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by

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SUMMARY

The world economic situation now appears to be less favourable in the short run than earlier in the year. World GNP and world trade are now expected to grow by rather less this year than previously forecast. On the more positive side, the decline in relative oil prices and the likelihood that this will continue in the short term will have beneficial effects in industrial economies, either in restoring the cash position of the corporate sector which may result in increased investment (including stockbuilding) or in the financial position of households, when private consumption may improve. Policy in the major industrial countries remains restrictive and this stance of policy seems likely to be maintained beyond the immediate future.

In spite of the depressed economic situation exports from Ireland are likely to grow very rapidly—by 7½ per cent. The main growth is in industrial exports which are expected to grow by over 10 per cent in volume terms. This growth reflects growth in U.K. imports (expected to grow more rapidly than imports into other countries on average this year) and the continuing effect on the supply of goods for export by the start up and growth of production of new foreign firms.

Internal demand is likely to remain very weak. Fiscal policy in 1982 is deflationary and even assuming some slippage on both the revenue and expenditure sides there is still a contractionary influence on the economy. Real disposable income is expected to decline by 3 per cent with private consumption falling by the same amount. Total investment is forecast to decline by almost two per cent—a rise in expenditure on machinery and equipment being more than offset by a fall of 5 per cent in building and construction. The principal source of the decline in investment will be weak private investment as the liquidity of the corporate and household sector has been adversely affected by budgetary measures and the poor level of activity of the past few years. Government consumption expenditure is expected to grow in volume terms by over 3 per cent.

Import volume growth is forecast at ½ per cent. This contrasts with a growth of 1¼ per cent in final demand. However, the 1981 import figures include one-off items and some reduction is forecast in food imports, feeding-stuffs for animals and oil imports—though imports of materials for further production in industry are expected to grow by 5 per cent in volume. Import prices are forecast to rise by 10 per cent compared with 12 per cent for export prices.

The balance of payments deficit on current account is expected to improve from a deficit of £1.3 billion in 1981 to £1.2 billion this year. The improvement in exports (both prices and volume) relative to imports is partly outweighed by the increase in foreign interest payments on Government debt.

Foreign interest payments also affect GNP. For 1982 GDP growth of 1¾ per

cent will be wiped out by the rise in interest payments to the extent that GNP is expected to fall by ¼ per cent.

The size of the Public Sector Borrowing Requirement at £2,665 million will result in further foreign borrowing this year. Net external liabilities of the State are likely to increase by almost £1,300 million. The monetary guidelines, given the needs of the Semi-State sector for bank borrowing, will result in a decline in the absolute amount of credit available to the private sector. In spite of this, Domestic Credit Expansion this year will be 42 per cent of end 1981 money supply.

TABLE I: NATIONAL ACCOUNTS 1981-1982

A: Expenditure on Gross National Product

	1981 £m	1982 £m	Change in 1982 £m Total	Change in 1982 £m Volume	Change in 1982 % Total	Change in 1982 % Price	Change in 1982 % Volume
Private Consumer Expenditure ...	6625	7550	925	−198	14	17½	−3
Public Net Current Expenditure ...	2250	2680	430	72	19	15½	3¼
Gross Domestic Fixed Capital Formation	3030	3350	320	−54	10½	12½	−1¾
Exports of Goods and Services ...	5540	6665	1125	415	20	12	7½
Physical Changes in Stocks:							
Agriculture	−20	10	30	28	—	—	—
Intervention	−50	0	50	40	—	—	—
Other	30	−50	−80	−75	—	—	—
Final Demand	17405	20205	2800	228	16	14½	1¼
Imports of Goods and Services ...	−7065	−7810	745	35	10½	10	½
GDP at market prices	10340	12395	2055	193	20	17½	1¾
Net Factor payments	210	470	260	220	—	—	—
GNP at market prices	10130	11925	1795	−27	17¾	17½	−¼

B: Gross National Product by Origin

	1981 £m	1982 £m	Change in 1982 £m	Change in 1982 %
Agriculture, Forestry, Fishing ...	920	1150	230	25
Non-Agricultural: Wages	6050	6950	900	14¾
Other	1220	1475	255	21
Net Factor Payments	−210	−470	−260	—
National Income	7980	9105	1125	14
Depreciation	900	1020	120	13¼
GNP at factor cost	8880	10125	1245	14
Taxes less Subsidies	1250	1800	550	44
GNP at market prices	10130	11925	11925	17¾

C: Balance of Payments on Current Account

	1981 £m	1982 £m	Change £m	
X − M + F	−1735	−1615	+120	
Net transfers	425	415	−10	
Balance on Current Account ...	−1310	−1200	+110	

I. THE INTERNATIONAL ECONOMY

Introduction

The picture of the international economy emerging for 1982 is of a world perhaps tentatively recovering from recession. Real GNP growth in the OECD area for 1982 as a whole is forecast at below 1 per cent or broadly in line with the rates recorded for 1980 and 1981.

Any recovery later this year is predicated on a number of crucial assumptions. The first of these is that inflationary pressures will abate in 1982 on foot of the predicted stability of nominal oil prices. Secondly, it requires that the period of de-stocking has come to an end. The reduction in the OPEC surplus this year will be reflected in the household and corporate sector. If the dominant influence is on the household sector, then growth through private consumption could occur. If, however, corporate liquidity is improved, then this may, or may not, result in increased investment. There is considerable excess capacity at the moment and it takes time for investment projects to get under way.

It had been thought at the start of 1982 that the above factors would be reinforced by a movement on the part of governments away from the very restrictive monetary and fiscal policies which have characterised the last two years. In this regard there had been until recently an expectation amongst overseas forecasting agencies that interest rates would decline somewhat in 1982. The basis for this expectation has become increasingly doubtful of late given that it was grounded on certain optimistic assumptions about a pick-up in the US economy and about US interest rates. The most recent indications would suggest that a US economic recovery is going to come later and more sluggishly than was earlier thought and that the prospects of a significant fall in US interest rates are weak. With the US economy so important in world trade and the behaviour of US interest rates such a dominant influence in determining monetary and exchange rate policy elsewhere, this means that earlier forecasts may have erred on the side of optimism.

