

NATIONAL ECONOMIC AND SOCIAL COUNCIL

The Potential for Growth in Irish Tax Revenues

NATIONAL ECONOMIC AND SOCIAL COUNCIL

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1. The main task of the National Economic and Social Council shall be to provide a forum for discussion of the principles relating to the efficient development of the national economy and the achievement of social justice, and to advise the Government, through the Minister for Finance, on their application. The Council shall have regard, *Inter alia*, to:

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- (v) the balanced development of all regions in the country, and
- (vi) the social implications of economic growth, including the need to protect the environment.

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Ten persons nominated by agricultural organisations,

Ten persons nominated by the Confederation of Irish Industry and the Irish Employers' Confederation,

Ten persons nominated by the Irish Congress of Trade Unions,

Ten other persons appointed by the Government, and

Six persons representing Government Departments comprising one representative each from the Departments of Finance, Agriculture and Fisheries, Industry and Commerce, Labour and Local Government and one person representing the Departments of Health and Social Welfare.

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6. The Council shall have its own Secretariat, subject to the approval of the Minister for Finance in regard to numbers, remuneration and conditions of service.

7. The Council shall regulate its own procedure.

NATIONAL ECONOMIC AND SOCIAL COUNCIL

The Potential for Growth in Irish Tax Revenues

by

Dr. G. E. J. Llewellyn

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PREFACE

In 1974, the Council decided that the potential for growth in tax revenues merited deeper study. The Council therefore commissioned Dr. G. E. J. Llewellyn, Assistant Director of Research, Faculty of Economics, University of Cambridge, to prepare a background study to assist the Council in its deliberations.

The Council's report entitled *Prelude to Planning*, which has already been published, draws on Dr. Llewellyn's analysis and conclusions in its discussion of the potential for growth in the Irish economy and of the structural changes that are likely to accompany faster economic growth. In accordance with its normal practice, the Council, having examined Dr. Llewellyn's study, would have drawn conclusions and made recommendations on the scope for increasing tax revenues by raising tax rates and/or widening the tax base. However, the Council will not be able to do so, given the pressure of other work during the short time available between now and the expiration of the term of office of its members on 31 December 1976.

Oisín House, 21 October 1976

THE POTENTIAL FOR GROWTH IN IRISH TAX REVENUES

This report was prepared by Dr. G. E. J. Llewellyn (Assistant Director of Research, Faculty of Economics, University of Cambridge), with assistance from Mr. R. J. Tarling (Research Officer, Department of Applied Economics, University of Cambridge), Mr. M. A. King (Lecturer in Economics, University of Cambridge), Mr. T. S. Ward (Research Officer, Department of Applied Economics, University of Cambridge), and Mr. J. R. de Ridder (Research Student, Faculty of Economics, University of Cambridge).

The authors are grateful for a large number of helpful comments received from the Central Bank of Ireland, the Department of Finance, Dr. Kieran Kennedy, Director, Economic and Social Research Institute and Mr. Derek Chambers. These comments have proved very useful, and have resulted in a number of changes, both major and minor, being made throughout the report. Ultimate responsibility must, however, necessarily rest with the authors.

The authors would also like to thank the Chairman of the National Economic and Social Council, Professor Loudon Ryan, for his constructive criticism, help and encouragement throughout, and Mr. T. P. Ferris, Secretary of the Economic Policy Committee of NESR, for his invaluable help at all stages in the preparation of the report. This help included research, the gathering of data and the drafting of a number of sections of the report.

CHAPTER 1

INTRODUCTION

Background

1.1. The purpose of this report is to examine the potential for growth in the tax revenues of the Irish Government. Conceptually this involves three issues: the opportunity for raising tax rates on the existing tax base, the opportunity for widening the tax base, and the opportunity for increasing the overall size of the tax base, through economic growth.

1.2. The question of the potential for growth in tax revenues is an issue which is of general concern to the majority of Western Governments. Over the post-World War II period, most Governments have either been under pressure, or at least have felt that they have been under pressure, to increase rapidly expenditure on the provision of the goods and services that, typically, it has become regarded as Government's role to provide. The result has been that over the bulk of the post-war period, and notwithstanding the fact that the rate of growth of real output in all the major Western economies has been high by historic standards, the proportion of the total supply of goods and services, measured in constant prices, that has been pre-empted by Government has been growing in about half of the OECD countries.¹

1.3. This phenomenon would, by itself, generally be taken to imply that the proportion of all incomes taken in tax would be increasing in about half of the OECD countries. But in addition, two other phenomena have generally been present, and each has been responsible for the need for a proportionately-increasing tax take.

1.4. The first phenomenon is the generally increasing *relative* price of the resources pre-empted by Government. Typically, and over the

¹See OECD (1972) p. 10.

post-war period particularly, the prices of the goods and services that Governments have wished to pre-empt have risen relative to the general price level. This has arisen in large part, although not exclusively, because the goods and services provided by Government, such as the armed services, the Police Force, a health service, the education system, and so on are labour-intensive as compared with the goods and services produced in the economy as a whole, and labour costs in all countries have risen *relative* to most other prices. It should be emphasised that this phenomenon does not, by itself, have anything to do with inflation, which is the general increase in price of *all* goods and services. Rather, this phenomenon is due to the fact that real output and income per person employed has shown a secular increase in all OECD countries over the last 25 years or so. This increase in real output per head, real income per head, or material living standards—how it is described does not matter—has meant that goods have become progressively cheaper relative to the price of labour or, what is of course the same thing, labour has become progressively more expensive relative to goods.

1.5. The result of this phenomenon has been that the proportion of the total supply of goods and services measured in current prices that has been pre-empted by Government has risen relative to the constant-price proportion. Thus while the Government's share of output measured in constant prices has risen in about half of the OECD countries,¹ the Government's share of output measured in current prices has risen in 18 out of 21 of the OECD countries.² For detailed figures for 13 OECD countries, see the column headed "Expenditure on Goods and Services" in Table 1.1 of this report. This in turn would generally be taken to require that an increasing proportion of all incomes would have to go to Governments as tax.

1.6. There is an additional reason for a proportionately-increasing Government tax take. Over the post-war period Governments have typically increased the extent to which they have re-distributed income within their countries, whether by subsidies, transfers to households, interest on the Public debt, or whatever. This is a conceptually quite distinct phenomenon from that discussed above, whereby Govern-

¹OECD (1972) p. 10.

²OECD (1972) p. 46.

ments have typically been increasing the proportion, particularly the current price proportion, of the nation's goods and services for *Government* consumption: the phenomenon being discussed here is the extent to which Governments have typically been increasing the proportion of GNP that they have been *redistributing*. The result of bringing this second phenomenon into consideration as well is that total Public current price expenditure, expressed as a percentage of current price GNP, has been increasing in all the 14 OECD countries for which comparable data are available¹: see the column headed "Total goods and services and current grants" in Table 1.1.

The effect on taxation

1.7. The increasing current price share of Government expenditure in GNP, arising for the reasons discussed above, has required that a secularly-increasing proportion of all incomes had to be taken by Governments as tax, whether by social security taxes, personal income taxes, direct taxes on corporations, indirect taxes, or whatever. Thus over the period 1955–57 to 1967–69 the proportion of current price GNP taken as tax increased from 25.8% to 30.5% in the OECD as a whole, the increase in the case of Ireland being from 22.3% to about 27.7%.² The proportion of Irish GNP taken as tax continued to rise, to 29.9% in 1970 and 31.3% by 1973—see the column headed "Total Taxes" in Table 1.1.

1.8. It should be noted, however, that while the proportion of Irish GDP that has been taken as tax has risen over time, the proportion is not particularly high, judged by the standards of other OECD countries.³

¹OECD (1972) pp. 66–67.

²OECD (1972) p. 71.

³These international comparisons must be treated with some caution, because of course materially different rankings can emerge when subsets of the total tax system are considered. For example, R C Geary ("Are Ireland's Social Security Payments too small? A Note", Dublin: Economic and Social Review, Vol. 4. No. 3, April 1973) has shown that, when allowance is made for differences in income levels, the burden of Ireland's social security payments was considerably higher than a straight comparison with other countries would suggest. Again, J H Doherty and J P O'Neill ("Recent Trends in Public Finance", Annual Report of Central Bank of Ireland, 1972–73) have shown in a comparison of EEC countries that when social security contributions are excluded, Ireland has on average over the period 1968–1970 the third highest tax/GNP ratio of the EEC countries.

As the "Total Taxes" column of Table 1.1 shows, for 1973, only in Japan and Italy (21.5% and 29.9% of GNP, respectively, taken as tax) is the overall taxation ratio lower than in Ireland. The Irish value of 31.3% is a little below the UK figure of 34.8%, and markedly below the levels in countries such as Germany (40.6%), the Netherlands (47.5%), Sweden (48.1%) and Denmark (51.5%). This is of course a global comparison and draws no inferences about the incidence of taxation at the sectoral level. The relative tax burden of the agricultural and non-agricultural sectors, may well be different in Ireland from the position in other OECD countries.

Shorter-run influences on the level of Government spending

1.9. In addition to the secular influences that in all OECD countries have increased the current price share of GNP that has been taken in tax, two essentially short or medium-term phenomena have recently been responsible in most OECD countries for a sharp increase in Government expenditure. This increase has not, for the most part, been accompanied by a corresponding increase in tax revenues. The influences, which are discussed in turn, are (a) the increase in oil prices and (b) the increase in payments to the unemployed.

(a) The increases in oil prices

1.10. As is well known, the quadrupling of oil prices in December 1973 led to an increase in the incomes of the oil-producing countries that, to date, has far exceeded the increase in their expenditures. In round figures, the oil-price rise increased oil-producers' incomes by \$80 billion in the first full year, and their expenditure increased by only about half that amount, leaving the oil producers with a surplus of income over expenditure of around \$40 billion. From the point of view of the OECD countries, considered as a whole, this necessarily represents an excess of expenditure (on oil) over income (from exports to the oil producers), of \$40 billion, which manifests itself as a current account deficit of that amount for the OECD region as a whole.

1.11. This balance of trade deficit can be expected to diminish slowly as the oil producers develop plans and projects and generally find ways to spend their new-found income. Over the next few years at least, a substantial trade deficit for the OECD region can be expected to

remain, the precise magnitude depending upon the level of economic activity in the OECD and on the extent to which the non-oil developing countries, who typically spend all of their foreign exchange receipts, receive loans or transfers from the OPEC countries. The effect of the deficit on OECD economies is simultaneously inflationary and deflationary: it is inflationary because it raises prices, directly and indirectly, and it is deflationary because the excess of oil producers' income over expenditure represents, from the OECD countries' point of view, a tax imposed by the oil producers, the proceeds of the tax not being fully spent. OECD Governments can offset this deflationary impact by increasing their expenditure, by reducing their taxation, or by some combination of the two; to the extent that they are successful, output and employment stay at their full-employment level. This in turn means that imports too stay at their full-employment level, and the excess of the value of imports over the value of exports has to be financed by borrowing the requisite foreign exchange from the oil producers. To the extent that OECD Governments do not increase their expenditure or decrease their taxation to offset the deflationary impact of the oil price rise, and thereby do not achieve full employment levels of output and employment, output falls, at least relative to trend and possibly absolutely, and unemployment rises. This rise in unemployment in turn necessitates an increase in Government expenditure relative to receipts through the automatic payment of unemployment benefits.

(b) The increase in payments to the unemployed

1.12. It seems likely that, by the end of 1973, an upper turning point had been reached in the level of activity in the OECD world as a whole and that, even without the oil price rise, some decline in the level of economic activity, at least relative to trend, and some increase in unemployment, would have taken place. That part of the deflationary impact of the oil price rise which was not offset by Government action in the various OECD countries added to this, so that by the end of 1974 there was a strong underlying tendency for unemployment to rise in virtually all OECD countries. This in turn led automatically to an increase in payments for unemployment benefit, financed necessarily and appropriately by an increase in Government expenditure relative to Government income.

1.13. Thus to a certain extent Governments which had been unwilling to indulge directly in deficit expenditure to offset the deflationary impact of the oil price rise nevertheless found themselves doing so automatically as unemployment tended to rise. While the increase in the deficits of OECD Governments was large, however, it was not large enough fully to offset the deflationary impact of the oil deficit, and the OECD world entered into a recession, the deepest in the post-war period, with industrial output falling to about 16% below trend,¹ in volume terms, at what now appears to have been the trough of the recession in the second quarter of 1975.

1.14. It can therefore be seen that when considering the growth in tax revenue that a Government needs in order to finance its expenditure, it is appropriate to distinguish the secular increases in Government expenditure, which by and large do need to be financed out of increased tax revenues, from cyclical increases in Government expenditure, which are attributable to the current recession, and which by and large do not need to be financed out of taxation.² Putting the matter another way, in assessing the extent to which in the past it has been, and in the future may be, necessary to increase taxation revenue in order to finance Government expenditure, it is appropriate to consider only that expenditure which would have been undertaken, and would in the future be undertaken, if the economy remained throughout on a full capacity output path. It is for this reason that the tax and expenditure data in Table 1.1 were given for the years 1964, 1970, and 1973: these years represent cyclical peaks in the level of economic activity in most OECD countries, and so the growth rates quoted are devoid of any unduly large influence due to excessively high or low unemployment levels (although the absolute figures will lie above the underlying trend).³

¹See OECD (1975), Chart K, page 47.

²Merely because this expenditure does not have to be (indeed cannot be) financed from taxation does not necessarily mean that financing this expenditure will be easy: the necessary borrowing, directly or indirectly from the OPEC countries' surplus may be difficult to arrange, and implies an accumulating debt over time and substantial interest charges.

³Choosing years of approximately equal pressure of demand, country by country, is also extremely important when growth rates of output and employment are being calculated: this point is recognised in the next chapter, where output growth rates are given for peak-to-peak periods.

A caveat concerning policies to increase Public Sector receipts.

1.15. While the purpose of this report is to examine the receipts side of the public accounts, it should be emphasised that to consider one side of the accounts in isolation from the other—taxation in isolation from public expenditure—is liable to produce results which are open to misinterpretation and could, if this were not fully recognised, promote irrational decision-making.¹

1.16. One reason for this is that there is no objective and clear-cut way of determining what should be included in the public sector accounts as an item of revenue and what should be included as an item of expenditure.² For example, charges or fees which are levied in connection with the provision of particular Government services might equally well be treated either as negative items of expenditure or as positive items of revenue. If the former treatment is adopted, then the raising of such charges becomes one means of achieving a reduction in public expenditure, which might be taken by the unwary as signalling an increase in the resources available for private consumption or

¹The need to take a composite view of taxation and public expenditure was recognised by the National Economic and Social Council in its recent report on public expenditure (Report No. 21, July 1976), when it stated that "The inter-relationships between the growth in national output, tax rates and tax structures and the level and composition of public expenditure are complex and very little is known about them. As a matter of urgency attempts should be made to identify these (and other relevant) inter-relationships and obtain some measure of their strength and direction. If these efforts are to be even modestly successful, then a model of the economy is required. The need for such a model has long been felt. The Council understands that work on the formulation of such a model is now under way in the Department of Finance and the Central Bank. The Council has been informed that, in order to make the most effective use of resources available for this task, the Department and the Central Bank intend to co-operate closely with other interested bodies and particularly with the Central Statistics Office and the Economic and Social Research Institute." The Council again referred to the work on the formulation of a model of the economy in *Prelude to Planning* (NESC, No. 26, October 1976, para 4.22).

²This point was made in *Report on Public Expenditure* (NESC, No. 21, July 1976, pages 9 and 10) where the Council stated: "Specific tax reliefs within any given tax structure may be regarded as 'implicit' public expenditures. . . . This merely illustrates the fact that tax measures may be alternatives to public expenditures".

TABLE 1.1
International comparison of Taxation and Expenditure: 1964, 1970 and 1973. Percentages of GNP at factor cost

	Direct Taxes		Social Security Contributions		Net Indirect Taxes		Total Taxes net of subsidies		Expenditure on Goods and Services		Current Grants		Total Goods and Services and Current Grants								
	(1)		(2)		(3)		(4)		(5)		(6)		(7)								
	1964	1970	1964	1970	1964	1970	1964	1970	1964	1970	1964	1970	1964	1970							
United Kingdom	12.3	18.2	4.9	6.1	6.2	12.9	16.7	30.1	41.0	34.8	23.3	26.3	26.6	8.2	10.4	10.8	31.5	36.7	37.4		
Germany	12.2	12.0	14.0	9.8	11.4	13.2	15.2	13.5	13.4	37.2	36.9	40.6	22.4	23.0	24.5	12.7	12.8	13.6	35.1	35.8	38.1
Italy	6.9	6.9	7.5	12.1	12.8	13.1	12.2	11.7	9.3	31.2	31.4	29.9	18.4	16.9	18.9	13.0	16.3	18.9	31.4	33.2	37.8
Belgium	9.3	12.4	15.0	9.8	11.6	12.5	12.6	13.0	11.3	31.7	37.0	38.8	17.8	19.3	20.4	12.5	16.5	18.2	30.3	35.8	38.6
Netherlands	13.8	15.3	17.3	11.2	16.2	18.8	10.0	11.2	11.4	35.0	42.7	47.5	22.1	23.4	22.8	n.a.	19.8	24.1	n.a.	43.2	46.9
Ireland	6.9	9.6	10.7	1.9	2.9	3.5	14.9	17.4	17.1	23.7	29.9	31.3	19.3	21.1	23.6	7.6	10.8	13.0	26.9	31.9	36.8
Denmark	14.6	25.2	30.6	2.0	2.2	1.3	14.6	15.5	19.6	31.2	45.9	51.5	20.1	30.0	31.8	9.2	14.5	15.5	29.3	44.5	47.3
Sweden	17.9	23.2	22.2	8.0	8.7	9.9	11.4	13.1	16.0	35.3	45.0	48.1	25.4	31.0	32.3	9.6	13.2	16.3	35.0	44.2	48.6
Austria	13.5	14.3	14.1	8.0	9.4	9.8	15.0	16.9	17.7	36.5	40.6	41.6	21.8	23.6	24.6	14.3	15.3	14.8	36.1	38.9	39.4
France	n.a.	7.6	7.4	n.e.	15.2	15.8	n.a.	16.3	16.3	n.a.	39.1	39.5	n.a.	19.2	19.6	n.a.	19.3	20.5	n.a.	35.5	40.1
United States	n.a.	14.4	14.9	n.a.	6.4	8.0	n.a.	10.1	10.1	n.a.	30.9	33.0	n.a.	25.5	24.8	n.a.	8.6	10.0	n.a.	34.1	34.8
Canada	12.1	16.7	18.0	1.8	3.3	3.3	14.8	15.3	15.0	28.7	35.3	36.3	21.9	26.8	26.4	7.5	9.8	11.2	29.4	36.8	37.6
Japan	8.4	9.4	10.7	3.2	4.0	4.1	7.8	6.9	6.7	19.4	20.3	21.5	15.1	14.1	16.1	4.5	4.7	5.1	19.6	18.8	21.2

Source: "National Accounts of OECD Countries", OECD, various issues.

investment, and indeed might be coupled with a reduction in taxation, thus reinforcing the illusion.¹

1.17. Similarly certain types of subsidy, which are treated as an item of expenditure, are to a large extent indistinguishable from indirect taxes as far as their economic effects are concerned. In particular, a given change in the rate of subsidy payments will tend to have a similar effect on retail prices as the same change in the rate of indirect tax in the reverse direction. Other types of subsidy or grant, such as those relating to industrial investment or housing, for example, have virtually the same impact as tax allowances, which conventionally are treated as offsets to Corporation tax or personal income tax. A change from one system of encouraging investment, exports or house building to another is therefore likely to be open to misinterpretation if only one side of the public sector accounts is examined to the exclusion of the other.

1.18. A more serious danger is that policy decisions may be partly dictated by the desire to increase taxation or reduce expenditure *per se*, which will tend to militate against rational decision-making in any particular area, such as housing or investment. Moreover the implications of a given change in expenditure for taxation are extremely difficult to determine unless they are considered in the context of complete public sector accounts, because most items of expenditure generate some tax return, albeit to a greater or lesser extent.

1.19. The points which it is important to appreciate are: first, that any definition of what constitutes public expenditure or public sector receipts is necessarily arbitrary and, because of that, is likely to be ambiguous; second, policy decisions should be taken with reference to both sides of the public sector accounts; and third, the principal concern of the policy-maker in Government should be the net effect of his actions on the economy—whether they impinge directly on taxation or expenditure should in general be a matter of subsidiary interest.

¹The public expenditure cuts announced by the incoming Conservative Government in the UK in 1970 partly involved increases in charges, even though the Government had the stated objective of leaving more money in the hands of private consumers.

1.20. With these caveats in mind, it is appropriate to examine the likely evolution of the main components of Irish tax revenues, given the existing tax base and tax rates, on the assumption that GDP continues to grow in the future at a rate fairly close to that achieved in the past.

CHAPTER 2

THE EVOLUTION OF THE PRESENT TAX BASE IN RELATION TO GDP

Introduction

2.1. The purpose of this chapter is to examine in a broad way the manner in which the Irish tax system, and hence Irish tax revenues, have evolved over the post-war period. Armed with this evidence, the chapter then considers the prospects for the growth of public sector receipts under existing arrangements—that is with the scope and rates of taxation remaining unchanged—given the future growth of real domestic income and expenditure. To this end, each of the major components of the present fiscal system is examined briefly in order to establish a presumption about the sensitivity of the yield with respect to an increase in real national income.¹ An estimate, albeit tentative, is then made of the overall response of public sector revenue to the growth of the economy.

Background

2.2. Over the post-war period the Irish taxation system had undergone a considerable amount of structural change. Full details of Irish tax revenues by type of tax for every year from fiscal year 1953–54 are given in Appendix Table 5, having been compiled from the various Revenue Commissioners' Reports², but such tables contain too much detail for the broad features of the structural change to be clearly

¹This encompasses both the variation in tax revenue in response to changes in the tax base (personal income, consumers' expenditure, for example) and that of the tax base in response to changes in overall national income.

²Data for items such as rates and social insurance contributions, however, have been taken from *National Income and Expenditure* (various issues).

visible. Accordingly, a reduced form of this table is given in Table 2.1 in this chapter; this table shows Irish tax revenues by type of tax for each of the main categories of tax for the fiscal years 1954–55, 1960–61, 1967–68 and 1973–74.

2.3. Each of these end-years represents a cyclical peak in the level of economic activity in Ireland and was chosen in order to minimise the effect of cyclical variations in the level of economic activity on Public Sector receipts.

2.4. It can be seen from Table 2.1 that most of the structural change in the Irish tax system occurred after 1960–61. Consider first of all the four "old faithfuls", the customs and excise taxes on beer, hydrocarbon oils, spirits and tobacco. Ireland has always relied very heavily on these taxes, which in 1954–55 brought in very nearly half of total tax revenues.¹ The proportionate contribution of these tax revenues has been falling over the period, to 39.5% in 1960–61, 35.7% in 1967–68, and to 24.9% or just under a quarter of total tax revenues, in 1973–74, but it is clear that even by the end of the period the dependence of the overall tax revenues on the taxes on just these four items of expenditure was still quite considerable.

2.5. Corresponding to this decline in the proportionate contribution of the "old faithfuls" to overall tax receipts has been a substantial increase in other indirect tax receipts, and the two have about offset one another. As can be seen in Table 2.1, turnover taxes, wholesale taxes, and value-added tax were not levied until after fiscal year 1960–61, so their contribution to tax receipts in 1954–55 and 1960–61 was nil. However, the introduction of turnover tax (in fiscal year 1963–64) and wholesale tax (in fiscal year 1966–67) meant that by fiscal year 1967–68 these two taxes accounted for 7.3% of total tax receipts. The introduction of value-added tax, in substitution for the wholesale and turnover tax system, in fiscal year 1972–73 meant that by fiscal year 1973–74 this form of tax accounted for 16.1% of total tax revenue.

2.6. The other feature of structural change in the Irish fiscal system has been the increase in the proportionate contribution of income tax

¹The actual figure was 47.3%—see Table 2.1.

and social security contributions, from 23.7% of total taxation in fiscal year 1960–61 to 35.6% in fiscal year 1973–74, an increase of 11.9 percentage points. The major counterpart to this increase is to be found in the declining proportionate contribution of Rates and other miscellaneous taxes (these miscellaneous taxes include fee stamps, harbour tolls, broadcasting licence fees, the Post Office Surplus, agricultural levies, and a few other small taxes). Rates and other miscellaneous taxes, which were together contributing 26.1% of total tax revenue in 1960–61, were contributing only 14.7% of total revenue in 1973–74, a decline in proportionate contribution of 11.4 percentage points.

TABLE 2.1

Receipts of Various Taxes as a Percentage of Total Revenue, Ireland
Peak Years of Economic Activity

	1954–55	1960–61	1967–68	1973–74
Income tax	20.5	19.0	21.8	26.1
Social security contributions	4.7	4.7	7.3	9.5
Corporation profits tax	2.6	2.2	3.8	2.7
Beer	—	6.0	6.3	5.6
Oil	—	9.1	10.0	6.7
Spirits	—	5.2	4.6	4.8
Tobacco	—	19.2	14.8	7.8
M/V licence	3.8	4.4	3.5	2.8
Turnover tax	—	—	5.0	—
Wholesale tax	—	—	2.3	—
VAT	—	—	—	—
Rates	14.2	15.3	10.7	8.6
Stamp	1.5	1.9	1.3	1.6
Estate duty	2.4	2.2	1.9	1.6
Total	97.0	89.2	93.3	93.9
Other	3.0	10.8	6.7	6.1

*Excluding VAT on these items.

†These receipts are mainly VAT, but include arrears of Turnover and Wholesale Taxes.

Source of data: See Appendix Table 5.

2.7. The contribution of each of the other taxes was relatively small, and the proportionate contribution of each changed little over the period. However, given these changes in the structure of the Irish tax system, the next step is to examine how each item of taxation has increased relative to the growth in national income. It was shown in Table 1.1 in the previous chapter that over the post-war period the proportion of Irish GNP that was taken by the Government as tax increased from 23.7% in 1964 to 31.3% in 1973. It is the purpose of the next section to show how this increase came about.

The growth of Irish tax revenues in relation to GDP

2.8. Tax revenues increase through time for two conceptually-distinct reasons; growth in the tax base, and growth in the tax rate applied to the tax base. The tax base generally is in one of two forms, being either a physical quantity, such as standard barrels in the case of beer, or a monetary quantity, such as all employees' incomes in the case of income tax.¹ The distinction between the two types of tax base is important, because of the different way in which each is affected by inflation. A monetary tax base, such as employees' income in the case of income tax, generally increases at something like the rate of inflation, so that the real value of the revenues will be unaffected by the changes in the rate of inflation—there are problems caused by the progressivity of the income tax system, whereby the marginal tax rate increases with nominal, not just real, income, but this problem will be discussed later. A physical tax base, however, does not increase in size with inflation, and so if real revenues are to be unaffected by variations in the rate of inflation, the tax *rate* has to be varied in some degree with the rate of inflation—in short, such tax rates have to be indexed.² In practice, however, rates in Ireland and most other countries have not been indexed, but have merely been increased from time to time to take account of inflation and the Government's fiscal needs, rather than the rate of inflation *per se*.

¹That is, taxes are either levied on a *specific* basis or on an *ad valorem* basis.

²If the aim were to maintain revenue in relation to national income, the extent of adjustment in rates to inflation would vary according to the elasticity of demand for the product in question. Complete indexation would ensure that real rates of tax were maintained, but not necessarily real revenue.

2.9. The evolution of tax bases, tax rates, and tax revenues for the post-war period from fiscal year 1960–61 is given in Table 2.2, for each of the main taxes in Ireland. Consider first the case of oil. Over the period 1960–61 to 1973–74 as a whole, revenues from oil grew at just about the same rate as nominal GDP: the average rate of growth of tax receipts was 11.1% per year, and that of GDP was 10.8% per year. This result came about as a result of the tax base, the quantity of dutiable oil consumed in Ireland, increasing at twice the rate of growth of real GDP (consumption of dutiable oil grew at 8.0% per year on average, whereas real GDP grew at 4.0% per year) and the tax rate increasing at a little under half the rate of the GDP deflator, (the tax rate on oil grew on average at 3.1% per year, whereas the GDP deflator, the index of the price of the domestic component of all goods and services produced in Ireland, grew on average at 6.8% per year). Put another way, over the period as a whole, the tax rate on oil did not keep up with inflation, but oil consumption grew much faster than real GDP: the net effect of the two phenomena was that tax receipts from oil increased on average almost at the same rate as current-price national income. The story was very similar for each of the two sub-periods considered separately.

