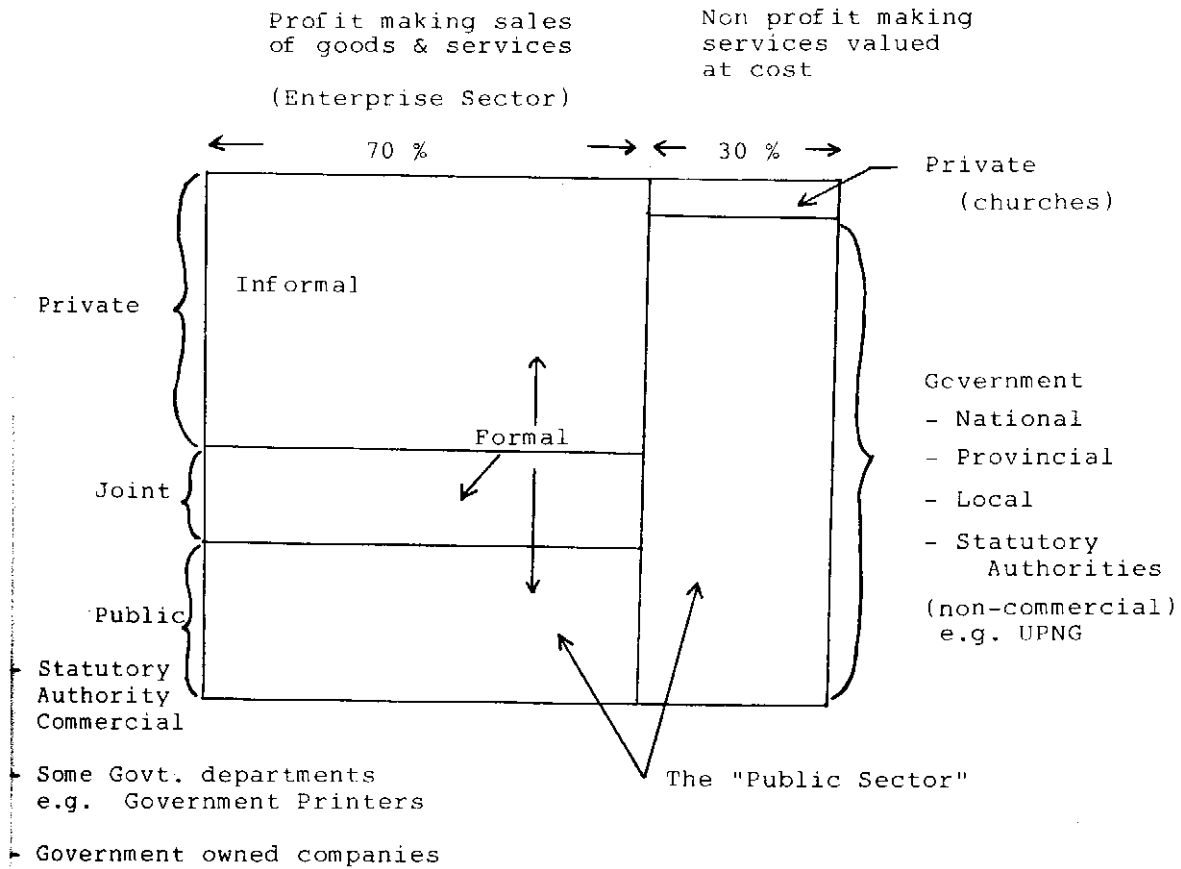


Table 1.1
National government expenditure and receipts 1986
K millions

Expenditure		Receipts	
Current :		Current revenue :	
goods and services	461	tax	450
interest	83	non-tax	97
transfers	184	Capital revenue	1
Capital : goods and services	74	Grants	205
Net lending	28	Borrowing	145
Principal repayments	62		
Total	898	Total	898

Source: IMF Government Finance Statistics and 1988 Budget Document No. 1.

If principal repayments are subtracted from each side, the expenditure total is what the IMF calls "expenditure and net lending". The borrowing item on the receipts side then becomes net borrowing and is a measure of the increase in the government's total indebtedness.

The financing of expenditure does not directly concern us in this study : we are concerned primarily with the economic effects of government expenditure, and not with the direct effects of taxation or increased indebtedness. Consequently, following the IMF (which makes international comparisons easier) the total we use in this report is expenditure and net lending, that is the budget total minus principal repayments. We regard the principal repayments as an item with no immediate economic effect because during the entire period studied here the principal repayments have been "rolled-over". Although this study is not primarily concerned with the problems of increased indebtedness, the matter is referred to in the final conclusions of the report.

On the expenditure side of Table 1.1 the current and capital expenditures on goods and services represent direct expenditures on GDP. Current expenditures on goods and services are part of public final consumption, which is another description of the government non-profit making services (valued at cost) shown in Figure 1.1. Capital expenditures on goods and services are included in the enterprise part of GDP of Figure 1.1 (in the national accounts they appear as part of gross fixed capital formation and increase in stocks).

Current transfers include subsidies, and transfers to non-financial public enterprises, to other levels of government (e.g. provinces), to non-profit institutions (e.g. universities) and to other government institutions (e.g. lending institutions). Some part of these transfers is spent by the recipient on goods and services (e.g. university salaries), and consequently to get total public consumption and total public capital expenditures according to the National Accounts these transfers must be allocated appropriately. Where this is possible this has been done below and noted.

The reader is warned that while the conceptual basis of the definitions given above is clear enough, in practice the presentation of the statistics contains many unresolved discrepancies. These, however, are unlikely to affect the main arguments or conclusions.

The re-arrangement of the expenditure categories used below is as follows -

- (a) current expenditure on goods and services
 - (i) wages and salaries
 - (ii) other purchases of goods and services
 - (b) capital expenditure on fixed assets
 - (c) interest payments
 - (d) other transfers and net lending.
- "(a)" is equivalent to government final consumption expenditure in the national accounts
- "(b)" excludes capital expenditure of public industries like the Post and Telecommunication Corporation
- "(d)" is net of national government transfers to provinces and other bodies like tertiary education institutions: their expenditures are included in (a) and (b). (d) is thus in principle net financial payments (by grant or loan) from government to public and private enterprises for a variety of purposes.

The total of (a), (b), (c) and (d), "government expenditure plus net lending", includes in principle all levels of government (although the official estimates of local government expenditure are very rough estimates).

In relating this concept of government expenditure to GDP we have used the measure of market GDP (i.e. excluding non-market production). This is firstly because of the arbitrariness of the definition of non-market production (a conceptual issue), and secondly (and more importantly) because the impact of government money expenditures is obviously likely in the first instance to affect the financial transactions underlying market GDP, rather than non-market production. The latter effect, if it occurs at all, is likely to be diffused and delayed, and to be studied requires a special method of inquiry.

Chapter 2

Government expenditure : size and trends

Our estimates we set out in Table 2.1 (page 9) The data for 1987 and 1988 are based on the 1988 budget information and the projections of GDP contained therein.

The first and most important point is that the total, as percentage of GDP, peaked in 1981 (when GDP declined), and thereafter declined until 1986. Thus from 1982 until 1985 the share of resources commanded by government appears to have fallen. It remained more or less unchanged in 1986 (we cannot regard the difference between 39.2 per cent and 39.6 per cent as significant), but according to the 1988 budget fell again in 1987 and is not expected to rise in 1988. The long-term decline since 1981 seems impressive, and even if we start from 1980 (on the grounds that 1981 was unusual with GDP falling) the overall decline is equally striking. Judged in this way we could say that the impact of government expenditure on the economy was declining in the mid-1980s and appears to be continuing to decline in the late 1980s.

The second point is that the largest component of government expenditure is the wage and salary bill, which reached 20 per cent of GDP in 1981-82, but declined to just over 16 per cent in 1985-86, and possibly just under 16 per cent in 1987-88. Wages and salaries as a proportion of total government expenditure were 45 per cent in 1980, and by 1986 had fallen to about 41 per cent. As Table 2.2 shows, the government wages and salaries bill as a proportion of the total wage and salary bill has been remarkably steady from 1980 to 1986, varying only from 35.7 per cent to 37.7 per cent, and showing no trend. Note that if we compare 1980 with 1986, there has been no change in the ratio of government wages and salaries to GDP: the 1981-82 rise has been reversed.

Table 2.2
Wages and salaries: national government totals (K million)
and government share (per cent)

	GDP compensation of employees (market)	Total government wage and salary payments	Percentage
1980	669.5	240.1	35.9
1981	742.2	278.8	37.6
1982	758.4	285.9	37.7
1983	792.9	293.0	37.0
1984	872.3	311.7	35.7
1985	871.5	318.5	36.5
1986	939.0	345.9	36.8

Source: Table 2.1 and National Accounts

Table 2.1
Government expenditure and net lending
(K million and per cent of market GDP)

	Total	(a) (i) Wages and salaries	(a) (ii) Other current purchases	(b) Capital expenditure	(c) Interest payments	(d) Other transfers and net lending	GDP (market)
1980	601.4	240.1	165.8	112.8	26.7	56.0	1445.8
1981	676.9	278.8	171.1	107.3	51.6	68.1	1395.0
1982	665.9	285.9	178.2	84.5	51.6	65.7	1448.5
1983	713.8	293.0	178.3	89.0	66.6	86.9	1650.3
1984	746.0	311.7	193.4	100.6	72.7	67.6	1802.3
1985	760.7	318.5	218.8	106.1	70.8	46.5	1942.1
1986	836.0	345.9	206.0	119.3	83.3	81.5	2109.5
1987	850.0	559.0	24.3	132.0	82.0	77.0	2300.0
1988	910.0	569.0	23.0	145.0	69.0	127.0	2475.0

Source: Appendix.

Other current purchases, between 10 per cent and 12 per cent of GDP, declined slightly as a proportion of total government expenditure between 1980 and 1986.

Capital expenditure on fixed assets, nearly 8 per cent of GDP in the early 1980s, fell to under 6 per cent in 1982, and has not recovered.

Interest payments increased rapidly in the early 1980s, reflecting budget deficits and increased borrowing. They reached 4 per cent of GDP in 1983-84, but did not increase after that. According to the 1988 budget they are expected to fall, but the budget figure could well be an under-estimate.

Other transfers and net lending have been a relatively small proportion of total expenditure (about 10 per cent on average) and of GDP. They fluctuate absolutely, reflecting the variety of policies and decisions they embrace. It is not possible to say that the role of government as a financial intermediary is either large or increasing, although the indications from the 1988 Budget suggest a larger role (especially in agriculture).

Comparing 1980 with 1986 (i.e. neglecting the 1981-82 rise), the impact of government expenditure - measured by ratio to market GDP - had become smaller. The main reasons for this are the relative decline in capital expenditures between 1980-81 and 1985-86, and an absolute fall in other current purchases in 1986 (which may when the accounts are revised turn out to be an under-estimate). On the other hand, the expected continued decline in government expenditure's impact in 1987 and 1988 arises from expected relative falls in the wage and salary bill, other current purchases and interest payments, all of which may turn out to have been under-estimated.