Despite this more cautious outlook for the world economy, the prospect of a gentle upswing in demand and output remains. However, the employment outlook is poor. For the OECD as a whole the unemployment rate is expected to deteriorate to above 8 per cent in 1982 from 7.2 per cent last year with corresponding increases occurring in individual member countries. Indeed, available indications suggest that unemployment will continue to rise into 1983.

The Orientation of Policy

In general, the stance of policy, both fiscal and monetary, has been restrictive throughout 1980 and 1981. Governments by and large have

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accorded first priority to the reduction of inflation and the improvement of external balances following the oil price shock of 1979-80 and have chosen to pursue these objectives, even in the face of rapidly rising unemployment, through the medium of demand deflationary budgets and high interest rates. Another pervasive feature of policy has been the pre-occupation with cutting taxes in the hope of stimulating the supply side of the economy. On the whole, formal incomes policies have been eschewed as a means of controlling production costs and thereby inflation — reliance being placed on market forces to 'squeeze' inflation out of the system.

To date these policies have been something less than successful. The much vaunted supply-side boost expected to materialise from the cutting of taxes has been more than counterbalanced by the effects of high interest rates and the erosion of business confidence through depressed demand conditions. Furthermore, the response of prices to deflationary policies has been slow and whatever reduction in inflation has occurred has been purchased at enormous cost in terms of unemployment and capacity under-utilisation. In large part the failure of policy with regard to inflation may be put down to the unwillingness of governments to influence directly the wage bargaining process either through incomes policy or through less formal channels.

The stance of policy seems set to remain broadly unchanged throughout the remainder of 1982 although, as already alluded to, there is some evidence to suggest that policy is becoming more flexible. We now turn to a more detailed assessment of policy orientation in the major OECD economies.

(i) The US: A good deal of uncertainty attends the current orientation of policy in the US arising from the clear conflict between the declared stance of monetary and fiscal policies and the ongoing attempts to reconcile them. Monetary policy targets are likely to be marginally more restrictive than they were last year. The same preliminary targets are being maintained for the growth of M2 and M3 but a tighter target is proposed for M1 (see Table 1). The targetted growth of 'narrow money' is to be reined in from 3.5-6 per cent to 2.5-5.5 per cent, largely in response to the unsettling spurt in M1 growth which occurred in the last quarter of 1981 when it registered an annualized rate of 14.3 per cent, in contrast with the outturn for 1981 as a whole which was 2.2 per cent. A more permissive stance for 1982 might have been

TABLE 1: Monetary Policy Announcements — Selected Countries

Country	Target Variable	1981 Target	Outturn	1982 Target	Current Trend in Interest Rates
		%		%	
US	M1	3.5 - 6	2.2	2.5 - 5.5	
	M2	6 - 9	9.5	6 - 9	Upward
	M3	6.5 - 9.5	11.2	6.5 - 9.5	
UK	£M3	6 - 10	15.8	8 - 12	
	M1	-	10.0	8 - 12	Downward
	PSL2	-	11.3	8 - 12	
W. Germany	CBM	4 - 7	4.5	4 - 7	Downward
France	M2	10	11.6	12.5 - 13.5	Upward

Notes: £M3 — Sterling M3; PSL2 — private sector liquidity; CBM — Central Bank Money

countenanced by the Federal Reserve Board if 1981 targets generally had been realized but overshooting with regard to M2 and M3 has effectively reinforced the Board's resolve to press on with a restrictive policy.

Fiscal policy for 1982-83 is being framed within the context of President Reagan's "three essential priorities": substantially higher defence spending, major personal tax cuts and the long-term reduction of government spending as a proportion of GNP. Whereas it was previously thought that these priorities could be pursued without generating a budget deficit significantly in excess of $100 billion, it is currently anticipated that the deficit for 1982-'83 will be about $180 billion. The latest information available to us at the time of going to press indicated that attempts to formulate a compromise budget based on higher taxes and reduced defence expenditure had broken down.

Taking likely budgetary policy and the declared aims of monetary policy together, it seems that US interest rates will be such as to jeopardise the prospect of the US economy recovering from recession this year. The current expectation is that the recovery previously predicted to occur in the second or third quarter will not now materialize until the end of 1982 or early 1983.

(ii) The UK: Current UK economic policy seems designed to ensure the availability of cheaper money in 1982. Thus the March budget by coupling a relaxation of monetary policy to continued fiscal stringency is likely to precipitate a reduction of interest rates this year.

The second version (March 1981) of the medium term financial strategy (MTFS) had set a target of 5-9 per cent growth in sterling M3 for 1982-'83. The most recent budget—MTFS Mark III—raised this range to 8-12 per cent and extended coverage of the new target to narrow money, M1 and to PSL2, the widest definition of private sector liquidity. With regard to sterling M3 the new higher target hardly represents an effective relaxation of policy since the reality has been that in the first two years of the MTFS the outturn for sterling M3 has substantially outstripped its targetted growth. There has in consequence been a growing recognition that sterling M3 may not be the most satisfactory monetary aggregate to base policy on. Nevertheless, the extension of the ambit of monetary growth targets to cover M1 and PSL2 is interpreted by most commentators as an indication of greater flexibility in the approach to policy instruments.

Although the recent budget entails an increase in the PSBR as a percentage of GDP relative to the targets contained in either the MTFS Mark I or Mark II, 3.5 per cent as against 3.25 per cent and 2.25 per cent respectively, the stance of fiscal policy remains restrictive. Public spending is planned to increase by just over 9 per cent in cash terms and the PSBR target is £9.5bn. for 1982-83 as against the £10.5bn. estimated outturn for 1981-82. Some doubt has been expressed concerning the plausibility of these targets, particularly in the light of the very restrictive assumptions on public sector pay which underpin the forecasts.