2.10. The position regarding the tax on tobacco, however, was very different. Over the period as a whole, tobacco tax receipts grew at an average rate of only 6.5% per year, whereas money national income grew over half as fast again at 10.8% per year. The reason for this is, first, that tobacco consumption in Ireland, as in other countries, hardly grew over the period, averaging a growth rate of only 0.8% per year. Growth was a bit more rapid, at 1.5% per year, between 1960–61 and 1964–65, and correspondingly slower, at 0.5% per year, over the latter part of the period. Thus the tax base did not grow anything like as fast as real GDP. Given this situation, the tax *rate* would have had to increase almost as fast as the rate of growth of real GDP *plus* the rate of growth of the GDP deflator, if tax revenues were to have grown as fast as nominal GDP. This the tax rate did not do: it almost kept up with inflation, growing at 5.7% per year while the GDP deflator grew at 6.8%, but this was nothing like enough to prevent tax revenue from tobacco falling as a share of nominal GDP: for the share of tobacco tax in GDP to have remained constant, the tax rate would have had to

have increased at an average rate of 10.0% per year,¹ rather than the actual rate of 5.7%.

2.11. The tax on beer was the most buoyant of the four "old faithful" taxes. Over the period, tax receipts from beer grew faster, at 13.0% per year, than nominal GDP (10.8% per year), and this was true of both of the sub-periods. This came about because the tax base (beer consumption) grew slightly faster than real GDP (4.3% as compared with 4.0%) but more so because the tax rate grew faster than the GDP deflator (8.7% as compared with 6.8%).

TABLE 2.2

Growth rates* of tax base, tax rate, and tax revenue, by type of tax, Ireland, % per year

		1960-61/ 1964-65	1964-65/ 1973-74	1960-61/ 1973-74
Oil	tax base	8.8	7.7	8.0
	tax rate	2.0	3.5	3.1
	tax revenue	10.8	11.2	11.1
Tobacco	tax base	1.5	0.5	0.8
	tax rate	3.4	6.8	5.7
	tax revenue	4.9	7.3	6.5
Beer	tax base	3.6	4.6	4.3
	tax rate	6.5	9.7	8.7
	tax revenue	10.1	14.3	13.0
Spirits	tax base	6.9	7.6	7.4
	tax rate	3.2	6.4	5.4
	tax revenue	10.1	14.0	12.8
Income tax incl. social insurance contributions	tax base**	10.7	12.3	11.8
	tax rate	4.0	5.1	4.8
	tax revenue	14.7	17.4	16.6
Rates	tax revenue	4.1	11.3	9.1
<i>Memorandum Item:</i>				
GDP	constant prices	3.9	4.0	4.0
	deflator	4.9	7.6	6.8
	current prices	8.8	11.6	10.8

See footnotes on facing page.

2.12. Revenues from the sale of spirits too were buoyant, very nearly as much as beer, but the reasons were somewhat different. In contrast to beer, consumption and hence the tax base grew very much faster than real GDP, at 7.4% per year on average. The tax rate, however, grew less rapidly, at 5.4% per year on average, than did the GDP deflator, at 6.8% per year. The tax rate on spirits, therefore, did not keep up with inflation.

2.13. While it is instructive to present an arithmetic breakdown of the determinants of tax revenues in this way, considerable care must be exercised in drawing inferences. It would almost certainly be wrong, for

¹The rate of growth of nominal GDP, 10.8% per year, minus the rate of growth of the tobacco tax base, 0.8% per year—see Table 2.1.

(a) *Taxes on oil*: Tax base data from Appendix Table 6.1: the base is the sum of the columns headed "Tax Base" for the light mineral hydrocarbon oils, both excise and customs, and for the "other sorts" of hydrocarbon oils, both excise and customs. Tax revenue is the sum of the revenues obtained from the four sources, headed "Actual Revenue". The rate of growth of the tax rate is the difference between the rate of growth of revenue and the rate of growth of the tax base.

(b) *Taxes on Tobacco, Beer and Spirits* derived analogously to oil, from Appendix Tables 6.2, 6.3 and 6.4 respectively.

(c) *Taxes on income, including social insurance contributions*, income from employment taken from row 8, Appendix Table A.1, 1969 *National Income and Expenditure*, and Table A.1, 1973 *National Income and Expenditure* Income tax receipts and social insurance contributions obtained from Appendix 5 to this report. Tax rate obtained by difference (see "Oil" above).

(d) *Rates*: Revenues obtained from Appendix 5 to this report.

(e) *GDP data*: Constant price data from Appendix 2 to this report. Current price data from 1969 and 1973 editions of *National Income and Expenditure*. Deflator obtained by difference (see "Oil" above).

Footnotes to Table 2.2.

*For description of the method of calculating growth rates see Appendix 1.

**The income tax base is comprised of income from employment, the profits of trades and professions, interest on certain government and other securities and certain other income such as rents, interest on loans and income from abroad.

example, to infer that had the tax rate on spirits been kept up with inflation, thereby growing at 6·8% per year on average rather than at 5·4%, tax *revenues* would have grown 1·4% per year faster than they in fact did. It would be wrong because the higher growth of the tax rate would almost certainly have resulted in a somewhat slower growth of consumption, and hence in the tax *base*. Nevertheless in the case of oil and tobacco, the price elasticity of demand for which is much less than unity in respect of *small* changes in price, it is likely that consumption would have been little reduced if tax rates had been completely indexed.

2.14. Attention is now turned to the two major taxes that have a money, rather than a physical, tax base—income tax (including social insurance contributions), and rates.¹ Over the period as a whole, income from employment (the major element of the tax base) grew slightly faster than nominal GDP—11·8% per year on average, as compared with 10·8% per year for nominal GDP. For each of the sub-periods, too, income from employment grew slightly faster than nominal GDP. Hence even if the tax rate, the average share of employees' income going as income tax and social insurance contributions, had not changed, income tax receipts would have grown slightly faster (by 1% per year on average) than nominal GDP. In fact, however, the average effective tax rate rose throughout the period—at 4·0% per year between 1960–61 and 1964–65, and at 5·1% per year between 1964–65 and 1973–74, an average rate of 4·8% per year over the period as a whole. Accordingly revenues from income tax rose considerably faster than nominal GDP, at 16·6% per year on average, 5·8% per year more than the growth rate of money national income.²

2.15. The remaining large tax, rates, also has a tax base denominated in money terms, namely, the rateable value of property. Unlike money

¹Though rateable values are changed at infrequent intervals which means that rates have much in common with specific duties.

²For a detailed analysis of the relationship between income from employment, on a Green Book basis, and actual income tax receipts, see the study by Dowling (forthcoming). In the comparisons in the above paragraph it should be noted that tax base figures relate to National Accounts data and are calendar year aggregates, while tax revenues relate to the financial years.

income, however, this tax base does not automatically increase with inflation, instead property has to be revalued. It can be seen from Table 2·2 that, over the period as a whole, revenue from the rates grew nearly as fast, at 9·1% per year, as nominal GDP: over the first part of the period, however, revenue from the rates lagged behind rather, growing at a little less than half the rate of nominal GDP.

2.16. Given this behaviour of the Irish tax system over the past, the purpose of this chapter now is to examine the way in which revenues can be expected to increase as real national income grows. This is carried out in the next section. While attention is focused in that section on the growth of *real* national income, it should be recognised that the change in revenue is not independent of the prevailing rate of inflation, or more specifically the change in revenue is not independent of the government's reaction to inflation as regards raising tax allowances and rates of specific duty. If these are left entirely unchanged in nominal terms, then the effect of inflation on receipts under the present structure is likely to be broadly neutral, to the extent that the tendency for income tax revenue to increase more than in proportion to the increase in income, because of the progressivity of the income tax structure, is likely to be more or less offset by the lack of buoyancy of the specific duties. It should be noted, however, that the yield of the specific duties will increase slightly with inflation even at unchanged rates of duty, in so far as the *relative* price of duty items will tend to lag behind that of prices in general, thus stimulating an increase in demand for such products.

The response of tax revenues to an increase in real income

2.17. The purpose of this section is to consider how Irish tax revenues are likely to grow in relation to the growth of real income in the future on the assumption that tax rates are changed only so as to offset any changes that would otherwise arise from inflation.

2.18. In carrying out an exercise of this sort, the customary procedure is to examine on the basis of past time-series evidence, the responsiveness of each tax base to changes in real income and relative price. The income elasticity so obtained is then used to project revenues in the

future on the basis of stated assumptions about the growth of real income. Unfortunately, however, there are problems in attempting to apply such a method to many of the items of Irish taxation. These problems are discussed case by case.

2.19. The first obvious and serious case is that of oil. Before December 1973 the price of oil relative to goods in general was declining gently, and from the small fluctuations that occurred in relative price, and from the much larger fluctuations that took place in real incomes, it was possible to derive price and income elasticities of demand that were probably fairly accurate *if applied to fluctuations that lay within the range of previous experience*. In December 1973, however, the price of oil increased four-fold, and previously-estimated price elasticities are therefore useless in predicting consumers' response to this price change. Initially, consumers reacted by reducing their use of cars, though in the short-term there is clearly a limit to the extent to which this can be achieved. In the long-term, however, more radical changes in behaviour are possible, such as the purchase of cars with a lower fuel consumption. The adjustment of consumption to this marked change in relative prices has almost certainly not fully worked itself out as yet so that even without any further rise in the relative price of oil, it is extremely unlikely that the oil tax base in Ireland will increase as rapidly in relation to GDP as it did over the pre-1973 period, when consumption grew at about twice the rate of growth of real GDP.¹

2.20. It is at present simply not possible for any precise estimate to be made of the rate at which oil consumption will grow, because this will depend upon the degree of energy saving that will be practised. Indeed, estimates vary from one writer to another, and even the oil companies differ amongst themselves quite fundamentally on the rate at which they expect oil demand in Europe to increase. But it would probably be unwise to plan an oil consumption in Ireland growing any faster than real GDP over the next 5 to 10 years, and oil consumption could conceivably grow more slowly than that. Hence, even if the oil customs and excise rates were to be indexed, which would imply a higher rate of growth of the tax rate in relation to the growth of the GDP deflator

¹See Table 2.2.

than has been the case in the past, oil revenues would be unlikely to grow any faster than national income. If the rates were not indexed, but allowed to fall behind inflation in the same way as happened over the pre-1973 period, revenues would in all probability rise markedly less rapidly than national income. It must be emphasised that the status of this projection is (necessarily) no better than educated guesswork, and as further information on oil consumption in Ireland becomes available, this conclusion may have to be changed.

2.21. Prediction of the tax receipts from beer, spirits, and tobacco is likely to present less of a problem, for the past is likely to be able to provide better guidance. Consumption of beer has increased at much the same rate as real national income over the past 15 years, which accords with the experience of other countries, the income elasticity of beer being generally regarded as close to unity over the long-term, though beer sales do not seem to vary with income in the short-term. The implication is clear as far as future revenue at existing tax rates is concerned: revenue can be expected to increase, with indexed rates, at about the same rate as nominal national income.

2.22. In contrast to beer, the consumption of spirits has been generally found to increase by more than in proportion to a rise in real income: on the basis of past evidence the income elasticity of demand for spirits in Ireland is closer to two than one, which is in line with what has been found for the UK over recent years.¹ There is little reason why this relationship to income should change significantly in the near future, so that with indexed rates the revenue from the sale of spirits could be expected to rise at about twice the rate of nominal national income. It should be recognised, however, that over the post-war period (specifically for the period 1960–61 to 1973–74 considered in Table 2.2) the spirits tax rate did not quite keep up with inflation.

¹This and other observations regarding elasticities are based on research carried out in the Department of Applied Economics by T. S. Ward, the final results of which will shortly be published. For preliminary results, see T. S. Ward and R. R. Neild, "Public Spending and Taxation", *Economic Policy Review*, No. 1, February 1975. See also the results reported by R. W. Price in a forthcoming National Institute of Economic Research publication on demand management policy in the UK, edited by F. Blackaby.

2.23. The volume of tobacco purchased in 1973–74 was much the same as that purchased as far back as 1953–54, and although consumption increased by 5% a year between 1970–71 and 1973–74, the widespread and growing publicity given to the health hazards attached to smoking probably represents good reason for expecting relatively little growth in the tax base in the foreseeable future. In view of this, it is as well that significantly less reliance at present is placed on tobacco as a source of revenue than was the case a few years ago. In 1960–61, for example, the tax on tobacco accounted for almost 20% of total public sector receipts—more than income tax—whereas in 1973–74, the percentage had been reduced to less than 8%. This trend is highly likely to continue of its own accord.

2.24. The second tax about which it is impossible to gain much guidance from past Irish evidence is VAT, simply because there is virtually no past evidence to go on, the tax being too new. Nevertheless, on the basis of international experience, fairly strong presumptions can be made about the future behaviour of VAT. By and large these have been found to be consistent with the UK and recent Irish experience. Value-added tax receipts in Ireland currently represent 16% of total public authorities revenue. This is less than in other EEC countries generally, though greater than in the UK, where the tax covers only about half of total consumer expenditure and the standard rate is set as low as 8%. It is important to consider VAT in some detail, because VAT, together with personal income tax, represents the most likely source of potential revenue growth in the medium-and long-term. The discussion centres upon the future behaviour of the existing tax-base given the prevailing structure of tax rates, though it does point the way towards how structure and rates might be altered to influence the behaviour of revenue with respect to the growth of national income.

2.25. One of the most well-established features of consumer behaviour is a tendency for the consumption of food to decline as a proportion of total consumption as real income increases. This phenomenon can be generalised to cover all basic necessities. The obverse of this feature is that the consumption of goods other than necessities—most durable goods and "luxury" goods—tends to increase by more than in proportion to income over the long-term. In the short- and medium-terms,

however, the relationship with income growth is slightly more complex, because the consumption of necessities tends to increase by 1% or 2% a year irrespective of the rate of income growth. In other words, consumers can be regarded as spending a certain amount of their income on necessities and devoting part of what is left to expenditure on durable goods, such as domestic appliances, or luxuries, such as perfume or restaurant meals. The higher the level of income, the greater is this residual expenditure on items which are non-essential, or "postponable" purchases.

2.26. The prevailing structure of VAT in Ireland, as in other countries, is designed so that the tax falls relatively heavily on non-essential goods and relatively lightly, if at all, on necessities. Consequently, the higher the growth of real income, the greater the proportionate increase in VAT receipts, while at low rates of income growth, VAT receipts will tend to increase by less than in proportion to income.

2.27. Precisely how VAT varies with income is, however, almost impossible to determine given the very short time which has elapsed since the introduction of the tax in Ireland. Moreover the experience of other countries, while indicative, is unlikely to give a satisfactory answer to these questions, because the structure of rates and coverage of the tax is different. In the UK, for example, where the structure is not as complicated as in Ireland, it has been found that the "break-even" point seems to be around a 2% rate of growth of income; below that, VAT revenue increases by less than in proportion to income and above 2% VAT revenue increases by about 1.3 times the percentage rise in income. A growth rate of income of 5% would therefore be associated with VAT receipts increasing by about 6%. In the case of Ireland, where more rates operate, the elasticity of tax revenue may well be higher than in the UK, and clearly the elasticity can be manipulated by concentrating the tax—or at least the higher rates—on goods with a high income elasticity of demand.

2.28. The general conclusion of this section, therefore, is that the future growth of VAT revenue is very much dependent on the rate of economic growth achieved. At low rates of growth—and during cyclical downturns—receipts of VAT are likely to lag behind national

income, while at high rates of growth—and during cyclical upturns—VAT receipts will increase more rapidly than income.

2.29. The remaining large tax to consider is income tax. Taxes on personal income in Ireland as in most other countries have become a more important source of revenue over recent years, as a result of the progressive nature of the tax structure, whereby the proportion of income taken as tax increases as income increases. Income tax is the one tax about which it is possible to be reasonably certain what effect an increase in real income would have on revenue, given the highly detailed work carried out by Dowling (forthcoming study).

2.30. This feature has been adequately considered elsewhere and suffice it to say here that as long as the present broad structure remains in existence, it is to be expected that this trend will continue, even if tax allowances (and the starting-point for higher rate bands) were to be fully indexed in line with inflation. As an approximate rule of thumb, at existing tax rates, income tax revenue can be taken to rise by about $1\frac{1}{2}$ times the percentage increase in real income even with the indexation of tax allowances and the starting point of tax bands. It must be emphasised, however, that this figure is based on historic experience. Recent changes in personal income taxation and any changes in the distribution of real income increments in the future could result in a variation in the relationship.

2.31. Social Insurance Contributions: To the extent that social insurance contributions are directly related to pay, they can be expected to tend to vary in the same direction as national income. However, any move towards harmonisation of Irish practice with that in other EEC countries could tend towards these contributions rising faster than national income.

2.32. The remaining tax of any substantial size is Rates, but as was noted in the previous section, the tax base changes by administrative action, as does the tax rate. The two therefore cannot usefully be considered separately, and it is difficult to discuss rates without taking explicit account of the expenditure they go towards financing. The smaller revenue sources can now be considered.

2.33. Corporation profits tax: In contrast to taxes on personal income, taxes on corporate income have shown a marked tendency to decline as a proportion of total public sector receipts over recent years, so that in 1973–74, they represented less than 3% of total revenue—about the same as in 1954–55. The low yield is a reflection of the efforts on the part of Government to encourage investment and exports through reducing tax liability. To the extent that such efforts continue in the future, and it is argued in Chapter 7 that they should, the implication is that corporation profits tax receipts are unlikely to keep pace with the growth in real national income, in so far as growth is associated with additional investment and necessitates a more than proportionate increase in exports to match the rise in imported goods.

2.34. Motor vehicle licence duties: The increase in oil prices is also a factor of some importance with regard to the revenue derived from motor vehicle licences, since it has had, and may continue to have a depressing influence on the growth of car sales, which in the past have proved relatively income-elastic.

Overall prospects

2.35. The main findings of the above examination of the major components of the Irish fiscal system are summarised in Table 2.3, which shows the approximate elasticity of tax revenue with respect to real income. In aggregate, it is estimated that total public sector receipts are likely to increase secularly more than in proportion to the growth in national income, with indexed tax rates and unchanged coverage, the elasticity being approximately 1.10. While there will inevitably be some error in each of the elasticities given in Table 2.3, there is a high probability that these errors will at least in part cancel one another out. The estimate of the aggregate elasticity is, however, rather heavily dependent upon two crucial assumptions.

2.36. The first concerns Rates. Rates have been given an income elasticity of 1.0 in Table 2.3, on the assumption that local rates are varied with local authority expenditure, and that this in turn rises proportionately with national income. If, however, local authority expenditure and hence local rates are assumed to be invariant with

TABLE 2.3

Elasticity of Public Sector Receipts with respect to real income, i.e. on the assumption of indexed tax rates †

	Elasticity	Weight in 1973-74*
Income tax	1.5	.261
Social security contributions	1.0	.095
Corporation Profits tax	1.0	.027
Beer	1.0	.056
Oil	1.0	.067
Spirits	2.0	.048
Tobacco	0	.078
M/V licences	0.5	.028
VAT	1.2**	.161
Rates †	1.0	.086
Stamp duty	0.5	.016
Estate duty***	0.5	.016
Other	1.0	.061
Total	1.10	1.000
Total, assuming rates have zero elasticity	1.01	

†Local authority rates can be expected to be related to local expenditure, which in turn may well increase at least in line with national income. This, however, requires local authorities to take the necessary discretionary action, so that strictly speaking rates can be regarded as invariant to income growth.

*The ratio of the yield of each tax to total public sector receipts in 1973-74.

**This assumes a growth rate of real income of around 5%. The elasticity would tend to be higher at higher growth rates and lower if income were to increase by less.

‡The assumption is that nominal tax rates on specific duty items are increased in line with the average rate of inflation (as measured by, for example, the domestic expenditure deflator) and that tax allowances and the higher income tax rate bands are similarly varied.

***Estate duty represented about 90% of the total yield from death duties. However, death duties have now been replaced by the Capital Acquisitions Tax Act (1976) which applies to inheritances and gifts.

respect to the level of national income, then as shown at the foot of Table 2.3 the aggregate elasticity of tax revenue with respect to national income would be reduced by 0.086 to 1.01. Each assumption is plausible in its way—as was explained in the text, it is pointless to discuss rates without taking explicit account of the expenditure they go towards financing. Given that local authority expenditure, and hence rates, do not *automatically* increase with national income, the aggregate elasticity of 1.01 is the figure to take if the concern is with the change in tax receipts that would result from a change in national income for any *given* set of local authority expenditure plans. If, however, it is expected that local authority spending plans rise with national income, then the 1.10 figure is the one to take. The difference between the two figures for the aggregate elasticity is quite substantial, indicating the importance of making clear the assumption about the elasticity of local authority expenditure with respect to national income.

2.37. The second important assumption concerns oil consumption. It is assumed in Table 2.3 that the income elasticity of demand for petrol and diesel oil is 1.0, as compared with slightly over 2 before the steep rise in oil prices. This estimate is not offered with any degree of certainty. The current levels of oil consumption are the joint outcome of the rise in price and the present economic slump. To make the matter more complicated, it may well be that not all the energy-saving effects have yet been realised, and certainly there has not yet been sufficient an upturn in the level of economic activity, whether in Ireland or elsewhere, to permit any assessment of the new income elasticity of demand for oil. All that can be said is that the new elasticity is likely to be lower than it was in the past; the value of unity is consistent with this, while at the same time being higher than the historic value of the UK elasticity of about 0.7. When new information comes to light, this value for the oil elasticity will almost certainly have to be changed.

2.38. Aside from these two assumptions, one depending essentially upon a choice of definition, the other stemming from genuine uncertainty, it is also apparent that the overall elasticity is somewhat sensitive to the assumed rate of growth of national income, through its effects on VAT receipts. The elasticity of 1.2, shown in Table 2.3, assumes that the growth of real income is around 5%. A growth rate higher than this

is likely to give rise to a higher elasticity, while a lower growth rate has the reverse effect. Indeed, as discussed above, a rate of income growth of less than 2% or so would reduce the elasticity of VAT revenue to below unity. This factor highlights the importance of achieving a high growth rate of economic activity. Moreover, the higher the rate of growth, the greater is the shift in the composition of receipts towards those with a relatively high income elasticity, which tends to reinforce the VAT effect.

Conclusion

2.39. On the basis of the evidence of this chapter it would seem that given indexed tax rates and the present coverage, tax revenues are most unlikely to increase substantially faster than national income. This conclusion is somewhat sensitive to the assumption made about the growth of oil consumption in relation to national income, a necessarily unknown value at present, but it would seem to be imprudent to count upon much more than an equiproportionate rise in oil consumption and GDP, and rely on an aggregate tax elasticity much in excess of unity.

2.40. It would therefore follow that, if Government wishes to increase its revenue, whether in order to decrease its deficit, or to increase its expenditure with an unchanged deficit, or to achieve some combination of the two, it has three choices. It can increase the tax rates on the existing tax base; it can widen the existing tax base, by bringing more items into the tax net; or it can deepen the tax base by promoting the growth of real income per head, and hence of the *per capita* tax base. The first two possibilities are examined in the next chapter. The question of policies to promote economic growth are considered thereafter.

Chapter 3

THE SCOPE FOR WIDENING THE TAX BASE

3.1. The previous chapter examined the growth of Irish tax revenues over the post-war period, and considered the way that, given the prevailing tax system, tax revenues would be likely to evolve in the future in relation to the growth of GDP. The broad conclusion was that, of the three main taxes,

- (a) income tax, if tax allowances and the starting point of tax bands were indexed, would rise somewhat faster than income from employment, which in all probability would rise at about the same rate as nominal GDP. Income tax, therefore, would rise somewhat as a current-price percentage of GNP. If indexation were not implemented, then the present progressive rate system would, given continued inflation of money incomes, result in a more-rapidly-rising proportionate income-tax take.
- (b) value-added tax, being a tax on consumption, can rise (given the VAT rate structure) at a rate that is at most only slightly higher than the growth rate of consumption, which in turn is likely to rise only about as fast as GDP. Indeed, to the extent that investment increases as a proportion of GDP, a phenomenon that is often desirable, consumption must thereby grow less rapidly than it would have otherwise, with VAT revenues affected accordingly,
- (c) of the specific taxes, it seems likely that the growth of hydro-carbon oil consumption will be less buoyant in the future in relation to GDP than it was in the past, and that tobacco consumption will in all probability be no more buoyant in the

is likely to give rise to a higher elasticity, while a lower growth rate has the reverse effect. Indeed, as discussed above, a rate of income growth of less than 2% or so would reduce the elasticity of VAT revenue to below unity. This factor highlights the importance of achieving a high growth rate of economic activity. Moreover, the higher the rate of growth, the greater is the shift in the composition of receipts towards those with a relatively high income elasticity, which tends to reinforce the VAT effect.

Conclusion

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future than it has been in the past, so that only the spirits tax offers any hope for buoyant tax revenue in the future.

3.2. The purpose of this chapter is to consider the ways in which tax revenues could be increased through increasing the breadth of the tax base, that is through widening the tax base to encompass more items than are at present included. Two basic points about this chapter have to be made. First, attention is focussed only on taxes, which, if introduced would yield substantial revenues. Secondly, the administrative and political problems of introducing such taxes are deliberately not considered. Before turning to this question, however, it is useful to consider the mounting evidence that Governments may be constrained, possibly severely, as to either the proportion, or the rate of change of the proportion, of gross incomes that they can take as tax. Basically this is no more than an element of the truism that people will be governed only if they consent to be governed, but it is instructive to examine the evidence for this proposition, and the mechanisms that may come into play if a Government attempts to take a greater share of incomes in tax than the populace is prepared to give.

3.3. Experience in OECD countries over the post-war period suggests that, when wage earners find that their real post-tax incomes are below what it is felt they ought to be, wage earners respond by seeking, and frequently striking for, higher money wages. To the extent that, for whatever reason, higher real wages for the whole labour force cannot be, or are not, forthcoming, the result is inflation and a rise in unemployment. This mechanism has been observed in a number of different circumstances, for there appears to be a number of factors that influence, from time to time and from country to country, the real wage that wage earners or a substantial group of the total wage earners are prepared to accept.

3.4. First, there is the wage differentials argument.¹ There is strong evidence that wage differentials between different sectors of industrial economies change only very slowly over time. To the extent that any sector does succeed, at any moment, in raising its money wage rate

¹See, for example, Kaldor (1959) and (1976), Streeten (1962), and Edgren, Faxen and Odhner (1969) and McCarthy, O'Brien and Dowd (1975).

relative to that in other sectors, strong social pressures apparently lead other sectors to seek, and by and large to obtain, equiproportionate increases in their money wage rates, thereby restoring traditional wage differentials. Each group's target wage, in this case, is the money wage of its traditional wage 'neighbour'. There is reasonably good evidence that much of the inflation experience of OECD countries over the period 1958-68 is explainable, in a statistical sense at least, in these terms¹ although this theory, like the two theories expounded next, is only partial: validation of the settled claims for higher money wages by increases in the money supply is a necessary, although also arguably often an unavoidable extra condition.

3.5. The second argument is that wage earners set their real wage target by reference not to the wage levels in other sectors of the economy, but by reference either to some absolute level or by reference to some desired or expected rate of change of that level. Just what determines this desired level or rate of change of real wages is not clear, and indeed it is implausible that that rate would be uniform either across countries or within any one country through time. But it is certainly arguable that wage earners would be dissatisfied with an actual fall in their post-tax real incomes, whether arising from a phenomenon such as a rise in oil, other basic commodity, or food prices relative to wages, such that real gross wages were reduced,² or from an increase in taxation that was so large as to reduce real post-tax incomes.³

3.6. All of these theories place the desire by all or some wage earners for a higher real post-tax wage than the economy can provide as the root cause of inflation. For the increase in money wages actually to occur, it is necessary that the authorities permit an approximately equiproportionate increase in the supply of money. Monetarist economists argue that this the authorities need not necessarily do: on the assumption that the desired real wage is a negative function of the actual level of unemployment, it follows that there is some level of unemployment (the so-called "natural rate") at which the desired real

¹See Eatwell, Llewellyn and Tarling (1974).

²This explanation is sometimes advanced as an explanation of the world-wide wage explosion that occurred after 1968.