In interpreting the changes in the 1980s, it is important to recognise the part played by the fall in GDP in 1981 in increasing the impact of government expenditure on the economy: the private sector declined, the government sector did not. The subsequent years reflect both the positive attempts to restrain government expenditure, as well as the recovery of the private sector as export receipts rose again: both factors reduced the impact of government expenditure from its high levels of 1981-82.

The present position is that the impact of government expenditure is at its lowest level for the 1980s, with only the modest role of the government as a financial intermediary unchanged since the beginning of the decade.

Note: Measuring the impact of government expenditure with current or constant prices

The rise of the ratio of government expenditure to GDP as a crude measure of the impact of government expenditure raises the question whether the numerator and denominator should be in current or constant values. The issue is this: if the prices of the goods and services which government buys change at a different rate to those which apply to GDP as a whole, then the ratio can give misleading results. For instance, a constant ratio of current values could hide the fact that government prices (e.g. wage and salary rates) are rising faster than the general price index. In such a case, a government kina buys increasingly less than a private sector kina: the "real" impact of government expenditure is declining. If we calculated our ratio with constant-price expenditures and GDP we would thus show a falling ratio.

It is doubtful whether the constant-price national accounts are reliable enough to bear such a burden of interpretation. However, for what it is worth, the following Table 2.3 gives the ratio of government final consumption expenditure (a.i. plus a.i. of Table 2.1) to market GDP in both current and constant prices, the latter with and without the terms of trade correction.

Table 2.3
Government final consumption expenditure
as per cent of market GDP

	Current prices	Constant prices	Constant prices with terms of trade correction
1980	28.1	33.3	34.7
1981	32.3	32.3	37.6
1982	32.0	30.1	36.2
1983	28.6	28.5	34.9
1984	28.0	29.6	32.9
1985	27.7	28.0	33.1
1986	26.2	26.3	31.9

Source: National accounts, excluding non-market component.
For details and terms of trade correction see Appendix.

The constant-price ratio can be interpreted roughly as an index of number of government employees per real unit of GDP. It shows a slightly more pronounced declining trend over the seven years than the current-price ratio. The ratio with the terms of trade correction (roughly an index of number of government employees per unit of real income) also shows a more pronounced declining trend, but reflects the decline in real income in 1981 and 1982 as does the current-price ratio. In general, the constant-price ratios do not indicate different trends, and thus it is reasonable to believe that relative price movements do not require the broad conclusions above to be modified.

Chapter 3

The allocation of expenditure by function and service

Table 3.1 classifies government expenditure into six functions, for the years 1980 to 1987. Note that the 1987 estimates are very rough. They are included for their obvious interest but are not used in the following analysis. General public service includes general administration, police, judiciary and the correctional institutional services. Defence includes the army. Housing and other community services include expenditures on recreational services, broadcasting and press. In economic services the largest expenditure subdivisions are transport and communications (about one-half of the total in 1984), agriculture, forestry and fishing (about one-quarter of the total in 1984), and mining, manufacturing and construction (just under one-fifth in 1984).¹

The expenditures by function are expressed as percentages of market GDP in the table. General public services has been a steady percentage, varying between 10 and 11 per cent. Defence has been a very steady percentage of GDP, varying only from 1.7 to 1.9 per cent. The share of education has been more variable, with some non-recurrent expenditures swelling 1984. But since the large rise in 1981-82, the trend has been down, and the 1986 percentage is no higher than in 1980. Health has fluctuated between 3.7 and 4.5 per cent, but shows no clear trend. Housing and other services (a small, mixed bag) has declined since the early 1980s because of the decline in housing expenditure and the ending of large capital expenditures on water supply. The largest function, economic services, shows a declining trend. In fact, after 1982, the changes in the percentage for economic services is the main factor explaining the changes in the percentage for total expenditures (see Table 2.1), and its declining trend. (Note that this does not appear to have been so in 1987 when expenditure percentage declines occurred in all the other categories including unallocated.)

Table 3.2 divides government expenditure and net lending on economic services into agriculture, forestry and fishing; transport and communications; and the remainder. As a share of GDP, expenditure on agriculture etc. has been steady, varying from 2.3 to 3.2 per cent, and showing very little difference in 1985-86 from 1980. The share of expenditure on transport etc., on the other hand, shows a declining trend, from 7.1 per cent in 1980 to under 5 per cent in 1985-86. The share of the remainder (largely manufacturing and mining) has fluctuated considerably, and shows no clear trend. It is obvious that economic service's declining share arises from the relative decline in transport expenditures. Overall, the declining trend over the 1980s in government spending relative to GDP has been the result of relative cuts in spending on transport and communication.

Some of the government activities may be justified on political or social grounds. All government activities can be tested for their efficiency i.e. their ability to achieve their purpose with least cost. Most government activities can be subjected to the economic test that the resources used should generate net social benefits greater than any other use of the resources would generate (or have a higher social rate of return than other uses).

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1. In the Appendix to R. Goodman, C. Lepani and D. Morawetz : The Economy of Papua New Guinea (Canberra 1985), Dr. J. Guest attempted to distinguish administration from the other functions of individual departments. That useful attempt to isolate "administrative overheads" has not been followed here due to the constraints of time.

Whatever the difficulties of applying the economic test to resources used in general public services, defence and social services, there should be no difficulty in applying it to economic services. Whether it is done by government is another matter. We know it is applied to a large number of transport projects, and it is probably significant that transport expenditures have declined as a share of GDP.

Table 3.1
Government expenditure and net lending by function
(K million and per cent of market GDP)

	General public services	Defence	Education	Health, social security & welfare	Housing & other community services	Economic services	Unallocated
1980	157.3 (10.9)	26.0 (1.8)	95.0 (6.6)	54.0 (3.7)	40.4 (2.8)	191.1 (13.2)	37.6 (2.6)
1981	158.0 (11.3)	25.7 (1.8)	109.9 (7.9)	62.0 (4.4)	32.7 (2.3)	198.5 (14.2)	90.1 (6.5)
1982	151.8 (10.5)	25.8 (1.8)	113.5 (7.8)	65.5 (4.5)	32.4 (2.2)	200.2 (13.8)	76.7 (5.3)
1983	166.0 (10.1)	28.4 (1.7)	116.3 (7.0)	70.3 (4.3)	29.9 (1.8)	194.7 (11.8)	108.2 (6.6)
1984	185.3 (10.3)	35.0 (1.9)	149.0 (8.3)	76.5 (4.2)	28.1 (1.6)	212.5 (11.8)	59.6 (3.3)
1985	198.4 (10.2)	34.3 (1.8)	136.4 (7.0)	84.1 (4.3)	35.7 (1.8)	183.8 (9.5)	88.0 (4.5)
1986	208.2 (9.9)	36.4 (1.7)	138.9 (6.6)	87.4 (4.1)	30.3 (1.4)	241.2 (11.4)	93.6 (4.4)
1987	214.0 (9.3)	33.0 (1.4)		264.0 (11.5)		260.0 (11.3)	79.0 (3.4)

Note: Includes capital expenditure.
Includes national and provincial governments. Total as in Table 2.1.

Source: 1980-84 GFS.
1985-86 IMF and author's estimates of provincial expenditures based on trends.
1987 author's estimates based on 1988 budget documents.

Table 3.2
Government economic services expenditure and net lending
(K million and per cent of market GDP)

	Agriculture, forestry and fishing	Transport and communications	All other
1980	36.6 (2.5)	102.9 (7.1)	51.6 (3.6)
1981	44.1 (3.2)	93.8 (6.7)	60.6 (4.3)
1982	40.7 (2.8)	88.1 (6.1)	71.4 (4.9)
1983	39.6 (2.4)	87.9 (5.3)	67.2 (4.1)
1984	48.5 (2.7)	100.0 (5.5)	64.0 (3.6)
1985	44.5 (2.3)	88.5 (4.6)	50.8 (2.6)
1986	50.2 (2.4)	102.8 (4.9)	88.2 (4.2)

Note: Includes capital expenditure.
Includes national and provincial governments. Total as in Table 2.1.

Source: 1980-84 GFS.
1985-86 IMF and author's estimates of provincial expenditures based on trends.
1987 author's estimates based on 1988 budget documents.

Chapter 4 Government employment

We have seen that the government wage and salary bill is the main part of government expenditure, and of course it "carries" with it most other current purchases (travel, subsistence, telephone, electricity, postal charges, materials, plant and transport hire and so on) which are purchased only because government employees use them. Consequently, the number of people employed by government, and their average salary or wage, are the basic determinants of the value of total current purchases of government, which as we have seen is about two-thirds of total government expenditure.

Table 4.1 shows recent estimates of government employment from 1978 to 1987. They exclude government labourers (about 10,000), provincial and local government employees not paid by the national government, and employees of all statutory authorities (e.g. University of Papua New Guinea and Post and Telecommunication Corporation).

Table 4.1
Government employment

	Numbers employed		Wages and salary payments K million
	Citizens	Non-citizens	
1978	43,338	3,372	n.a.
1979	43,988	2,968	n.a.
1980	46,634	3,008	189.404
1981	47,013	2,966	222.089
1982	47,814	2,691	216.210
1983	46,537	2,193	232.417
1984	46,394	2,045	238.476
1985	47,096	1,884	260.790
1986	48,403	1,778	277.530
1987	47,415	1,729	n.a.

Sources: Numbers employed : 1988 Budget Document 1, Figure 2.4 (data from Department of Personnel Management).
 Wage and salary payments : GFS and IMF (includes employers' contributions).

1. All users of employment statistics will be aware of the difficulties of obtaining estimates of government employees actually on the payroll. The estimates used here are as good as are available, but are subject to margins of error which may render annual changes of little significance.

The safest conclusion we can draw from these estimates is that the number of citizens employed rose rapidly in the early 1980s (especially in 1980) until 1982, since when the trend has shown no rise or fall. Numbers of non-citizens, on the other hand, have tended to decline quite rapidly between 1981 and 1983. Furthermore, budget estimates indicate that numbers of government labourers have declined substantially during the 1980s.

In a measure of overall employment trends the three different categories of employment should be weighted by the average salaries or wages of the three groups. Average emoluments in 1981 for the three groups are estimated as follows by the National Statistical Office -

Citizens (excluding labourers)	K4,115
Non-citizens	K16,439
Labourers	K575

Using these average emoluments as weights to construct the average weighted change in government employment between 1980 and 1986, we obtain the following index of employment -

1980 = 100
1986 = 94.6

i.e. employment overall declined by 5 per cent between 1980 and 1986.

Under policy prevailing over the period - no increases in numbers or real wages - the expected weighted employment index in 1986, as a result of localisation, would be 93.7. The quality of the underlying data does not make the difference between 94.6 and 93.7 very significant, but there is some indication that employment in the public service has risen in the 1980s against policy.

Has government been more successful in enforcing its wages policy? To help answer this, we can interpret our expected employment index as an expected average real salary index under prevailing policy - no increases in numbers or real wages. The average real salary of each group is constant, but the overall average changes because the share of the groups in total employment changes. Thus the expected average real salary fell by 6.3 per cent between 1980 and 1986.