(iii) W. Germany: The thrust of monetary policy in West Germany continues to be to bring about the reduction of inflation by maintaining a strong D-mark, in turn facilitated by high interest rates. For this reason monetary policy is likely to retain its restrictive stance throughout 1982. The target

growth in Central Bank money is to be the same as last year at 4-7 per cent (see Table 1) when an actual growth rate of 4.5 per cent was achieved.

Fiscal policy, too, continues to be broadly restrictive, with the basic aim being a reduction of the current budget deficit in the medium term—this despite the fact that all the indicators point to an economy suffering from deficient aggregate demand: low inflation, low growth, historically very high unemployment and a large expected surplus this year on the balance of payments current account. Meanwhile, the government has announced a set of fiscal measures specifically designed to stimulate investment and employment, all of which will be financed by increased taxation.

(iv) France: France is alone amongst the major OECD countries in the importance it has assigned to combatting unemployment and redistributing income. Consequently, whereas the UK, US and West Germany have been pursuing pro-cyclical monetary and fiscal policies, policies in France have been oriented towards stabilizing the economy on a steady growth path and have thus been anti-cyclical in thrust.

The monetary growth target for 1982 is a 12.5-13.5 per cent growth in M2. The corresponding target for 1981 was 10 per cent as against an outcome of 11.6 per cent. The target for 1982 seems particularly optimistic given that GDP in value terms is likely to rise by some 16 per cent, the implicit assumption here being a very marked fall in the aggregate liquidity ratio. With regard to 1983, the French government has stated that monetary growth will be reined in to a range 8-9 per cent to the extent that the reduction of inflation becomes a priority objective. It is clear, however, that the French do not intend to rely on monetary policy as the tool for combatting inflation, rather the government has sought and received the agreement of the Trade Unions for an anti-inflationary incomes policy coupled with price regulation.

Fiscal policy is unambiguously expansionary for 1982. "Permanent-category" central government spending is set to grow by 28 per cent compared with the initial budget of 1981 while the corresponding figure for the growth of revenue is 19 per cent. The draft budget forecasts a budget deficit of 95.4 billion Francs for 1982 as against 57 billion Francs in 1981, 2.6 per cent and 1.8 per cent of GDP respectively. Notwithstanding the magnitude of this figure, however, it is likely to prove an underestimate. French forecasting agencies are expecting a deficit of 110-120 billion Francs this year which would amount to about 3.3 per cent of GNP.

Developments and Prospects

Table 2 presents a detailed breakdown of forecasts of economic performance by country and by indicator. Only two of the OECD majors are expected to grow at a higher rate than the OECD average: France and Japan at 2.5 and 3.75 per cent respectively. The available evidence suggests that capital formation is likely to be very weak for the second year in a row, not surprisingly given the low levels of capacity utilisation. Viewed in conjunction with expectations with regard to overall growth and the behaviour of imports, it becomes clear then that the recovery is primarily due to re-stocking rather than a strong trend in underlying capacity expansion. For all countries inflation is expected to moderate (although only marginally in the case of France) and

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TABLE 2: Selected Economic Indicators

	GNP/GDP Growth		Investment (volume growth)		Unemployment		Inflation (consumer prices)		Money Supply Growth*		Interest Rate+		Balance of Payments US $ billion	
	1981	1982	1981	1982	1981	1982	1981	1982	1981	1982	1981	1982	1981	1982
	(%)		(%)		(% Labour force)		(%)		(%)		(%)			
US	1¾	−½	5	n.a.	7½	9	10½	7½	11¼	8	n.a.	n.a.	6½	22
UK	−2½	1½	−8	¾	11¼	13	12	10¾	15¾	10¾	13¼	13½	15	10½
Germany	−¼	½	−6	−4¼	5½	7½	6	5	1¼	3	10¾	10½	−7¾	0
France	½	2½	−2	1¼	8½	9¼	13	12½	12½	15	15¼	14½	−6¼	−8¼
Italy	−¼	1¼	−¼	−5½	8½	9	19½	17	9¼	13	22	17	−8	−5
Canada	2¾	0	n.a.	n.a.	7½	8½	12½	11½	n.a.	n.a.	n.a.	n.a.	−5	−6½
Japan	3¾	3¾	n.a.	n.a.	2¼	n.a.	5	4	n.a.	n.a.	n.a.	n.a.	4¾	6½

*US — M3; UK — £M3; Germany — M1; France — M3; Italy — M3
+Short-term interest rates
Sources: National forecasts

unemployment to increase with the expected deterioration for Germany being relatively more pronounced. The latest available information from forecasting agencies in the individual countries points to a decline in nominal interest rates although the implicit expectation for real interest rates is that they will increase in some cases.