³For a discussion of this argument, see Turner and Jackson (1973).

wage is equal to the actual real wage that the economy can generate, and hence at which the rate of inflation is constant. Therefore, if an economy is experiencing accelerating inflation, it is because the actual rate of unemployment is below the natural rate, and to cure the accelerating inflation it is necessary to raise the actual rate of unemployment, at first to a level above the natural rate—later it can be reduced to the natural rate.¹ This is as maybe, but the crucial point is that, even if the theory were completely correct, inflation could be cured in this way only if the populace were prepared to see unemployment as high as the so-called “natural” rate. If a Government were to insist, by restricting the growth of the money supply or whatever, on maintaining a rate of unemployment markedly higher than that which the electorate would tolerate, the result would in all probability be that the Government would be replaced, by one means or another, by one that would reduce the level of unemployment, even if at the expense of a higher rate of growth of the money supply and the general price level.

3.7. The upshot of all of this is that there is fairly strong evidence from a variety of countries over the post-war period that, if the level or the rate of growth of real post-tax wages is below that which wage earners are determined to enjoy, either inflation, or strife between the electorate and Government, or possibly both, are likely to result. It can be objected that nothing in any of these theories establishes what factors determine the level or rate of change of real post-tax wages that wage earners will feel strongly enough about to fight for, and this criticism would be well made. But ultimately this has to be seen as the political question which it is: if wage earners insist on trying to obtain a higher post-tax real income than the economy can provide, then the outcome will at the very least be inflation.

3.8. Nowadays, when tax rates are generally at or near an all-time high by peace-time standards,² any Government which seeks to increase the

¹For a further discussion of this theory, see Morgan (1974), especially pp. 18–25 and 32–36.

²In Ireland, for example, total direct and indirect taxes amounted to 31.3% of GDP, and this proportion, while definitely not high by OECD countries, is much higher than it was only 10 years ago. See Table 1.1, for example, which shows that the proportion of total taxes to GDP in Ireland rose from 23.7% in 1964 to 29.9% in 1970 to 31.3% in 1973.

real *per capita* value of its tax revenue will inevitably prefer, if it can, to achieve this from an increase, through economic growth, in the size of the *per capita* tax base at something like prevailing tax rates, rather than through an increase in tax rates on something like the prevailing *per capita* tax base. Nevertheless, unpalatable though it might be, the issue of increasing *per capita* taxation levels through widening the tax base is an issue which often has to be considered, and it is to this question that this Chapter now turns.

A Broader Tax Base

3.9. This section examines the following question. How is it possible to broaden the tax base and so increase tax revenue? In formulating the problem in this way, it is assumed that the levels of government expenditure and transfer payments are given, as is the level and rate of growth of GDP. Of course, the tax system does affect the incentive to work, to save, and to invest, and these incentive effects will have repercussions on both the size and growth rate of GDP, but these linkages are not well understood theoretically, and the quantitative magnitudes involved are very uncertain. Consequently, this section concentrates exclusively on the size of the tax base, although it should be borne in mind (*a*) that any change in taxation may provoke responses which alter the original size of the tax base (for example, a higher income tax rate may reduce the supply of labour, perhaps through a reduction in hours worked, and hence total income), and (*b*) that the effect of a tax in reducing aggregate demand and freeing resources for public consumption or export demand cannot be evaluated simply in terms of the revenue yield (the standard example of this is the case of a tax on capital which is paid largely out of saving and which provides revenue to finance activities such as the redemption of government debt rather than transfer payments which are then spent by the recipients).

3.10. There is another line of thought which suggests that the problem is best seen in terms of searching for a broad-based tax to increase revenue. The idea that a broad-based tax is the best way of expanding the sources of revenue is important, and, although rather obvious, is by no means trivial, for governments have often found it easier (for administrative or other reasons) to tax a narrow range of activities. A good example of this is excise duties where relatively high rates of tax

are imposed on a narrow range of commodities. In fact, excise duties are very important revenue raisers, but, apart from raising the duties in line with inflation, they offer little potential for further revenue in real terms. This is because such extraordinarily high tax rates (often of several hundred per cent on a tax-exclusive basis) can be imposed only on a very few commodities.

3.11. The advantage of a broad base is that precisely because the base is comprehensive, the rates of tax can be lower. High tax rates provoke economic avoidance by giving a strong incentive to convert income or transactions into other legal forms which attract lower tax rates.¹ For example, shareholders may, under certain circumstances, have definite preferences about whether they receive dividends or whether they receive capital gains if the company retains rather than distributes its profits. These preferences may be simply the result of taxing different legal definitions of income at different rates. Even under an imputation system of corporation tax, high-rate tax payers may prefer the company to retain profits and take the benefit in capital gains thus attracting a lower ultimate tax rate because of the concessionary treatment of capital gains. In 1975 the UK government had to introduce legislation to deal with precisely this problem in the form of scrip dividends (where the shareholders were offered shares in the company as an alternative to a cash dividend). Another consequence of high tax rates is simple straightforward evasion. Not only do high rates increase the benefits of successful evasion, but evasion may appear more justified to the taxpayer if the high rates are imposed only on a limited range of activities and hence may be seen as unfair.

3.12. A broad tax base has the advantage of being more efficient because

(a) it involves less distortion between the tax treatment of

¹In his Financial Statement (see Parliamentary Debates, Dáil Éireann, 28 January 1976, Column 626), the Minister for Finance stated "services... have to be paid for by someone and that someone is the taxpayer . . . The taxpayer's reluctance shows itself in the demands for wage increases to compensate for the increased taxation necessary, in the tendency towards tax avoidance and evasion, and in the unwillingness of those at present outside the tax net to be brought within it, at least on the same terms as everyone else".

different legal activities, and different ways of earning and spending purchasing power

(b) less resources are spent on the wasteful conversion of income into a form which is taxed at a lower rate

(c) it may appear as less arbitrary and more "just".

This last point is important because it suggests that a broad-based tax may be a more acceptable means of raising revenue than a more narrowly-based tax, and hence this may increase the potential tax take. The basis for this suggestion is the old idea in public finance that a tax should be "horizontally equitable", which means that people "in the same circumstances" should be treated equally, and, in this context, should pay the same amount of tax. The practical success of a tax system in meeting the criterion of horizontal equity depends on the ability of the system to provide an operational and acceptable definition of the phrase "in the same circumstances", and there have been many instances where governments have employed too narrow a definition of "similar circumstances", and have thereby provoked hostility which helped to undermine the tax.

3.13. In the history of Anglo-Irish relations there was a difficult time when taxes on the consumption of alcohol imposed by the government in London failed to reflect the evident fact that while it was true that beer was a workingman's drink in England, it was certainly not the case that whiskey was a rich man's drink in Ireland. The introduction of Selective Employment Tax (SET) in the UK provoked a degree of dislike out of all proportion to its real economic effects because it involved a distinction between manufacturing and services, which, while perfectly clear in the majority of cases, was inevitably more than a little arbitrary in border-line cases. The sense of injustice (or horizontal inequity) created by those few cases was enough to initiate a process of criticism which undermined public confidence in the tax, and smothered the debate on the economic effects of SET.

3.14. Consequently, a broad-based tax offers the best hope of obtaining acceptance for an increased tax burden. This principle suggests two main lines of hope, both of which will be examined in

more detail below. The first is simply to raise the rate of VAT and to reduce to a minimum the number of exemptions granted. The second is to produce a comprehensive tax base for personal taxation which again provides for as few exemptions and concessions as possible. Other alternatives will be looked at below, but they avoid the central problem that in the end individuals must shoulder a higher tax burden if overall revenue is to rise.

3.15. Two further points should be made at this stage. First, it may seem that none of the alternatives discussed below is palatable, but it must be emphasised that the appropriate comparison is not between the present state of affairs and each of the alternatives, but between the various different ways in which revenue can be raised. Secondly, it might be asked whether there are really not any other ways of raising revenue, besides broadening the tax base? The only alternatives to broadening the base appear to be

(a) increasing charges for publicly-provided services, and extending the scope of such charges. This is a politically sensitive question (as in the case of prescription charges, for example), but the possibility of extending the area in which charges are made should not altogether be ignored, although it is not discussed further here.

(b) raising tax rates on the existing tax base. Such a policy would call for higher tax rates than would be necessary under a broader tax base, and so there is certainly a strong case for examining the current tax system to see if there is scope for broadening the base.

3.16. The current tax system relies on the following main sources of revenue

- (i) personal income tax
- (ii) social insurance contributions
- (iii) corporation tax
- (iv) VAT
- (v) customs and excise duties

- (vi) rates
- (vii) taxes on capital
- (viii) motor vehicle and stamp duties.

It will be helpful to classify these different sources of revenue in order to assess their potential contribution to increased revenue. The traditional classification of direct versus indirect taxes is not helpful here because it confuses two quite distinct issues:

- (a) personal taxation, versus "impersonal" taxation, where the tax charge is not related to an individual's circumstances, and
- (b) income taxation versus consumption taxation.

The ensuing discussion of the different potential sources of revenue is organised around the distinction between personal and impersonal taxes, considering the latter category first because the issues are more straightforward.

Impersonal Taxes

3.17. The impersonal taxes, which are now considered in turn, are

- (a) VAT
- (b) excise duties
- (c) payroll tax
- (d) corporation tax¹
- (e) rates

The inclusion of rates in this list is rather arbitrary, because rates could be viewed as a property tax with the amount of tax being directly

¹Prior to the Corporation Tax Act (1976), resident companies were charged separately to income tax and corporation profits tax on all profits treated as 'income' and to capital gains tax in gains arising from the disposal of capital assets. The Corporation Tax Act (1976), effective from 6 April 1976, levies on resident companies a single corporation tax instead of the former income tax, corporation profits tax and capital gains tax. Non-resident companies are in general subject to corporation tax on profits attributable to an Irish trading agency or branch, but remain liable to income tax or capital gains tax on certain other Irish sources of income.

related to the value of property belonging to the individual owner. Given that the basis of valuation for rates is far from perfect, there seems little hope of raising substantially greater amounts of revenue from rates unless they are replaced by a local income tax, (as recommended for the UK by the Layfield Report in 1976)¹. This, however, simply pushes the burden of revenue-raising on to the base for income tax. A similar pessimistic conclusion can be reached for the contribution of corporation tax. In all OECD countries the proportion of total revenue originating from corporate taxes has been declining, and, especially if allowance is made for inflation, the only way to reverse this trend is to withdraw the existing generous tax concessions for investment expenditure. This would raise more revenue at the cost of creating fiscal obstacles to investment relative to the existing situation, and might be especially damaging to a country wishing to attract foreign investment. It has already been argued that the potential contribution of additional excise duties is limited, and so the matter is reduced to a choice between VAT and a payroll tax.

3.18. Both taxes would lead to an increase in prices, but there are two differences between them. First, VAT falls on consumption, whereas a payroll tax would increase the price of investment and consumption goods alike. Secondly, VAT is charged on imports and rebated on exports.

3.19. A further point to be taken into account is the extent of exemptions given. In general, the fewer the number of zero-rated and exempt items for VAT the better, and if it is impossible to avoid granting substantial exceptions, there may be a strong case for a payroll tax. With the payroll tax, it is important to include all employees, and in principle this should include the self-employed. If this raised objections from the self-employed, and if these objections are difficult to resist, then there

¹J. Copeland and B. M. Walsh in "Economic Aspects of Local Authority Expenditure and Finance" (ESR1, Paper No. 84, December 1975) conclude that "There is little scope for introducing new local taxes that would have a significant impact on the revenue of local authorities in Ireland. While a local income tax might be feasible, it would have to be set at a low rate and probably made uniform between local authorities and administered by the central government. It would hardly represent a genuinely local tax to the degree attained by the Rates at present".

is a strong case for VAT. Perhaps a final argument in favour of using a broad-based VAT is that it falls ultimately on domestic consumption, and thus helps to free resources for public expenditure, investment and exports. It is also a useful stabilisation instrument.

3.20 Thus on the impersonal tax side it can be argued that the best way to increase revenue would be to raise the rate of VAT and to eliminate as many exempt or zero-rated items as possible. It must be recognised, however, that the practical implications of increasing or extending VAT, or indeed of any other change in the tax system which results in an increase in total revenue, have to be taken into account before any such decisions are taken. An alternative would be a general payroll tax, although there are practical difficulties in applying this to the self-employed, where it is difficult to distinguish between the wage and the profit components of their income.

Personal Taxes

3.21. The personal taxes considered are

- (a) personal income tax
- (b) personal expenditure tax
- (c) social insurance contributions
- (d) taxes on capital.

Items (c) and (d) are dealt with briefly. Social insurance contributions are a form of earned income taxation. They can (and in the UK do) give rise to some rather odd patterns for marginal income tax rates when the combined effect of contributions and income tax is taken into account. Their only virtue seems to be their less visible nature: the media typically give far less attention to an increase in social insurance contributions than to an increase in income tax rates. And it may be that the alleged insurance nature of the payment enhances their acceptability, although this apparent benefit aspect of taxation by social insurance contributions is largely spurious.

3.22. Taxes on capital, on the other hand, do provide an opportunity for exploiting new bases for taxation. Their major drawback, as far as the broad purpose of this section is concerned, is that they are unlikely to produce enough extra revenue to warrant their consideration as a major revenue raiser, unless taxes on capital were to be applied to the majority of the population. This would imply either that the wealth tax would need to have a low threshold level, or that the taxation of gifts and bequests would need to be integrated with the main personal tax system, an issue which is considered further below.¹

3.23. This therefore brings the discussion to the central question of whether the main personal tax should be primarily a tax on income or a tax on consumption. There is a long history to this debate, and although the outcome of the debate has been inconclusive, economists have produced two rival definitions of the "ideal" personal tax base. The first gives rise to the concept of the "comprehensive income tax", a tax on all income whether earned or unearned, dividends or capital gains, permanent or purely windfall in nature. More formally, comprehensive income is an individual's consumption plus his net saving, where net saving is the increase in the value of his wealth after allowing for inflation.² This approach treats capital gains and the receipt of gifts on a par with earned income, because all receipts are seen as accretions to an individual's potential spending power.

3.24. The second definition of the ideal tax base is to take the base to be simply an individual's spending on goods and services, that is his consumption expenditure.³ In contrast to the income tax, the effect of a

¹It would in all probability be difficult to implement the wealth tax with a low threshold: note that the White Paper ('Capital Taxation', Prl. 3688, Dublin, February 1974) set out proposals for *inter alia* an annual wealth tax. But in May 1974, the Minister for Finance announced his decision to modify the wealth tax proposals. Among the modifications announced were—to apply a single rate of 1% instead of rates of 1½ to 2½%; to increase exemption thresholds from £60,000 to £100,000 for a married man and from £40,000 to £70,000 for a single person, with an additional allowance for a minor child of £2,500 and a new exemption threshold of £90,000 for widowed persons; and to revise these thresholds every three years to take account of inflation—valuations initially agreed would remain valid for three years.

²This concept is often described as the Haig-Simons definition of income; see Simons (1938).

³The classic work on the expenditure tax in Kaldor (1955).

personal expenditure tax is to allow the individual to make his own decisions about the value of a capital gain; if he spends the gain then he is taxed, if he believes the gain to be purely transitory and does not spend the illusory gain no tax is charged. The main advantages of an expenditure tax, however, are that because, in comparison with the comprehensive income tax, net saving is taken out of the tax base, the tax does not discriminate against saving in the way that the income tax does, and the tax is levied on the demands on resources made by the taxpayer and not on the value of his contribution to the creation of those resources.

3.25. How does the current income tax system relate to these two ideal tax bases? Perhaps surprisingly, the current system is nearer to an expenditure tax than to a comprehensive income tax. There are two main reasons for this. First, the current system does give an incentive to save and to invest through concessions for contractual saving (through pension funds, for example) and for investment by companies through accelerated depreciation, grants and tax holidays. Secondly, a comprehensive income tax would involve taxing capital gains (properly indexed for inflation) at income tax rates, and would not give concessions to pension contributions or to owner-occupiers. In addition, gifts and inheritances would be taxed as income. The net effect of this is that to move from the current position to an expenditure tax proper would involve only a small gain or loss in revenue. There would be a non-pecuniary *gain* in terms of having a more rational and efficient tax base, and this might enable tax rates to be raised, especially at the upper end, because expenditure would be seen to be an acceptable base for personal taxation. The *loss* in revenue from extending reliefs to all forms of savings and investment could, in principle, be estimated, and this would probably offset the increased tax to be gained by taxing spending financed by dissaving, which at the moment is not taxed.

3.26. So far, therefore, there is little here to suggest a potential increase in revenue in moving from the present income tax system to an expenditure tax proper. As regards the present income tax system, there would seem to be some scope for increasing tax revenue by bringing

more farmers within the income tax net.¹ However, probably the only way of raising more revenue would be to move from the present system to an income tax system with a greater coverage—i.e. to include gifts, bequests and capital gains made in the definition of taxable expenditure of the donor. This would increase revenue because

- (a) large gifts and estates would pay much higher rates than at present
- (b) small estates too would pay tax, whereas at present they pay little or none.

3.27. This might be accepted because it would enable the basic rate of tax to be reduced, for a constant level of revenue. Space does not permit a discussion of the administration of such a tax, but it is a feasible proposition provided all taxpayers submit an annual return. In the UK this is regarded as administratively difficult to handle because the tax system is not computerised, in which case there is a good deal to be said for restricting it to higher-rate taxpayers.

3.28. In contrast a move in the direction of a comprehensive income tax would increase revenue, although the three ways in which there could be substantial benefits raise questions of potential acceptability. Changes which might be considered in a move to an income tax with a greater coverage are:

- (a) to withdraw tax relief on pension contributions and insurance premia, of various kinds. This would be a major revenue raiser (the amount could in principle be calculated from the accounts of pension funds and other forms of contractual saving), but there is a difficult problem in allocating

¹Under the Finance Acts, 1974 and 1975, farmers with an annual land valuation of £100 or more are now chargeable to income tax on their farming profits. While those with an annual land valuation below £100 are generally excluded from income tax, there are specific cases where such people have their farming profits chargeable to income tax or have their personal reliefs affected. In a report on *The Taxation of Farming Profits* (NESC No. 15, February 1976), the National Economic and Social Council recommended that the valuation threshold for assessing income tax should be lowered to £75 for the 1978–79 year of assessment and to £50 for the 1980–81 year of assessment.

to the individual employees the employers' contributions which would then be regarded as part of employee income. A simpler method would be to deduct the standard rate of tax from the investment income of pension funds, and to accept this rough and ready method of taxing contractual savings. The important point is that there is potential revenue here.

- (b) to change the taxation of owner-occupied housing. Again there are quite large sums to be obtained from adopting one of several possible changes, which are given in increasing order of importance:

- (i) limiting relief on interest payments on mortgages to the standard rate; little revenue here.
- (ii) taxing the imputed income of owner-occupiers.¹
- (iii) taxing the capital value of the net equity stake of the owner-occupier in his own house (i.e. value of house minus outstanding mortgage).²

- (c) the inclusion of receipts of gifts, inheritances and capital gains into the tax base of personal income. This would require generous and inevitably complex averaging provisions, but would raise revenue.

3.29. It may well be that none of these options seems attractive, and they may conflict with basic policy aims of using the tax system to encourage savings and investment. But the alternative seems to be to

¹In Ireland, until 1969, land, etc. was regarded as yielding income from ownership and so was assessed under Schedule A, while income from occupation was assessed under Schedule B. In 1969, assessments under Schedules A and B were abolished. The Commission on Income Taxation, Second Report (Pr. 5119, 1959) contains a useful discussion on the taxation of "residential premises owner-occupied". The Commission recommended the exemption from Schedule A tax on owner occupation for dwellings of up to £30 in valuation.

²This area of potential tax revenue is examined in greater detail in *Report on Housing Subsidies*—a forthcoming report by the National Economic and Social Council.

raise more revenue through an impersonal tax which may be more difficult to defend on distributional grounds. It is never easy to withdraw tax allowances, although it is not clear that this is necessarily more difficult than raising tax rates. The extreme case is that of the United States, where the system of personal and other allowances for income tax is now so complex that about one half of the potential tax base is conceded in the form of allowances. This has provoked a growing call for the abolition of most of the allowances, a reduction in tax rates (made possible through the higher tax base), and a transfer of the financing of those activities previously supported by tax allowances to direct government expenditure, where the sums involved would be subject to public and continual scrutiny, in a way which does not happen when large "tax expenditures" are made by the granting of tax allowances. The choices are not palatable, but they seem to come down to a choice between raising the rate of VAT, or increasing the scope of the personal income tax net. There is no magic tax which will produce revenue from nowhere; the new sources of revenue must somehow reduce personal consumption below what it would otherwise have been.

Chapter 4

THE SECTORAL GROWTH OF OUTPUT IN MODERN INDUSTRIAL ECONOMIES

4.1. The previous chapter considered the relatively unpalatable question of how to increase tax revenue per head by increasing the breadth of the tax base. Undoubtedly a more attractive way of increasing tax revenue *per capita* is through economic growth in *per capita* real income. The application of unchanged tax rates to the growing *per capita* tax base thereby brings about rising *per capita* tax revenues while at the same time allowing real *post-tax* incomes to rise.

4.2. In considering the potential for economic growth, and more importantly economic growth *per capita*, in the Irish economy, it is useful to distinguish between supply-side considerations and demand-side considerations, even though these two influences on growth are inevitably intertwined. Furthermore, in order to gain any real understanding of the growth process, and hence in order to have any chance of influencing the growth rate through economic policy, it is necessary to consider the growth process at a disaggregated level, so far as the data will permit. The reasons for this are as follows.

4.3. By definition, the growth of an economy is determined, on the supply side, by the rate of growth of inputs (labour, capital, and imports), and by the rate of growth of productivity. Studies of the growth of an economy considered in the aggregate, however, typically find that quantitatively speaking most of the growth of output is accounted for by productivity growth rather than by input growth¹:

¹See, for example, Solow (1957) for the United States, and Denison (1967) for the United States, Canada, and the advanced European economies.

the rate of growth of total employment, for example, is generally very little higher in fast-growing economies than it is in the case of slow-growers (see Table 4.1). Further, while there is some tendency for the level of investment to be higher in the case of fast-growing economies, this is apparently not sufficient by itself to account for anything like all the difference between slow- and fast-growing economies. The conclusion from aggregate studies therefore is generally that the pattern of

TABLE 4.1

The growth of civilian employment and real GDP, various countries, 1955-73 (per cent per year)

	Employment	GDP
Japan	1.29 ^{1,2}	9.48
Italy	-0.47	5.12
W. Germany	0.48	4.97
France	0.59	5.31
Netherlands	0.93	4.64
Canada	2.72	4.72
Austria	-0.18 ¹	4.96
Norway	0.43 ³	4.24
Denmark	1.14	4.53
Belgium	0.66	4.18
US	1.71	3.63
UK	0.40	2.75
Ireland	-0.43	3.32

¹includes Armed Forces.

²1955-72.

³1955-70.

understanding why output growth rates differ is one of understanding why productivity growth rates differ.

4.4. To date, probably the most promising approach to the study of why productivity growth rates differ is to consider a disaggregation of the economy, at least into broad sectors. There is now a considerable

amount of evidence, obtained from the 25 or so years of relatively good data collected in most developed countries since the second World War, that much of the growth of productivity, that is output per man, has been achieved by, or at least accompanied by, a reallocation of labour within the economy. Over much of the post-war period the pattern of this structural change has been quite stable across a wide spectrum of industrial countries, with the *rate* of structural change bearing a close overall relationship to the overall rate of productivity growth.

4.5. On the face of it, it might seem surprising that the pattern of structural change has been fairly uniform across a range of fairly disparate countries: it might be thought possible, for example, that in one country rapid growth, whether of output, productivity, or both, could result largely from the growth of one sector, whereas in another country the source could be the rapid growth of a totally different sector.¹ A consideration of demand-side influences suggests, however, that this is unlikely.

4.6. Economies operate to satisfy the wants of the populace, and broadly these can be classified as the desire for food, manufactured goods, and a whole range of services. Once an economy is producing food at the high *per capita* levels characteristic of all the developed (OECD) countries, the domestic demand for food is unlikely to grow markedly faster than the rate of growth of the population, so that rapid economic growth based on agriculture is possible only if substantial and rapidly-growing markets for agricultural products exist abroad. Given the present Common Agricultural Policy of the EEC, the scope for increases in Irish agricultural exports is considerable.

¹This is the approach adopted, for example, by Henry (1974), in a linear programming exercise designed to consider growth stratagems to achieve stated employment targets. In its unconstrained form, however, the model gives "unacceptable results in the form of huge outputs for a few sectors, with small or zero outputs for many other sectors." Henry goes on to observe that "It is necessary to include bounds because it is not realistic to allow certain domestic outputs to vanish." (Page 20.) This chapter is essentially concerned with the nature and severity of the bounds that constrain the growth of an economy.

4.7. Given the limited prospects for higher employment in agriculture, even if agricultural output expands rapidly, rapid progress towards full employment must depend on rapid growth in the industrial and service sectors. In practice, much of the output of the service sector is ancillary to industrial output—in other words, the demand for much of the output of the service sector is a derived demand. Much of Distribution, Transport, and Communications is a case in point: if industrial goods are demanded and produced, they have to be transported and passed through shops. Therefore, in all economies, the growth of much of the service sector is bound up quite closely with the growth of industry, and hence the pattern of structural change tends to be quite similar in all growing economies.

4.8. It is possible, of course, that the growth of an economy could be led by the growth of one or more of the service sectors that does not experience derived demand, such as the Civil Service, or Health, Education and Welfare, but by and large this seems unlikely.

4.9. In this chapter, therefore, cross-country evidence on the systematic association between the growth of industry and much of the service sector is examined¹. The conclusion is reached that while the

¹Data on output in *constant prices*, that is, corrected for changes in value due to inflation, are available in the OECD National Accounts Statistics for all the broad sectors of the economy for the major OECD countries. Historical data on GDP by sector of origin are not available for Ireland from OECD sources. Further, the official Irish National Income and Expenditure accounts distinguish only five extremely broad sectors in the GDP by sector of origin accounts. This makes an examination of the historical structural evolution of the Irish economy almost impossible, unless alternative, more highly disaggregated, data can be constructed or found. Accordingly, given that an understanding of structural change is an absolute necessity for a satisfactory understanding of the growth process, a full set of constant-price GDP by sector of origin accounts for the Irish economy was constructed by the author. The accounts, and a description of the method by which they were compiled, are given in Appendix 2 to this report. Inevitably, the data are not as accurate, and hence the derived growth rates are not as accurate, as they would have been had they been calculated by Government statisticians with the assistance of the cross-checks imposed by income and expenditure data, as well as by sampling evidence. But with these caveats in mind, it is clear that it is very much more useful to have these estimates than not to have them at all. Furthermore, in the light of much of the cross-country evidence presented in this report, it would appear that most of the estimates are quite plausible.

Irish economy could possibly evolve with an economic structure entirely different from that exhibited by all the other OECD countries, this would seem to be unlikely, and a safer and more plausible assumption would be that it will necessarily evolve in essentially the same way as all other economies. Chapter 5 examines the way that productivity change accompanies structural change, and an estimate is made, on supply-side considerations, of the growth potential of the Irish economy. It is important to point out at this stage that throughout this report, summary statistics and relationships are calculated *without* Ireland, for it would not be appropriate for Ireland to contribute to a statistic with which it was then compared.

Agriculture, Manufacturing, and the growth of complementary output

4.10. Agricultural output has grown relatively slowly in all of the OECD countries over the post-war period. Over the first part of the period, the average of the rates of growth of Agriculture in the twelve major OECD countries in Table 4.2 was 1.9% per year, with the highest

TABLE 4.2
Growth rates of Agricultural Output, various countries,
% per year

Country	Period 1		Period 2		Full Period	
	Year	%	Year	%	Year	%
Japan	1953-64	4.4	1964-72	2.66	1953-72	3.67
West Germany	1951-65	1.6	1965-73	2.52	1951-73	1.93
Italy	1951-63	2.4	1963-73	1.80	1951-73	2.13
Denmark	1954-65	1.0	1965-73	-0.56	1954-73	0.34
Netherlands	1951-65	2.2	1965-73	4.21	1951-73	2.93
France	1951-64	1.9	1964-73	2.27	1951-73	2.05
Canada	1951-66	1.8	1966-73	0.18	1951-73	1.28
Austria	1951-66	0.7	1966-73	1.82	1951-73	1.06
Ireland	1951-64	1.3	1964-73	1.6	1955-73	1.4
Belgium	1951-64	2.8	1964-73	1.59	1951-73	2.30
Norway	1951-65	-0.1	1965-73	-0.24	1951-73	-0.15
US	1951-66	1.3	1966-73	5.09	1951-73	2.51
UK	1951-65	2.5	1965-73	2.49	1951-73	2.49

For sources of data, see Appendix 1.

being Japan at 4.4% and the lowest being Norway at -0.1%. The growth rate of Irish Agriculture, at 1.3% was somewhat below average. Over the second part of the period, the average rate of growth was 2.0% per year, the extremes being the United States at 5.1% and Denmark at -0.6%. The Irish rate, 1.6% per year, was again somewhat below average. Thus over the period as a whole the average rate of growth of Agriculture in OECD countries was quite low, as compared with a number of other sectors, and the range of growth rates too was quite small—for the full data, see Table 4.2.