Table 4.1 shows that the actual nominal average salary rose by 45 per cent over the same period, implying an average real rise, after allowing for the 40 per cent rise in the CPI of 3.6 per cent. This actual rise of 3.6 per cent is to be compared with the expected fall of 6.3 per cent. In other words, average real salaries rose by 10.6 per cent more than expected on the basis of stated policy i.e. 10.6 per cent is the extent of the real wage drift against policy.

Table 4.2 summarises the figures on which this conclusion is based.

Table 4.2
Government policy performance in 1986
(1980 = 100)

<u>Employment</u>	
expected	93.7
actual	94.6
<u>Average real salary</u>	
expected	93.7
actual	103.6
real wage drift	110.6

Why did this large wage drift occur? The answer probably lies partly in the process of localisation.

Non-citizens work in Papua New Guinea only where there is no citizen capable of doing the work. Localisation is the process of replacing a non-citizen with a citizen. Because the replacement takes place at the top end of the citizen salary scale, it raises the average salary. The reverse process for non-citizens, removing a person at the low end of the salary scale, also raises the average.

These effects are shown in Table 4.3.

Table 4.3
Average emoluments of government employees
ratio of 1986 to 1980

	Citizen	Non-citizen
Total	1.90	2.06
National departments	2.10	2.52
Police	1.99	1.55
Defence	1.67	-
Finance	1.69	1.67

Source: 1980 and 1986 Budget Estimates of Expenditure (excluding labourers; based on staff ceilings).

These ratios are higher than that of 1.43 derived from Table 4.1 (probably because of different measures of the nominal salary bill) but reinforce the general conclusion.

As expected, the ratios in all cases are greater than the inflation ratio of 1.40 (based on the CPI). For the total, and for national departments, the ratio is higher for the smaller non-citizen group, than for citizens. This also is a likely effect of localisation.

There remains the possibility that part of the real wage drift is the result of upgrading or promotion of citizens unconnected directly with localisation. Unfortunately there is no publically available information to explore this possibility.

This short inquiry into the effectiveness of the public employment and wage policy of the government in the 1980s concludes that, contrary to policy -

- . weighted employment has probably risen slightly;
- . the average real salary (or average real unit labour cost of public employment) has risen by over 10 per cent.

Chapter 5 International Comparisons

In Chapter 2 it is shown that government expenditure and net lending was equivalent to just under 40 per cent of GDP in 1985 and 1986. From 1980 to 1986, leaving aside the two exceptional years 1981 and 1982, the percentage averaged 41.1 per cent. The percentage is estimated to be 37 per cent in 1987, and even though that figure is less reliable than the earlier ones, there is evidence that the percentage has tended to fall during the 1980s.

Is 40 per cent a high or low number? This report argues that however large or small the percentage is, governments should continuously ask themselves whether their expenditure is necessary and whether it is productive (see the following chapters 6, 7 and 8). However, it is possible to form some idea as to whether a country's percentage is high or low by comparing it with other, similar countries.

International comparisons can be very misleading if the countries are dissimilar in important ways. Furthermore, even if the comparison shows that Papua New Guinea is doing the same thing as comparable countries, if what is being done is wrong or misguided, the fact that everyone is doing it doesn't make it right or sensible! Nevertheless, comparisons, if made with caution, can show whether a country is out of line or is conforming. The result then can be suggestive of further lines of inquiry (rather than providing any definitive conclusion).

The problem is, firstly deciding with which countries Papua New Guinea is comparable. We have chosen GDP per head (converted to US\$) as the first criterion, and from World Bank statistics we have selected countries with GDP per head both below and above Papua New Guinea. Countries with a population less than one million are excluded (this excludes Fiji), as are countries with a population in excess of ten millions (obviously excluding Indonesia, Philippines and Thailand). The countries are shown in Table 5.1. The upper and lower limits have been set at roughly twice and one-half the GDP per head of Papua New Guinea. From World Bank statistics, seven characteristics have been chosen for comparison : population, area, growth of GDP per head 1965-84, percentage of labor force in agriculture, overseas aid as percentage of GDP, exports of goods and services as percentage of GDP, and government consumption as percentage of GDP.

From the list in Table 5.1, we have chosen a shorter list consisting of countries with more than 60 per cent of the labor force in agriculture, and with exports of goods and services more than 35 per cent of GDP. The list is shown in Table 5.2, and it is interesting that most of the countries in this group receive overseas aid at high levels to GDP. They appear to be as homogeneous a group of countries in which we are likely to be able to place Papua New Guinea : small, open, low-income, agricultural and underdeveloped. The countries are all African (Lesotho probably should also be included in the group, but full statistics for that country were not available).

All of the countries, except for Cote D'Ivoire and Zambia, have populations less than Papua New Guinea. All, except for Botswana and Congo PR, have negligible growth rates. Botswana benefits from its special relationship with South Africa (as does Lesotho), and this almost certainly accounts for its very high growth rate.

Table 5.1
Statistics of developing countries

GDP per head 1984 \$US	Country	Population mid-1984	Area th. sq. k.	GDP per head growth rate 1965-84	Labour force in agriculture per cent 1980	Overseas aid per cent of GDP 1984	Exports of goods & services per cent of GDP 1984	Government consumption per cent of GDP 1984
380	Senegal	6.4	196	-0.5	81	14.8	29	19
450	Mauretania	1.7	1031	0.3	69	24.6	48	17
470	Liberia	2.1	111	0.5	74	13.6	40	23
470	Zambia	6.4	753	-1.3	73	9.8	37	23
530	Lesotho	1.5	30	5.9	86	17.6	-	-
546	Bolivia	6.2	1099	0.2	46	5.5	17	11
550	Yemen AR	7.8	195	5.9	69	8.2	7	40
550	Yemen PDR	2.0	333	-	41	7.3	-	-
610	Cote D'Ivoire	9.9	322	0.2	65	2.2	46	16
700	Honduras	4.2	112	0.5	61	9.6	27	15
710	El Salvador	5.4	21	-0.6	56	6.6	21	14
710	Papua New Guinea	3.4	462	0.6	76	13.8	42	24
760	Zimbabwe	8.1	391	1.5	53	5.8	22	19
800	Cameroon	9.9	475	2.9	70	2.5	32	10
860	Nicaragua	3.2	130	-1.5	47	4.2	18	35
960	Botswana	1.0	600	8.4	70	11.6	61	26
970	Dominican R.	6.1	49	3.2	46	4.2	27	8
1090	Mauritius	1.0	2	2.7	28	3.5	48	13
1140	Congo PR	1.8	342	3.7	62	5.3	64	13
1150	Ecuador	9.1	284	3.8	39	1.5	27	12
1150	Jamaica	2.2	11	-0.4	33	8.2	55	17
1160	Guatemala	7.7	109	2.0	57	0.7	13	8
1190	Costa Rica	2.5	51	1.6	31	6.7	34	16
1240	Paraguay	3.3	407	4.4	49	1.3	21	8
1270	Tunisia	7.0	164	4.4	35	2.2	34	17
1570	Jordan	3.4	98	4.8	10	18.0	43	24

Source: World Development Report of World Bank 1986. Overseas aid is net disbursements of official development assistance from all sources i.e. loans and grants made on concessional financial terms by all bilateral official agencies and multinational sources. After this table was compiled, 1985 figures became available in the World Bank's 1987 Report. The 1985 figures do not alter the conclusions in the text.

Table 5.2
Papua New Guinea and comparable countries

GDP per head 1984 US\$	Country	GDP per head growth rate 1965-84	Government consumption per cent of GDP 1984	Government expenditure per cent of GDP (av. of last 3 years)	Overseas direct aid per cent of GDP 1984
450	Mauretania	0.3	17	39.60 (1979)	24.6
470	Liberia	0.5	23	40.25	13.6
470	Zambia	-1.3	23	32.91	9.8
610	Cote d'Ivoire	0.2	16	30.98 (1980)	2.2
710	Papua New Guinea	0.6	24	35.36	13.8
960	Botswana	8.4	26	35.75	11.6
1140	Congo P.R.	3.7	13	41.98 (1983)	5.3
All developing countries				23.63	
African developing countries				21.34 (1980)	
Asian developing countries				18.53	

Note:

Central government expenditure as defined by IMF, excluding net lending. Last year, if not 1984, indicated in brackets. The Papua New Guinea figure differs from those in Table 2.1 above through the exclusion of net lending and because GDP in Table 5.2 is total GDP i.e. includes non-market.

Source:

Table 5.1 and IMF Government Finance Statistics Yearbook 1986.

In all of the countries in the group government expenditure relative to GDP is comparable to that of Papua New Guinea. In all cases these percentages are very high compared with those of other developing countries. The oil-rich Middle East countries have comparably high proportions, as do some of the North African countries. No Asian countries have such high government expenditures but in the Western Hemisphere there are a few with higher ones (Guyana, Jamaica and Nicaragua, although these countries are not comparable by our criteria with Papua New Guinea).

It thus appears that Papua New Guinea can be included in a select group of five countries which in addition to being low-income, open and agricultural, have the interesting and unusual combination of relatively high levels of government expenditure and slow growth rates. One of these countries, Mauretania, admits to spending a very large proportion of GDP on defence (over 10 per cent or about a quarter of government expenditure). Liberia, Cote d'Ivoire and Papua New Guinea all report very small defence expenditures.

One explanation for the situation of these countries (with the exception of Cote D'Ivoire) is that they have all attempted in recent decades to provide an extensive range of government activities (including a large defence force in Mauretania's case), supported by large injections of overseas aid.

Each of the four : Mauretania, Liberia, Zambia and Papua New Guinea, is a recipient of one of the highest levels of aid in the developing world. Despite the aid, the growth rate remains slow and GDP low, and hence, inevitably, the large absolute amount of government expenditure shows up as a large percentage of GDP. This explains the large share of government expenditure; it does of course not explain the slow rate of growth. These countries no doubt receive aid because they have low incomes; it is not argued here that they stay poor because of the lavishness of the aid, although other writers have suggested the connection.

The conclusion of this inquiry into international comparisons is that Papua New Guinea's levels of government expenditure are relatively high by international standards, but fit a pattern seen in a small number of comparable countries which have low-incomes, slow growth and are recipients of lavish aid.

Chapter 6

The effects of government expenditure

The multiplier analysis

This is the analysis which is the basis of fiscal stabilisation policy. It says that in an economy with under-employed resources, an increase in net government expenditure (expenditure minus taxes) of "Z" million kina will increase GDP by some multiple of "Z", i.e.

increase in GDP = m times Z (million kina)
where m is greater than one.

The analysis depends on the idea that expenditure generates income which in turn generates more expenditure. This "circular flow" of income and expenditure does not continue endlessly because of "leakages" into savings, taxes and imports. Consequently each successive round of expenditure becomes smaller, leading to a limit which determines the size of m, the multiplier. The larger the leakages into savings, taxes and imports, the smaller the value of the multiplier. This explanation applies both to increases and decreases in net expenditure.