The results of the latest European Community business survey (February 1982) give mixed support to the forecasts outlined above. On the one hand, industrial selling price expectations are falling as judged by the survey results indicating a reduction of inflationary expectations at the micro-level. Moreover, the survey results on capacity utilisation support the expectation that investment activity will be weak this year—the level of capacity utilisation in the Community's manufacturing industry is reported at under 77 per cent and ranges from 61 per cent in the case of Ireland to 81 per cent for France. However, the survey reports that industry regards stock levels as still being excessive, this outlook being more pronounced than in the previous month and being particularly true of the UK and West Germany. Furthermore, expectations with regard to production remain unchanged with the balance of respondents in the Community as a whole expecting a fall in production (see diagram 1).
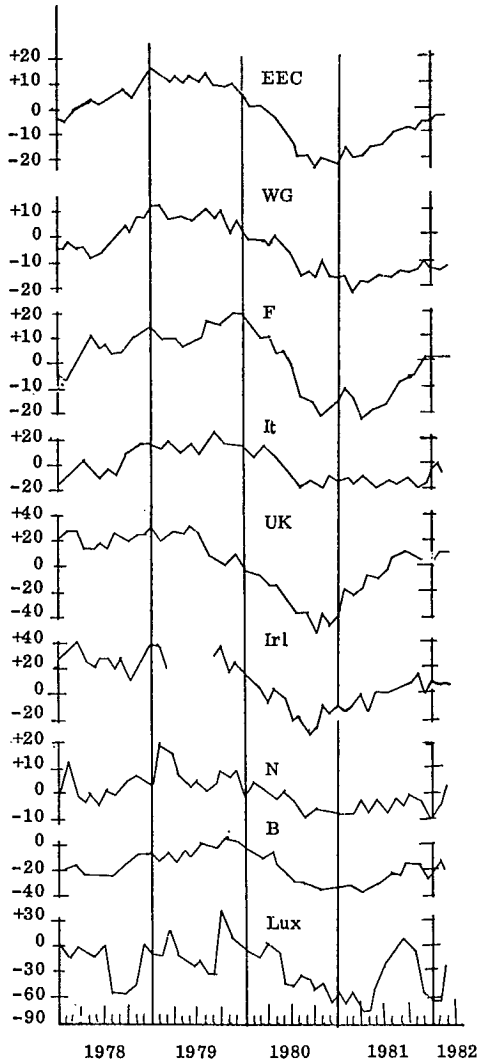
World Oil Market Conditions
There has been a major downward adjustment underway in oil consumption by industrialised countries since 1979. Sluggish economic growth over the period has undoubtedly been an important factor in this process. However, the effects of substitution and conservation in the wake of a near five-fold increase in the relative price of oil since 1973 may now be a more important influence. In the major industrial countries oil use per unit of output has fallen by almost 30 per cent between 1973 and 1981, with over 80 per cent of the decline concentrated in the last three years. Moreover, there are now indications that some of the developing countries are making progress in containing the growth of oil consumption. Further significant adjustment is expected. On the assumption that real oil prices remain at about their present level for the next year or so, OECD oil consumption is expected to fall 15 per cent below its level of 1979 by mid-1983 (Table 3) although the area's real GNP is forecast to be nearly 7 per cent higher.

TABLE 3: Oil Market Condition. Million barrels per day (seasonally corrected)

	1977	1979	1980	1981	1982	1980		1981		1982		1983
						1st half	2nd half	1st half	2nd half	1st half	2nd half	1st half
OECD Supply & Demand												
Consumption	40.8	40.9	37.7	35.3	34.5	38.3	37.1	35.4	35.1	34.7	34.3	34.1
Stockbuilding	−0.3	0.8	0.6	−0.7	−0.6	1.9	−0.6	0.6	−1.9	−0.9	−0.4	0.0
Production	14.2	14.9	15.0	15.0	15.1	15.1	14.9	15.0	15.0	15.0	15.2	15.3
Net Imports	26.2	26.8	23.3	19.6	18.8	24.9	21.7	20.9	18.2	18.8	18.7	18.8
Stock/Consumption ratio		86.7	100.6	100.9	94.2	101.4	101.7	110.4	101.5	97.9	94.8	95.3
OPEC Production	30.5	31.6	27.5	23.0	22.7	29.0	25.9	24.7	21.4	22.7	22.6	22.9

Source: Economic Outlook, 30 OECD, Paris, December 1981

Production Outlook for Manufacturing Industry
EEC and Member States*

Order books in Manufacturing Industry
EEC and Member States*

EEC

WG

F

It

UK

Irl

N

B

Lux

1978   1979   1980   1981   1982

WG

F

It

UK

Irl

N

B

Lux

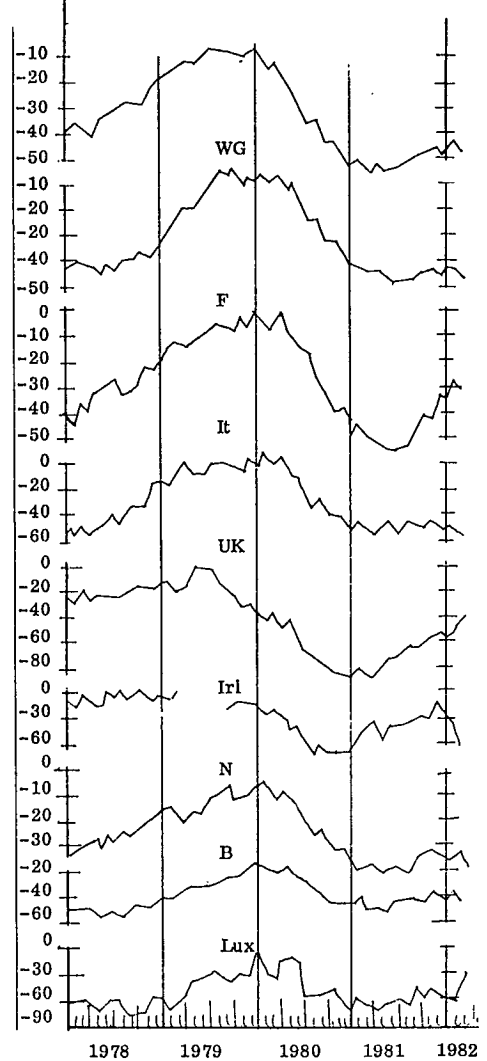1978   1979   1980   1981   1982

Diagram 1: Leading
Indicators for
European Economies

*Net balances, i.e., differences between percentages of respondents offering positive and negative replies.
Source: European Community business survey results (monthly) Supplement B.

In addition to the drop in consumption, the reduction in oil stocks is likely to continue depressing demand for oil. During 1981 there were sharp swings in OECD oil stockbuilding. Between the last quarter of 1980 and the first quarter of 1981 demand was boosted by about 2½ mbd mainly as a result of stockbuilding. But the weakening consumption pattern, the upward movement in interest rates and the expectation that prices may continue to weaken led to a decumulation in the second half of 1981. However, by end 1981 world oil stocks are estimated to have stood at around 5 million barrels, equivalent to about 108 days of forward world oil consumption, well above the more normal level of 92 days consumption prevailing at end 1978. As a result it is expected that the destocking will continue, albeit at a more gentle pace, during the two halves of this year and will stabilise in the first half of 1983.