4.11. The situation in Manufacturing was quite different. First, the average of the rates of growth experienced by the major OECD countries was much higher than in Agriculture in both periods—6.2% per year for the first period, and 5.6% per year for the second. Furthermore, the spread of the growth rates was much greater in Manufacturing than in Agriculture: in the first period, manufacturing average growth rates ranged from 13.5% per year in Japan to 3.3% in the United Kingdom, and in the second period from 10.9% to 2.9%, again for the same two countries—see Table 4.3.

4.12. Agriculture and Manufacturing together produce the vast bulk of the entire economy's physical output of goods. These goods have to be transported and, for the most part, distributed through wholesale and retail outlets. It is therefore to be expected that the rate of growth of these activities will be very similar to the weighted average rate of growth of the Manufacturing and the Agricultural sectors. The figures for the average rate of growth of Agriculture and Manufacturing combined are given in Table 4.4. The Table shows that the goods-producing part of the economy, Agriculture and Manufacturing, grew over three times as fast in the fastest-growing country (Japan, 10.0% per year) as in the slowest countries (Ireland, 3.3% per year, the United Kingdom and Norway, 3.1% per year).

TABLE 4.3
Growth rates of Manufacturing Output, various countries,
% per year

Country	Period 1		Period 2		Full Period	
	Year	Rate	Year	Rate	Year	Rate
Japan	1953-64	13.5	1964-72	10.9	1953-72	12.4
West Germany	1951-65	8.4	1965-73	4.9	1951-73	7.1
Italy	1951-63	7.9	1963-73	6.3	1951-73	7.2
Denmark	1954-65	6.3	1965-73	4.8	1954-73	5.7
Netherlands	1951-65	5.9	1965-73	6.5	1951-73	6.1
France	1951-64	5.8	1964-73	6.2	1951-73	6.0
Canada	1951-66	5.2	1966-73	5.0	1951-73	5.2
Austria	1951-66	5.2	1966-73	6.0	1951-73	5.5
Ireland	1955-64	4.9	1964-73	5.4	1955-73	5.2
Belgium	1951-64	4.8	1964-73	6.0	1951-73	5.3
Norway	1951-65	4.3	1965-73	4.1	1951-73	4.3
US	1951-66	3.8	1966-73	4.1	1951-73	3.9
UK	1951-65	3.3	1965-73	2.9	1951-73	3.1

For sources of data see Appendix 1.

TABLE 4.4
The rate of growth of Agriculture and Manufacturing in various countries,
full period

Country	Period	Agriculture		Manufacturing		Agriculture and Manufacturing Growth rate % per year
		Growth rate % per year	Weight ¹ %	Growth rate % per year	Weight ¹ %	
Japan	1953-72	3.67	12.4	12.38	33.8	10.04
West Germany	1951-73	1.93	5.2	7.10	42.4	6.54
Italy	1951-73	2.13	13.6	7.18	24.2	5.36
Netherlands	1951-73	2.93	8.2	6.14	33.5	5.51
France	1951-73	2.05	8.5	5.95	36.7	5.22
Denmark	1954-73	0.34	13.4	5.68	29.1	4.00
Canada	1951-73	1.28	4.8	5.16	22.9	4.49
Belgium	1951-73	2.30	6.7	5.30	30.3	4.76
Austria	1951-73	1.06	11.4	5.48	37.0	4.44
US	1951-73	2.51	3.9	3.90	27.4	3.73
UK	1951-73	2.49	3.5	3.11	31.0	3.05
Norway	1951-73	-0.15	9.0	4.26	25.1	3.10
Ireland ²	1955-73	1.4	20.1	5.2	19.6	3.3

¹1961 weights.

²Average 1955, 1968 weights.

TABLE 4.5

The rate of growth of Commerce, various countries, % per year

Country	Period 1		Period 2		Full Period	
	Year	Rate	Year	Rate	Year	Rate
Japan	1953-64	10.7	1964-72	12.23	1953-72	11.34
Austria	1951-66	7.1	1966-73	6.19	1951-73	6.81
West Germany	1951-65	6.9	1965-73	2.25	1951-73	5.21
Italy	1951-63	6.6	1963-73	5.70	1951-73	6.19
Netherlands	1951-65	5.7	1965-73	4.69	1951-73	5.33
France	1951-64	4.8	1964-73	5.04	1951-73	4.90
Norway	1951-65	4.6	1965-73	4.12	1951-73	4.43
Belgium	1951-64	4.0	1964-73	5.03	1951-73	4.42
US	1951-66	3.8	1966-73	3.67	1951-73	3.76
UK	1951-65	3.1	1965-73	2.43	1951-73	3.02
Canada	1951-66	2.2	1966-73	4.79	1951-73	3.02
Ireland	1955-64	1.9	1964-73	4.4	1955-73	3.2

For sources of data, see Appendix 1.

4.13. In most OECD countries the national accounts data for the sector "Commerce" correspond closely with what is needed for this present purpose.¹ The rate of growth of output is measured in most countries², appropriately enough, by the rate of growth of the volume of sales: average yearly growth rates are given in Table 4.5. It can be seen from this Table that, across countries, the rate of growth of Commerce corresponds very closely with the rate of growth of output in the goods-producing sectors, Agriculture and Manufacturing. In Japan, the fastest-growing country, for example, the goods-producing sectors grew on average at 10.0% per year, and Commerce grew at just a little over 1 percentage point faster, at 11.3% per year. At the other extreme, the goods-producing sectors and Commerce grew at 3.1% and 2.9% respectively in the United Kingdom and at 3.3% and 3.2% respectively

¹"Commerce" includes Wholesale and Retail Trade, restaurants and hotels, financing, insurance, real estate and business services [Major division 6 & 8 of I.S.I.C.]

²See T. P. Hill (1971) for a thorough discussion of this point.

in Ireland. While the correspondence in the case of a few other countries (for example, Austria) is not quite so close, possibly due at least in part to incomparability of the data, the overall relationship is extremely close. The closeness of the relationship is indicated by the value for R^2 in the regression equation at the foot of Table 4.6, which indicates that a high proportion of the variability of commerce growth rates can be explained, in a statistical sense, by the variability of the output growth rates of the goods-producing sectors. Further, the coefficient of the regression

TABLE 4.6

The growth of output in Commerce and the Goods-producing Sectors, full period

Country	Period	Growth rate, % per year	
		Commerce	Manufacturing and Agriculture
Japan	1953-72	11.34	10.04
Austria	1951-73	6.81	4.44
West Germany	1951-73	5.21	6.54
Italy	1951-73	6.19	5.36
Netherlands	1951-73	5.33	5.51
France	1951-73	4.90	5.22
Norway	1951-73	4.43	3.10
Belgium	1951-73	4.42	4.76
US	1951-73	3.76	3.73
UK	1951-73	2.86	3.05
Canada	1951-73	3.02	4.49
Ireland	1951-73	3.2	3.3

Summary regression

$$q_{\text{commerce}} = -0.11 + 1.054 q_{\text{goods}} \quad r^2 = 0.769$$

(0.97) (0.182)

For sources of data, see Appendix 1.

Note: In the estimation of this summary regression, as in all other subsequent regressions presented in this report, Ireland has not been included. The reason for this is that it would be inappropriate to include Irish data in the estimation of a relationship with which Ireland is then compared.

equation indicates that as was initially established from inspection of the two series, and as was expected on *a priori* grounds, the growth rate of the Commerce sector is typically almost exactly equal to the growth rate of the goods-producing sectors. Lastly, it would appear that the rate of growth of the Commerce sector in Ireland, 3.2% per year on average, is almost exactly what would have been expected, given the 3.3% annual average rate of growth of the goods-producing sectors, Agriculture and Manufacturing.

Transport and Communication

4.14. Just as the goods produced by the goods-producing sectors ultimately find their way to the wholesale and retail outlets, thereby linking the growth of the Commerce sector to that of the goods-producing sectors, so too do the goods produced by the goods-producing sectors have to be transported. It would be expected that, as with Commerce, there would be an approximately one-to-one relationship with the rate of growth of the goods-producing sectors. Unfortunately it is not possible to test this presumption precisely, because the data in the national accounts of the various OECD countries are not quite right for this purpose. There are basically two problems. First, Communication, which includes telephone, telegraph, telex and postal services, is included with data on transport, and while the growth of some communication services is undoubtedly linked directly with the production of goods, some other communication services, such as personal telephone and postal services, are not. There is likely to be an indirect effect, from growth in goods output to growth in real incomes to a growth in the demand for personal telephone and postal services, but because the link is indirect there is no *a priori* reason why there should be a one-to-one relationship between the growth of goods output and the growth of demand for telephone and postal services by the personal sector.

4.15. The second problem is that "Transport" covers not only the movement of goods, but also the movement of people, whether for business purposes or for pleasure. For similar reasons to those given above, there is no *a priori* reason to suppose that there will be a one-to-one relationship between the growth of output in the goods sectors and the demand for transport services by the personal sector.

4.16. Nevertheless, a good part of both Transport and Communication output *is* directly connected with the production of goods, and so there is a broad presumption that the countries with the most rapid growth of the goods-producing sectors will have the most rapid of Transport and Communication, even if the relationship between the growth rates is not one-to-one.

4.17. The growth rates for the Transport and Communication sector are given in Table 4.7. It is interesting to note that, over the post-war period as a whole, growth rates in this sector have shown a considerable regression towards the mean: all the countries with above-average growth rates of Transport and Communication in the first period (Japan, Italy, Norway, Ireland, and The Netherlands) experienced a lower rate of growth in the second period than in the first, and all of the others, except West Germany, experienced an acceleration of their growth rate in the second period.

4.18. The comparison, for the full period, between the rate of growth of Transport and Communication and the rate of growth of the goods-producing sectors is shown in Table 4.8, and by the summary regression equation at the foot of the Table. It is apparent that, while there is some association between the two series, quite a bit of the variability of the rate of Transport and Communication growth is unexplained, in a statistical sense, by the rate of growth of the goods-producing sectors. Given the heterogeneous nature of the Transport sector alone, this finding is not surprising: in Ireland, the overall rate of growth of the sector has been somewhat higher than would have been expected on the basis of this cross-country relationship.¹ While this relationship is not particularly close, however, it is clear that, in assessing the future rate of growth of the Transport and Communication sector in Ireland, account should be paid to the likely rate of growth of the goods-producing sectors.

¹The relatively high growth of transport in Ireland can be explained in some degree by the increase in output which followed the significant investments made in high-capacity aircraft and terminal facilities, coupled with the introduction of modern car ferries and container vessels (using highly automated freight complexes) during the period under review.

TABLE 4.7
The rate of growth of Transport and Communication

Country	First Period	Growth rate % per year	Second Period	Growth rate % per year	Full Period	Growth rate % per year
Japan	1953-64	9.6	1964-72	6.7	1953-72	8.4
Italy	1951-63	6.8	1963-73	5.2	1951-73	6.1
Norway	1951-65	6.2	1965-73	5.7	1951-73	6.0
Ireland	1955-64	6.2	1964-73	5.6	1955-73	5.9
Netherlands	1951-65	5.8	1965-73	4.8	1951-73	5.4
Austria	1951-66	5.1	1966-73	6.4	1951-73	5.5
West Germany	1951-65	4.8	1965-73	4.2	1951-73	4.6
Canada	1951-66	4.5	1966-73	6.5	1951-73	5.1
France	1951-64	3.6	1964-73	5.2	1951-73	4.2
US	1951-66	3.6	1966-73	4.8	1951-73	4.0
Belgium	1951-64	3.5	1964-73	4.0	1951-73	3.7
UK	1951-65	2.2	1965-73	3.2	1951-73	2.6

TABLE 4.8
The growth of output in Transport and Communication, and in the goods-producing sectors, full period

Country	Period	Growth rate, % per year	
		Transport and Communication	Manufacturing and Agriculture
Japan	1954-72	8.39	10.04
Italy	1951-73	6.08	5.36
Norway	1951-73	6.01	3.10
Ireland	1955-73	5.9	3.3
Netherlands	1951-73	5.43	5.51
Austria	1951-73	5.52	4.44
West Germany	1951-73	4.56	6.54
Canada	1951-65	5.13	4.49
France	1951-73	4.25	5.22
US	1951-73	3.99	3.73
Belgium	1951-73	3.70	4.76
UK	1951-73	2.57	3.05

Summary regression:

$$q_{tc} = 2.76 + 0.477 q_{goods} \quad r^2 = 0.384$$

(1.01) (0.191)

For sources of data, see Appendix 1.

Construction

4.19. All the sectors considered so far as characterised by having readily-available indicators of output growth and, in the case of Commerce, and much of Transport and Communication, a necessarily-close relationship with the goods-producing sectors of the economy. Like all these sectors, the rate of output growth of the Construction sector is readily measurable. Unlike all the other sectors, however, there is no necessary reason why the rate of growth of the output of the Construction sector should be linked on a one-to-one basis with the output of the goods-producing sectors. Further, it can be seen from Table 4.10 that there is no such one-to-one link. For the period as a whole, for example, Construction output in Japan grew at an average rate of 13.6% per year, over one third as fast again as the rate of growth of the goods-producing sectors (10.0% per year). In another extreme case, that of the United States, the rate of growth of Construction output (1.6% per year) was less than half the rate of growth of the goods-producing sectors (3.7%).

4.20. The growth of the Construction sector is not, however, a haphazard phenomenon. While some Construction output is related to the production of the goods-producing sectors, much is a response to demand by the personal sector and by the Public sector. This demand is likely to be stimulated by rising real income, and there is no necessary reason why the increased demand for Construction output should be proportionately more than, or proportionately less than, the increase in the community's real income, as measured by the rate of growth of real GDP.

4.21. In fact, as can be seen from Table 4.10 and the regression equation at the bottom, there is a strong tendency for a given increase in the output of the goods-producing sectors to be accompanied by a more than proportionate increase in Construction output. The coefficient of the regression equation (1.506) indicates that, on average across countries, a 1% higher growth rate of GDP is typically accompanied by a

TABLE 4.9
Growth rates of Construction, various countries, % per year

Country	Period 1		Period 2		Full Period	
	Year	Rate	Year	Rate	Year	Rate
Japan	1953-64	14.4	1964-72	12.58	1953-72	13.63
Italy	1951-63	8.5	1963-73	1.31	1951-73	5.23
West Germany	1951-65	7.0	1965-73	3.38	1951-73	5.68
France	1951-64	6.8	1964-73	5.89	1951-73	6.43
Canada	1951-66	6.1	1966-73	3.09	1951-73	5.14
Austria	1951-66	5.0	1966-73	7.41	1951-73	5.77
UK	1951-65	3.6	1965-73	1.52	1951-73	2.84
Belgium	1951-64	2.9	1964-73	2.37	1951-73	2.68
Ireland	1951-66	2.1	1964-73	4.2	1951-73	3.3
US	1951-66	2.1	1966-73	0.51	1951-73	1.59
Norway	1951-65	1.9	1965-73	4.00	1951-73	2.66

For sources of data, see Appendix 1.

TABLE 4.10
Growth rate of Construction and the goods-producing sectors, various countries, full period

Country	Period	Rate of Growth, % per year	
		Construction	Goods-producing sectors
		q_{con}	q_{gps}
Japan	1953-72	13.63	10.04
Italy	1951-73	5.23	5.36
West Germany	1951-73	5.68	6.54
France	1951-73	6.43	5.22
Canada	1951-73	5.14	4.49
Austria	1951-73	5.77	4.44
UK	1951-73	2.84	3.05
Belgium	1951-73	2.68	4.76
Ireland	1955-73	3.3	3.3
US	1951-73	1.59	3.73
Norway	1951-73	2.66	3.10

Summary regression

$$q_{cons}^t = -2.40 + 1.506q_{goods} \quad r^2 = 0.851$$

$$(1.11) (0.210) \quad n = 11$$

For sources of data, see Appendix 1.

1.5% increase in the rate of growth of the Construction sector.¹ The rate of growth of Construction in Ireland, 3.3% per year, is just 0.3 percentage points less than would be expected on the basis of the cross-country relationship.

4.22. There is thus good evidence that, while the growth of the Construction sector is not directly tied to the growth of the goods-producing sectors, there is a high and, across countries, fairly uniform income elasticity of demand for the sector's output. In the absence of any special controls or other phenomena designed to restrict the growth of the Construction sector, therefore, it would seem that rapid growth of the Construction sector has to be expected when there is rapid growth of the goods-producing sectors.

The rest of the economy—Private and Public Services

4.23. All the sectors considered so far—Agriculture, Manufacturing, Commerce, Transport and Communication and Construction—are characterised by the fact that good indicators exist for measuring the rate of growth of their output, and of the four non-goods-producing sectors, three of them—Commerce, Transport and Communication, and the Public Utilities—are characterised by the fact that demand for their output is derived demand. Their output typically grows equi-proportionately with Manufacturing. These sectors, plus Construction, account for a large part of the output of the typical advanced economy, and employ a large proportion of total inputs. Table 4.11 shows the proportion of the civilian labour force employed in these sectors in 1955 and in 1973 in each of the major OECD countries. In virtually all economies, the proportion so engaged exceeds three-quarters, and the Irish experience is clearly quite typical. The remainder of the economy, the sectors entitled Private Services and Public Services, are harder to

¹The meaning of the negative constant term, has to be interpreted with care. Taken at face value, it would imply that, if the goods-producing sectors were not to grow, i.e. if q_{gps} were equal to zero, the Construction sector would decline. This could be so, but in no country did the goods-producing sectors over the full period grow slower than 3.1% per year, and so there is no good evidence on what would happen to the Construction sector at lower rates of growth of the goods-producing sectors than that.

TABLE 4.11

The proportion of civilian employment engaged in the sectors other than Private and Public Services

Country	1955	1973
Austria	83.5	83.7
Belgium	82.2	75.9
Canada	80.1	67.3
Denmark	n.a.	71.8
France	83.6	78.9
Germany ¹	87.0	82.8
Italy ²	87.2	81.1
Japan	85.3	80.9
Netherlands ³	76.0	67.7
Norway	85.4	75.5
UK ⁴	80.8	73.8
US ³	78.2	70.8
Ireland ⁵	80.0	75.6

¹1957.

²Including ISIC (8), financial, insurance, real estate and business services.

³Allocated within ISIC 6–9 by shares of wage and salary earners.

⁴UK Domestic services.

⁵See Appendix 4.

measure and less well understood. The major problem stems from the fact that these sectors contain a wide miscellany of different outputs, and it is often not clear what indicator should be used to measure the rate of growth of output. In practice, the measurement of output growth is inextricably mixed up with the concept and measurement of productivity growth. As the question of productivity growth is considered in the next chapter, further consideration of output and productivity growth in the Other Service sectors is deferred until then.

Conclusion

4.24. All but two sectors of the economy—Mining and Public Utilities—have been considered in this chapter. Mining has been omitted because, by and large, special factors determine the growth of

output, country by country, in that sector. The Public Utilities sector has been omitted partly for the special factors reason, and partly because it is generally a fairly small employer.

4.25. What this chapter has shown is that, on the basis of the evidence of the growth of the major OECD countries over the post-war period, the growth of output of Distribution, Transport and Communication, and Construction is apparently, as is to be expected, closely linked with the rate of growth of the goods-producing sectors, Agriculture and Manufacturing. Indeed it would seem, given the wide range of countries considered and the inevitable problems with data, that the Irish economy can be expected to conform quite closely with these patterns of growth in the future. It has in the past, and while there is some scope for individual country variation, it would seem that it would be imprudent to assume that Ireland can grow, sector by sector, in any way that is substantially different from the well-established patterns.

4.26. The next question to be considered is the rate of growth of productivity that can be expected to accompany economic growth in Ireland. This is considered in the next chapter.

Chapter 5

THE SECTORAL GROWTH OF PRODUCTIVITY

5.1. The previous chapter examined the way in which most of the sectors of a modern economy grow in quite a fixed relationship with one another. It was shown that, across countries, there is relatively little variation in the rate at which the output of each sector¹ grows in relation to the others.

5.2. Given this fairly fixed structure of economic growth, the purpose of this chapter is to examine the employment requirements that have to be met if each sector is to grow in the way required for overall economic growth.

5.3. This chapter therefore presents whatever evidence is available on the apparent determinants of the rate of growth of productivity, sector by sector. The reason for taking note of international evidence, rather than of Irish time-series evidence, is that to the extent that the concern of this part of the report is with policies that could accelerate the rate of Irish growth, the concern is by definition with growth that lies outside the range of Irish experience. In such circumstances it is often preferable to look at the experience of other countries, which have experienced growth rates such as those being contemplated.

5.4. At the same time, it has to be admitted that the cross-country evidence on the determinants of sectoral productivity growth rates is nowhere near as good as the evidence on the strictness of the relative sectoral output growth rates presented in Chapter 4. In part, this may well be due to the paucity, inaccuracy and, in some cases, inappropriateness of the available data on investment and the capital stock. For this reason, the influence of capital formation on productivity growth in all sectors

¹Excepting Private and Other Services, which are considered later in this chapter.

other than Agriculture and Manufacture goes undetected in this chapter. Hence, in assuming that Ireland could achieve productivity growth rates comparable with those exhibited by the other countries considered in this chapter, it is assumed that Ireland can and would match their investment performance, even though it is often not known exactly what that performance was.

5.5. For the most part, this may not be too unreasonable. However, to the extent that it may be felt that the productivity assumption relating to any sector is objectionable, or to the extent that better evidence than the cross-country evidence used in this chapter is available, either now or later, it is a straightforward matter to replace the assumption used in this chapter with a different one, and to work out the consequences.

5.6. What follows in this chapter, therefore, is envisaged as the basis for a discussion on the growth of productivity, sector by sector, in the Irish economy, rather than an assertion that this is precisely how things must work out.¹

The constraints on the rate of growth of GDP.

5.7. Early post-war studies of the growth of GDP started with the presumption that typically the output of an economy is constrained by the supply of the factors of production. Thus it was considered that the basic rate at which an economy could grow was determined, once it had reached full or near-full employment, by the rate of growth of the labour force. To the extent that the economy was devoting an increasing share of its output to capital formation, and to the extent that technical progress was taking place, output could grow faster than employment, but the scope for increasing output per head by these two means, even when taken together, appeared to be quite limited.

5.8. The predominance of this view of growth was in all probability due to the fact that most of the early theoretical and empirical analysis of growth was carried out by British and American economists. In writing about Britain and the United States these economists were, it is now possible to realise in retrospect, concerned with probably the only

¹Due to inadequacies in the data, it has not been possible to undertake an analysis of the construction sector in this Chapter.

two major economies to which it is sensible or useful to apply the supply-constraint assumption. When attention is focused on countries like Japan, Italy, or Germany, which over more than 20 years of post-war growth experienced extremely high sustained growth rates of output, that have far outstripped the rate of growth of employment, and are inexplicable even in terms of the very high levels of investment that have taken place, it is apparent that some explanation other than factor-growth is called for. Thus it has come to be recognised that the study of growth is really the study of the growth of output per unit of input, and this "residual factor" has been the subject of much discussion.¹

5.9. The crucial question to establish is whether the growth of productivity, whether defined as the growth of output per person employed or as the growth of output per unit of labour and capital input, is a haphazard phenomenon. Fortunately it appears that productivity growth is not haphazard; a study of output and productivity growth by sector suggests that at least in broad terms the process is understandable, and may even, particularly in the case of countries such as Ireland, be amenable to increase through the application of appropriate policies.

Agriculture

5.10. One sector that over the post-war period has apparently not, in any of the OECD countries considered in this report, been constrained by a need for growing employment has been Agriculture. In all of the countries, without exception, Agricultural employment has declined absolutely, notwithstanding a steady growth in the volume of output in all countries other than Denmark (in the second part of the post-war period) and Norway (throughout the entire period). The rate of growth of productivity, implicit in the growing output and declining employment, has been quite interestingly high—indeed in the case of no less than 9 OECD countries (Japan, Belgium, the United Kingdom, Italy, the Netherlands, France, Canada, West Germany, the United States) the rate of growth of productivity in Agriculture over the post-war period taken as a whole has been greater than in Manufacturing.²

¹See, for example, Denison (1967).

²This can be seen by comparing the "full-period" growth rates of productivity in Agriculture, country by country, in Table 5-3 with the corresponding figures for Manufacturing in Table 5-6.

5.11. That it should have proved possible for output in Agriculture to grow while employment declined is perhaps not surprising in the case of some countries, such as Italy and France, where particularly in the early part of the period much of the farming sector was notoriously inefficient in comparison with the then-prevailing best-practice techniques. But what is instructive to note is that even in countries where output per man is and always has been comparatively high, such as the United States and Canada, and in countries where output per acre is particularly high, such as the United Kingdom, productivity has grown apace: 5.6% and 4.2% per year on average in the case of the United States and

TABLE 5.1

Growth rates¹ of Agricultural output, employment and productivity, and the level of agricultural investment, various countries, per cent per year, first period

Country	Output q (1)	Employ- ment e (2)	Produc- tivity p (3)	Investment- output ratio I/Q (4)
Japan (1953-64)	4.4	-2.8	7.2	13.3
Belgium (1951-64)	2.8	-2.8	5.6	12.8
UK (1951-65)	2.5	-2.5	5.0	15.0
Italy (1951-63)	2.4	-2.7	5.0	14.3
Netherlands (1951-65)	2.2	-2.7	4.9	10.7
France (1951-64)	1.9	-3.6	5.5	14.2
Canada (1951-66)	1.8	-3.5	5.3	27.1
Germany (1951-65)	1.6	-3.5	5.1	23.3
US (1951-66)	1.3	-3.6	4.9	23.0
Ireland (1955-64)	1.3	-2.5	3.8	—
Denmark (1954-65)	1.0	-3.0	4.0	12.6
Austria (1951-66)	0.7	-3.3	4.1	15.2
Norway (1951-65)	-0.1	-3.2	3.1	25.5

Summary regression:

$$e = -2.6 + 0.085q - 0.037 I/Q \quad r^2 = 0.466$$

(0.5) (0.096) (0.019)

¹See Appendix 1.

TABLE 5.2

Growth rates of agricultural output, employment and productivity, and the level of agricultural investment, 2nd period

Growth rates, % per year

Country	Period	Output	Employment	Productivity	Investment-output ratio
Japan	1964-72	2.66	-7.65	10.31	20.53
Belgium	1964-73	1.59	-5.63	7.22	12.25
UK	1965-73	2.48	-3.54	6.02	17.16
Italy	1963-73	1.80	-5.05	6.85	14.17
Netherlands	1965-73	4.21	-2.84	7.05	13.58
France	1964-73	2.27	-3.80	6.07	20.82
Canada	1966-73	0.18	-1.74	1.92	32.46
W. Germany	1965-73	2.52	-4.83	7.35	32.97
US	1966-73	5.09	-2.03	7.12	23.12
Denmark	1965-73	-0.56	-4.52	3.96	14.34
Austria	1966-73	1.82	-4.28	6.10	17.79 ¹
Norway	1965-73	-0.24	-4.28	4.04	31.02
Ireland	1964-73	1.6	-3.2	4.8	—

¹1966-69 only.

Summary regression (excluding Ireland):

$$e = -5.9 + 0.213q + 0.063 I/Q \quad r^2 = 0.112$$

(1.7) (0.308) (0.068) n = 12

Source of data: See Appendix 1.

TABLE 5.3

Growth rates of agricultural output, employment and productivity, and the level of agricultural investment, full period

Growth rates, % per year

Country	Period	Output	Employment	Productivity	Investment-output ratio
Japan	1953-72	3.67	-4.84	8.51	16.36
Belgium	1951-73	2.30	-3.96	6.26	12.58
UK	1951-73	2.49	-2.88	5.37	15.79
Italy	1951-73	2.13	-3.77	5.90	14.24
Netherlands	1951-73	2.93	-2.75	5.68	11.75
France	1951-73	2.05	-3.68	5.73	16.91
Canada	1951-73	1.28	-2.94	4.22	28.81
W. Germany	1951-73	1.93	-3.98	5.91	26.82
US	1951-73	2.51	-3.10	5.61	23.04
Denmark	1954-73	0.34	-3.64	3.98	13.33
Austria	1951-73	1.06	-3.61	4.67	16.02
Norway	1951-73	-0.15	-3.59	3.44	27.51
Ireland	1955-73	1.5	-2.9	4.4	—

Summary regression (excluding Ireland):

$$e = -3.5 - 0.079 q + 0.005 I/Q \quad r^2 = 0.029$$

(0.8) (0.191) (0.033) n = 12

Source of data: See Appendix 1.