The analysis says nothing about what happens to prices. In fact, most versions of the analysis assume prices do not change, so that the increase in net expenditure produces an increase in employment and output. However, in reality, some prices will rise, and part at least of the effect of the multiplier will be dissipated in price increases, the increase in employment and output being correspondingly less. If all the rise in net expenditure were dissipated in price increases, there would be no increase in output and employment, and the value of the multiplier would be zero. This would obviously be the case if all resources were fully employed.

A further complication arises when resources are fully employed or close to being fully employed. The government uses its expenditure to obtain the extra resources it wants, and it does this by bidding up prices and "crowding out" the private sector. This can happen if wages, or interest rates or the value of the kina rises. The increase in government expenditure simply displaces some private expenditure. Again, the value of the multiplier is reduced.

Taking these other effects into account, what is the likely value of the net government expenditure multiplier in Papua New Guinea? There is good evidence that the leakage into imports is high, as it is in most open, developing economies. Suppose the marginal propensity to import (out of GDP) is 0.5¹. Suppose that the marginal leakage into taxes and savings is 0.3. Then the value of the multiplier is 1.25, which is relatively low. The crowding out effect is difficult to estimate as is the effect on prices. Both would depend upon the size of the expenditure increase relative to the markets it affected.

1. See Appendix. The evidence presented there suggests that 0.5 is on the low side.

For instance, suppose it was intended to increase government employment by one per cent representing 500 skilled workers. At an average annual salary of K7,000 the budgeted expenditure increase would be K3.5 million. Such an increase in the demand for skilled labour would have some effect in the skilled labour market, causing salary increases as the private sector attempted to stop losses. In other words, either part of the K3.5 million would be swallowed up in salary increases, or the government would poach from ("crowd out") the private sector. Whatever happened, the multiplier would be further reduced below 1.25, and it is very unlikely that the extra government expenditure of K3.5 million would result in a net national increase in employment of 500 skilled workers. Note that because price responses to demand decreases and increases are not symmetrical, the same analysis cannot be simply applied to an employment reduction.

The point of the example is to demonstrate the likelihood that the multiplier in Papua New Guinea is small and in reality less than one. The above argument and conclusion mean that an increase in government expenditure (in real terms) will have as its main effect a worsening of the balance of payments because of the increase in imports. This must act as a major constraint upon independent initiatives to increase government expenditure, without at the same time increasing taxes or altering the value of the kina (or both). Any change in the budget deficit with an unchanged kina value results in a change in the external deficit in the same direction. As a consequence, if the government adopts a strong kina policy, it is imperative that it avoids a worsening budgetary deficit.

It might be thought that if export receipts rise, this balance of payments constraint on the government will be removed. That is not so! Export receipts increase private sector incomes and most of these increases go into imports a process reflected in a very low value for the multiplier. Allowing for lags in ordering imports, it is most unlikely that an export boom in Papua New Guinea can ever improve the balance of payments or the strength of the kina in a permanent fashion.

In these circumstances if the government decided to increase its expenditure, it would inevitably worsen the balance of payments, despite the export boom. The only way to remove this constraint is for the government to increase taxes i.e. to increase the private sector's income leakage into taxation. That of course raises questions about the relative efficiency of government spending and private spending to which we now turn.

The cost reduction argument

This is the argument which is the foundation of modern development policy, and appears to be the basis of the 1988 budget. It says that government expenditure reduces the total costs of production of profit-making enterprise sufficient to not only compensate for taxation but also to raise the rate of return on profit-making enterprise. In other words, government expenditure is a socially profitable investment. The government commands resources through taxation and borrowing, and invests these resources (i.e. spends its tax and loan revenue) so as to get a higher rate of return on them than profit-making enterprise could get if it had access to the tax revenue and loan money. Note that this argument applies not only to capital works like roads, building and maintenance, but also to agricultural extension services and the police. By building and maintaining roads, providing agricultural extension services and police, etc., the government raises the rate of return on profit-making enterprises' own investments.

Let us be explicit about what happens. Take the example of road building. A road is built between villages with land of agricultural potential and an urban market or a port where goods can be exported. As a result, the cost of transport is reduced and the overall cost of producing and marketing agricultural products is lowered. Hence, the rate of return on the villagers' investment in agriculture is raised. Alternatively and equivalently, we can say that the investment in road building is profitable. But the essential economic effect is the reduction in costs of production and marketing. Without that, the road building is a waste of resources.

Two questions arise at this stage. The first is why it is necessary for the government to do what would appear to be in the interests of the profit-making enterprise sector to do itself. Why don't the villagers build the road? Why don't parents send their children to private schools set up by profit-making private enterprise? Why don't firms pay directly for the training of their own accountants?

Let us acknowledge that one reason these things don't happen - or don't happen very often in Papua New Guinea - is partly inherited prejudice. When Papua New Guinea achieved independence it was part of the conventional wisdom that government must play a large part in social and economic development, even though already in the early 1970s the failure of government-led development was becoming apparent in much of Africa and Asia.

Another reason was Australia's own century-old experience of state socialism or government activism. Economic development in Australia (and New Zealand) has always had a strong public leaning of the organised consensual community type. Colonisation of Australia had always had a strong communal side ("public works" is almost an Australian invention). This practical experience of the provision of public services was probably Australia's most abiding legacy in Papua New Guinea, although the legacy was more of a blueprint of what should be done rather than services in existence. Probably, the large political and bureaucratic establishment in existence at independence saw its justification in terms of social and economic development, as it appears to do today.

In the theoretical economic literature there are several reasons given why government acts to provide goods and services, and the theory of public expenditure discusses these under the headings of public goods and externalities. It is not intended to review these topics here; although a careful analysis can sometimes cast doubt on traditional justifications of particular government activities. It should be noted that "government should do it because it does not pay private enterprise to do it" is not an adequate justification. Anything that profit-making enterprise does not do should be regarded with suspicion when it is suggested as a candidate for government concern.

The second question is whether the rate of return on a particular government expenditure is high enough to justify it. High enough in an economic context can only mean that there is no other investment, public or private, which would yield a higher return. This is an easy enough criterion to state, but a difficult one to apply outside a competitive market environment. Monopolistic behaviour upsets the simple application of the criterion, as does the existence of public goods. Furthermore, there is the question of uncertainty. Estimation of a rate of return requires relating expected revenue to expected costs, and behind expected revenue is the question mark of expected demand and the economic environment which produces that expected demand. Investment, even investment intended to lower costs, is always a leap in the dark.

What do these conceptual issues boil down to in practice? In essence, what should be prepared for each proposed government activity is a cost-benefit analysis arriving, if possible, at an expected overall rate of return on the resources invested in the activity.

The activity can be undertaken if the resources could not obtain a higher rate of return either in another public or in a private investment. Obviously an activity should not be considered in isolation: several activities may mutually support one another or may conflict with one another.

Does government expenditure lower costs of production (eventually) or, what comes to the same thing, raise the social rate of return on use of resources? The answer to this is important, but impossible to give with any certainty. For the large area of government current expenditure there are no studies, from government or elsewhere, which could help in answering the question. Do agricultural extension services raise the profitability of agricultural production? Does any government expenditure on agriculture raise the profitability of production? It is significant that in one area of government expenditure, roading, official studies show that, by present profitability guidelines, with one or two exceptions, no further national roading proposals are profitable.

Only detailed studies of particular activities can show whether or not an activity lowers costs, raises profitability and contributes to real enterprise GDP growth. The analysis of the profitability of government activities is considered further in Chapters 7 and 8 below.

Redistribution

By taxing and spending, government inevitably redistributes resources from one private interest to another.

Redistribution of resources can be the explicit intention of fiscal policy; it can also be the unintended result. There is no doubt that some redistribution of resources is the intention of fiscal policy in Papua New Guinea. Mining company income is redistributed to provinces and local regions so that many people can share the wealth from the mines. The personal income tax structure has a progressive character. In calculating taxable income, deductions related to number of dependants are allowed. Some groups benefit more from certain government expenditures than other groups.

In theory it would be possible to classify the population by various characteristics (e.g. region, income, occupation, family status, degree of education) and calculate how much each group gains or loses by the redistributive process of taxing and spending. In practice this is difficult to do, but attempts have been made in some countries. (Part of the difficulty is knowing just what are the benefits of government expenditure; consequently the gains have to be measured somewhat arbitrarily in terms of expenditure allocations.) The results suggest that the redistribution that emerges does not accord with the intentions. In particular, educated middle income families often gain more than they were expected to do, presumably because they know how to "work the system" for their and their children's benefit. This has become a major source of criticism of the "welfare state" as it arose in the developed countries after the Second World War. This type of analysis of government expenditure and taxation could not be applied to Papua New Guinea without a substantial research effort.

Instead we adopt a simpler approach to redistribution. In the introduction to this report the economy was divided into two sectors : government and enterprise, and the latter was subdivided into formal enterprise and informal enterprise (which includes most Papua New Guinean families). We have also seen that the most important part of government expenditure is the government wage and salary bill which supports about 48,000 Papua New Guinean public servants and politicians (and their families). It is the redistribution of resources between formal enterprise, informal enterprise and the 48,000 that concerns us.

In 1986 the total expenditure plus net lending of the national government was K835.98 million, financed as follows -

	K million
Taxes	449.52
Non-tax current revenue	97.35
Capital revenue	1.21
Grants	204.68
Borrowing (abroad)	73.59
Borrowing (domestic)	9.62
	<u>835.98</u>

Grant aid was used mainly to pay salaries of expatriate public servants and consultants, and finance imported equipment. Non-tax current revenue was largely profits from public enterprise and returns from investments i.e. income from the enterprise sector. Taxes were as follows:

	K million
Individual income tax	151.67
Corporate tax	75.44
Domestic taxes on goods and services	73.01
International trade taxes	137.76
Stamp duties	10.31
Other	1.33
	<u>449.52</u>

Government citizen employees paid about K20 million income tax. The main part of income tax was paid by self-employed businesses, wages and salary earners in the enterprise sector and expatriate public servants. Domestic taxes on goods and services are mainly excises, paid by all the population. International trade taxes are mainly customs duties and, like stamp duties, paid by businesses and higher income consumers. Thus the main part of taxes are paid by business firms or higher income consumers who are likely to be either employees of business firms or higher salary expatriate government employees (or aid-financed employees).

It thus appears that, apart from aid, borrowing and income tax paid by national government employees, the resources to finance government expenditure, including the wage and salary bill, come almost entirely from the enterprise sector of the economy (both public and private), and the higher salaried employees of the enterprise sector together with higher salaried expatriates. The key to government finance is a

transfer of resources from the enterprise sector to government employees via the government wage and salary bill.

That is the essence of the redistribution effected by fiscal policy, and it has several important consequences. Remember that we concluded above that government expenditure had no significant positive multiplier effect on GDP. If, in addition, government activities can not be shown to be socially productive (and there is little evidence one way or the other), then the redistribution of resources may be having a serious effect. The redistribution of resources described here - the transfer of resources from business to government - is quite possibly a transfer from profit-making investment to consumption, even though some resources left in the hands of business would have gone into consumption, and some part of government servants' salaries undoubtedly is invested in productive enterprise. Nevertheless the main effect of the process could be to reduce investment and increase consumption, which must adversely affect economic growth.