On the supply side there has also been a marked shift with an increase in the number of market participants and a corresponding erosion in OPEC's market share (Table 4). The largest increase has occurred in Mexico and the UK, each of whose production increased by 1.6 mbd between 1973 and 1981. In conjunction with the developments on the demand side, these conditions have more than offset the 5 mbd reduction in the output of Iran and Iraq since 1978 and have led to a curtailment in OPEC production. After a peak rate of 31.3 mbd in 1977, OPEC production has fallen to an estimated 23 mbd last year and to even lower levels in the early part of this year.

TABLE 4: Oil Consumption and Dependence on OPEC

	1978	1979	1980	1981	1982
Consumption (mbd) (OECD and non-OPEC LDCs)	48.3	48.8	45.4	42.9	42.2
OPEC Exports (mbd)	28.5	29.4	25.0	20.2	19.6
Share of OPEC Exports in consumption (per cent)	59	60	55.1	47.1	46.4

Source: *Economic Outlook, No. 30*, OECD Paris, December 1981

For a significant share of OPEC countries these levels are below those needed to meet external financial commitments. This has been reflected already by the fact that last year seven of the thirteen OPEC members recorded a current balance of payments deficit compared with one country in 1980. Clearly, these factors have resulted in downward pressure on prices. But there have been marked differences in the pricing strategy adopted by oil producers during 1981. Non-OPEC countries reacted quickly to the weak market conditions by reducing their price from $39 to $35 per barrel between the beginning of the year and the autumn. OPEC members with high relative prices did not follow at first but as demand was switched from their products the consequences became burdensome. For example, Nigeria lost about a quarter of its foreign exchange reserves and was the first OPEC country to adjust its price. Other countries followed and by October oil prices were about $1 below their January level. This trend was reversed, however, in October and November when Saudi Arabia cut back its production and raised its price, offsetting further reductions by members with high relative prices.

It nevertheless appears that further downward pressure will emerge. For one, oil consumption will be showing its usual seasonal drop of about 3 mbd

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over the next few months and while this has usually been offset by companies building up stocks, that pattern is unlikely to emerge this year. Second, non-OPEC producers faced with large current account deficits may find it advantageous to cut prices further. Third, it is not evident that OPEC will be able to sustain a concerted reduction in output. Saudi Arabia in particular has repeatedly expressed concern at the incentive being provided by excessive price levels to the development of alternative energy sources and the consequences this would have for long-term oil consumption and OPEC production. The pricing formula developed by OPEC's Committee on Long-Term Strategy which is based on changes in economic growth, inflation rates and exchange rates in industrial countries if applied since 1979 would indicate a price today somewhat below the present $32-$34 per barrel.

All these considerations would point to the likelihood of a further easing in real oil prices in the short run and the possibility of a stabilisation in the real price of oil well into next year. Short-term considerations (e.g. uncertainty arising from the South Atlantic crisis) may in the short run push up prices.

II. THE DOMESTIC ECONOMY

Exports of Goods and Services

In the February Commentary an increase of 21 per cent in the value of exports of goods and services was forecast for 1982—made up of a volume increase of 7¼ per cent and a price increase of 12¾ per cent. Exports of manufactured goods were expected to grow most rapidly—by 12½ per cent in volume terms—while other industrial exports and agricultural exports were expected to rise by 5 and 3 per cent respectively.

In the period since that forecast was made the trade data indicate that manufactured exports continued to grow in volume terms in the first quarter of the year compared with the fourth quarter level, with a quarter to quarter increase of 4-5 per cent. The value of other industrial exports also appears to have recovered following a sharp decline in the third and again in the fourth quarter of last year. There were very special factors at work in 1981—the Tara Mines dispute and the cessation of production at Whitegate Oil Refinery —which adversely affected exports in the second half of last year. In the first quarter of this year these negative factors were still operative but other categories of exports (e.g. drink and tobacco, Shannon exports) have grown rapidly.

The outlook for demand for the remainder of the year remains reasonably favourable. The OECD forecasts for world trade are for an increase in the rate of growth of OECD imports and intra OECD trade in the second half of this year and this rate is expected to be maintained in the first half of 1983. The situation with regard to the U.K. is more uncertain—due to the lack of data between February and September 1981. The data available for the final months of the year indicate a very high level of imports at that time and it is difficult to know whether imports only increased in that period or whether the rise had occurred earlier. Forecasts for U.K. imports during the year vary considerably depending on the assumption made with regard to last year. There is expected to be some increase in imports between end 1981 and end 1982. At best from the point of view of Irish exports the growth could be substantial, at worst as low as 1 per cent, between end 1981 and end 1982.

On the supply side the resumption of work at the Tara Mines will lead directly to increased mining exports, and in spite of a weakening of new foreign investment this year there are likely to be increased output and exports from previous years' investment for some years to come.

Agricultural exports are more difficult to forecast. It appears that there was some smuggling of live animals to Northern Ireland in 1981—the amount and value are uncertain—in response to price differentials. Thus recorded agricultural exports in 1981 understate the true position. For 1982 it may very well be that smuggling will continue at roughly the same rate, but it is impossible to be in any way certain of this. Cattle disposals this year (including

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smuggled cattle) are likely to be about the same as last year, and we have assumed no volume change. Dairy products exports, on the other hand, are expected to increase by about 5 per cent.

Tourism receipts are unlikely to grow in volume terms this year. Real disposable income in the main consuming countries are being squeezed again. Table 5 below summarises the forecast for exports of goods and services.

TABLE 5: Exports of Goods and Services (£ million)

	1981	1982	Per cent change Price	Volume
Manufactured Exports	2820	3520	11	12½
Other Industrial Exports	670	815	10½	10
Agricultural Exports	1305	1500	12½	2
Other Exports	50	60	11	—
Merchandise Exports	4845	5895	11½	9¼
Adjustment for Balance of Payments purposes	—95	—105	—	—
Adjustment for Intervention and other agricultural trade	30	55	—	—
Merchandise Exports for Balance of Payments purposes	4830	5845	11½	8½
Tourism	440	515	17½	—
Other Services	270	305	12½	—
Exports of Goods and Services	5540	6665	12	7½

Fiscal Assumptions

The fiscal measures introduced in the March budget impinge on all aspects of the economy, affecting public and private consumption, investment, stockbuilding, imports, prices, employment etc. For some measures the effects are straightforward—e.g. the effect of increased indirect taxes on real disposable income and costs. However, the effect of the application of VAT on imports at the point of entry and bringing forward the date of payment of company tax is by no means clear. These measures increase claims on the cash flow of the corporate sector—and thus are likely to affect its behaviour.