Canada, 5.4% in the case of the United Kingdom. Judged by international comparison, output and productivity have grown at respectable rates in Ireland (1.5% and 4.4% per year respectively, over the post-war period as a whole)¹

5.12. The sources of productivity growth are undoubtedly numerous, and the relative importance of different sources almost certainly varies from country to country. In some countries, particularly Italy and France, the reduction of disguised unemployment was a vitally important source of productivity growth, especially in the early post-war period. In later years in these countries, however, and more generally elsewhere, the growth of average farm size, permitting an increase in the degree of mechanisation, the increasing use of "bought-in" industrial inputs such as fertiliser, improvements in agriculture technology, and a general improvement in farmers' ability and willingness to cope with technological advance, have all played important parts. It is impossible to assess from data alone the length of time for which this process might continue: given, however, that the rate of productivity growth continues to be high even in the best-practice countries, it would seem reasonable to suppose that there is still considerable scope for productivity growth in most of the other countries.

5.13. Although the factors making for productivity growth in Agriculture are numerous, it might be expected that the extent to which they have been embodied would be reflected in the share of the income of the Agricultural sector that was re-invested, and indeed the evidence of the first part of the post-war period is consistent with this. The regression equation at the foot of Table 5-1 suggests that, while there was apparently little systematic association between the rate of employment change and the rate of output change, there was a systematic association² between the rate of employment change and the rate of re-investment: typically, as would be expected, the rate of Agricultural employment decline was more rapid in those countries where the rate of re-investment was high. Investment data are notoriously unreliable

¹See Table 5-3.

²Shown by the value of the coefficient on the I/Q term, -0.037 , which is nearly twice the value of its standard error.

in Agriculture, however, both for conceptual reasons (investment goods in Agriculture range from seeds to tractors, from fencing to milking machinery) and for disclosure reasons.

5.14. It is interesting therefore, that in the second part of the post-war period this statistical association between the rate of employment decline and the rate of re-investment disappears:¹ this may reflect the fact that the association for the first period was a fluke, or it may reflect the fact that a good number of the sources of agricultural productivity growth do not involve phenomena that get caught in the recorded investment figures. It would seem, therefore, that by and large the sources of productivity growth in Agriculture have to be sought on a country-by-country basis. Certainly, as far as Ireland is concerned, it would seem reasonable to say that a continued relatively rapid rate of Agricultural productivity growth seems feasible, whether judging the issue on the basis of what all other comparable countries have achieved or on the basis of Irish evidence.²

The contribution of employment decline in Agriculture to employment growth in other sectors

5.15. The contribution that the release of labour by the Agricultural sector can make to the employment requirements of other sectors that may need employment growth in order to secure output growth depends on the *rate* of employment decline in Agriculture, and on the *size* of the agricultural sector, in employment terms, relative to that part of the economy that needs labour in order to grow. Thus, if an agricultural sector is large, even a modest rate of decline of employment can yield an amount of labour that permits very rapid employment growth in a small sector. This phenomenon was of importance, particularly in the early part of the post-war period, to a number of countries such as Japan, Italy, and France, which had large agricultural sectors, and

¹Note that the value of the coefficient is no larger than its standard error.

²See, for example Fennell (1968) who concludes that "... although agriculture (in Ireland) has had a poor record in terms of output (growth) it would be wrong to regard the sector as stagnant. The changes which have occurred internally have been considerable and it may well be that they are creating conditions conducive to a breakthrough in production." (page 338). Given the wide variation in productivity levels, both by County and by farm size, this seems a plausible view.

relatively small manufacturing sectors which absorbed labour at a high rate. The next section therefore turns to a consideration of the growth of output, employment and productivity in manufacturing over the post-war period.

The Manufacturing sector

5.16. Over the whole of the post-war period, fast-growing countries have experienced rapidly-growing manufacturing output, and slow-growing countries have experienced slow growth in Manufacturing. The association has been almost perfect. Beyond that, however, the post-war characteristics of the manufacturing sector have not been so uniform, and the period needs to be considered in two parts.

The first part of the post-war period

5.17. Over this period, the early 1950s to the mid-1960s, the rates of output growth and employment growth were typically highly associated across countries in manufacturing: typically employment in manufacturing grew at about seven tenths of the rate of output growth. This relationship was affected, as would be expected, by the rate of re-investment: the higher the rate of re-investment, the lower the rate of employment growth that was associated with a given rate of output growth, that is to say, the higher was the rate of productivity growth, and vice versa.¹ This relationship can be seen from the data in Table 5.4, and is summed up in the regression table at the foot of the Table.

¹This regression equation "explains" the rate of growth of employment (across countries) in manufacturing in terms of the rate of growth of output in manufacturing and the share of investment in output. Some economists have questioned the use of the variable I/Q, arguing that the incremental capital output ratio (ICOR) or the straight capital output ratio might be more appropriate. However, the problem is that capital stock data are not available for the large sample of countries that are included in the cross-country comparison. As it is, investment data can be readily derived from the National Accounts data produced by the OECD from 1950. But to accumulate these data on gross investment, to convert them into constant prices, and to allow satisfactorily for depreciation, would be a formidable task and would also require data going back to about 1910, for those items of investment which last for forty years or so, such as buildings. Goldsmith has carried out this exercise for the United States, Feinstein has performed a similar exercise for the United Kingdom, but there are no really good capital stock estimates for the European members of the OECD or for Japan.

5.18. It can be seen from the Table that over this period the rate of output growth in Irish manufacturing was relatively modest, only Belgium, Norway, the United States and the United Kingdom growing at lower rates. Correspondingly, the rate of manufacturing employment growth and of manufacturing productivity growth was low also, although slightly higher than might have been expected on the basis of the cross-country evidence.¹

TABLE 5.4

Growth rates of manufacturing output, employment and productivity, and the average value of the manufacturing investment-output ratio, various countries, first period, % per year

Country	Period	Output q	Employ- ment e	Produc- tivity p	Investment I/Q
Japan	1953-64	13.45	5.47	7.98	27.62
West Germany	1951-65	8.36	3.63	4.73	14.98
Italy	1951-63	7.93	2.81	5.12	16.93
Denmark	1954-65	6.30	2.92	3.38	10.07
Netherlands	1951-65	5.94	1.66	4.28	16.09
France	1951-64	5.81	1.41	4.40	14.04
Canada	1951-66	5.24	2.30	2.94	13.52
Austria	1951-66	5.24	1.20	4.04	14.82
Ireland	1955-64	4.92	1.08	3.84	13.89
Belgium	1951-64	4.79	0.63	4.16	14.49
Norway	1951-65	4.34	0.72	3.62	16.65
United States	1951-66	3.81	1.06	2.75	13.01
United Kingdom	1951-65	3.25	0.77	2.48	12.35

Summary regression:

$$e = -0.06 + 0.675 q - 0.135 I/Q \quad r^2 = 0.938$$

$$(0.47) (0.077) (0.043) \quad n = 12$$

Sources of data: See Appendix 1.

¹On the basis of the output growth rate of 4.9% per year and the average investment-output ratio of 13.9%, the regression equation at the foot of Table 5.4 would predict a rate of employment growth in Irish manufacturing of 1.4% per year. The actual rate was 1.1% per year, so that productivity growth, at 3.8% per year, was greater by 0.3 percentage points per year than might have been expected on the basis of the cross-country evidence.

5.19. A relationship of this sort, between output, employment, and investment, is what might reasonably be expected in a modern sector working continuously throughout at or near its productive potential. It was this relationship which led a number of economists, and most notably Kaldor,¹ to conclude that if a manufacturing sector was to grow secularly, it needed a continually growing supply of labour; the level of re-investment could modify the extent of the employment growth necessary for any given amount of output growth, but at any plausible level of re-investment, rapid output growth could not be achieved without a fairly rapid growth of manufacturing employment. The role of Agriculture in providing much of this labour was therefore self-evident.

5.20. Further, this growth of manufacturing output was desirable, for with it came productivity growth: the fact that a given rate of manufacturing output growth was associated with an employment growth rate of seven tenths of that amount meant that productivity grew at about three tenths of the rate of growth of output. Rapid output growth in manufacturing therefore seemed an excellent way of achieving increases in output per head.

5.21. All these cross-country relationships seemed to be fairly readily interpretable in terms of the prevailing state of knowledge. Micro-economic studies, for example, had shown the importance of economies of scale in individual industries,² and it was therefore quite believable that output per person would rise as the scale of output rose, even if the magnitude of the increasing returns suggested by the cross-country data did seem rather large. It therefore came as a considerable surprise when the data for the second part of the post-war period exhibited very different behaviour. This period is now examined.

The second part of the post-war period

5.22 Over this period, the mid-1960s to the early 1970s, all the countries other than West Germany and Austria experienced an acceleration, albeit small in most cases, in the rate of growth of manufacturing productivity. This was not accompanied, however, by a general accelera-

¹See Kaldor (1966).

²See, for example, Pratten (1971) and Denison (1967).

tion in the rate of growth of output: in many cases the rate of growth of output fell, and in some cases considerably. In Japan, for example, the rate of output growth fell from 13.5% per annum to 10.9%, and in Germany from 8.4% to 4.9%, while productivity growth rates were virtually unaffected (Japan: 8.0% up to 8.8%, Germany: unchanged at 4.7% throughout). Taking the data for all the countries together for this second period, it is apparent that there is no statistically-significant association between the rate of employment growth in manufacturing and the rate of output growth, and hence no association between the rate of output growth and the rate of productivity growth—see Table 5.5, and the regression equation at the foot.

5.23. This is a most curious phenomenon, and no really convincing explanation has as yet been put forward. One set of explanations sees the phenomenon as essentially short-term, resulting from some form of labour "shake-out",¹ but the phenomenon has persisted for sufficiently long now that that interpretation has lost some of its credibility. Other explanations are couched in terms of an acceleration in the rate of productivity growth that is due to an increased rate of technical progress, or a more rapid embodiment of best-practice techniques, but these explanations are not wholly convincing, given that the investment data also show no association with productivity growth rates over this second period.² Thus it is too soon to be sure whether the break-down of the relationship is permanent, or in some sense cyclical (but lasting longer than would usually be the case). While the hypothesis that the old relationship may re-assert itself, may be criticised, it was felt that it would be even more dangerous to assume that the *new* relationship, or non-relationship, would hold in perpetuity. Indeed, the regression equation for the latter period suggests that output can grow at a considerable rate in perpetuity without employment growing at all.

5.24. Whatever the explanation is for the absence of the relationship, across countries, between the rate of growth of output and the rate of

¹The National Institute in the UK, for example, was inclined to interpret the acceleration of productivity growth in UK Manufacturing, from 2.5% per year to 4.0% per year, in these terms.

²Note that, in the regression equation at the foot of Table 5.5, the coefficient of the I/Q term is smaller than its standard error.

TABLE 5.5

Growth rates of manufacturing output, employment and productivity, and the average value of the manufacturing investment-output ratio, various countries, % per year, Period 2

Country	Period	Output q	Employment e	Productivity p	Investment-output ratio I/Q
Japan	1964-72	10.90	2.10	8.80	29.06
West Germany	1965-73	4.89	0.20	4.69	15.90
Italy	1963-73	6.29	0.89	5.40	13.70
Australia	1966-73	4.90	1.31	3.59	16.64 ¹
Denmark	1965-73	4.82	-0.39	5.21	9.45
Netherlands	1965-73	6.49	-1.21	7.70	19.20
France	1964-73	6.16	1.16	5.00	18.12
Canada	1966-73	5.00	1.78	3.22	15.91
Austria	1966-73	5.99	-1.29	7.28	12.62 ²
Ireland	1964-73	5.4	1.3	4.1	18.68
Belgium	1964-73	6.03	0.08	5.95	19.34
Norway	1965-73	4.12	0.07	4.05	18.90
United States	1966-73	4.10	0.44	3.66	13.43
United Kingdom	1965-73	2.87	-1.12	3.99	12.85

¹1966-71 only.

²1966-69 only.

Summary regression:

$$e = -1.76 + 0.133 q + 0.075 I/Q \quad r^2 = 0.290$$

$$(1.09) (0.251) (0.099) \quad n = 12$$

Source of data: See Appendix 1.

growth of employment in the second period, it poses a considerable problem when the task is to try to assess the employment demands that a growing manufacturing sector will impose in the future. On balance, it would seem prudent to assume that in the future rapid growth of manufacturing output would require growing employment in something like the manner exhibited by all countries over the post-war period up

to about 1965.¹ This may be pessimistic, in that the rapid productivity growth rates of the last 8 years or so, accompanying generally lower rates of growth of output than used to be the case, may continue into the future. But to the extent that that proves to be the case, the procedure of adopting the "seven tenths" rule will underestimate the growth of productive potential in the future, and it is a deliberate policy throughout this report to err on the conservative side. Certainly the growth of employment in Irish manufacturing in the second period, as in the first, is broadly consistent with this rule of thumb: given the output growth rate of 5.4% per year and an average investment-output ratio of 18.7%, the equation used for the first period would predict, for the second period, a rate of growth of manufacturing employment of 1.1% per year, which compares quite closely with the actual rate of 1.3%.

The Commerce sector

5.25. This section examines the employment demand of the next large sector, Commerce. In the previous chapter, it was shown that the rate of growth of the output of the Commerce sector is apparently closely determined by, and approximately equal to, the rate of growth of output of the goods-producing sectors, Agriculture and Manufacturing. In this section it will be shown that the rate of growth of productivity in Commerce is fairly closely determined by, and with a few exceptions fairly close to, the rate of growth of productivity in manufacturing.

5.26. General reasons why Commerce productivity should increase in the long run are not hard to find. Reddaway, for example, writing about

¹As emphasised earlier, it may be preferred to substitute an alternative relationship between output growth and employment growth in Manufacturing, derived from some other source, such as Irish time series data. It would seem unlikely, however, that a production-function approach of this kind would yield a markedly different conclusion. Further, the hope is that Ireland will grow differently in the future from the way it did in the past—certainly if 'differently' is taken to mean 'faster'. To that extent, past evidence, gleaned from time series data, could be misleading. It is likely that a substantial part of total new investment in the Irish economy will be from abroad, using technologies appropriate to and developed in overseas countries. To the extent that this is so, it may be more appropriate to use a relationship derived from the behaviour of those economies than a relationship derived from the past behaviour of the Irish economy.

the United Kingdom in the First Report of the Selective Employment Tax, stated that

"... there (is) a reasonable expectation that productivity (will) show an upward trend over any period of a decade or more, reflecting the introduction of improved methods, sometimes involving additional capital per worker."¹

If these two sources of labour productivity growth are taken as the most likely sources, the interesting question is the extent to which each of the two phenomena contributes to an explanation of the systematic cross-country relationship, seen in Table 5.6, between the rate of growth of productivity in Commerce and in Manufacturing. Empirical investigation of this question unfortunately runs into difficulties. Capital stock data compiled on the necessary uniform basis are not available for Commerce in most countries, so that it is not possible to examine accurately the extent to which differences in the rate of growth of capital per worker in this sector could explain variations in the rate of productivity growth. Some data on gross investment are published by the OECD for some member countries, but the accuracy of these data is questionable, and so the issue of the importance of capital accumulation for labour productivity must therefore remain open for the present. But it should be noted that even if it were to be found that differences in the rate of Commerce productivity growth could be explained by differences in the rate of capital accumulation, it would then be necessary to explain why there has been a systematic tendency for countries with rapid manufacturing productivity growth to have high rates of capital accumulation in Commerce.

5.27. An alternative explanation for the close association between the rates of productivity growth in Commerce and in Manufacturing, and which places less emphasis on the role of capital, is to be found in the theory of imperfect competition. The argument is that retailers and wholesalers are imperfect competitors, each being a substitute but not a perfect substitute for his rivals. Consequently, the profit-maximising retailer charges a price by setting a mark-up on his marginal costs, the

magnitude of the mark-up being determined by the price elasticity of demand for the goods he sells. In such a circumstance a wholesaler or retailer, faced with an increase in an overhead cost item, would not raise his margin in an attempt to pass on the cost increase, because the margin was already set at the profit-maximising level. He would therefore, in the short run, have to endure reduced profit, and in the longer run would seek with renewed vigour to indulge in improved techniques of production.

5.28. The argument then runs that much of the labour employed in wholesale and retail activities is essentially overhead labour. Over time, as productivity rises in the Manufacturing sector, real wages rise too, both in Manufacturing and, through the broad maintenance of traditional differentials, in Commerce too. This increase represents an increase in the price of an overhead item of costs (labour) relative to the major item of marginal costs, goods. This would tend secularly to reduce sellers' profits, except that they progressively spread their overhead item (labour) over more and more units of output, thereby increasing the productivity of labour, through the introduction of self-service shops of increasing size, leading ultimately to the supermarket.

5.29. The crucial difference between the two explanations is that in the first, increases in labour are exogenous to the Commerce sector, whereas in the second increasing labour productivity is *induced* by the rising level of real wages in the economy in general and Commerce in particular. To the extent that the second theory does represent an important element of the behaviour of the Commerce sector, then the correlation seen in Table 5.6 is understandable, for it is the countries that have the most rapid increase in industrial productivity that have the most rapid increase of money wages relative to wholesale prices.

5.30. The high degree of correlation between the rate of productivity growth in Manufacturing and Commerce is shown by the quite high value of 0.876 of the correlation coefficient of the regression equation at the foot of Table 5.8: the value of the coefficient of 1.135 suggests that typically an acceleration of 1 percentage point per year in the rate of manufacturing productivity growth would be accompanied by a

¹Reddaway (1970) page 83.

slightly greater acceleration (1.1%) in the rate of growth of productivity in Commerce.¹

5.31. The rate of growth of productivity in Commerce in Ireland has been broadly in line with this experience. For the first period, when manufacturing productivity grew at 4.3% per year, (see Table 5.7), the equation would predict a rate of productivity growth of 2.1% per year, which accords quite closely indeed with the actual rate of 1.9% per year.² For the second period, however, the equation would predict, given the manufacturing productivity growth rate of 4.1%,³ a commerce

TABLE 5.6

The rate of growth of labour productivity in Commerce and Manufacturing full period, per cent per year

Country	Period	Productivity growth rate	
		Commerce	Manufacturing
Japan	1954-72	7.4	8.3
Ireland	1955-73	3.2	4.0
Austria	1951-73	4.6	5.1
West Germany	1951-73	3.1	4.7
Netherlands	1951-73	3.4	5.5
Italy	1951-73	4.0	5.2
France	1951-73	2.7	4.6
Norway	1951-73	2.1	3.8
US	1951-73	1.6	3.0
Belgium	1951-73	2.2	4.9
UK	1951-73	1.9	3.0
Canada	1951-73	0.4	3.0

Summary regression:

$$P_{\text{comm}} = -2.23 + 1.135 p_m \quad r^2 = 0.876$$

$$(0.69) \quad (0.142) \quad n = 11$$

Source of data: See Appendix 1.

¹Note however, that given the size of the standard error, the coefficient is not statistically significantly different from unity.

² $(1.135 \times 3.8) - 2.23 = 2.1$.

³See Table 5.8.

TABLE 5.7

The rate of growth of labour productivity in Commerce and Manufacturing first period

Country	Period	Productivity growth rate, % per year	
		Commerce	Manufacturing
Japan	1953-64	7.3	8.0
Austria	1951-66	4.3	4.0
West Germany	1951-65	3.8	4.7
Netherlands	1951-65	3.4	4.3
Italy	1951-63	3.2	5.1
France	1951-64	2.5	4.4
Norway	1951-65	2.1	3.6
United States	1951-66	1.9	2.8
Ireland	1955-64	1.9	3.8
New Zealand	1954-65	1.6	3.2
Belgium	1951-64	1.4	4.2
United Kingdom	1951-65	1.4	2.5
Canada	1951-66	-0.6	2.9

Source of data: See Appendix 1.

TABLE 5.8

The rate of growth of labour productivity in Commerce and Manufacturing, second period

Country	Period	Productivity growth rate, % per year	
		Commerce	Manufacturing
Japan	1964-72	7.6	8.8
Ireland	1964-73	4.6	4.1
Austria	1966-73	5.1	7.3
West Germany	1965-73	1.9	4.7
Netherlands	1965-73	3.4	7.7
Italy	1963-73	5.0	5.4
France	1964-73	2.9	5.0
Norway	1965-73	2.1	4.0
US	1966-73	1.1	3.7
Belgium	1964-73	3.4	6.0
UK	1965-73	2.7	4.0
Canada	1966-73	1.4	3.2

Source of data: See Appendix 1.

growth rate of 2.4% per year, whereas the actual rate was 4.6% per year. In an equation such as this, when a predictive equation performs badly, it is always tempting to blame the data, especially in a case such as this where the Commerce output data were obtained not from official sources but from inevitably somewhat *ad hoc* estimates compiled by the author.¹ On the face of it, the author's estimates of the growth of productivity in Commerce for the second period might seem too high. Given that the employment figures are likely to be fairly accurate, this in turn implies that the Commerce output growth rate may be too high for the second period: certainly, on the basis of the rate of growth of the output of the goods-producing sectors, a rate of growth of Commerce output of about 2.7% per year would be expected, rather than the 4.4% figure. A 2.7% figure for output growth, taken together with the recorded 0.2% per year decline in Commerce employment, would imply a Commerce productivity growth rate of about 2.9%, which is quite believable.

5.32. It would therefore seem that the precise rate of growth of output, and hence productivity, in Commerce is in doubt, and is likely to remain so for some time, particularly for the second period. For planning purposes, however, it would seem plausible and sensible to assume that in Commerce productivity will grow in the future at about the same rate as productivity in Manufacturing. As time passes the Manufacturing sector will get progressively larger in relation to the Agricultural sector, so that the output growth rate of the goods-producing sector as a whole will approximate that of Manufacturing. This in turn implies that the Commerce growth rate will approximate that of Manufacturing, so that the employment growth rate in Commerce will settle down to much the same figure as the rate of employment growth in Manufacturing.

Transport and Communication

5.33. The question of the employment requirements of the Transport and Communication sector is now examined. Transport is an activity which, like much of Manufacturing, offers considerable scope for economies of scale, and a wide range of techniques is frequently observed in simultaneous operation. On air routes which move relatively

¹See Appendix 2 for details.

small numbers of people, small planes, each necessarily with a pilot and stewardess, are used. On more densely-used routes, larger planes can be used, with many more people being carried without a proportionate increase in transport employment. Similar economies of scale are evident in surface transport—for example, with the increased capacity resulting from the introduction of car ferries, container vessels and automated freight terminals. Railway and road transport are also subject to considerable interesting returns, so that the rate of productivity growth in transport is in large part determined by the rate of growth of load size. To a certain extent increasing returns can be expected to be characteristic of Communication, too, which is included with Transport in the sectoral national accounts of OECD countries.

5.34. This broad expectation is borne out by the cross-country data: it can be seen from Table 5.9 and from the regression equation at the foot of the Table that there has been a systematic tendency across countries for employment growth to be more rapid in the Transport and Communication sectors that have been growing fast. Employment growth has not been in proportion to output growth, but typically has been proceeding at about six tenths of the rate, reminiscent of the "seven tenths" relationship found for Manufacturing in the first part of the post-war period.

5.35. Further, the fairly high value, -2.0 , of the constant term in the equation suggests that, in addition to the productivity growth that has been systematically associated with output growth, there has also been a not inconsiderable amount of productivity growth that is apparently independent of the rate of output growth.

5.36. The growth of output in the Transport and Communication sector in Ireland has been relatively rapid by international comparison: at an average rate of 5.9% per year, this sector has been growing more rapidly in Ireland than in any of the other OECD countries except Japan, Italy and Norway.

5.37. On the basis of the cross-country evidence, an employment growth rate of 1.6% per year would be expected.¹ The actual situation

¹ $(5.9 \times .610) - 2.0 = 1.6$.

TABLE 5.9

Rate of growth of output and employment in Transport and Communication, full period

Country	Period	Rate of growth, % per year	
		Output	Employment
Japan	1953-72	8.39	3.31
Italy	1951-73	6.08	2.70
Norway	1951-73	6.01	0.66
Ireland	1955-73	5.9	0
Netherlands	1951-73	5.43	0.67
Austria	1951-73	5.52	0.79
West Germany	1951-73	4.56	0.35
Canada	1951-73	5.13	1.66
US	1951-73	3.99	0.11
France	1951-73	4.25	1.08
Belgium	1951-73	3.70	0.84
UK	1951-73	2.57	-0.59

Summary regression:

$$e = -2.0 + 0.610 q \quad r^2 = 0.689$$

$$(0.7) (0.137) \quad n = 11$$

Source of data: See Appendix 1.

was zero employment growth over the period, so that productivity growth proceeded more rapidly, by 1.6 percentage points per year, than would have been expected. This is possibly due to the rapid growth and the relatively large weight of air transport in Ireland, a sector in which rates of capital formation and hence rates of labour productivity growth are typically high. In assessing the employment requirements of the Irish Transport and Communication sector in the future, it would probably be best to assume a productivity rate that lies between the prediction of 4.3% generated by the cross-country equation on the one hand, and the more rapid recent Irish experience of 5.9% on the other: this range is not particularly wide, so that it would seem that the employment requirements of this sector can be assessed with a reasonable amount of certainty by assuming a productivity growth rate of about 5% per year.

5.38. The remaining sector to be considered in this chapter is Private and Public Services, otherwise known in the literature as "Other Services". In the previous chapter, which considered the rate of growth of output, sector by sector, it was pointed out that conceptually, and hence in practice, it is impossible to measure the rate of output growth in virtually the whole of the "Other Services" sector. Published estimates are usually compiled on an *ad hoc* basis, from curious and often unstated assumptions about the rate of growth of productivity.

5.39. Given therefore that the rate of growth of output in "Other Services" cannot be considered independently of the rate of growth of productivity, consideration of both output and productivity growth in Other Services was deferred until this chapter. The question is now considered.

The Growth of Output in "Other Services"

5.40. The study of output and productivity growth in this sector presents a severe conceptual problem. Whereas in all the other sectors of the economy the rate of growth of output is obtained from the evidence of physical output indicators, in the case of Other Services this is not possible. The output produced is not physical in nature; it cannot be weighed, or measured for length or volume. The procedure usually adopted by statisticians is instead to infer the rate of growth of output from the rate of growth of input, and the input which is most frequently used is employment, so that any discussion of labour productivity based on the evidence of employment and output data would be meaningless, the output data having been inferred from the employment data in the first place.

5.41. The problem of adequately representing the growth rate of Other Services is therefore considerable, yet it has to be dealt with because the sector is an important one. In Ireland the sector employs about 25% of the entire labour force,¹ and produces about 28% of measured GDP.²

5.42. It was assumed, in an initial attempt to compile the sectoral output accounts for this report, that the rate of growth of output in

¹1974—See Appendix 4.

²1973—See Appendix 2.

Other Services was equal to the rate of growth of employment, it thereby being assumed that the rate of growth of labour productivity in Other Services was zero. But the assumption of zero productivity growth in Other Services implied a rate of growth of output that was lower than that implied for "Other Services" in the Official National Accounts. Accordingly, in the compilation of the GDP by sector of origin accounts given in Appendix 2, an output growth rate was chosen for "Other Services" such that the overall Service Sector accounts in Appendix 2 were consistent with the official accounts: this procedure implies output growth rates for "Other Services" of 1.7% per year over the first period (1955–64) and 2.9% per year over the second period (1964–73), with productivity growth rates for the two periods of 1.7% per year and 1.1% per year respectively. It will be shown below that these output growth rates for "Other Services" implied in the National Accounts would seem to be on the low side: while the method of their derivation in the official accounts is almost certainly essentially arbitrary, it is important to recognise that virtually all other high *per capita* income countries, while recognising the difficulty of measuring the true rate of output growth in Other Services, *attribute* positive productivity growth in this sector. The consequence is that the rate of growth of Service sector output and hence of total GDP in Ireland is measured as being lower than would be the case if customary conventions were followed. These two matters are investigated below.

The growth of productivity in "Other Services"

5.43. While physical measures of output for many service activities have not been constructed and very likely cannot be constructed, it would seem likely, considering the nature of many of these activities, that at least some growth of labour productivity has taken place over the years, sometimes through the substitution of capital for labour, and sometimes through improved methods of organisation. In the provision of lodging accommodation and food, the installation of more modern cookers, cleaning equipment, and other machinery such as dish-washers will almost certainly have served to increase labour productivity.