This possible growth-retarding effect can be described differently. These 48,000 Papua New Guineans represent a very large proportion of the best educated, most skilled and most experienced entrepreneurs and managers in the national labour force. What the redistribution of resources really means is that a large proportion of these 48,000 have been lost to the economy, if we assume that their economic product is really less than their salary.

This redistributive approach can thus become an extreme version of the argument that government expenditure retards growth. Obviously this line of thought leads us back to the need for a detailed, activity by activity examination of government which can not be undertaken here. We are blocked by ignorance about the productiveness of government expenditure.

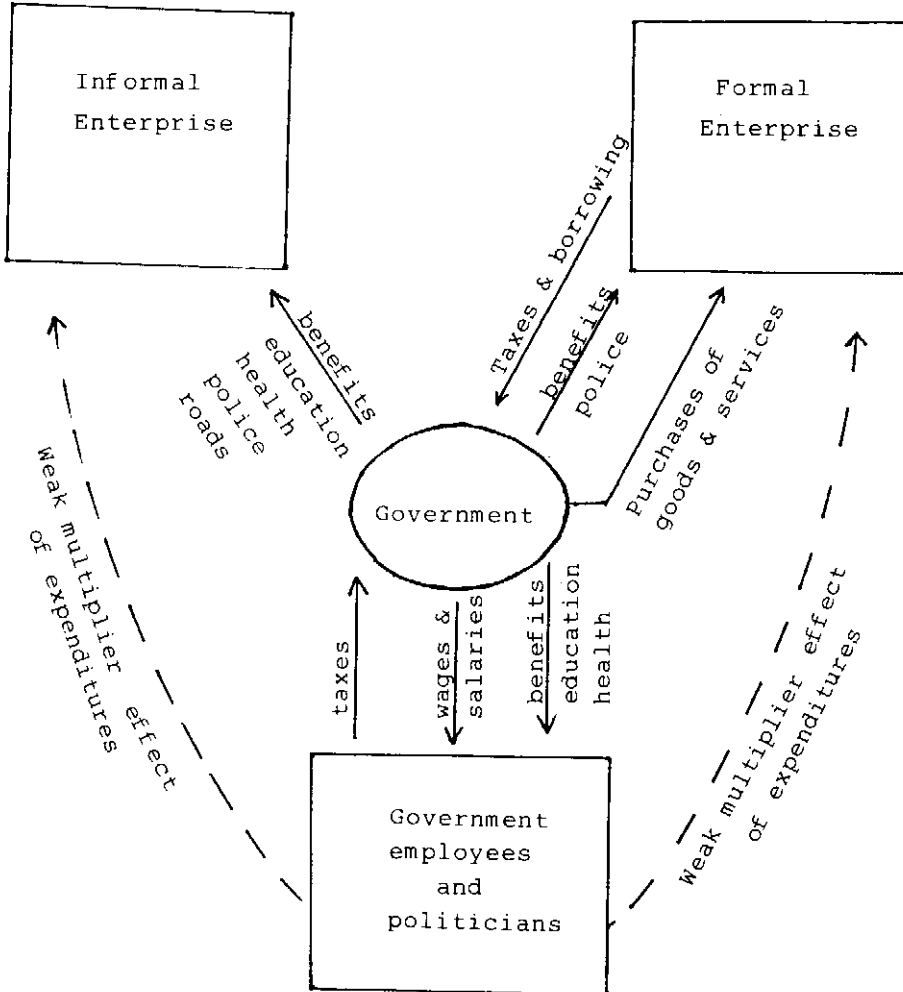
It is possible to take a different approach in assessing redistribution especially if we believe that government activities do provide positive benefits. We know that economic growth in the enterprise economy, expressed as real enterprise GDP per person employed, has been positive (disregarding the income effects of changes in the terms of trade). We suggested that informal enterprise may have grown even faster.

Most of the resources transferred to government come from the formal sector, from taxes on profits, salaries and wages, and taxes on spending of various forms. The taxes, both direct and indirect, paid by the informal sector, are almost certainly very small, even though it contains most of the population. On the other hand, the informal sector benefits from government services and activities (such as the police, education, health and road maintenance). Thus the redistribution of resources by government probably has the structure shown in Figure 6.1.

It seems almost certain that the beneficiaries of the process are the informal enterprise sector and government employees and politicians. The formal enterprise sector, given the small multiplier, must be the net contributor. Employment in the formal enterprise sector has not grown on average over the last decade. On the other hand, employment in the informal sector must have increased, even though there are no statistics to base the statement on. Has it grown because it is a net beneficiary, or because the net transfer of resources from the formal enterprise sector makes investment or employment in that sector relatively unprofitable, or because government employees and politicians are investing their savings in the informal sector? Or does the expansion of the informal sector come about for other reasons, quite unconnected with government? There are several possible reasons, one of which

Figure 6.1

Redistribution by government



is close links with the formal enterprise sector whose productivity and output growth we have seen to be somewhat stronger than for the economy as a whole; another is population growth, although that raises the question as to why population growth has been rapid: probably the effect of health services disturbing, temporarily at least, the traditional balance between births and deaths.

At this point the review of the possible effects of the government's redistribution of resources is becoming an analysis of Papua New Guinea's economic growth, which is not the agenda of this report. Enough has been said to show that if government activities are effective in delivering benefits, the redistribution model can be a helpful explanation of growth and change, especially in the informal enterprise sector.

In the above analysis the identification of politicians and public servants as net beneficiaries is not a criticism of Papua New Guinean politicians or public servants. It is a critique of outmoded approaches to the role of government in economic development which could be applied to many developing countries, especially in Africa where the mobilisation of resources from "enclave" market economies to support rural development has had the unplanned effect of developing well-paid, well-educated corps of urbanised bureaucrats and politicians. The recognition that the main effect of government expenditure could be a socially and economically undesirable redistribution of potentially useful resources, must be the first step in a serious reappraisal of the role of government in development.

It is obvious that the analysis of redistribution bristles with political implications, not the least of which is the issue of state-making or state-creation. Perhaps the redistribution of resources can be justified in such terms, but if that is the case it should be recognised for what it is, and not disguised behind economic policies. If expenditure on state-building is a dead weight cost it should not be disguised as a beneficial economic investment.

Chapter 7

The productivity of government expenditure

The economic approach

At the most general level of inquiry, we must ask whether a particular government expenditure achieves the aims of the activity underlying it. The economic approach starts to emerge when we ask what would be the effect of altering the plan and spending a little less. To answer that question we must know the relationship between the input (the resources used and the way they are used) and the output (the benefits or the extent to which the aims are achieved). It helps if the output can be quantified and valued in money terms, but that is not essential to the economic approach.

It is from the relationship between input and output that costs and benefits can be estimated and compared, and summary measures, like cost-benefit ratios or rates of return, calculated and used in decisions about expenditures. For instance, it is standard practice to select a minimum rate of return (based on rates of return elsewhere) which projects must meet if they are to be undertaken. From what has been said above, it will be appreciated that a calculated rate of return is no more reliable, or unreliable, than the underlying data on inputs and outputs, and on costs and benefits, and in particular the relationship assumed to exist between inputs and outputs. For instance, if you are uncertain whether a particular medical activity has any observable or measurable effect on health, no additional insight is gained by calculating a rate of return. On the other hand, if the relationship is known with a reasonable degree of certainty, it is possible by giving insurance values to working life, to calculate the rate of return on the medical activity to see if it is wasteful of resources or worth undertaking. When resources are scarce, there is no other rational way of proceeding.

The assessment procedure, outlined above, must be a continuous process. New proposals to spend or invest must be assessed as they arise, and activities under way must be reassessed as part of the learning process. The information generated by assessing activities in operation is very often the only way of obtaining accurate information which can be used to assess new proposals.

It is certain that the assessment of existing activities (or the reassessment of a proposal once it is under way) is never done for most - perhaps any - of the activities of the departments of the Papua New Guinean government. That in itself makes any supposed assessment of a new activity suspect. In fact, only a few departments attempt to provide an economic appraisal of new activities.

In what follows we review two examples of economic appraisals as case studies. The first is transport projects, which are economically appraised as a normal approach by the Department of Transport, and ranked according to their expected rate of return. The second is some private research into the rates of return on different stages of education, which if accepted would lead to some radical changes in the allocation of resources to education.

Two examples of economic appraisals

1. Roading:¹ The Department of Transport makes economic appraisals, calculating expected rates of return, of most proposals for developing or extending the national road system. It has used international teams of consultants to make the original appraisals and rank the projects. At the present time, with existing information, very few proposals offer a rate of return greater than 10 per cent per annum. In most cases those appraisals have been accepted by the government, but in some cases political reasons cause a project to be promoted.

While the ranking of road works on the basis of economic appraisals is a normal process in most countries, the practice is enforced on Papua New Guinea by the foreign or international lenders or aid donors who provide part of the finance for road works, whether new, upgrading or maintenance.

Maintenance is becoming an important part of road works in Papua New Guinea. Maintenance is in general and in total regarded as a regular, continuous activity, somewhat similar to a fixed overhead. One consideration is the need to maintain regional private contractors' capacity, because of the high cost and other difficulties of moving resources from region to region. However, within regional allocations, particular projects are ranked by criteria such as traffic density.

In the Department of Transport, as in other departments, there is no follow up monitoring of results. Consequently, appraisals of new projects can only be based on old assumptions and guesses, and not on information provided by up-to-date monitoring. The Department of Transport is well aware of the value of monitoring, and explains its absence as due to lack of qualified people.

The appraisals are based on estimates of both the diversion of existing traffic to the new or improved road, and the generation of new traffic. The estimates of new traffic generated are the most difficult to make and are the most controversial. Some of the information used is cross-section data relating freight costs to production of crops based on provincial studies. However, the methodology can hardly be said to take fully into account agricultural benefits. The Department of Transport's consultants concluded that forestry benefits were far larger than those generated in other sectors, largely because new roads in areas of low population density did not induce migration of agriculturalists.

There is apparently very little collaboration between the Departments of Transport and Agriculture in making roading appraisals. From time to time, the Department of Agriculture asks for an appraisal to be reviewed in the light of proposed agricultural developments. However, the joint appraisal of combined transport and agricultural proposals, allowing for interaction between transport and agricultural changes, is not normally undertaken. More generally, joint appraisal of developmental projects embracing several interacting factors like transport, health, education and agriculture, are not undertaken. Of course, there is no guarantee that two unprofitable ventures will become profitable if undertaken together, but the dependence of agricultural development on infrastructure requires that a development proposal be seen as a whole.

1. The information this example is based on was provided by discussions with officials of the Departments of Works, Transport and Agriculture, and two commissioned reports of the Department of Transport: Provincial Rural Transport Study (1981) and Transport Investment Programme Study (1984).