The corporate sector will be affected with regard to disbursements of profits, funds for reinvestment, the level of stocks and the level of activity. Only in the case where increased claims are met by increased borrowing at zero interest rates will these particular fiscal measures be neutral on the corporate sector. Even in this case it would require that the funds borrowed be provided outside the credit guidelines of the Central Bank so that there would be no displacement effect, or that the credit guidelines are so generous that the increased credit requirements could be accommodated without effecting credit for other purposes.

In the Budget speech the Minister stated that if the change in relation to VAT on imports gives rise to financing difficulties then the possibility that the Industrial Credit Company could provide loan finance would be explored. It is unlikely that the whole of the extra funds required will be raised in this way —some companies are already over-borrowed, there is the physical problem of

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the number of importers who would be seeking funds etc. Nor can the credit guidelines of the Central Bank easily accommodate the increased demands. In the section on financial and monetary developments it is pointed out that given the amount that private sector credit can increase this year and given also the cash needs of the semi-state sector (classified as private in the monetary and banking statistics) out of this, the amount of credit available for the private sector proper will be reduced considerably. Furthermore, company retentions after tax and allowing for stock depreciation have been in decline since 1979 in nominal terms. When allowance is made for depreciation and capital grants from the State sector there is a minor nominal rise in the cash available to the corporate sector, but this will be outweighed by the fall in credit through the banking system. Even without the increased claims on the corporate sector arising from the change in VAT on imports and the bringing forward of company tax the corporate sector would be cash constrained.

It is necessary to make some assumption about the amount that will be raised through foreign borrowing by the ICC. Simply as a working assumption, which can be changed as information becomes available later this year, it is assumed that £100 million is provided in this way and that the corporate sector adjusts its activities to reflect the cash shortage. In practical terms this means that some investment will be reduced, stock levels will be reduced, dividends and distributed profits will be less than otherwise, some activities will be reduced, some firms will seek to recoup the increased interest charges through higher prices, and it is possible that some firms will delay payment of other taxes to finance advance payments.

Over and above the difficulties raised by the bringing forward of taxes there is also the question of the likely outturn of the current budget deficit, the Exchequer Borrowing Requirement and the Public Sector Borrowing Requirement. The Exchequer returns for the first quarter suggest that Exchequer borrowing may be running above the limits outlined in the Budget and there have been reductions in certain taxes since then. In recent years overruns on the current budget deficit have been substantial. The likelihood is that in 1982 there will also be overruns with the current deficit running at about £850 million, the Exchequer Borrowing Requirement at about £1,850 million and the Public Sector Borrowing Requirement at about £2,650 million. These figures compare with £802 m., £1,722 m. and £2,237 m. in 1981. The Public Sector Borrowing Requirement figure includes £100 million raised abroad by the ICC, as discussed above, plus borrowing for capital purposes by the Semi-State sector. It excludes borrowing by the sector to cover losses on day-to-day operations as this information is not published. To the extent that these companies have to borrow directly, or the Central Government provides more equity than allocated in the budget, then the Public Sector Borrowing Requirement would be higher. Ideally, we would like to have a full financial picture but this is not available.

Overall fiscal policy is deflationary even with the higher forecast figures here. This is not readily apparent from the basic data. However, interest payments made abroad this year are expected to increase by £265 million on last year's level and when the borrowing requirement net of interest payments is examined there is a significant fall in real terms. Thus the economy in 1982,

while receiving a sharp external stimulus will also be experiencing internal deflationary forces.

Government Consumption Expenditure

Net Central Government current consumption expenditure on goods and services (excluding depreciation) is budgeted to increase by 24 per cent. We expect the overrun on this to be small and reflect increased volumes, as the public service pay agreement is expected to be maintained.

Local Authorities net current consumption expenditure is more difficult to forecast. Total expenditure by the local authorities was expected to increase by just over 11 per cent prior to the specific budget day adjustments and increases since then. Even with these changes the amount allocated is increasing very much less than might be expected to maintain levels of activity, particularly when it is realised that threequarters of current expenditure of the local authorities goes on consumption expenditure. The assumption we are making is that the real level of local authorities consumption expenditure remains unchanged in 1982 on 1981.

Even with this, net public authorities consumption expenditure should increase in volume terms by $3\frac{1}{4}$ per cent with the value rising by just over 19 per cent.

Investment

The Public Capital Programme has been increased from £2,000 million as outlined in "Public Capital Programme 1982" to £2,088 m. at present. The increase was due to specific measures in the proposed budget of January which brought the public capital programme up to £2,030 million and a net addition of £58 million in the actual March Budget. The overall figure of £2,088 million represents an increase of 17 per cent on the 1981 outturn.

In addition to the specific expenditure contained in the public capital pro-gramme as revised there is also the question of borrowing by the ICC not covered in the public capital programme to finance fax payments. It is difficult to know how this will be classified but it is assumed that it will appear under capital expenditure — increasing the nominal value of the Public Capital Programme to £2,188 million. Ideally, we would prefer to have a full financial flow which would indicate loans and grants, purchases of equity, direct investment and trading losses etc. of the whole state sector. In this way it would be possible to distinguish public investment from publicly financed invest-ment. The importance of these distinctions can be seen from Table 6 below

TABLE 6: Expenditure on Capital Account (National Accounts Basis) Central Government 1980-1982

	1980	1981	1982	% change	
	£m	£m	£m	1981	1982
Grants, transfers to private sector	257	302	330	17.5	9.3
Loans and Purchase of Share Capital	53	109	158	105.6	45.0
Other loan — Intervention Agency	46	11	—	—	—
Grants, Loans to Local Authorities	272	392	487	44.1	24.2
Gross Physical capital formation	278	423	435	52.2	2.8
Capital Payments to the rest of the world	2	1	2	—	—
Total:	908	1238	1412	26.3	14.1

which provides a National Accounts classification of Central Government outlays on Capital Account. As can be seen, actual direct investment by the Exchequer is expected to increase by only 2.8 per cent this year. Grants and loans to local authorities are also likely to be reflected in increased investment this year (though some part of this is itself on-lent) but loans and purchases of share capital may not all be so reflected. Some part of the latter reflects loans and grants to state agencies out of which new investment will take place, but a substantial part is the provision of equity to reduce non-exchequer borrowing by these agencies.