5.44. Laundries and dry-cleaning establishments characteristically become bigger over time, installing larger and more automated equip-

ment, and in the management of parks and reserves capital equipment such as tractors, mechanical wheelbarrows and automatic watering equipment is used more than used to be the case. In hospitals, medical centres and in dentistry, processes become more capital-intensive over time, and, in teaching the use of books, films and television has spread, increasing the effectiveness of teachers. In all activities such as this it would seem that an assumption of zero labour productivity growth would be an unreasonable one.

5.45. Yet at the same time it must be recognised that it is in the nature of many other service activities that what is being purchased is essentially the services of a man for an hour. To the extent that this is the case then, by definition, the rate of labour productivity growth truly is zero. Baumol's famous example of the horn quintet, while it is a very special case, illustrates this kind of service: what is essentially being purchased by a ticket for a live performance is the right to hear the stipulated number of players perform the work in question at the speed recommended by the composer. Any attempt to increase the players' "efficiency" either by reducing their numbers or by increasing the rate at which they play, would be met with resistance and would not be deemed to be a genuine increase in productivity.

5.46. In the light of such arguments, it would perhaps seem reasonable to suppose that productivity growth *has* taken place in some parts of the large Service sectors, but that the overall rate of growth of productivity has not been as high as in many of the other sectors.

5.47. Such a view would not, however, be shared by all those who are engaged in estimating the rate of growth of service-sector output and output per head. Table 5.10 below gives the rates of growth of measured output, employment and productivity in the Other Services sector (New ISIC divisions 8, 9 and 0) for the various OECD countries whose output and employment data can be appropriately subdivided. There are two extreme cases of particular interest; these are Germany and Canada. In Germany, the rate of growth of output in Other Services was measured as being 6.4% per year between 1962 and 1965, and 5.2% between 1965 and 1973. Taken in conjunction with employment growth rates in this sector of 1.8% and 2.2% over the same periods, this

implies rates of productivity growth of 4.6% per year and 3.0% per year. The first of these two values in particular would appear to be extremely high, and it is not clear why there should be such a discrepancy between this rate and the second rate, given that the two were obtained for adjacent periods of time.

5.48. At the opposite extreme is Canada, where measured output in Other Services grew at 5.1% per year between 1961 and 1966 and at the same rate between 1966 and 1970. Taken in conjunction with employment growth rates of 5.6% and 4.8%, these output data imply *negative* productivity growth in the first period, and a positive rate in the second. This result is on the face of it particularly odd, for it is hard to imagine that the productivity of any employees actually fell, over the period, and it is very hard indeed to believe that the *overall* level of labour productivity declined. Various other countries are scattered between these extremes of high positive productivity growth and slight negative productivity growth: Ireland, according to the Official Statistics, had an average rate of productivity growth in "Other Services" of 1.4% per year, which is markedly lower than the rates claimed for West Germany, France, Belgium, and Norway. Thus there appears to be considerable variation in the extent to which different countries attribute productivity growth to Other Services.

5.49. It is informative that the United Kingdom, a country which probably more than any other has made a strenuous attempt to find physical indicators with which to represent the rate of growth of Service productivity, attributes a relatively low rate of productivity growth to this sector. Indicators used in the United Kingdom include the number of income tax assessments handled by accountants, a weighted average of various kinds of cases tried in Courts of Justice, the number of grants of probate, numbers of hospital and nursing home patients, the number of children inspected by the school medical service, a weighted average number of dental treatments, the number of admissions to cinemas, and a weighted average of radio and television licences.¹ Despite this considerable ingenuity, it was apparently impossible to avoid, in a

¹This list is not exhaustive—see CSO "The index of industrial production and other output measures", pages 30–31.

accounted for 40% of total employment and 36% of total GDP in Ireland in 1973, suggest that typically employment grows at about six tenths of the rate of growth of output, given customary investment levels. In turn, this implies that typically productivity in these sectors grows at about four tenths of the rate of growth of output. It is not possible to be sure, and therefore not wise to assert, that these relationships will persist into the future, but they may, and to the extent that

TABLE 5.11

Growth rates of output, employment, and productivity, Ireland, % per year, 1955-64¹

	q	e	p
Agriculture	1.3	-2.5	3.8
Mining and quarrying	6.1	-1.2	8.3
Manufacturing	4.9	1.1	3.8
Public Utilities	6.1	-1.0	7.1
Construction	2.5	0	2.5
Distribution	1.9	0	1.9
Transport and Communication	6.2	-0.8	7.0
Other Services	1.7	0	1.7
GDP	2.6	-0.8	3.4

Growth rates of output, employment, and productivity, Ireland, % per year, 1964-73

	q	e	p
Agriculture	1.6	-3.2	4.8
Mining and quarrying	9.3	0	9.3
Manufacturing	5.4	1.3	4.1
Public Utilities (to 1972)	7.1	1.7	5.4
Construction (to 1972)	4.2	0.6	3.6
Distribution	4.4	-0.2	4.6
Transport and Communication	5.6	0.9	4.7
Other Services	2.9	1.8	1.1
GDP	4.0	-0.1	4.1

Source of data: Calculated from "GDP by sector of origin" (constant prices) accounts, compiled in part by the author—see Appendix 2.

¹See Appendix Tables 2 and 4.

they do the implication is that in Ireland, as in other countries, the faster output grows in these sectors, the faster too will productivity grow. This in turn implies an increase in the tax base *per capita*, and as such represents the one painless way by which a Government can increase its tax revenue *per capita*.

5.54. To the extent that the labour flows into Manufacturing, Transport and Communication and Commerce are a necessary condition for growth, it follows that Ireland could experience rapid growth of output and output per head only if the requisite labour was forthcoming. On this score, however, it is readily apparent that Ireland is, by international comparison, particularly well endowed. Consider the following illustration.

5.55. Typically employment growth in the sectors that require it comes from four major sources: an increase in the number of people of working age (assuming a constant participation rate), net migration, the release of labour from Agriculture, and, in cases, a reduction in the number of unemployed. It is therefore instructive to see how much labour is available from these four sources, on a standardised set of assumptions, in the various OECD countries considered throughout this report. The standardised assumptions are:

- (a) That net migration is zero. Hence, in the case of countries like Germany and France, that have experienced net immigration, this figure is subtracted from the increment to the number of people of working age. In countries like Ireland, the United Kingdom, and Italy, which have experienced net emigration, this figure is added.
- (b) That labour is released at such a rate over a ten-year period that in all agricultural sectors other than that of the United States, labour productivity at the end of the ten-year period is as high as it was in the United States at the beginning of the period.
- (c) That unemployment over the period in each country is reduced to the rate prevailing in the country with lowest unemployment,

5.56. The amount of labour potentially available from the four sources under the three standardised assumptions given above is then expressed as the rate at which manufacturing employment could grow, if all that labour were to go into manufacturing: in practice, of course, not all of this labour would go into manufacturing, but the purpose of normalising the potential growth of the labour supply in this way is to show how large this increment in the labour supply is in relation to that large sector. The results of this calculation¹ are given in Table 5-12.

5.57. The striking feature is how high Ireland is in the list: in both periods the potential supply of labour from the increase in the number of people of working age, from the assumption of zero net migration, from the reduction of unemployment to a standardised level, and from the assumed decline in employment in Agriculture, is greater, in relation to the numbers employed in Manufacturing, than in any country other than Japan. Further, not only is Ireland nearly at the top of the table for both periods, but the Irish figures (11.7% per annum for both periods) are on average no less than six times those of the lowest country, the United Kingdom, and over twice the average of *all* the other countries.

5.58. The assumptions underlying this illustration are of course quite arbitrary, but the conclusion appears to be quite robust. For example, if it is assumed that the end-of-period productivity level in Agriculture in each country is not the base-year level in the United States, which might seem to be a rather extreme assumption, but is instead the *average* level prevailing in the base period for the seven countries (including Ireland) with below-average agricultural productivity, the conclusion is much the same. The Irish figures for the two periods are 11.4 and 9.5, which still place Ireland second in both periods in a series with much the same spread as Table 5.12.

5.59. The potential for employment growth in the sectors which typically absorb labour as output expands has therefore been tremendous in Ireland over the post-war period. Further, the labour force and participation rate projections prepared by Brendan Walsh,² show that

¹Details are given in Appendix 3.

²Walsh (1974), page 14.

TABLE 5.12

Potential growth rate of employment in Manufacturing, % per year: for assumptions see text.

Japan	1953-64	13.7	1964-72	10.6
Ireland	1955-64	11.7	1964-73	11.7
Italy	1951-63	10.9	1963-73	5.3
Germany	1951-65	4.9	1965-73	0.2
Austria	1951-66	8.0	1966-73	4.9
France	1951-64	2.3	1964-73	5.2
Denmark	1954-65	6.2	1965-73	5.5
Netherlands	1951-65	4.2	1965-73	2.6
Belgium	1951-64	3.1	1964-73	2.4
Norway	1951-65	5.0	1965-73	6.4
Canada	1951-66	5.8	1966-73	9.7
UK	1951-65	2.4	1965-73	1.7
US	1951-66	3.5	1966-73	7.2

Source: See Appendix 2.

Ireland's labour force is likely to grow at a considerably more rapid rate than in most EEC countries for at least another decade: taken in conjunction with the relatively large size (in terms of employment) of Agriculture in Ireland, the implication is that in Ireland, over the medium term, those sectors which typically seem to need to expand employment as output grows *could* grow at a rate rivalling that experienced by Japan over the post-war period.

5.60. It must be emphasised at once that this is a statement only about *potential*: a host of other conditions, particularly appropriate investment levels and the requisite rate of growth and type of demand would also have to be experienced. These are considered in the next chapter. But it is most instructive to see that, judging by the experience of other OECD countries over the post-war period, the potential for economic growth in Ireland, as far as the labour-supply-side is concerned, is probably greater than any OECD country other than Japan. If even part of this growth in employment and output could be realised, output per head, and hence the tax base per head, would almost certainly increase at a dramatic rate.

CHAPTER 6

THE INFLUENCE OF OTHER SUPPLY-SIDE FACTORS AND OF DEMAND ON THE GROWTH OF OUTPUT AND PRODUCTIVITY

6.1. The previous chapter concluded that as far as the supply of labour is concerned, Ireland has probably more potential for economic growth than any major OECD country other than Japan. Merely having the potential, however, is not enough to bring about rapid growth: a host of other supply-side characteristics have to be present, and there has to be the requisite rate of growth of demand. These two groups of influences are considered in turn in this chapter.

The influence of supply-side factors other than labour

6.2. So far in this report, labour has been talked of simply as the number of people potentially available for employment. It could easily be objected that the quality of the labour force, the skills possessed by the labour force, the willingness of the labour force to adapt to new techniques and a host of other such important considerations have not been discussed, and the point would be well made. Unfortunately, data on issues such as these are not available, particularly in a form that would enable cross-country comparisons to be made. Consequently the importance of such matters becomes a subject of conjecture.

6.3. Two points can be made, however. First, the level of education and the adaptability of the populace is, by international standards, quite high. Further, it is quite clear that many of the people who emigrated in the 1950s and 1960s and who have acquired skills could be attracted back to Ireland to augment the domestic supply of skilled labour. Second, while the importance of the labour force having the

requisite skills cannot be denied, nevertheless the experience of both France and Germany over the last 15 years or so has been most illuminating. Both these countries, as the labour-supply calculations at the end of the previous chapter showed, had a strictly limited labour-supply potential domestically by the end of the 1950s or the beginning of the 1960s. Both, for demand-side reasons that will be considered below, elected to continue their rapid growth of GDP and of employment, and so admitted foreign workers in such numbers, that these workers now account for over 10% of total employment in both these countries.

6.4. These workers were, upon arrival from Turkey, Yugoslavia, Portugal, North Africa, and so on, comparatively unskilled. Further, they were for the most part unable to speak anything but the most rudimentary French or German. Notwithstanding these initial problems, "guestworkers", as they are somewhat euphemistically called, contributed considerably to the growth of output, in some of the most modern and sophisticated factories in Europe. Judged against these standards, the problems of employing Irish workers in Ireland would appear to be minimal!

6.5. A more fundamental question than the particular initial attributes of the labour force is the supply of capital: it is patently clear that if output, and particularly manufacturing output, is to expand at a high rate, capital formation in the shape of buildings, plant, equipment and so on will have to take place on an appropriate scale. The importance of capital formation is intuitively obvious, it features prominently in virtually all theoretical discussions of economic growth, and as was seen in the previous chapter there is also convincing evidence that a higher share of reinvestment permits a higher rate of growth of manufacturing output in relation to employment. A crucial question therefore is how to bring about an appropriately high level of capital formation.

6.6. It is important to recognise that while at any particular instant an economy may be at or near the point where the level of its output is constrained by the currently-available stock of capital equipment, over time the magnitude of the capital stock, and hence the level of actual or potential output, can apparently be changed dramatically. This can

happen in either (or both) of two basic ways. First, there is strong evidence from the time series behaviour of most industrial countries that, in a period of rapidly rising output levels, businessmen are moved to add to their productive capacity: on the financial side, this requires an appropriate level of retained profits or an appropriate supply of loanable funds. On the real side, this requires that some of the additional output, which generates the desire for more capacity, be devoted to providing that capacity. Clearly, viewed from the supply side, growth can be a self-sustaining process, with extra output providing at one and the same time the motive for investment and the wherewithal to carry it out.

6.7. The second phenomenon that may permit the capital stock to grow rapidly on occasion is capital inflow from abroad. The economic significance of this monetary phenomenon is that it allows the country experiencing the money capital inflow to purchase physical plant and machinery from abroad. In the case of big countries, such as the United States and, to a large extent, Germany, Japan and the United Kingdom, capital inflows cannot contribute enormously to economic growth because the capital requirements of any one of these countries for, say, a one percentage point increment to their growth rate would represent a sizeable fraction of the output of the capital goods industries of the rest of the world. But in the case of a smaller country, such as Ireland, a capital inflow of quite small dimensions in relation to the output of even just one big OECD country would represent a substantial increment to the capital stock of Ireland. It is perfectly feasible on supply-side considerations, therefore, for Ireland's productive capacity to grow rapidly on the basis of imported capital.

6.8. This is not to say that capital inflow is always and unequivocally regarded as a good thing. Capital inflow generally carries with it the obligation to permit the repatriation of profits, which is not always politically popular, and of course the ownership of the capital rests abroad rather than at home. But as a means of accelerating the rate of industrialisation in a small country, foreign capital inflow is often hard to beat: in addition to providing the equipment and the expertise with which to operate it, foreign firms frequently provide, indeed generally necessarily provide, considerable product and market expertise which is invaluable if the output is to be sold abroad. In the case of Ireland,

foreign capital inflow is required in the main for companies exporting their produce and so when it comes to the repatriation of profits in foreign currencies to parent companies abroad the balance of payments is not burdened to the extent that profits are derived from export earnings.

6.9. A situation of growing output is generally accompanied by rising imports, for two reasons. First, manufactured output contains a substantial amount of raw material input, and to the extent that these raw materials are not available domestically, they have to be imported. Typically this is quite a systematic relationship: in the United Kingdom, for example, the ratio of the volume of imports of raw materials to the volume of manufacturing output has remained almost exactly constant over the entire post-war period.¹ The second reason for the increase in imports comes from the fact that as output rises, income rises with it. Typically consumers, investors (in the sense of those who add to the productive capital stock) and the Government spend a proportion of their income on imported goods, especially imported manufactures.

6.10. Further, the proportion of each *increment* of income that is spent on imports is generally greater than the average share of imports in income, so that in a situation where rapid growth of output and income is desired, a really rapid growth of imports has to be planned for. This phenomenon of a high income elasticity of demand for imports of manufactures is a particularly difficult phenomenon for a Government to frustrate, because under GATT, Kennedy Round, and more recently EEC rules Governments are committed to what is virtually free trade in manufactures. The question of providing for the rapid growth of imports that will almost inevitably result from a rapid growth of manufacturing output is returned to below, at the conclusion of the next section, which considers the other vital element in economic growth, the securing and maintenance of a high rate of growth of demand.

The role of demand in economic growth

6.11. The emphasis so far has been on the role of supply-side factors in the process of economic growth: on all the international evidence

¹See Godley and Nordhaus (1972), Appendix "Table of Identities".

available, it would seem that rapid sustained economic growth of output and output per head is inachievable if the supply-side conditions that have been discussed above are not met. At the same time, however, it is also apparent that merely meeting all the supply-side conditions is not enough to ensure rapid growth, for an adequate supply potential, while being an apparently-necessary condition for growth, is not a sufficient condition: a further necessary condition is a rapid growth of demand.

6.12. At one level it is a mere truism to say that rapid growth of output is always accompanied by rapid growth of demand, because it is obviously necessary that, if producers are to go on producing, and at an ever-increasing rate, their output has to be sold. No producer is going to expand capacity in order to produce primarily for stock, and certainly no economy is likely to experience stock-led growth for any great length of time. However, in order for an economy to grow at a high rate, it is necessary (supposing of course that it has the potential on the supply-side) not only to have a rapid growth of demand, but also to have rapid growth of the right components of demand.

6.13. It was demonstrated in Chapter 4 that the demand for much of the output of many sectors of the economy is derived demand, being a necessary concomitant to the demand for physical goods, and in particular manufactured goods. It follows that if policy is to be directed to increasing the level of demand, with a view to increasing the level of output, it is important that much of the demand should be directed at the manufacturing sector: such demand will automatically spill over into demand for output produced by Commerce, Transport and Communication, and to a certain extent Construction as well.

6.14. This is not to say that GDP cannot be increased by expanding demand for the output of such non-goods-related sectors as for example, the Civil Service, Education, and the Welfare Services. But the scope for such growth would appear to be limited, if only because these sectors constitute a relatively small part of the overall economy. It was shown in Chapter 5 that typically in OECD countries, and the Irish experience conformed to this, three quarters or more of total employment is in the goods-producing sectors (Agriculture and Manufacturing) or in the sectors which experience derived demand from the goods-

producing sectors. Further, it is interesting to note that there is no case, over the post-war period, of a country experiencing growth led by the non-goods-producing or non-goods-related sectors: it was seen at the end of Chapter 5 that in most of the OECD countries the proportion of employment in Private and Public ("other") services actually *fell* over the post-war period.

6.15. It therefore does seem reasonably certain that rapid growth of GDP and GDP per head in Ireland would have to be led by rapid growth in the demand for goods, which in practice would almost certainly, for the reasons discussed in Chapter 4, mean manufactures. There is, however, one further aspect of the role of demand that has to be considered.

6.16. Economic growth is accompanied by rising real incomes, and a proportion of this increase in income is typically spent on imports. The proportion of the growing income that is spent on imports depends upon the capacity of the home economy to supply the range of goods demanded: as was noted earlier in this chapter, many raw materials have to be imported, because they simply are not available domestically, and in addition at least some incremental income is typically spent on imported manufactures. If a rapid growth of real incomes is to be sustained, therefore, it is necessary that the country's foreign currency receipts should increase rapidly in order to pay for the rapidly-rising imports.

6.17. In the larger OECD economies, which typically are not in receipt of large (proportionately speaking) capital inflows, the necessity for growing foreign exchange receipts becomes in turn a necessity for growing exports: indeed it is one of the most striking features of post-war economic growth that there has been a very high correlation indeed between the rate of growth of a country's exports of manufactures and the rate of growth of its manufacturing sector.¹ This can be seen from Table 6-1, which presents data for the nine OECD countries for which the requisite data are available. The closeness of the correlation can be observed from the equations in Table 6-2, which are presented for both

¹And thereby, for the reasons presented in Chapter 4, between the rate of growth of a country's exports of manufactures and its rate of growth of GDP.

TABLE 6.1
Growth Rates of Manufacturing Exports (9 countries) % per year

Country	Period 1		Period 2		Full Period	
	Start-End	%	Start-End	%	Start-End	%
Japan	1953-64	17.2	1964-72	15.3	1953-72	16.9
West Germany	1951*-65	11.8	1965-73	10.7	1951*-73	11.4
Italy	1951*-63	15.0	1963-73	12.5	1951*-73	13.9
Netherlands	1951*-65	10.3	1965-73	12.3	1951*-73	11.0
France	1951*-64	8.0	1964-73	10.4	1951*-73	9.0
Canada	1951*-66	6.4	1966-73	11.0	1951*-73	7.9
Belgium (+Luxembourg)	1951*-64	8.1	1964-73	10.0	1951*-73	8.9
US	1951*-66	3.4	1966-73	8.4	1951*-73	5.0
UK	1951*-65	3.5	1965-73	4.0	1951*-73	3.7

*Data available starting on 1952.

Source: United Nations, *Statistical Yearbook*, 1962, 1964, 1966 and 1967, and United Nations, *Monthly Bulletin of Statistics*, December 1974 and March 1975.

TABLE 6.2

Country	Period 1		Period 2		Full Period	
	% _{qm}	%X _m	% _{qm}	%X _m	% _{qm}	%X _m
Japan	13.5	17.2	10.9	15.3	12.4	16.9
West Germany	8.4	11.8	4.9	10.7	7.1	11.4
Italy	7.9	15.0	6.3	12.5	7.2	13.9
Netherlands	5.9	10.3	6.5	12.3	6.1	11.0
France	5.8	8.0	6.2	10.4	6.0	9.0
Canada	5.2	6.4 5.1*	5.0	11.0	5.2	7.9
Belgium	4.8	8.1	6.0	10.0	5.3	8.9
US	3.8	3.4 2.8*	4.1	8.4	3.9	5.0
UK	3.3	3.5	2.9	4.0	3.1	3.7

Summary regressions:

Period 1	$q_m = 0.964 + 0.596X_m$ (1.032) (0.100)	$R^2 = 0.836$
	$q_m = 1.382 + 0.564X_m$ (1.039) (0.102)	$R^2 = 0.815$
Period 2	$q_m = -0.703 + 0.625X_m$ (1.436) (0.132)	$R^2 = 0.763$
Full period	$q_m = 0.381 + 0.603X_m$ (0.922) (0.088)	$R^2 = 0.871$

*Canada and the US, 1951-65.

periods in Table 6-1 and for the post-war period considered as a whole.¹ The equations show that typically over the post-war period each country's manufacturing sector has been growing at about six tenths of the rate of growth of its manufactured exports.

6.18. The relationship seems sufficiently well-determined, and sufficiently pervasive that, when taken in conjunction with the strong theoretical reasons why a relationship of this sort should obtain, it would seem reasonable to infer that Ireland too could expect rapid sustained economic growth only if it managed to secure a rapid and sustained growth of its manufactured exports. Certainly, to expect Ireland to grow rapidly *without* such rapid growth in its exports would be to expect it to grow in a way that has not been achieved, over a run of years, by any OECD country, and it would clearly be dangerous to base a growth stratagem on a requirement such as that.

6.19. For Ireland then, as for any industrialising country within the essentially-free-trade EEC and OECD environment, the demand-side requirement for a rapid growth of GDP, and hence of GDP per head, would appear to be the obtaining and the subsequent maintenance of a high rate of growth of manufactured exports. It should be emphasised that this requirement is to be interpreted at the strongest as a *necessary* condition: in no sense can it be regarded as a *sufficient* condition. If the case of the United Kingdom is considered, for example, it is quite likely that, even if it had experienced a more rapid growth of export demand over the last 25 years or so, supply-side considerations such as low investment and a relatively inelastic supply of labour might well have prevented economic growth from proceeding markedly more rapidly than it in fact did.

6.20. In Ireland's case, however, where the labour supply potential is large, it would seem that rapid economic growth stimulated and then validated by a rapid growth of manufactured exports is a distinct possibility.

¹For the first period, export growth rates for all countries other than Canada and the US are available from UN sources only from 1952. Whether 1951 or 1952 is used as the starting year for Canada and the US, however, does not affect the estimated equation unduly—to see this, compare the first and second equations for Period 1.

6.21. In concluding this chapter, one final point has to be made. The whole discussion of growth in this report has been conducted in largely aggregative terms. While the discussion has disaggregated the Irish economy into basic sectors, and thereby to a finer level than has been possible before with published data, nevertheless the degree of aggregation looks enormously broad as compared with the situation facing the individual businessman and the individual firm. To discuss the potential for growth in terms of the supply-side considerations of labour, measured simply as numbers of people, and investment, measured simply as the ratio of expenditure on capital goods to measure output, may seem to smack of an unacceptably high degree of generalisation. To discuss demand in terms of maintaining a high rate of growth of demand for exports of manufactures may seem to be begging the basic questions facing the individual exporter, who is forced with *specific* problems relating to his particular product in his particular markets.

6.22. The reasons for adopting the approach of this report therefore have to be emphasised. Essentially they are two. First, while the number of necessary conditions for economic growth is probably large, the limited availability of data, particularly good cross-country data, makes it impossible to test all but the most basic propositions concerning the causes and sources of economic growth. Second, and more important, however, is a basic point which is a corollary to the first; even with the relatively high degree of involvement in economic matters that is characteristic of governments today, their basic role still consists in most capitalist economies, and certainly in Ireland, in controlling the overall characteristics of the economics environment.

6.23. Governments can and do affect the level of demand, and the rate of change of that level: they may change the exchange rate, or at least influence its movement, so as to increase the competitiveness of exports. These policies, however well executed, do not by themselves cause growth. But what is clear is that by *not* carrying out the right policies, a Government can easily *stop* growth. Too low a rate of growth of aggregate demand, or too many reversals of policy, will very likely remove the incentives of even the most potentially optimistic entrepreneur to invest. Government policy cannot by itself cause growth, but it most certainly can stop it.

CHAPTER 7

Conclusions

7.1. The purpose of this report has been to consider the prospects for growth in the real tax revenues received by the Irish authorities over the medium term, where the medium term is defined as a period of the order of five years.

7.2. Conceptually there are three distinct ways in which real tax revenues can increase overtime. The first two assume given real income per head; real tax revenue can be increased in this situation either by increasing tax rates on the existing tax base, or by widening the tax base to include additional items. Both of these methods work, but are subject to the agreement of the electorate to their having a larger proportion of total income taken as tax. The third way in which real tax revenue can increase is through an increase in the size of the real tax base—in short, through economic growth.

7.3. The first two ways of increasing real tax revenues were considered in Chapters 2 and 3. Chapter 2 examined the evolution of the Irish tax system over the post-war period, and it was shown that while the dependence on specific duties on the four "old faithfuls" (tobacco, beer, spirits and oil) has been much reduced, nevertheless the dependence is still fairly substantial; the other quantitatively important taxes are income tax, VAT, and Rates—the full position is spelt out in Table 2.3 which shows the contribution of each type of tax to total tax revenue and the proportionate amount by which revenue from each tax would increase given an assumed 1% change in GNP¹. Chapter 3 considers the ways in which the tax revenues could be increased by increasing the rates on the existing tax base, or widening the tax base

¹It follows that the proportionate increase in total tax revenue arising from any one item of taxation is obtained by the proportionate change in GNP multiplied by the elasticity multiplied by the weight.

to take in more items of expenditure. It is argued that to increase the rates of the specific duties relative to other duties would be to increase the relative dependence of the tax system on the four "old faithfuls" which, representing as it does a substantial narrowing of the tax base would almost certainly be a retrograde step. A better, more general, proposition would be to increase income tax rates, or to increase the VAT rate. The tax base could be widened in a number of ways, but quantitatively the most important would appear to be a payroll tax, or a decrease in the number of items exempt from VAT.

7.4. It is emphasised throughout the report that neither the raising of tax rates nor the widening of the tax base is pleasant from the point of view of the electorate, and to the extent that a Government wishes to take a larger share of the electorate's income in tax than the electorate is prepared to give, the result is strife, whether manifesting itself as inflation, or in some other form. There can be little doubt that the third way of increasing tax revenues, through an increased size of the tax base as a result of economic growth, is vastly to be preferred.

7.5. The prospects for economic growth in Ireland are therefore considered, in Chapters 4, 5 and 6. Chapter 4 examines the way in which the various sectors of the Irish economy are likely, on international evidence, to evolve relative to one another. Chapter 5 considers the labour requirement that the various major sectors are likely to experience if rapid growth is achieved. This is clearly a matter for speculation, given that the concern is with something that the Irish economy has not experienced in the past. Nevertheless it would appear that, on the basis of a plausible set of relationships, between output and employment that were derived from cross-country relationships, there is enormous scope for growth in the Irish economy as far as the labour supply side is concerned. Indeed it would appear that only in Japan, of all the OECD countries, was there greater potential on this side of the equation over the post-war period to date, and the position looks as if it will be similar at least over the next decade.

7.6. There are more necessary conditions for growth than a ready supply of labour, and Chapter 5 emphasises the importance of capital in general and technology embodied in necessarily-imported capital in particular, as well as such requirements as entrepreneurship, educa-

tional standards, adaptiveness, knowledge of markets, and so on. Further, there is strong evidence that a rapid growth of exports has to accompany rapid economic growth, if only to finance the imports that necessarily grow rapidly in a quickly-growing economy.