It is not at all certain that more careful economic appraisal would produce higher rates of return. The rates of return on many proposals are low or negative. It is a generally held opinion that many rural roads have been built for reasons of prestige and have no other value: the local people do not use them and have no plans to use them. In fact the opinion has been strongly expressed that air and water access are still more important to Papua New Guinea at its present stage of development than road access.

There are two basic criticisms of the assessment procedure adopted by the Department of Transport : firstly, the assumption that little or no development takes place alongside a road; and secondly, the failure to monitor the economic effects of the road after the road is built or improved. These two criticisms merge into one : the assumption that no or little development takes place is a dangerous one because it is not based on up-to-date information.

The following comments on roads and development are intended to illustrate the importance of continuous monitoring of the economic effects of government activities and government expenditure. They are based on two brief inspections of rural roads and their economic environment in the Jimi Valley (Western Highlands Province) and around Kimbe (West New Britain Province).²

Economic roads can be thought of as falling into two categories. In one category roads are an integral part of a development scheme, and can not be thought of as separate from the planned agricultural development, the schools, and so on. This is clearly the case with the roads serving the smallholder oil palm blocks around Kimbe and Hoskins. The relevant economic test applies to the rate of return on the entire scheme of which the road is part (assuming the best form of the scheme is chosen, with the road along with the other parts related in an optimal way to the whole scheme). The concept of a separate rate of return on the roads alone is illogical.

In the other category is the road built to service two termini, A and B. The primary object is to move goods and people between A and B. However, the road could stimulate development alongside the road between A and B, and a favourable assessment of the likely development would mean the difference between an acceptable or unacceptable rate of return. The road from Tabibuga over the Jimi gorge to Koinmbe is in this latter category. Coffee had been planted and produced in the Jimi area during the boom of the mid-1970s. The coffee was airlifted out, but with the decline in prices air transport costs were too high and production slackened. The road mentioned (and other similar roads in the area) has provided sufficiently cheap transport for production to have increased and new plantings to have been undertaken. Furthermore, gardens have been planted close to the roads (so close in some cases that the resulting erosion has created an additional maintenance problem), and the village people use the roads to take their vegetables to market and bring back cheaper tinned food and milk than they can buy locally. Access by health workers has improved. The effect on education is not known because the area seems to have been well served with missions.

Similar rural roads were visited near Hoskins. Here the developments were village production of palm oil fruit, coffee, fruit and vegetables which indicated a deliberate location of plantings alongside roads by the customary landowners.

2. My thanks go to the Department of Works officials who arranged the visits, the Provincial Works Managers who suggested the routes, and the knowledgeable "guides" who helped me understand what I was seeing. Of course, I alone am responsible for the conclusions.

It does not appear that the Transport and Agriculture departments collaborate sufficiently to appraise and assess properly either category of roading project. Discussions with officials in both departments, together with the brief inspections mentioned above, make it quite clear that while the principle of economic appraisal is accepted, there is no adequate, properly conducted practice. In particular, there is no monitoring of completed projects to provide the data on which approvals of new projects must rest (and test of old assumptions made).

Monitoring, on a sample basis of a variety of sorts of roads, needs to be undertaken by a team consisting of transport and agricultural economists, with assistance of road engineers, education and health experts.

There is an assumption underlying the Department of Transport's thinking, held also by other officials concerned with roads - an assumption contained in transport consultants' reports, but not necessarily stemming from them - that Papua New Guinea is unique because, unlike Africa, Malaysia and Indonesia, roads between A and B do not generate settlement and development between A and B. The commonest explanation given is the nature of customary landholding, i.e. the difficulty of outsiders obtaining leases or ownership. Such an explanation itself assumes of course that the owners of the land fail themselves to appreciate the economic significance of a road.

This assumption and its foundations appear to be both unproven, and on the evidence of roads in the Jimi valley and around Kimbe it is quite false. More research would be needed to show whether the assumption holds for some roads and not for others. It is possible that the foundation of the assumption is some badly sited roads!³

It should be noted that nothing said above implies that any particular existing road is or is not economic. Nor would economic appraisals of the kind recommended necessarily show roads with high rates of return. The points being made are that government, if it is to decide economically, must provide itself with the information required for rational decisions, and that the Transport and Agriculture departments must collaborate in the assessment and monitoring procedures.

2. Education⁴ The share of resources going into education in 1986 from government expenditure alone was 6.6 per cent of market GDP (see Table 3.1). This figure excludes resources provided by parents, churches and other organisations. It is the largest social welfare expenditure, and larger than expenditures on transport and communications (the largest economic service). The allocation of the total amongst different types of education has been estimated to be -

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3. Professor I. Livingstone has told me that the assumption does not hold for the Gazelle Peninsula. Supply responses of people living along roads there are normal in relation to their distance from a market.
 4. This example is based almost entirely on K. Gannicott : Education in Papua New Guinea, Islands/Australia Working Paper No. 87/19 (NCDS, Australian National University, 1987).

Table 7.1
Expenditure on education
(per cent of total)

	Primary & secondary schools	Universities	Other tertiary
1978	57.9	17.1	25.0
1983	61.1	19.0	19.9

Source: Gannicott, Table 1.2.

Enrolments in the educational system are estimated to be -

Table 7.2
Enrolments in educational institutions

	Enrolments	Per cent of age group enrolled
Primary		
1975	256,991	55.7
1983	322,254	60.3
Lower secondary		
1975	27,963	12.3
1983	41,702	13.6
Upper secondary		
1975	1,243	1.0
1983	1,968	1.5
Tertiary education		
1970	3,500 (722)	< 1.0
1983	8,700 (3,245)	1.0

Source: Gannicott, Table 1.1. Upper secondary includes Goroka Teachers' College and universities' preliminary year. Tertiary education figures approximate (universities in brackets).

Enrolments at all levels are increasing, but the percentage of the age group enrolled is in each case very low by international standards, and even by the standards of comparable developing countries. There is thus great pressure to invest more resources in education, and the government has as its aim universal primary education in the near future.

The question of where to spend money in education has become a vital one. Universities accounted for 19 per cent of the education budget in 1983, but only 0.08 per cent of total enrolments. Gannicott comments "if education resources are limited, as of course they always are, one extra university student means thirty-five fewer pre-tertiary students (op.cit. p.7)".

Educational economists in attempting to find a rational basis of allocating expenditures between different types of education, have devised a method of calculating the rate of return to expenditure on education which relates type and stage of education to subsequent earnings (i.e. essential information is census or sample data relating income to level of education). It is also necessary to take into account earnings foregone during the period of education. Furthermore, it is necessary to distinguish the social return which includes all costs, and the private return which excludes costs paid by the government.

Gannicott has calculated rates of return to investment in education in Papua New Guinea. His paper contains a wealth of data and useful commentary, and a very limited summary of his results is attempted here. For full explanation the reader is referred to the original source.

Table 7.3 reproduces Gannicott's summary presentation. The rates of return refer to one full cycle of education compared to the previous cycle. Thus, for example, the social return to a completed provincial high cycle (grade 10), instead of stopping at the end of grade 8, is 13.3 per cent.

Table 7.3
Rates of return to investment in education
Papua New Guinean citizens only, 1979 (per cent)

Level of educational investment	Social return	Private return
Primary/illiterate	19.9	29.4
Grade 8 ('force-out')/primary	15.2	19.2
Completed provincial high/grade 8	13.3	17.5
Provincial high/primary	13.9	17.6
National high/provincial high	9.5	16.1
University/national high	< 1	11.4
Primary/illiterate	19.9	29.4
Secondary/primary	11.3	15.7
University/secondary	< 1	11.4

Source: Gannicott, Table 3.4

Gannicott's first major conclusion is that investment in Papua New Guinean education after provincial high (after Grade 10) is uneconomic, yielding social rates of return less than 10 per cent. (Note that the private return is still economic for post-grade 10 education.) Furthermore, "the calculated social rate of return of less than one per cent is the lowest that has ever been reported for any country's university system (op.cit. p.43)". (It should, however, be remembered that these rates of return are based on future earnings of students, and do not take into account the less quantifiable benefits, e.g. research, contribution of universities to the economy.)

The second major conclusion of the study is that at all levels of education the social rates of return are low by the standards of other countries. Gannicott demonstrates this with the data of Table 7.4. He also points out that Papua New Guinea's rates are particularly low when compared with developing countries with similar low enrolments.

Table 7.4
Social returns to education: Papua New Guinea in
international perspective

Country/region	Primary	Social return	
		Secondary (per cent)	Higher
Papua New Guinea	19.9	11.3	< 1
Africa	26	17	13
Asia	27	15	13
Latin America	26	18	16

Source: Gannicott, Table 3.5, giving his source as G. Psacharopoulos, "Returns to education: a further international update and implications", Journal of Human Resources, 1985, 20: Table 1.

We have chosen education and Gannicott's research results to illustrate how decisions about the allocation of resources can be assisted by economic appraisals. In the present example, there is a strong implication that society would benefit from increasing the resources going into primary and early secondary education, and that these resources could come from universities. However, as well as following up this line of attack, policy-makers should also ask why all rates are so low. Gannicott helps here also.

He attributes the low rates of return to high costs per pupil, the reasons being low pupil-teacher ratios, relatively high teacher salaries, high proportion of highly paid expatriate teachers in secondary schools and universities, the prevalence of boarding, and excess capacity and wide range of courses in the universities. If these causes of high cost can be removed without altering the quality of education (and hence the benefits), there is immediately an enormous agenda for educational reform, which may

not reduce resources going into education, but may increase the proportion of young people benefitting from it (and raise the social rate of return). Gannicott himself presents some evidence that there are some economies of scale in education i.e. costs per pupil are low the greater the numbers - but to take advantage of these economies it is necessary to overcome some of the rigidities in the present system.

It has not been the intention of this example to show how the results of one research report can be used to reform Papua New Guinea's education system overnight. The intention has been to show how economic appraisal can contribute to an informed policy discussion about options in educational policy and the allocation of scarce resources to education. The general approach can be applied to most types of social policy.

Measuring and accounting for benefits: difficulties

In the roading and education examples above, the costs and benefits that entered into the rates of return calculations were quantifiable and monetary. Other costs and benefits, less easily quantified, are not so easily assessed. Examples of such costs are pollution from motor vehicles which affects the health of people, plants and animals. Examples of potential benefits which are difficult to quantify are the general academic research output of universities (as distinct from contract research for public or private interests) and the effect of agricultural extension services on the profitability of investment in agriculture. Because such potential benefits present problems in the minds of policy-makers which must be resolved in practice, it is worth exploring these two examples.