If we assume that corresponding to these loans and grants direct investment by the private sector takes place, then it is possible to look at the investment forecast and past investment in terms of the sources of finance (Table 7). There are some dangers with this as it is possible that corresponding to some loans there may be no investment (where borrowed funds might be used to finance consumption) or where the investment may have taken place last year (as is the case with some IDA grants).

TABLE 7: Sources of Funds for Investment 1978-1981 (£m)

	1978	1979	1980	1981	1982
Publicity financed Investment	816	1022	1305	1766	2088*
Privately financed Investment	1014	1346	1247	1264	1262
Gross Investment	1830	2368	2552	3030	3350

*forecast — excluding non-programme outlays and ICC borrowing to finance advance tax payments.

The table suggests that privately financed investment declined in volume terms in 1980 and 1981. This decline has been associated with a decline in internal financial resources of the corporate sector. For this year the forecast implies a further real decline. In Table 8 this forecast is given by type of asset.

TABLE 8: Investment 1981-1982

	1981	1982	% change	
			Price	Volume
	£m	£m		
Building and Construction	1630	1780	15	−5
Machinery and Equipment	1400	1570	10	1
Total:	3030	3350	12½	−2

The forecast for the year is thus for a fall of 2 per cent in total investment in volume terms. Building and Construction expenditure may fall by 5 per cent while expenditure on machinery and equipment may rise by 2 per cent. This latter part of the forecast depends heavily on re-equipment expenditure by existing industrial firms and may prove to be too optimistic in the light of the cash constraints facing the industrial sector.

The poor growth in private investment also reflects a slowdown in new foreign investment — a consequence of the world recession. There appears to have been a slowdown in the inflow of new firms from the second half of last year and this will affect actual investment expenditure this year and next.

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Table 9 below summarises the most recent data and provides some order of magnitude for developments if the forecasts given above are to be realised.

TABLE 9: Indicators of Investment (seasonally corrected)

| | 1981 | | | | 1982 |
	I	II	III	IV	I
Imports of Capital Goods (£m)	195	220	260	235	230
Cement Sales (IQ 1981 = 100)	100	94.0	89.4	85.4	81.4

If the first quarter level of imports of capital goods were maintained for the remainder of the year, then imports of capital goods would be slightly less than £700 million compared with the forecast of £800 million for the remainder of the year. Similarly, for the forecast for building and construction to be realised cement sales would have to be running at an average level of 89.7 (IQ 1981 = 100) for the remainder of the year. The forecast may thus be on the optimistic side.

Private Consumer Expenditure

In looking at private consumption it is necessary to consider private disposable income and the factors that underlie changes in private disposable income. Those factors are average earnings, total employment, distributed profits of companies and net taxes and transfers.

The situation with regard to average earnings is very much as outlined in the February Commentary. In the public sector increases in basic rates of pay are assumed to follow the lines set out in the public service pay agreement with no deviations from the amount allocated in the budget estimates. This allocation was for an increase of 18.3 per cent on 1981 actual expenditure of which 2 per cent is due to increased numbers. Average earnings in the private sector are expected to rise by about 14 per cent but employment to fall by about 1 per cent. Total private sector earnings are expected to rise by 13 per cent.

Agricultural incomes are expected to increase by 25 per cent this year. The farm price review will result in an average increase of 12 per cent in the prices of products—though the delay in implementing the price increases affects income. By end 1981 (4th quarter) agricultural output prices were running 8 per cent above the year average and they continued to rise in the first quarter of this year. The year on year increase in output prices is expected to be about 16-20 per cent. In addition to this, the volume of imports is expected to fall and input prices to rise less rapidly than output prices.

We expect the cash position of the corporate sector to deteriorate under the impact of accelerated tax payments and the imposition of VAT at the point of entry on imports. Some part of the adjustment to this by the corporate sector is expected to come in a smaller increase in distributed profits this year. Distributed profits are expected to grow by only 10 per cent. There were very substantial increases in current transfer payments outlined in the budget. The increase in current transfer payments, excluding National Debt interest and excluding minor payments made abroad, is 28½ per cent. Actual expenditure may be somewhat higher than this.

The increases in incomes and transfer payments result in an increase in

personal income of 16¾ per cent. Taxes on personal income, however, are expected to increase very sharply so that personal disposable income may rise by 14 per cent. We have no way of predicting the savings ratio. There are several factors at work which might suggest a rise in this ratio and others which would tend to pull it down. The growth in incomes is very uneven—with agricultural incomes increasing most rapidly. If farmers have a' high average and marginal propensity to save, then this would give an upward bias to the savings ratio. Similarly, high interest rates may encourage increased saving while the removal of income tax relief on new bank borrowings may discourage consumption. On the other side, the fall in real disposable income by other groups may lead to a fall in their savings ratio as attempts are made to maintain consumption patterns. Indeed, the largest increase in disposable income occurs amongst those on social welfare. It must be expected that this will all be reflected in consumption. Simply as a working assumption it is assumed that the savings rate remains unchanged and that consumption also increases by 14 per cent.

Consumer prices are forecast to rise by 17½ per cent this year. The increase in the Consumer Price Index in the three months November to February at 2.3 per cent was very low. It reflected a variety of favourable factors towards the end of the year. There was an effective appreciation of the currency of 2 per cent in the final quarter of the year. Import prices fell marginally in the same period. There were also no indirect tax increases and no major increases in pay took place. There is likely to be an acceleration in the rate of inflation, as measured by consumer prices, in the second quarter. The increase may be of the order of 5½-6 per cent, reflecting the indirect tax changes in the budget, an effective depreciation of 3 per cent in the exchange rate in the first quarter of the year and increases in pay in the private sector (where the norm appears to be front loaded increases in contrast with the public service pay agreement). In the third and fourth quarters the increases are expected to taper off with the increase from November to November below 15 per cent.