7.7. For all these reasons, overseas investment in Ireland looks to be an extremely attractive proposition. Supplying simultaneously capital goods and technology, plus knowledge of and access to vital overseas markets, such investment could, if it was forthcoming in sufficient quantity for sufficiently long, set Ireland off on a rate of economic growth that could be towards the top of the international league. This ought to be easier to achieve than in large countries, which in order to grow fast generally have to establish, or increase the size of, their capital goods industries: the demands of Japan or Germany would have been too large to have been met by the capital goods industries abroad. Ireland, however, is small enough for this not to be a problem.

7.8. It cannot be emphasised too strongly that all this is speculative. It is necessarily so, if only because what is being discussed is the possibility of a more rapid rate of economic growth than Ireland has ever seen. Further, it is speculative because Ireland is virtually unique in the OECD world in being a small country with an apparently enormous supply-side potential for growth; there is therefore no appropriate parallel case to which to appeal. Denmark, the Netherlands and Belgium are the only possibly similar cases, but their potential on the labour supply side has almost certainly never been as great as Ireland's is and it is quite likely, given their proximity to France and Germany, that their case is better analysed in terms of the development of a region rather than in terms of the options facing a truly independent economic state.

7.9. Notwithstanding these caveats, it does appear that Ireland has a truly enormous *potential* for growth, and that exploiting this potential would represent far and away the most acceptable way of increasing the real value of Government's tax revenues. It follows from this that a considerable amount of effort could, with advantage, be devoted to establishing and then invoking the policies necessary to permit this potential to be realised.

APPENDIX 1

The sources of data

The sources of basic data which have been used in the study are Irish official publications and publications of the OECD. Irish data sources are referred to explicitly in the text or in later appendices. The OECD sources were the country tables in "National Accounts" and "Labour Force Statistics". Recent publications were used to bring up to date the data contained in "Growth in Advanced Capitalist Economies, 1950-1970" (T. F. Cripps and R. J. Tarling, University of Cambridge Department of Applied Economics, Occasional Paper 40 [CUP 1973]).

The OECD publications are the result of attempts by their statistical officers to obtain data on consistent definitions and classifications (according to UN systems) from the individual country statistical offices. GDP by sector of origin and employment are normally defined according to international conventions; in recent years, there has been a movement towards using the concept of constant purchasers values (market price) estimates for GDP and it has not always proved possible to use this definition throughout the whole period for all countries. Investment data are less comparable across countries. A detailed discussion of the data difficulties can be found in Appendix 1 of Cripps and Tarling's paper.

Growth rates were calculated as the continuously-compounding (exponential) rate of growth between peak years of economic activity. Peak years of economic activity differ slightly from country to country—see, for example, Table 4.2 and subsequent tables.

Further information on detailed points can be obtained from the authors.

APPENDIX 2

GDP by sector of origin in Ireland, constant 1988 prices (€m, factor cost)

Sectors	Years																		
	'66	'68	'67	'68	'69	'60	'81	'82	'63	'64	'65	'68	'67	'68	'69	'70	'71	'72	'73
Agric., Incl. Forestry and fishing	178.1	160.9	188.0	167.4	182.5	191.3	193.1	194.8	191.8	200.2	191.5	191.2	196.3	207.9	203.4	207.0	216.3	229.8	230.6
Industry of which Mining	198.2	192.8	183.8	196.8	211.9	226.7	244.3	281.5	277.3	299.8	311.8	318.6	342.1	374.7	403.2	410.3	436.0	453.0	506.4
Manufacturing	8.8	7.2	7.5	6.0	9.4	8.2	9.6	10.1	10.5	11.4	11.0	15.1	18.0	21.90	24.0	25.0	26.1	26.5	(28.3)
Elec., Gas and Water	137.8	136.7	135.3	144.8	154.7	168.4	179.3	189.7	196.6	214.2	222.9	227.3	242.7	263.40	282.9	288.8	301.2	314.0	348.8
Construction	13.4	13.3	13.1	14.8	16.2	18.8	17.3	19.5	20.9	23.3	25.2	25.9	28.3	31.09	33.5	37.2	39.3	41.1	(48.8)
and "Other"	40.8	38.4	27.7	31.2	32.6	34.5	38.2	42.2	47.4	50.9	52.7	50.2	53.1	58.31	62.8	61.2	69.5	71.4	(74.7)
Distribution, transp. and comm., of which Distribution	125.5	123.8	120.5	121.0	124.5	131.8	139.1	144.8	151.9	159.4	162.5	165.7	174.1	190.2	200.1	208.7	213.0	222.9	242.7
Transport	108.9	106.1	101.8	101.5	103.8	108.4	113.1	117.4	122.3	128.9	128.5	129.1	138.1	148.9	157.2	163.4	166.0	173.8	188.8
Communication	14.4	14.4	14.3	14.9	15.9	18.2	20.3	21.2	23.8	25.8	28.9	28.9	29.8	32.2	32.8	34.9	35.9	38.8	40.4
Public Admin. and Defence	4.2	4.3	4.4	4.8	4.9	5.2	5.7	8.0	8.4	8.7	7.1	7.7	8.2	9.1	10.1	10.4	11.0	12.3	13.5
Other Domestic	61.0	61.4	61.7	61.7	61.9	62.8	63.3	65.2	68.1	68.7	67.8	68.5	60.8	61.3	63.7	66.8	69.0	70.1	(73.4)
GDP	1989	199.7	200.5	199.2	203.4	209.7	214.4	218.2	223.4	231.8	234.1	237.7	247.1	256.2	266.0	289.8	285.3	299.6	(311.3)
	749.7	748.4	744.3	735.9	774.4	811.1	844.2	874.3	900.2	947.8	957.5	971.8	1,020.2	1,090.3	1,138.4	1,182.2	1,220.8	1,276.3	(1,383.8)

Notes: This table represents an attempt to provide consistent accounts for GDP by sector of origin at constant prices using OECD sectoral definitions (which are narrower than the Irish classification). Inevitably, estimated disaggregation of the sub-totals is not as accurate as the official published estimates for the sub-totals. A detailed description of the methods of construction is available on request from the authors.

APPENDIX 3

Potential growth rate of employment in Manufacturing (per cent per year)

Contribution of:

	Increment in labour force less migration	Unemploy- ment	Under- employment in primary activities	Total
	(1)	(2)	(3)	
Period 1 (1950s and early 1960s):				
Japan 1953-64	6.5	0.1	11.0	13.7
Ireland 1955-64	4.7	1.8	10.9	11.7
Italy 1951-63	2.5	4.1	7.8	10.9
Germany 1951-65	2.3	0.5	2.8	4.9
Austria 1951-66	1.7	0.2	7.0	8.0
France 1951-64	-1.2	0	3.2	2.3
Denmark 1954-65	3.7	1.0	2.7	6.2
Netherlands				
1951-65	3.3	0.1	1.2	4.2
Belgium 1951-64	1.7	1.1	0.6	3.1
Norway 1951-65	1.2	-0.1	4.3	5.0
Canada 1951-66	4.4	1.4	0.3	5.8
UK 1951-65	1.8	0.3	0.4	2.4
US 1951-66	2.5	1.3	0	3.5
Period 2 (early 1960s to 1973):				
Japan 1964-72	4.2	0.2	8.1	10.6
Ireland 1964-73	1.7	2.5	9.9	11.7
Italy 1963-73	-1.5	0.8	5.6	5.3
Germany 1965-73	-2.5	0	2.3	0.2
Austria 1966-73	-2.5	0.1	6.3	4.9
France 1964-73	1.1	0.4	4.1	5.2
Denmark 1965-73	3.3	0.1	2.7	5.5
Netherlands				
1965-73	0.9	0.3	1.5	2.6
Belgium 1964-73	1.1	0.6	0.9	2.4
Norway 1965-73	2.6	0	4.5	6.4
Canada 1966-73	7.4	2.5	1.5	9.7
UK 1965-73	0.4	0.9	0.5	1.7
US 1966-73	5.9	1.9	0	7.2

Footnotes to Appendix table overleaf

Footnotes to Appendix 3.

Sources: OECD National Accounts and Labour Force Statistics.

Notes: Column 1 is the recorded natural increase in the population.

Column 2 is the contribution if the unemployment rate were lowered to the lowest country rate in each period (Period 1, France; Period 2, Germany and Norway).

Column 3 is the contribution if GDP per person employed in Agriculture were raised to the \$ level in the country with the highest level (that is, in both periods, the US); although this might appear to be a strong assumption, the ranking of the countries according to the "Total" column is not altered when only countries below the average \$ level are raised to the average \$ level.

Total is obtained as the arithmetic sum of the absolute contributions of each column, this total converted to a compound growth rate; because of this compound factor, the growth rates do not sum to the total.

APPENDIX 4
Employment by sector (Irish sources) in 000's

Sector	Years																							
	'51	'52	'53	'54	'55	'56	'57	'58	'59	'60	'61	'62	'63	'64	'65	'66	'67	'68	'69	'70	'71	'72	'73	'74
Agric., Incl. Forestry and Fishing	496.2	482	468	452	442	430	414	407	398	390	378.7	370	383	364	340	333.6	320	310	298	283	273.1	287	281	264
Industry of which:	19.0	11	10	10	10	11	10	8	8	9	9.6	9	9	9	10	9.3	10	10	10	10	10.4	10	10	10
Mining and Quarrying	171	171	110	172	178	175	168	163	163	172	178.4	168	190	194	197	199.4	200	204	211	213	213.9	212	217	222
Manufacturing	179.8	10	10	11	12	12	10	10	10	10	10.2	10	11	11	12	11.8	12	13	13	13	14.2	14	14	14
Electricity and Water	85.9	82	77	79	74	71	58	66	68	67	69.8	65	69	74	78	74.1	75	78	81	78	84.5	78	79	80
Construction	150.9	149	147	148	148	146	145	143	145	144.9	144.9	145	146	146	148	147.7	149	148	148	148	148.3	148	147	147
Distribution, Transport and Communication	42.3	60	59	59	58	57	57	55	55	54	53.3	58	65	65	67	68.3	68	68	68	60	68.8	61	81	82
Public Administration and Defence	40.0	42	43	42	42	41	41	40	41	41	40.8	41	42	43	43	43.2	44	46	46	48	48.8	52	55	58
Other non-Agricultural (Incl. I.R.F. BS)	199	198	197	185	183	182	180	180	178	177	177	178	181	183	185	190	192	195	199	201	202	204	208	211
Total at work	(1217.1)	1,185.0	1,166.0	1,153.0	1,145.0	1,125.0	1,084.0	1,088.0	1,080.0	1,055.0	(1,052.5)	1,000.0	1,088.0	1,071.0	1,089.0	(1,068.0)	1,060.0	1,063.0	1,068.0	1,053.0	(1,054.8)	1,045.0	1,052.0	1,068.0
Out of work	44.8	59	55	66	82	83	78	73	69	83	58.8	54	66	63	51	52.2	56	60	58	65	64.7	71	68	64
Total	1,261.9	1,254	1,231	1,228	1,228	1,199	1,162	1,161	1,129	1,118	1,108.1	1,114	1,122	1,124	1,120	1,118.2	1,116	1,123	1,122	1,118	1,118.6	1,117	1,117	1,122

Source: Data taken mainly from "Labour Force Statistics", OECD, various issues, supplemented by Irish sources.

Further information is available on request from the author.

(1) 1961, 1991, 1998 and 1971 estimates are taken from Irish Censuses of Population.

(2) 1983-1992 - 1998.

APPENDIX 6

Tax Revenues (€m), Ireland, Financial Years 1963-64—1973-74

	53/54	54/55	55/56	56/57	57/58	58/59	59/60	60/61	61/62	62/63	63/64	64/65	65/66	66/67	67/68	68/69	69/70	70/71	71/72	72/73	73/74	
Taxes on income:																						
Income tax	22.22	23.48	24.60	24.10	25.12	25.02	23.56	26.00	31.30	36.17	40.21	47.63	54.80	63.99	69.95	80.69	93.28	116.64	152.95	172.69	221.60	
air tax	2.85	2.94	3.20	(2.05)	2.93	2.80	3.03	3.28	3.67	4.52	7.71	6.44	9.32	8.43	13.06	12.86	14.85	20.34	21.09	21.15	22.80	
corp. profits tax	5.23	5.34	5.39	5.66	5.91	5.66	6.16	7.00	10.61	11.22	13.26	15.12	16.22	19.48	23.55	29.31	34.34	41.70	61.59	82.60	80.70	
loc. inc. contrib.																						
Estate etc. duties	2.80	2.99	3.30	2.35	2.68	2.89	2.89	3.21	2.87	3.50	3.60	4.44	4.87	4.61	6.04	7.61	7.70	6.31	9.04	13.23	14.00	
Taxes on capital:																						
Taxes on expenditure:																						
Customs duties:	36.90	36.96	39.62	45.13	46.66	46.30	44.96	41.01	44.53	46.86	50.36	65.74	68.96	67.66	70.13	75.96	67.92	91.84	101.50	116.78	136.90	
Excise duties	17.20	16.63	17.16	17.39	17.38	17.47	24.24	30.19	33.61	34.65	37.75	42.66	49.10	54.97	62.24	72.60	67.97	91.01	97.30	103.59	115.70	
Veh. reg. tax											3.70	13.42	14.18	14.92	16.06	17.69	20.34	41.19	50.26	42.76	47.76	
VAT														2.39	7.27	20.24	20.24	23.04	23.70	31.94	137.00 ⁽¹⁾	
Retail M. Vehicle etc. (incl. motor vehicles)	16.29	17.33	18.08	20.09	20.45	20.94	21.91	22.56	23.75	23.96	25.10	25.57	30.54	33.50 ⁽²⁾	34.39 ⁽²⁾	39.26	44.05	51.27	61.78	72.18	73.50	
Stamp duties (incl. probate)	4.40	4.77	5.08	4.78	5.68	5.51	6.91	8.48	6.93	7.40	8.24	8.60	9.36	10.22	11.29	12.47	13.43	15.68	17.49	19.34	23.90	
Other (residual to government expenditure)	1.87	1.82	1.91	2.02	2.00	2.12	2.64	2.74	2.98	3.06	3.48	3.87	3.61	3.47	4.20	5.13	5.47	5.80	7.74	10.91	14.00	
Total taxation	111.31	114.32	119.61	128.63	131.87	134.50	138.71	147.45	163.13	173.54	196.23	229.70	253.41	287.81	320.93	387.18	434.82	511.31	605.96	700.38	850.50	
Customs duties excl. sp. import levy				40,854	44,453	46,446	45,713	39,636	44,806													

Source: Revenue Commissioners' Reports.

- (1) Incl. special import levy 1963-64—1964-65 incl.
- (2) Other includes fee stamps, harbour bills, boatkeeping licence fees, P. Office Surplus, agric. levies and nite.
- (3) In 1964-67 rates collected on agric. land were £1 million less than those levied, arrears being collected in 1967-68.
- (4) Figures above refer to amounts *awarded* (i.e. adding £1 million to actual rates collected in 1964-67 and reducing 1967-68 by £1 million).
- (5) Includes arrears of turnover and wholesale taxes.
- (6) Includes arrears of turnover and wholesale taxes.
- (7) Four months' receipts.

APPENDIX 6

Irish tax revenues, tax base, tax rates and specific duties, 1955-1974

APPENDIX TABLE 6.1

Customs and excise duty, oils¹

Fiscal year	Predicted revenue ² £m (1)	Actual revenue £m (2)	Error £m (3)
1952-53		6-904	
1953-54		7-404	
1954-55		7-813	
1955-56		8-314	
1956-57	10-517	10-347	0-170
1957-58	11-988	11-745	0-243
1958-59	12-836	12-647	0-189
1959-60	13-648	13-374	0-274
1960-61	13-685	13-476	0-209
1961-62	15-241	15-014	0-227
1962-63	16-003	15-785	0-218
1963-64	17-724	17-521	0-203
1964-65	21-123	20-728	0-395
1965-66	24-935	24-368	0-567
1966-67	30-070	29-446	0-624
1967-68	32-653	32-232	0-421
1968-69	37-588	36-865	0-723
1969-70	44-012	43-095	0-917
1970-71	48-012	47-133	0-879
1971-72	51-302	50-152	1-150
1972-73	55-076	53-843	1-233
1973-74	58-203	56-937	1-266
1974 ³	49-361	47-690	1-671

Notes: (1) Light and "other sorts" of hydrocarbon-oils.

(2) A nine-month financial year, 1 April 1974-31 December 1974.

(3) The predicted revenue figures do not take the amount of drawback into account. However, drawback is not quantitatively very important and the variations in its level are difficult to predict.

Sources:

Column (1): Table 6.1A col. (3) less col. (4) + Table 6.1B col. (3) + Table 6.1C col. (5) + Table 6.1D col. (5).

Column (2): Table 6.1A col. (5) + Table 6.1B col. (4) + Table 6.1C col. (6) + Table 6.1D col. (6).

Column (3): Column (1) - Column (2).

APPENDIX 6

Irish tax revenues, tax base, tax rates and specific duties, 1955-1974

APPENDIX TABLE 6.1

Customs and excise duty, oils¹

Fiscal year	Predicted revenue ² £m (1)	Actual revenue £m (2)	Error £m (3)
1952-53		6·904	
1953-54		7·404	
1954-55		7·813	
1955-56		8·314	
1956-57	10·517	10·347	0·170
1957-58	11·988	11·745	0·243
1958-59	12·836	12·647	0·189
1959-60	13·648	13·374	0·274
1960-61	13·685	13·476	0·209
1961-62	15·241	15·014	0·227
1962-63	16·003	15·785	0·218
1963-64	17·724	17·521	0·203
1964-65	21·123	20·728	0·395
1965-66	24·935	24·368	0·567
1966-67	30·070	29·446	0·624
1967-68	32·653	32·232	0·421
1968-69	37·588	36·865	0·723
1969-70	44·012	43·095	0·917
1970-71	48·012	47·133	0·879
1971-72	51·302	50·152	1·150
1972-73	55·076	53·843	1·233
1973-74	58·203	56·937	1·266
1974 ³	49·361	47·690	1·671

- Notes:**
- (1) Light and "other sorts" of hydrocarbon-oils.
 - (2) A nine-month financial year, 1 April 1974-31 December 1974.
 - (3) The predicted revenue figures do not take the amount of drawback into account. However, drawback is not quantitatively very important and the variations in its level are difficult to predict.

Sources:

- Column (1): Table 6.1A col. (3) less col. (4) + Table 6.1B col. (3) + Table 6.1C col. (5) + Table 6.1D col. (5).
- Column (2): Table 6.1A col. (5) + Table 6.1B col. (4) + Table 6.1C col. (6) + Table 6.1D col. (6).
- Column (3): Column (1) - Column (2).

/70	70/71	71/72	72/73	73/74
28	116.64	152.85	173.69	221.60
85	20.34	21.09	21.15	22.80
34	41.70	51.59	62.60	80.70
70	6.31	9.04	13.23	14.00
92	91.84	101.50	116.78	138.90
97	91.01	97.30	103.59	115.70
34	41.19	50.28	42.75	} 137.00 ^a
22	25.04	29.70	26.15	
-	-	-	31.94 ^b	
05	51.27	61.78	72.18	73.50
43	15.58	17.49	19.34	23.90
47	5.60	7.74	10.91	14.00
62	511.31	605.96	700.36	850.60

Fiscal year	£m (1)	£m (2)	£m (3)
1952-53		6.904	
1953-54		7.404	
1954-55		7.813	
1955-56		8.314	
1956-57	10.517	10.347	0.17
1957-58	11.988	11.745	0.24
1958-59	12.836	12.647	0.18
1959-60	13.648	13.374	0.27
1960-61	13.685	13.476	0.20
1961-62	15.241	15.014	0.22
1962-63	16.003	15.785	0.21
1963-64	17.724	17.521	0.20
1964-65	21.123	20.728	0.39
1965-66	24.935	24.368	0.567
1966-67	30.070	29.446	0.624
1967-68	32.653	32.232	0.421
1968-69	37.588	36.865	0.723
1969-70	44.012	43.095	0.917
1970-71	48.012	47.133	0.879
1971-72	51.302	50.152	1.150
1972-73	55.076	53.843	1.233
1973-74	58.203	56.937	1.266
1974 ^a	49.361	47.690	1.671

Notes: (1) Light and "other sorts" of hydrocarbon-oils.
(2) A nine-month financial year, 1 April 1974-31 December 1974.
(3) The predicted revenue figures do not take the amount of drawback into account. However, drawback is not quantitatively very important and the variations in its level are difficult to predict.

Sources: Column (1): Table 6.1A col. (3) less col. (4) + Table 6.1B col. (3) + Table 6.1C col. (5) + Table 6.1D col. (5).
Column (2): Table 6.1A col. (5) + Table 6.1B col. (4) + Table 6.1C col. (6) + Table 6.1D col. (6).
Column (3): Column (1) - Column (2).

APPENDIX TABLE 6.1A

Customs duty—mineral hydrocarbon oils, light¹

Fiscal year	Tax-base millions of gallons (1)	Effective tax rate £/gallon (2)	Predicted revenue £m (3)	Drawback £m (4)	Actual revenue £m (5)	Error £m (6)
1952-53	72.570	0.083		0.099	6.365	
1953-54	76.728			0.120	6.820	
1954-55	80.377			0.097	7.149	
1955-56	84.822			0.083	7.558	
1956-57	80.585	0.112	9.026	0.110	8.827	0.089
1957-58	74.991	0.137	10.274	0.137	10.109	0.028
1958-59	78.319	0.139	10.886	0.125	10.800	-0.039
1959-60	42.240	0.140	5.914	0.079	5.798	0.037
1960-61	4.229	0.143	0.605	0.112	0.573	-0.080
1961-62	1.777	0.143	0.254	0.126	0.239	-0.111
1962-63	3.169	0.143	0.453	0.116	-0.434	-0.097
1963-64	2.742	0.143	0.392	0.144	0.374	-0.126
1964-65	7.895	0.155	1.224	0.195	1.184	-0.155
1965-66	6.143	0.167	1.026	0.195	1.015	-0.184
1966-67	27.154	0.190	5.159	0.208	5.036	-0.085
1967-68	14.278	0.191	2.727	0.113	2.702	-0.088
1968-69	14.901	0.200	2.980	0.064	2.926	-0.010
1969-70	24.701	0.211	5.212	0.046	5.128	0.038
1970-71	37.799	0.212	8.013	0.062	7.913	0.038
1971-72	62.879	0.212	13.330	0.051	13.074	0.205
1972-73	69.996	0.212	14.838	0.046	14.528	0.265
1973-74	93.107	0.212	19.739	0.073	19.403	0.263
1974 ²	86.295	0.226	19.503	0.042	18.595	0.866

Notes: (1) These consist almost entirely of Petrol.

(2) A nine-month fiscal year from April 1st, 1974–December 31st, 1974. In subsequent years the fiscal year and calendar coincide.

Sources:

Column (1): Net duty-paid quantities of imported refined oils, retained for home-use (millions of gallons) from Annual Report of the Revenue Commissioners, various issues.

Footnotes to Appendix Table 6.1.A continued.

Column (2): A time-weighted average of the duties effective in each financial year, expressed above in pounds per gallon. Dates of duty-changes are as follows (rates shown below are expressed in shillings and pence per gallon): 9/5/56 from 1/9½ to 2/3½; 9/5/57 to 2/9½; 1/1/60 to 2/10½; 15/4/64 to 3/1½; 12/5/65 to 3/4½; 10/3/66 to 3/8; 15/6/66 to 3/9½; 24/4/68 to 3/11½; 8/5/69 to 4/2½ (or £0.2117); 5/12/74 to £0.3447.

Column (3): Column (1) × Column (2).

Column (4): Drawback (£m).

Column (5): Net Receipts (£m) from Annual Report of the Revenue Commissioners various issues.

Column (6): Column (3) – Column (4) – Column (5).

APPENDIX TABLE 6.1C

Customs duty—hydrocarbon oils, "other sorts"¹

Fiscal Year	Tax base millions of gallons		Effective tax rate £/gallon (3)	Effective Rebate £/gallon (4)	Pre- dicted Revenue £m (5)	Actual Revenue £m (6)	Error £m (7)
	Non- Rebated (1)	Partly Rebated ² (2)					
1952-53	6.607	0	0.083	—	0.548	0.539	0.009
1953-54	7.011	0	0.083	—	0.582	0.584	-0.002
1954-55	7.963	0	0.083	—	0.661	0.664	-0.003
1955-56	9.077	0	0.083	—	0.753	0.756	-0.003
1956-57	10.857	146.247	0.083	0.079	1.486	1.514	-0.028
1957-58	10.969	136.248	0.106	0.102	1.708	1.630	-0.134
1958-59	13.134	131.800	0.108	0.104	1.946	1.842	0.104
1959-60	6.498	75.754	0.109	0.105	1.011	0.929	0.082
1960-61	0.546	4.064	0.113	0.109	0.080	0.076	0.004
1961-62	0.679	0.673	0.113	0.113	0.007	0.071	0.006
1962-63	0.684	—	0.113	0.113	0.076	0.074	0.002
1963-64	0.841	—	0.113	0.113	0.095	0.091	0.004
1964-65	0.855	—	0.125	0.125	0.107	0.102	0.005
1965-66	1.424	—	0.137	0.137	0.195	0.193	0.002
1966-67	5.608	—	0.160	0.160	0.897	0.848	0.049
1967-68	2.892	—	0.161	0.161	0.456	0.466	-0.010
1968-69	3.931	—	0.168	—	0.660	0.662	-0.002
1969-70	5.501	—	0.181	—	0.996	0.982	0.014
1970-71	9.258	—	0.182	—	1.685	1.664	0.021
1971-72	10.807	—	0.182	—	1.967	1.925	0.042
1972-73	20.237	—	0.182	—	3.683	3.587	0.096
1973-74	23.227	—	0.182	—	4.227	4.144	0.083
1974 ³	14.437	—	0.182	—	2.628	2.682	-0.054

Notes: (1) This includes diesel oil, gas and vapourising oil, fuel and lubricating oils.

(2) A nine-month financial year, April, 1974—December 31, 1974.

(3) By means of rebates instituted on 11/5/1956, oils for use other than as fuel in road motor vehicles were effectively liable to duty at the rate of 1d per gallon (except for tractor vapourising oil which was fully rebated). As from 28/4/1960, such oils are fully rebated and so, in effect duty free.

Footnotes to Appendix 6.1.C. continued from previous page.

Sources:

Column (1): Non-rebated net quantities retained for home-use charged customs duty (millions of gallons) from Annual Report of the Revenue Commissioners various issues.

Column (2): Partly-rebated net quantities retained for home-use charged customs duty (millions of gallons) from Annual Report of the Revenue Commissioners various issues.

Column (3): A time-weighted average of the full-rate of the customs duties effective in each financial year. Dates of duty-changes are as follows (rates below are expressed in shillings and pence per gallon): 3/4/1952 from 1/4 to 1/8; 9/5/57 to 2/2; 1/1/60 to 2/3; 15/4/64 to 2/5 $\frac{1}{2}$; 12/5/65 to 2/8 $\frac{5}{8}$; 10/3/66 to 3/0 $\frac{3}{4}$; 15/6/66 to 3/2 $\frac{7}{10}$; 24/4/68 to 3/4 $\frac{1}{2}$; 8/5/69 to 3/7 $\frac{7}{10}$.

Column (4): A time-weighted average of the customs rebates (applicable to the quantities shown in column (2)) effective in each financial year. Dates of rebate changes are as follows (rates below are expressed in shillings and pence per gallon): on 11/5/56 from 1/8 to 1/7; 9/5/57 to 2/1; 1/1/60 to 2/2; 28/4/60 to 2/3; 15/4/64 to 2/5 $\frac{1}{2}$; 12/5/65 to 2/8 $\frac{5}{8}$; 10/3/66 to 3/0 $\frac{3}{4}$; 15/6/66 to 3/2 $\frac{7}{10}$.

Column (5): [Column (1) × Column (3)] + [Column (2) × (3)] - [Column (2) × Column (4)].

Column (6): Net customs receipts, £m from Annual Report of the Revenue Commissioners various issues.

Column (7): Column (5) - Column (6).