The general academic research output of universities, regarded as a contribution to the stock of knowledge, provides three sorts of benefits. Firstly, it can, from time to time, lead to practical cost-reducing economic innovation (or equivalently, to raising the rate of return on investment). It is never easy to attribute particular innovations or investments to particular pieces of academic research, but it is obviously easier to do this in technology and applied science than in the humanities and pure science. Secondly, academic research can be regarded both as a by-product of the educational process and an intermediate input into that process. In other words, research is part of the educational process which can improve the effectiveness or quality of education. As such, it should be reflected in the rates of return calculations based on students' future earnings. (Note that this has nothing to do with the assessment of the efficiency of a university lecturer's performance by means of research publications: that is an entirely separate matter of personal efficiency assessment which may or may not be useful or sensible.) Hence these benefits do not require separate assessment, but this argument shows clearly how a rate of return to an activity depends on the "production process" of the activity (as much as the monetary cost) and the way that production process affects quality of output. Educational output is perhaps best thought of in quality terms, and most university lecturers would agree that the best teaching is based at least in part on the personal research of the lecturer.

The third benefit of academic research is its diffused contribution to culture through popularisation and academic contribution to public discussion, etc. This can be regarded as the consumption aspect of research, as distinct from its investment aspect (the first and second benefits discussed above), and like the consumption aspect of

education as a whole (the personal pleasure obtained from education) is probably best treated as a beneficial by-product of education which can be diffused by private charity (the voluntary efforts of university lecturers), or as private household consumption, produced by profit-making enterprise. In either case these private pleasures do not enter into the calculation of the social rate of return to public education.

We turn to the benefits of agricultural extension services. A straightforward approach to the measurement of benefits would be to relate manhours of an extension officer's time to subsequent increases in the value of production per unit cost in the district in which the officer worked. However, in Jarrett's view, "the extension objective would seem to be to offer educational help, including technical advice, to farmers which will assist them....in deciding on their goals and in making decisions which will be compatible with these goals." There has been much criticism, both overseas and in Papua New Guinea, of the way in which extension services have operated and of the failure of the educational function (e.g. some extension officers have become in effect managers of the farmer's activities). There are in fact several different perceptions of the objectives of extension services. The straightforward relation of inputs to value of output would not capture the educational benefit unless the relation was examined over a period of time long enough for the direct influence of the extension service to be removed.

The extension service example thus appears to be difficult to resolve in terms of the rates of return to investment in those services, without detailed research into particular cases. It is possible that the raw data exists in Department of Agriculture records, and needs analysing from the point of view suggested here. Until past experience is monitored in this way it is not possible to say whether further development of extension services, or even their maintenance, is worthwhile or not.

However, it could be argued that this is an example where an attempt at complete quantification is neither practicable nor necessary. Case studies carefully reviewed by experienced experts, the argument would go, could provide the appraisal of the economic worth of maintaining or extending extension services. This is a dangerous argument. Without quantification it may be possible to show that a particular organisation of extension services gives the best result in terms of objectives, but without quantification it is not possible to show that those services are worthwhile.

The two examples of academic research and agricultural extension services were not chosen to illustrate definitive answers. They were chosen to illustrate analytical approaches that can be applied in some of the more difficult aspects of project appraisal to improve the quality of decision making. The economic appraisal of projects is not a set of rules of procedure : it is in fact continuous economic research.

5. F. Jarrett : Innovation in Papua New Guinea Agriculture, (I.N.A. Discussion Paper No. 23, 1985), p. 62.

Chapter 8 Delivery systems

When a service like roading, education or agricultural advice has been judged to be a good economic investment, the question arises as to what is the most efficient way to deliver it to the people who are expected to use it. In fact, alternative delivery systems usually show varying rates of return, and switching from one delivery system to another can alter the overall economic and social value of a service.

It is useful to have a general classification of delivery systems. The following is a rough guide.

- Government enterprise selling the service commercially. The organisational form can vary from joint venture with private enterprise, to government company and on to government department. If the enterprise is a monopoly (as is likely) the management in the public interest must be constrained by price and investment guidelines.
- Government enterprise selling the service at less than cost, receiving in effect a subsidy from the government. The organisational form can vary as in (a), the price being fixed by the government. The extreme, but important, case is where the price is zero (or nominal). In this case the organisation is usually a government department.
- The government providing a subsidy to a private supplier. The subsidy can take various forms -
 - a direct subsidy on output, sales or inputs to enable price to be below cost.
 - a voucher given by the government to the intending purchaser, entitling the latter to a reimbursable purchase of the service (either in physical or money terms). The private supplier receives his payment (i.e. the subsidy) by presenting the vouchers to the government. The vouchers can incorporate whatever degree of choice of supplier the government wishes to encourage e.g. secondary education vouchers could be used in either government or private schools.
 - a tax rebate. Tax rebates are suitable for encouraging people to use a private service, but obviously their use is limited in all countries and especially in Papua New Guinea. One problem with tax rebates is that a measure of its effectiveness in terms of purchase of the service is difficult. Although administratively very simple, the basic defects of this form of subsidy limit its use.

As an example of how these considerations can be applied to specific services, consider the case of agricultural advisory services. Estate services have been judged to be unsuitable for smallholders (see Goldthorpe).¹ However, advisory services are

1. C. C. Goldthorpe : Plantation Agriculture in Papua New Guinea, (I.N.A. Discussion Paper No. 19, 1985).

judged to be of benefit to smallholders (Jarrett)² although as pointed out above, there appears to have been no attempt to quantify the benefit. The test would be to sell the government services to smallholders (and see whether private services emerged as competing suppliers, in which case the government could withdraw). The problem remains of those smallholders who, it is believed, would benefit from advice, but do not know that they would benefit. This problem appears to be essentially educational, and has traditionally justified a free service (i.e. a government subsidy).

However, the majority of smallholders do not use the service, which suggests that the government has an inadequate delivery system for agricultural education. Agricultural and educational experts may be able to suggest new ways of approaching the problem. A new method which placed the onus, with an incentive, on the smallholder would be to issue vouchers. They could be cashed with private suppliers or with the government. The government service could be partially commercialised to give the advisory officers some incentive to do what is wanted.

Delivery systems are the feature of government services which are most likely to reflect out-of-date or irrelevant ideas. It is certain that effective delivery systems for developing countries with large informal enterprise sectors are different from the delivery systems suitable for developed economies with large formal enterprise sectors. Unfortunately the systems in place in Papua New Guinea are transplants of systems established successfully in Australia in the nineteenth century, relying very much on the direct services of government departments. It should be noted that even in Australia today (as in most developed countries) there is a move away from direct government services towards privatisation or commercialisation.

This report contains no recommendation for privatisation or commercialisation. That could only come from a detailed case-by-case inquiry of the economics of services and their delivery systems. But there is one guiding principle stressed by Professor Reddaway in an earlier L.N.A. paper³. That is, that Papua New Guinea should use its scarce resources to do the things that it does relatively well. This application of the principle of comparative advantage applies equally to government. Even a big government like that of Papua New Guinea (big, in terms of share of resources it commands), is limited and has to use very scarce factors, including in particular skilled people and organisational talents. To spread these scarce resources over all the government services provided by the traditional development model is certainly inefficient and probably ridiculous.

It is better to limit direct government services to those where the government has a clear comparative advantage, e.g. general policy, roads and other transport facilities, law and order, primary education, hospitals and public health (with continuous monitoring of these services to make sure they are worth doing). Other possible services, if they are worth doing on economic grounds, will surely be provided by the informal and formal enterprise sectors. It needs to be repeatedly stressed that the extravagant and wasteful government service delivery system of the developed countries in North America, Europe and the South Pacific in the middle of the twentieth century is not a sound pattern for any developing country, least of all Papua New Guinea, to adopt.

A sounder piece of advice for governments in today's developing countries would have come from Britain in the early nineteenth century: concentrate on the small number of things that only you can do well.

2. F. Jarrett *op. cit.*

3. Brian Reddaway : Some Key Issues for the Development of the Economy of Papua New Guinea, (L.N.A. Discussion Paper No. 26, 1986).

Chapter 9 Conclusions

This study started with three basic questions -

- . Does government expenditure have a multiplier effect on output and incomes or does it crowd out private expenditures?
- . Does it raise the productivity of private investment, or does it impose a net burden?
- . Could government expenditure be increased, reduced, or better allocated, so as to make a greater contribution to productivity and growth.

The study is a review of existing knowledge and thus inevitably suffers from existing gaps in information, particularly statistical information. The conclusions must therefore be regarded as provisional, liable to be altered if new information should become available in the future.

The answer to the first question is a reasonably confident one. Government expenditure does not have a multiplier effect on output and incomes. The main reason is the very large leakage of expenditures into imports. This conclusion applies to investment and exports as well. Investment booms and export booms, like rises in government expenditure, do not have multiplied effects on output and incomes because of the large leakages into imports.

The high propensity to import (proportion of an increase in expenditure that leaks into imports) is the main explanation of the small multiplier. Crowding out effects, such as price, interest rate and kina value increases, which reduce the profitability of private investment, are present, but of much less importance.

The low value of the multiplier and the import leakage means that a rise in government expenditure will cause an increased deficit in the external balance of payments and may put the kina under pressure. The link between the government's budget deficit and the external current account deficit is very close. Both deficits can of course be closed by foreign borrowing or external aid, but not by domestic borrowing. Tax increases, if sufficiently large to reduce private spending on imports, could in theory close both deficits. The practical conclusion is that unless the government is prepared to accept increased foreign indebtedness, or greater reliance on aid, it must accept the situation that its expenditures are constrained by their effects on the balance of payments and the value of the kina.

A less firm but equally important conclusion is that the particular structure of expenditures and taxation involves a large redistribution of resources from the formal enterprise sector to households. Households comprise the informal enterprise sector about whose growth little is known. This growth must benefit from the redistribution. However, consumption also benefits from the redistribution, especially when the consumption of 48,000 public servants and their families is taken into account. It is likely that on balance the redistribution retards growth.

The second question is concerned with the economic productivity of government activities. This study's conclusion is that the government does not have enough information to know whether any of its activities are economically worthwhile. In particular, it does not monitor its existing activities to get the information to decide either whether the activities are productive or whether new activities are worth undertaking. This conclusion is based partly on inquiries made in the course of the study in roading and education, but it can be reinforced wherever one looks at government activities. Government will never know whether it is wasting valuable resources - depriving the private sector of resources to invest productively - unless it starts to monitor its existing activities. A sensible conclusion would be to avoid any new activities and limit existing ones until better information is available. The resources the government uses are scarce, and it must concentrate on doing only the things it can do effectively. If it doesn't know how effective an activity is, and can not find out, surely the sensible thing is to stop that activity.

Because of financial constraints over the last few years, the government has in fact attempted to evaluate and curtail its activities. It is important that this attempt be maintained even if the financial constraint should weaken in the future due to, for example, increased mineral revenues. The argument for curtailing government activities does not depend on financial constraints (although they are important) : it depends on the understanding that a government's managerial and executive skills are a very scarce resource, and should only be used to provide highly productive and essential services.