APPENDIX TABLE 6.1D

Excise Duty—Hydro-carbon oils, "other sorts"¹

Fiscal Year	Tax base millions of gallons		Effective tax rate £/gallon (3)	Effective ³ Rebate £/gallon (4)	Pre-dicted Revenue £m (5)	Actual Revenue £m (6)	Error £m (7)
	Non-Rebated (1)	Partly Rebated (2)					
1952-53	0	0	0.075	—	0	0	0
1953-54	0	0	0.075	—	0	0	0
1954-55	0	0	0.075	—	0	0	0
1955-56	0	0	0.075	—	0	0	0
1956-57	0	1.346	0.075	0.071	0.005	0.006	-0.001
1957-58	0	1.449	0.098	0.094	0.006	0.006	0
1958-59	0	1.098	0.100	0.096	0.004	0.005	-0.001
1959-60	8.821	61.058	0.106	0.102	1.179	1.152	0.027
1960-61	17.024	8.769	0.108	0.108	1.839	1.740	0.099
1961-62	21.202	0.670	0.108	0.108	2.290	2.161	0.129
1962-63	23.796	-0.216 ⁴	0.108	0.108	2.547	2.418	0.129
1963-64	25.651	0	0.108	0.108	2.770	2.649	0.121
1964-65	28.671	0	0.121	0.121	3.469	3.225	0.244
1965-66	29.934	0	0.134	—	4.011	3.622	0.389
1966-67	27.823	0	0.156	—	4.340	3.894	0.446
1967-68	34.208	0	0.157	—	5.371	4.928	0.443
1968-69	34.392	0	0.164	—	5.640	5.014	0.626
1969-70	37.079	0	0.176	—	6.526	5.878	0.648
1970-71	36.139	0	0.177	—	6.397	5.719	0.678
1971-72	35.987	0	0.177	—	6.370	5.614	0.756
1972-73	30.918	0	0.177	—	5.472	4.733	0.739
1973-74	31.575	0	0.177	—	5.589	4.827	0.762
1974 ²	27.686	0	0.177	—	4.900	4.387	0.513

Notes: (1) This includes diesel oil, gas and vapourising oil, fuel and lubricating oils and white spirit (from September 1970).

(2) A nine-month financial year, April 1974–December 31, 1974.

(3) By means of rebates instituted on 11/5/1956, oils for use other than as fuel in road motor vehicles was effectively liable to duty or the rate of 1d. per gallon (except for tractor vapourising oil which was fully rebated). As from 28/4/1960, such oils are fully rebated and so, in effect, duty free.

(4) Quantities of oil effectively liable to duty at the rate of 1d. per gallon on which repayment of duty was made during the year.

Sources to table 6.1.D. (on page 124):

Column (1): Non-rebated net quantities retained for home-use charged with excise-duty (millions of gallons) from Annual Report of the Revenue Commissioners, various issues.

Column (2): Partly-rebated net quantities retained for home-use charged with excise duty (millions of gallons) from Annual Report of Revenue Commissioners, various issues.

Column (3): A time-weighted average of the full rates of excise duties effective in each financial year. Dates of duty-changes are as follows (notes below are expressed in shillings and pence per gallon): On 3/4/1952 from 1/2 to 1/6; 9/5/57 to 2/0; 17/6/59 to 2/2; 15/4/64 to 2/4 $\frac{1}{2}$; 12/4/65 to 2/7 $\frac{5}{8}$; 10/3/66 to 2/11 $\frac{3}{4}$; 15/6/66 to 3/1 $\frac{7}{16}$; 24/4/68 to 3/3 $\frac{1}{2}$; 8/5/69 to £0.1773 which was held up to 1975.

Column (4): A time-weighted average of the Customs rebates (applicable to the quantities shown in column (2)) effective in each financial year. Dates of rebate changes are as follows (rates below are expressed in shillings and pence per gallon): on 11/5/56 from 1/6 to 1/5; 9/5/57 to 1/11; 17/6/59 to 2/1; 28/4/60 to 2/2; 15/4/64 to 2/4 $\frac{1}{2}$; 12/5/65 to 2/7 $\frac{5}{8}$; 10/3/66 to 2/11 $\frac{3}{4}$; 15/6/66 to 3/1 $\frac{7}{16}$.

Column (5): Column (1) × Column (3) + Column (2) × Column (3) – Column (2) × Column (4).

Column (6): Net excise receipts, £m, from Annual Report of the Revenue Commissioners, various issues.

Column (7): Column (5) – Column (6).

APPENDIX TABLE 6.2

Customs and excise duty, tobacco

Fiscal Year	Predicted Revenue Customs and Excise £m (1)	Rebates £m (2)	Actual Revenue Customs and Excise £m (3)	Error £m (4)
1952-53	22.897	1.053	22.538	-0.694
1953-54	24.102	1.102	22.938	0.062
1954-55	23.005	1.029	21.902	0.074
1955-56	23.634	0.983	22.591	0.060
1956-57	25.768	1.082	24.800	-0.114
1957-58	27.154	1.127	26.037	-0.010
1958-59	26.227	1.084	25.121	0.022
1959-60	28.312	1.077	27.215	0.020
1960-61	29.331	1.041	28.285	0.005
1961-62	32.518	1.033	31.537	-0.052
1962-63	33.687	1.114	32.535	0.038
1963-64	34.412	1.312	33.151	-0.051
1964-65	39.201	1.624	34.471	0.106
1965-66	40.841	1.633	39.153	0.055
1966-67	43.563	1.474	42.518	-0.429
1967-68	48.600	1.355	47.533	-0.288
1968-69	48.279	1.432	47.999	-0.702
1969-70	54.739	1.177	53.663	-0.101
1970-71	51.811	1.239	50.670	-0.098
1971-72	54.440	1.325	53.288	-0.173
1972-73	56.767	1.149	55.793	-0.175
1973-74	66.557	1.098	66.208	-0.749
1974 ¹	53.199	0.695	45.690	6.814

Notes: (1) Nine-month fiscal year April 1, 1974-December 31, 1974.

Sources:

Column (1): Column (3) of Table 6.2A; excludes excise receipts.

Column (2): Column (4) of Table 6.2A.

Column (3): From Annual Report of Revenue Commissioners, various issues. The amount of customs revenue is shown separately in Column (5) of Table 6.2A.

Column (4): Column (1) - Column (2) - Column (3).

APPENDIX TABLE 6.2A

Customs duties, tobacco

Fiscal Year	Tax-Base lbs million (1)	Effective Tax Rate £/lb (2)	Predicted Revenue £m (3)	Rebates £m (4)	Actual Revenue £m (5)	Error £m (6)
1952-53	13.144	1.742	22.897	1.053	21.876	-0.032
1953-54	13.836	1.742	24.102	1.102	22.938	0.062
1954-55	13.206	1.742	23.005	1.029	21.902	0.074
1955-56	13.567	1.742	23.634	0.983	22.591	0.060
1956-57	12.247	2.104	25.768	1.082	24.533	0.153
1957-58	11.894	2.283	27.154	1.127	25.936	0.091
1958-59	11.423	2.296	26.227	1.084	25.121	0.022
1959-60	12.283	2.305	28.312	1.077	27.215	0.020
1960-61	12.288	2.387	29.331	1.041	28.285	0.005
1961-62	13.144	2.474	32.518	1.033	31.537	-0.052
1962-63	12.344	2.729	33.687	1.114	32.535	0.038
1963-64	12.541	2.744	34.412	1.312	33.151	-0.051
1964-65	13.067	3.000	39.201	1.624	37.471	0.106
1965-66	12.425	3.287	40.841	1.633	39.153	0.055
1966-67	12.064	3.611	43.563	1.474	42.261	-0.172
1967-68	12.756	3.810	48.600	1.355	47.450	-0.205
1968-69	12.026	4.052	48.279	1.432	47.692	-0.395
1969-70	12.435	4.402	54.739	1.177	53.547	0.015
1970-71	11.730	4.417	51.811	1.239	50.670	-0.098
1971-72	12.325	4.417	54.440	1.325	53.288	-0.173
1972-73	12.852	4.417	56.767	1.149	55.793	-0.175
1973-74	13.650	4.876	66.557	1.098	65.848	-0.389
1974 ¹	10.780	4.935	53.199	0.695	45.690	6.814

Notes: (1) In previous years the fiscal year ended on March 31. In 1975 and thereafter the fiscal year coincides with the calendar year. In order to make this change, a nine-month fiscal year, from April 1st-December 31st, 1974, was introduced.

Sources:

Column (1): Millions of pounds (lb) of manufactured and unmanufactured tobacco retained for home use from Annual Report of the Revenue Commissioners various issues.

Sources continued overleaf.

Sources to Appendix 6.2.A. continued from previous page.

Column (2): The main duty on imported unmanufactured tobacco, unstripped or unstemmed, containing 10% or more of moisture, which governs other duties. The rate is a time weighted average of the tax rates effective in each financial year. Dates of tax-rate changes are as follows: (rates shown below in shillings and pence per lb): 3/4/1952 from 23/10 to 34/10; 9/5/56 to 42/9; 9/5/57 to 45/11; 1/5/59 to 46/11½; 28/4/60 to 47/10½; 20/4/61 to 49/7½; 11/4/62 to 53/11½; 14/6/62 to 54/10½; 15/4/64 to 60/0; 12/5/65 to 65/11½; 10/3/66 to 69/4½; 15/6/66 to 72/9½; 12/4/67 to 76/2½; 24/4/68 to 79/7½; 6/11/68 to 84/9; 8/5/69 to 88/4 (or £4.416); 16/5/73 to £5.043; 3/9/73 to £4.935; 16/1/75 to £6.171.

Column (3): Column (1) × Column (2).

Column (4): From Annual Report of the Revenue Commissioners, various issues.

Column (5): From Annual Report of the Revenue Commissioners, various issues.

Column (6): Column (3) – Column (4) – Column (5).

APPENDIX TABLE 6.3

Customs and excise duty, beer

Fiscal Year	Predicted Revenue Customs + Excise (£m) (1)	Actual Revenue Customs + Excise (£m) (2)	Error £m (3)
1952–53	8.251	8.085	0.166
1953–54	8.441	8.405	0.036
1954–55	8.002	8.006	–0.004
1955–56	7.870	8.220	–0.350
1956–57	8.170	8.154	0.016
1957–58	8.646	8.586	0.060
1958–69	8.429	8.415	0.014
1959–60	8.893	8.876	0.017
1960–61	8.866	8.850	0.016
1961–62	9.572	9.559	0.013
1962–63	10.847	10.785	0.062
1963–64	11.368	11.364	0.004
1964–65	13.339	13.239	0.100
1965–66	15.054	14.658	0.396
1966–67	18.287	18.267	0.020
1967–68	20.379	20.257	0.122
1968–69	24.353	23.997	0.356
1969–70	32.190	31.913	0.277
1970–71	33.534	33.521	0.013
1971–72	38.707	38.615	0.092
1972–73	41.592	41.500	0.092
1973–74	47.856	47.869	–0.013
1974 ¹	40.197	40.168	0.029

Notes: (1) Nine-month fiscal year, April 1, 1974–December 31, 1974.

Sources:

Column (1): Column (3) of Table Customs + Column (4) of Table Excise.

Column (2): Column (4) of Table Customs + Column (5) of Table Excise.

APPENDIX TABLE 6.3A

Customs duty, beer

Fiscal Year	Tax Base millions st. bbls ¹ . (1)	Effective tax rate £/st. bbl. (2)	Predicted Revenue £m (3)	Actual Revenue £m (4)	Error £m (5)
1952-53	0.008	9.675	0.077	0.073	0.004
1953-54	0.010	9.675	0.097	0.091	0.006
1954-55	0.014	9.285	0.130	0.125	0.005
1955-56	0.019	9.250	0.176	0.171	0.005
1956-57	0.015	9.250	0.139	0.138	0.001
1957-58	0.015	10.243	0.154	0.145	0.009
1958-59	0.014	10.333	0.145	0.147	-0.002
1959-60	0.018	10.333	0.186	0.188	-0.002
1960-61	0.019	10.333	0.196	0.195	0.001
1961-62	0.023	10.333	0.238	0.240	-0.002
1962-63	0.026	11.850	0.308	0.310	-0.002
1963-64	0.042	11.850	0.498	0.503	-0.005
1964-65	0.044	13.363	0.588	0.575	0.013
1965-66	0.035	15.009	0.525	0.507	0.018
1966-67	0.035	17.996	0.630	0.614	0.016
1967-68	0.024	19.558	0.469	0.459	0.010
1968-69	0.022	22.331	0.491	0.489	0.002
1969-70	0.021	26.953	0.566	0.564	0.002
1970-71	0.021	27.213	0.571	0.555	0.016
1971-72	0.020	29.027	0.581	0.587	-0.006
1972-73	0.023	29.192	0.671	0.673	-0.002
1973-74	0.015	30.880	0.463	0.453	0.010
1974 ²	0.012	30.919	0.371	0.361	0.010

Notes: (1) A "standard barrel" (st. bbl.) is 36 gallons at a gravity of 1.055°.

(2) A nine-month period from 1 April to 31 December 1974. In subsequent years the fiscal and calendar years coincide.

Sources and Definitions:

Column (1): Millions of standard barrels of imported beer retained for home-use from Annual Report of the Revenue Commissioners, various issues.

Sources and definitions to Appendix Table 6.3.A. continued.

Column (2): A time-weighted average of the rates of duty effective in each financial year. Dates of duty changes are as follows (duties are expressed below in pounds, shillings and pence per standard barrel): 3/4/1952 from £5 12s. 6d. to £9 13s. 6d.; 22/4/54 reduced to £9 5s. 0d.; 9/5/57 to £10 6s. 0d.; 11/4/62 to £11 17s. 0d.; 15/4/64 to £13 7s. 3d.; 12/5/65 to £14 17s. 6d.; 10/3/66 to £17 19s. 11d.; 12/4/67 to £19 11s. 2d.; 24/4/68 to £21 1s. 5d.; 6/11/68 to £24 1s. 11d.; 8/5/69 to £27 4s. 3d.; 29/4/71 to £29.192; 17/5/73 to £31.913; 3/9/73 to £30.919; 16/1/75 to £42.047.

Column (3): Column (1) × Column (2).

Column (4): From Annual Report of the Revenue Commissioners, various issues.

Column (5): Column (3) - Column (4).

APPENDIX TABLE 6.3B

Excise duty, beer

Fiscal year	Tax base ^a of st. bbls. ¹ (1)	Effective tax rate £/st. bbl. (2)	Rebated millions st. bbls. (3)	Predicted revenue ⁴ £m (4)	Actual revenue £m (5)	Error £m (6)
1952-53	0.856	9.650	0.043	8.174	8.012	0.162
1953-54	0.870	9.650	0.041	8.314	8.328	-0.104
1954-55	0.859	9.260	0.041	7.872	7.881	-0.009
1955-56	0.844	9.225	0.046	7.694	8.049	-0.355
1956-57	0.881	9.225	0.048	8.031	8.016	0.015
1957-58	0.842	10.188	0.043	8.492	8.441	0.051
1958-59	0.814	10.275	0.040	8.284	8.268	0.016
1959-60	0.855	10.275	0.039	8.707	8.688	0.019
1960-61	0.851	10.275	0.037	8.670	8.655	0.015
1961-62	0.916	10.275	0.039	9.334	9.319	0.015
1962-63	0.898	11.825	0.040	10.539	10.475	0.064
1963-64	0.926	11.825	0.040	10.870	10.861	0.009
1964-65	0.962	13.338	0.040	12.751	12.664	0.087
1965-66	0.975	14.984	0.040	14.529	14.151	0.378
1966-67	0.987	17.971	0.040	17.657	17.653	0.004
1967-68	1.023	19.533	0.036	19.910	19.798	0.112
1968-69	1.079	22.180	0.035	23.862	23.508	0.354
1969-70	1.177	26.928	0.035	31.624	31.349	0.275
1970-71	1.215	27.188	0.035	32.963	32.966	-0.003
1971-72	1.317	29.002	0.035	38.126	38.028	0.098
1972-73	1.403	29.167	0.035	40.921	40.827	0.094
1973-74	1.535	30.875	0.035	47.393	47.416	-0.023
1974 ^a	1.290	30.919	0.030	39.826	39.807	0.019

Notes: (1) A "standard barrel" (st. bbl.) is 36 gallons at a gravity of 1055°

(2) A nine-month fiscal "year", 1 April-31 Dec. 1974. In subsequent years the fiscal and financial years coincide.

(3) Excludes home production which is exported.

(4) The predicted revenue figures do not take the rebated quantities into account. Rebated quantities are not quantitatively very important and the variations in their level are difficult to predict.

Sources:

Column (1): Millions of standard barrels of home-produced beer retained for home-use. That is, "Total net duty-paid (including rebated)" from Annual Report of the Revenue Commissioners, various issues.

Sources to Appendix Table 6.3.B. continued.

Column (2): A time-weighted average of the rates of duty effective in each financial year. Dates of duty changes are as follows (duties are expressed below in pounds, shillings and pence per standard barrel): 3/4/1952 from £5 12s. 0d. to £9 13s. 0d.; 22/4/54 to £9 4s. 6d.; 9/5/57 to £10 5s. 6d.; 11/4/62 to £11 16s. 6d.; 15/4/64 to £13 6s. 9d.; 12/5/65 to £14 17s. 0d.; 10/3/66 to £17 19s. 5d.; 12/4/67 to £19 10s. 8d.; 24/6/68 to £21 0s. 11d.; 6/11/68 to £24 1s. 5d.; 8/5/69 to £27 3s. 9d.; 29/4/71 to £29.167; 17/5/73 to £31.913; 3/9/73 to £30.919; 16/1/75 to £42.047.

Column (3): Rebated production from Annual Report of the Revenue Commissioners, various issues. The rebate is £2 per st. bbl.

Column (4): Column (1) × Column (2) - 2 × Column (3).

Column (5): Column (4) - Column (5).

APPENDIX TABLE 6.4

Customs and excise duty—spirits

Fiscal Year	Predicted Revenue £m (1)	Actual Revenue £m (2)	Error £m (3)
1952-53	6.141	5.996	0.145
1953-54	7.214	7.106	0.108
1954-55	7.577	6.987	0.590
1955-56	7.866	7.514	0.352
1956-57	7.100	7.020	0.880
1957-58	6.635	6.547	0.880
1958-59	7.022	6.942	0.080
1959-60	7.287	7.208	0.079
1960-61	7.755	7.669	0.086
1961-62	9.499	9.307	0.192
1962-63	9.057	8.942	0.115
1963-64	10.318	10.243	0.075
1964-65	11.629	11.503	0.126
1965-66	12.751	12.675	0.076
1966-67	14.193	14.054	0.139
1967-68	14.771	14.633	0.138
1968-69	17.184	17.514	-0.330
1969-70	21.895	22.143	-0.248
1970-71	23.673	24.151	-0.478
1971-72	27.885	27.974	-0.089
1972-73	30.993	32.052	-1.059
1973-74	39.890	40.646	-0.756
1974 ¹	30.609	30.339	0.270

Notes: (1) A nine-month fiscal year; 1 April 1974 – 31 December 1974.

Sources:

Column (1): Table 6.4A Column (4) + Table 6.4B Column (4).

Column (2): Table 6.4A Column (5) + Table 6.4B Column (5).

Column (3): Column (1) – Column (2).

APPENDIX TABLE 6.4A

Customs duties—spirits

Fiscal Year	Tax Base millions of proof gallons ¹ (1)	Rebatable millions of proof gallons ¹ (2)	Effective Tax Rate £/proof gallon ¹ (3)	Predicted Revenue £m (4)	Actual Revenue £m (5)	Error £m (6)
1952-53	0.132	0	8.821	1.164	1.104	0.060
1953-54	0.165	0	8.821	1.455	1.419	0.036
1954-55	0.184	0	8.821	1.623	1.568	0.055
1955-56	0.195	0	8.821	1.720	1.682	0.038
1956-57	0.195	0	8.821	1.720	1.693	0.027
1957-58	0.192	0	8.821	1.694	1.649	0.045
1958-59	0.209	0	8.821	1.844	1.810	0.034
1959-60	0.233	0	8.821	2.055	2.016	0.039
1960-61	0.276	0	8.821	2.435	2.389	0.046
1961-62	0.369	0	8.821	3.255	3.093	0.162
1962-63	0.337	0	9.558	3.221	3.170	0.051
1963-64	0.396	0	9.558	3.785	3.747	0.038
1964-65	0.351	0	11.058	3.881	3.785	0.096
1965-66	0.362	0	11.796	4.270	4.185	0.085
1966-67	0.327	0	13.275	4.341	4.241	0.100
1967-68	0.383	0	13.275	5.084	4.966	0.118
1968-69	0.422	0	13.582	5.732	6.058	-0.326
1969-70	0.456	0.001	15.365	7.006	7.362	-0.356
1970-71	0.515	0.001	15.488	7.976	8.474	-0.498
1971-72	0.533	0.001	16.738	8.921	9.106	-0.185
1972-73	0.635	0.002	15.743	9.995	11.061	-1.066
1973-74	0.744	0.002	17.262	12.841	13.641	-0.800
1974 ¹	0.740	0.001	17.495	12.946	13.379	-0.433

Notes: (1) At a temperature of 51°F, a "proof gallon" weighs $\frac{13}{8}$ of an equal measure of distilled water at the same temperature.

(2) A nine-month fiscal year, 1 April 1973–31 December 1974.

Sources:

Column (1): Millions of proof gallons imported and retained for home-use; from Annual Report of the Revenue Commissioners, various issues.

Sources continued overleaf.

Sources to Appendix Table 6.4.A. continued.

Column (2): Millions of "proof gallons" imported for use in medical preparations. These quantities are included in column (1) but must be isolated because they pay an effective duty of the difference between the current rate and 14/9d (or £0.7375 the basic rate per proof gallon in 1918); from Annual Report of the Revenue Commissioners, various issues.

Column (3): A time-weighted average of the duties effective in each financial year. Dates of duty changes are as follows (rates below are expressed in shillings and pence per proof gallon): 3/4/1952 from 137/5 to 176/5; 11/4/62 to 191/2; 15/4/64 to 221/2; 12/5/65 to 235/11; 10/4/66 to 265/6; 6/11/68 to 280/3; 8/5/69 to 309/9; 29/4/71 to £16.852; 1/7/72 to £15.373; 17/5/73 to £17.978; 3/9/73 to £17.495; 16/1/75 to £21.777.

Column (4): Column (1) × Column (3) - 0.7375 × Column (2).

Column (5): Net customs receipts, £m; from Annual Report of the Revenue Commissioners, various issues.

Column (6): Column (4) - Column (5).

Excise duties—spirits

Fiscal Year	Tax base millions of proof gallons ¹ (1)	Rebatable millions of proof gallons (2)	Effective Tax Rate £/proof gallon ¹ (3)	Predicted Revenue £m (4)	Actual Revenue £m (5)	Error £m (6)
1952-53	0.566	0.005	8.800	4.977	4.892	0.085
1953-54	0.655	0.007	8.800	5.759	5.687	0.072
1954-55	0.677	0.005	8.800	5.954	5.419	0.535
1955-56	0.699	0.007	8.800	6.146	5.832	0.314
1956-57	0.612	0.007	8.800	5.380	5.327	0.053
1957-58	0.562	0.006	8.800	4.941	4.898	0.043
1958-59	0.589	0.007	8.800	5.178	5.132	0.046
1959-60	0.595	0.006	8.800	5.232	5.192	0.040
1960-61	0.605	0.006	8.800	5.320	5.280	0.040
1961-62	0.710	0.005	8.800	6.244	6.214	0.030
1962-63	0.611	0.006	9.558	5.836	5.772	0.064
1963-64	0.684	0.006	9.558	6.533	6.496	0.037
1964-65	0.811	0.005	9.558	7.748	7.718	0.030
1965-66	0.829	0.005	10.235	8.481	8.490	-0.009
1966-67	0.837	0.005	11.775	9.852	9.813	0.039
1967-68	0.823	0.005	11.775	9.687	9.667	0.020
1968-69	0.948	0.004	12.083	11.452	11.456	-0.004
1969-70	1.074	0.003	13.865	14.889	14.781	0.108
1970-71	1.121	0.004	14.005	15.697	15.677	0.020
1971-72	1.242	0.003	15.271	18.964	18.868	0.096
1972-73	1.365	0.004	15.385	20.998	20.991	0.007
1973-74	1.566	0.003	17.274	27.049	27.005	0.044
1974 ²	1.009	0.002	17.507	17.663	16.960	0.703

Notes: (1) At a temperature of 51°F, a "proof gallon" weighs $\frac{1}{13}$ of an equal measure of distilled water at the same temperature.

(2) A nine-month fiscal year, April 1, 1974-December 31, 1974.

Sources:

Column (1): Millions of proof gallons produced at home and retained for home-use; from Annual Report of the Revenue Commissioners various issues.

Sources continued overleaf.

Sources to Appendix table 6.4.B. continued.

Column (2): Millions of home-made proof gallons used in medical preparations. These quantities are included in Column (1) but must be isolated because they pay an effective duty of the difference between the current rate and 14/9 (or £0.7375 per proof gallon, the basic rate in 1918); from Annual Report of the Revenue Commissioners various issues.

Column (3): A time-weighted average of the duties effective in each financial year. Dates of duty-changes are as follows (rates below are expressed in shillings and pence per proof gallon): 3/4/1952 from 137/0 to 176/0; 11/4/62 to 191/2; 12/5/65 to 205/11; 10/4/66 to 235/6; 6/11/68 to 250/3; 8/5/69 to 279/9; 1/10/70 to 280/5; 29/4/71 to £15.385; 17/5/73 to £17.990; 3/9/73 to £17.507; 16/1/75 to £21.789.

Column (4): Column (1) \times Column (3) $- 0.7375 \times$ Column (2).

Column (5): Net excise receipts, £m, from Annual Report of the Revenue Commissioners various issues.

Column (6): Column (4) $-$ Column (5).

BIBLIOGRAPHY

- Denison, E. F. (1967), "Why Growth Rates Differ", *The Brookings Institution*, 1967.
- Dowling, B., "The Income Sensitivity of the Personal Income Tax Base in Ireland: 1947-72" (forthcoming).
- Eatwell, J. L., Llewellyn, G. E. J. and Tarling, R. J. (1974) "Money Wage Inflation in Industrial Countries", *Review of Economic Studies*, 1974.
- Edgren, G., Faxen, F-O, and Odhner, C-E, (1969), "Wages Growth and the Distribution of Income", *Swedish Journal of Economics*, 1969.
- Fennell, R. (1968), "The Agricultural Sector, 1926-67" *Irish Journal of Agricultural Economics*, 1968.
- Godley, W. A. H., and Nordhaus, W. (1972), "Pricing in the Trade Cycle", *Economic Journal*, 1972.
- Henry, E. W. (1974), "Irish Full Employment Structures, 1968 and 1975", *The Economic and Social Research Institute*, Dublin, 1974.
- Hill, T. P. (1971), "The Growth of Real Product. A theoretical and empirical analysis of growth rates for different industries and countries", *OECD*, Paris, February, 1971.
- Jackson, D., Turner, H. A. and Wilkinson, F. (1972), "Do Trade Unions Cause Inflation?", University of Cambridge, Department of Applied Economics. Occasional Paper 36, CUP 1972.
- Kaldor, N. (1955), "An Expenditure Tax", *Unwin University Books*, London, 1975.
- Kaldor, N. (1959), "Economic Growth and the Problem of Inflation", *Economica*, 1959.
- Kaldor, N. (1966), "Causes of the Slow Rate of Economic Growth of the United Kingdom," *CUP* 1966.
- Kaldor, N. (1976) "Inflation and Recession in the World Economy", *Economic Journal*, December 1976.
- McCarthy, W. E. J., O'Brien, J. F., and Dowd, V. G. (1975), "Wage Inflation and Wage Leadership", *The Economic and Social Research Institute*, Dublin 1975.
- Morgan, E. V. (1975). "Causes and Effects of Inflation in Ireland", Report No. 10, *National Economic and Social Council*, Dublin, 1975.
- OECD (1972), "Expenditure Trends in OECD Countries, 1960-1980", *OECD*, Paris, 1972.
- OECD (1973), "Revenue Statistics of OECD member countries, 1965-71", *OECD*, Paris, 1973.
- OECD (1975), "Economic Outlook", *OECD*, Paris, December 1975.
- Pratten, C. F. (1971), "Economies of Scale in Manufacturing Industry", *CUP* 1971.

- Simons, H. (1938), "Personal Income Taxation", Chicago, 1938.
- Solow, R. M. (1957), "Technical change and the Aggregate Production Function", *Review of Economics and Statistics*, 1957.
- Streeten, P. (1962), "Wages, Prices and Productivity", *Kyklos*, 1962.
- Walsh, B. M. (1975), "Population and Employment Projections, 1971-86", Report No. 5, *National Economic and Social Council, Dublin*, 1975.

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