Is government expenditure too great overall? The conclusion here is that Papua New Guinea has a high ratio of government expenditure to GDP by the standards of developing countries. In fact she falls within a very small group of low-income, open, agricultural economies with poor growth rates and very high ratios of government expenditure. All of these countries receive relatively large amounts of external aid which undoubtedly swells government expenditure especially if it is project aid. The low GDP and its slow growth inevitably give a large ratio of government expenditure to GDP, but, quite apart from this arithmetical effect, aid itself encourages high levels of government spending and activities. There is a strong suspicion that aid in Papua New Guinea is so large that it forces government to over-extend itself, spread its resources too thinly and undertake inefficient and ineffective activities. There can be no direct proof of this suspicion, but Papua New Guinea's poor growth performance and her relatively large government sector start to make a case to be answered. Just as the government needs to limit its activities to the highly productive and essential, so it should limit aid projects to not only the highly productive and essential, but also those that do not absorb too many scarce Papua New Guinean resources.

The final question overlaps with the others : could government expenditure be altered to improve productivity and growth? As has been pointed out above, government needs more information if it is to be sure that anything that it does is economically worthwhile. Big government must be under suspicion.

The present trends of reducing the share of government expenditure in GDP should be continued. But it is not enough to adopt across-the-board proportionate cuts. That may be politically safe and easy, but it is dangerously inefficient. If vested interests are for the time being too powerful to severely cut or abolish a service, different

methods of delivering the service can be tried. Subsidies to private providers of services (e.g. agricultural extension services) could be more efficient and enable greater control and monitoring of the service to be undertaken. The delivery systems inherited from the past should not be regarded as sacred, but as one set of alternatives amongst many.

At the beginning of this study it was stated that it was not concerned with a detailed analysis of the financing of expenditures, i.e. with taxation, borrowing or aid. Nevertheless, in analysing the effects of expenditures reference has been made to taxation and aid, and the multiplier and crowding out analyses depend upon the methods of financing. A more complex politico-economic issue is government expenditure over a period of time which relies on rising government indebtedness. This is inevitably a political issue because one generation is shifting the burden of finance on to a succeeding generation.

The normal approach to this government indebtedness, as to all types of indebtedness, is to compare the costs of increased indebtedness with the benefits arising from the expenditures. If the rate of return is greater than the interest rate, the increased indebtedness is justified. (This rule is of course the same as what should be the normal yardstick for any government activity. As we have said, any government expenditure should show a rate of return in excess of a minimum related to the level of an appropriate interest rate.)

This approach to increased government indebtedness brings the issue clearly back to the question whether the government knows what is the productivity of the particular investment. Our conclusion is that the government usually does not have adequate information. Hence it is not possible at this stage to either approve or criticise the rising level of government indebtedness in Papua New Guinea.

Finally, it must be said that Papua New Guinea has inherited a governmental structure and a philosophy of the role of government in development that is probably out of date, even if it was ever relevant to Papua New Guinea's problems. It is a structure and philosophy derived from Australians' (and New Zealanders') experiences in their own countries. It fitted in well with the international development ideology of the 1950s and 1960s. It is very likely that Papua New Guinea will achieve its goals more easily if it forges a structure and philosophy of its own. If successful, this will almost certainly mean a smaller and more selective role for government, with fewer but more effective activities.

Appendix

1. Government expenditure statistics

Sources of data of Table 2.1

<u>Total</u>	1980-84 Government Finance Statistics (National Statistical Office). National plus provincial total expenditure and net lending, less national transfers to other levels of government (current and capital). 1985-86 IMF Financial Statistics : Central government total expenditure and net lending. 1987-88 1988 Estimates of Revenue & Expenditure : Total expenditure less debt principal repayments (rounded down).
<u>a.i. & ii</u>	1981-86 National Statistical Office unpublished. 1980 Government Finance Statistics raised with 1981 ratio of National Statistical Office unpublished to Government Finance Statistics. 1987-88 1988 Budget Document No. 1, Appendix 1, Table 8.
<u>b</u>	1980-84 Government Finance Statistics. 1985-86 IMF Financial Statistics 1987-88 1988 Estimates of Revenue and Expenditure.
<u>d</u>	Residual.
<u>GDP (market)</u>	1980-84 National Accounts. 1985-88 1988 Budget Document No. 1 (1985-86 Table 2.1; 1987-88 Appendix 1, Table 8; non-market production estimated at K384 million (1987) and K413 million (1988)).

Note: The total for 1980-84 includes provincial expenditures outside the national budget, but not for later years. Local government expenditures outside national and provincial budgets are not included. a and b includes estimates of provincial and local government expenditures, but the latter are regarded as unreliable. Errors will appear in the residual "d".

Current and capital expenditures on goods and services in Government Finance Statistics (unlike the National Accounts) exclude the expenditures of non-commercial statutory bodies (e.g. universities); these expenditures are included as transfers to non-profit institutions.

Appendix Table A
Market GDP at 1981 values (linked series)
(K million)

	GDP	Imports of goods & services	Exports of goods & services	Private final consumption	Gross fixed capital formation	Government final consumption	Real income (GDP with terms of trade adjustment)
1972/3	1374.9	672.0	551.6	592.2	334.0	461.9	1249.6
1973/4	1443.2	648.1	676.4	567.9	314.2	469.1	1516.8
1974/5	1450.5	837.3	718.7	602.9	360.0	498.1	1212.8
1975/6	1414.5	679.6	628.2	620.7	266.2	499.8	1148.5
1976/7	1328.0	740.8	601.1	648.8	301.2	441.3	1247.5
1977	1277.0	818.8	560.7	709.0	307.7	448.9	1274.5
1978	1403.6	835.8	613.6	757.0	335.2	462.8	1317.1
1979	1435.6	900.2	612.0	810.3	386.7	477.3	1457.6
1980	1405.6	986.0	610.0	861.1	436.6	464.6	1346.2
1981	1395.0	987.6	642.9	821.2	447.5	449.9	1195.7
1982	1393.5	976.0	632.5	784.8	528.3	418.8	1158.1
1983	1451.6	969.7	643.5	829.8	543.9	414.1	1187.1
1984	1463.0	949.4	642.6	874.6	430.1	407.1	1289.6
1985	1543.0	903.4	743.9	895.4	361.1	410.0	1296.1
<u>Revised</u>							
1984	1432.6				433.3	424.7	1259.4
1985	1534.1				364.3	429.3	1267.6
<u>Preliminary</u>							
1986	1588.9				395.5	419.0	1318.0

2. The national accounts

(i) Constant price linked series 1972/3 to 1986

For several of the calculations in this report constant price series of market GDP and its expenditure components were required. Linked series for 1972/73 to 1976/67 (June year) and 1977 to 1985 (December year) were constructed from the successive National Statistical Office series at 1972/73, 1977 and 1981 values. The linked series is based on 1981 values, with the 1972/73 and 1977 series raised in the ratios of 1971/73 and 1977 prices to 1981 prices. The series to 1985 are given in Appendix Table A, based on successive National Accounts Statistics Bulletins up to No. 26, January 1987. 1988 Budget Document No. 1 contains revised estimates of market GDP and government consumption for 1984 and 1985, and first estimates for 1986, which have been used in Tables 2.2 and 3.6 above.

(ii) Real income series : correction for the terms of trade

R. Goodman, C. Lepani & D. Morawetz The Economy of Papua New Guinea (Development Studies Centre, ANU, 1985) give estimates of "a terms of trade adjustment to reflect real purchasing power of the GDP" (their Table A8, prepared by Dr. J. Guest). The final column of Appendix Table A gives a linked series in 1981 prices of market GDP adjusted for change in the terms of trade, using the method of Dr. Guest.

(iii) Real enterprise GDP

Real GDP includes the output of government activities : the non-commercial or non-profit-making services measured in the National Accounts as government final consumption, defined as the government wage and salary bill (discussed above) and the other government current purchases. (In other words, government services are included in GDP at cost.) If we want to examine the relationship of government expenditure and real GDP it is sensible to exclude government services from real GDP. We have done this by defining real enterprise GDP, which is real GDP less real government current consumption (see Diagram 1.1). This real enterprise GDP is in essence an index of enterprise (profit-making) output, produced by both the private and public sectors (including joint ventures). The estimates of real enterprise GDP, with and without the terms of trade correction, are given in Table B, together with estimates of related formal wage employment.

Appendix Table B
Enterprise real GDP, income and employment

	Real enterprise GDP K(1981) million	Real enterprise income K(1981) million	Enterprise wage employment (numbers)
1978	940.8	854.3	135,013
1979	958.3	980.3	141,004
1980	941.0	881.6	157,394
1981	945.1	745.8	149,429
1982	974.7	739.3	138,923
1983	1037.5	773.0	142,255
1984	1007.9	864.9	138,637
1985	1104.8	866.8	141,976
1986	1169.9	891.0	148,283

Source: Real enterprise GDP : market GDP at constant prices, less government final consumption.
Real enterprise income : market GDP at constant prices, corrected for terms of trade, less government final consumption.
Wage employment : P. A. McGavin : The Labour Market in Papua New Guinea : A Survey and Analysis, (I.N.A. Discussion Paper No. 24, 1986) updated from Bank of Papua New Guinea.

Real enterprise GDP had a trend rate of growth of 2.6 per cent per annum over the period 1978-86. The effect of the changes in the terms of trade is seen when we compare real enterprise income : the large fall during 1980-82, and the subsequent rise; in 1986 real enterprise income had barely risen above the 1978 level, and was still well below the average of 1978-80.

3. The marginal propensity to import and the multiplier

Estimates of the marginal propensity to import were obtained from the annual time series data in Appendix Table A with 14 observations from 1972/73 to 1985. The following are the results (imports are the dependent variable) :

		Parameter estimate	Standard error
(a)	Intercept	-423.336	525.776
	E Exports	0.073	0.219
	C Private consumption	0.742	0.144
	I Investment	0.737	0.182
	G Government consumption	0.875	0.054
	Adj R - Sq.		0.890
	Durbin-Watson		2.283
(b)	Intercept	-831.410	213.596
	Total expenditure (E + C + I + G)	0.743	0.094
	Adj R - Sq.		0.825
	Durbin-Watson		1.016
(c)	Intercept	158.450	772.352
	GDP	0.490	0.546
	Adj R - Sq.		-0.0153
	Durbin-Watson		0.553

Obviously, GDP itself does not provide a satisfactory independent variable. However, total expenditure provides a sensible result, especially in the light of the disaggregated version (a). (The parameter estimate of G is suspiciously high and (like that of E) not significant according to the T-test). If we assume the disaggregated marginal propensities to import are -

C	0.74	
I	0.74	as in equation (a)
E	0.07	
& G	0.25	i.e. one quarter of government consumption expenditure is spent directly on imports (this is over 60 percent of expenditure on goods and services other than wages and salaries)

and weight these by the mean values of the respective time series, the weighted marginal propensity to import out of E + C + I + G is 0.43. This implies a marginal propensity to import out of GDP of 0.75. Even if the other leakages at the margin are no more than 0.25, this implies a multiplier of about unity.

These conclusions receive some support from "reduced form" equations explaining GDP in terms of Exports, Investment and Government consumption i.e. assuming the latter are exogenous and not interdependent. Without lags, the results show that only Exports have a significant effect on GDP, but the "multiplier" does not exceed unity.

None of these results should be regarded as more than indicative, but supporting the argument in the text of Chapter 6.

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PORT MORESBY

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Morobe Bakery Pty. Ltd.
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