The volume of private consumption is expected to fall by 3 per cent this year.

Imports of Goods and Services

Merchandise imports in 1981 increased by 21 per cent in value. The distribution of these imports by end use is given in Table 10.

TABLE 10: Imports by end use 1980-1981

	1980 £m	1981 £m	% change
Producers Capital Goods	748.2	909.8	21.6
Consumption Goods	1376.2	1738.6	26.3
Materials for further production	3280.8	3912.6	19.3
Unclassified	14.2	14.4	—
Total	5419.4	6575.9	21.3
Petroleum and Petroleum products included above	721.4	852.5	18.2

As can be seen, there were very large increases in all categories of imports at this aggregate level in 1981. Within the categories there were some large differences. Imports of food, drink and tobacco increased by about 30 per cent within consumption goods, while imports for materials for further production in agriculture increased by just under 50 per cent within the materials category. The volume of petroleum and petroleum products fell by about 1/6th.

The relative increase in food, drink and tobacco imports was due almost entirely to increased food imports. Some part of this reflected the poor supply situation domestically with regard to cattle supplies, affecting both live cattle imports and meat and meat preparation imports. There was also a very large increase in imports of butter and of eggs from Northern Ireland. We expect no further increase in the volume of food imports this year—the first quarter import figures indeed suggest that the volume of cattle and beef imports and dairy products imports could be reduced this year.

We expect a volume fall in imported feedingstuffs for animals. Imports of feedingstuffs have grown very rapidly in recent years (Table 11). This growth occurred not only because of an increase in feedingstuff usage in response to a favourable milk price/input cost relationship but also because of very severe weather conditions over the past 4 years. Adverse weather conditions affected grass growth and cereal output. Imported feed was a response to this. While the weather might still turn out to be unfavourable, we are at this stage assuming normal weather conditions and hence expect imports of feedingstuffs for animals to fall in volume terms.

TABLE 11: Imports of Feedingstuffs for Animals 1977-1981

	£m	M Tonnes (000's)
1977	47.4	340.3
1978	60.8	560.4
1979	95.8	828.3
1980	78.9	601.6
1981	120.5	819.6

The fall in oil imports in 1981 reflects primarily an increase in the take-up of natural gas by the Electricity Supply Board for electricity consumption, with natural gas replacing oil. This year we expect to see a further increase in gas usage—but this depends critically on the relationship between gas prices to the ESB and the prices at which the ESB can purchase oil in world markets. Assuming that gas prices are varied with world prices, there could be an increased take-up of gas by the ESB this year. Also, there could be a further shift away from oil if the weather remains favourable as turf production in the recent past has been adversely affected by weather conditions in the Spring/Summer. These factors would lead us to expect a volume fall in oil imports in 1982. Ideally, we would like to approach this from the point of view of energy demand but published data do not distinguish stock levels and changes in stocks of oil. Thus we are unable to state how much of what was imported in 1981 was reflected in excessive or inadequate stocks—that is excessive or inadequate in relation to demand. If stock levels in 1981 were excessive, then a

downward adjustment to stocks would reinforce the supply side effects on imports. Finally, the rise in the relative price of energy and the weak growth expected in GDP would militate against any increase in general energy demand. The forecast for oil imports is thus for a fall of 10 per cent in volume terms.

We expect imports of producers capital goods to increase by 2 per cent in volume terms in line with the forecast for investment. The remaining category of imports—viz. imports of materials for further production—is more problematical. Two opposite forces are at work. On the one hand we have a situation of weak internal demand—aggravated by some reduction in stocks towards the end of the year as the VAT payments on imports at the point of entry becomes operative. On the other hand, the growth in industrial exports necessitates an increase in imports of materials. There was a fall in the value of these imports (seasonally corrected) in the final quarter of last year, but preliminary data for the first quarter of this year indicate that there has been a recovery in these imports since. The forecast is for a volume rise of 5 per cent in imports of materials.

The merchandise import figures for the first quarter of the year show a rise of almost 17 per cent on the first quarter 1981 level. However, seasonally corrected, they were running at just 2 per cent above the level in the second half of last year—a significant slowdown. As the year progresses we expect the negative influences to become more operative and the year-on-year increases to fall quite sharply.

For service imports we expect a fall in expenditure abroad by Irish tourists as a result of the fall in real disposable income.

Imports of goods and services as a whole may rise by about ½ per cent in volume terms with import prices increasing by 10 per cent.

Net factor income

Net factor income in the difference between two very large gross flows of interest, dividends and employee remuneration paid abroad and received from abroad. Up to 1977 net factor income was positive, i.e. Ireland was a net recipient of interest and dividends from abroad. Since then, however, the situation has changed, with net factor payments being the norm, and these net payments have been increasing very rapidly. The change from being a net recipient is due almost entirely to interest payments made abroad by Government on foot of debt denominated in foreign currency and interest on Irish Government stock held by foreigners. Table 12 below summarises the position in recent years, distinguishing between Government gross payments and other net payments. The latter includes interest payments by the semi-state sector on its external borrowing. Unfortunately we do not have, from published information, any data on net interest payments by the semi-state sector. This is of particular importance in recent years as new debt contracted abroad increased very rapidly in 1979, 1980 and less so in 1981. The data also tend to understate the true cost of borrowing to the extent that borrowing takes place in low interest currencies against which the Irish Pound has depreciated. Capital losses due to currency changes do not appear in either the current or capital accounts of the balance of payments. These capital losses can be significant in some years.

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TABLE 12: Net Factor Incoome 1972-1982 (£m)

	Government Interest payments	Other net non-Government factor payments	Net Factor Income
1972	−10.6	+40.2	29.6
1973	−12.9	+36.4	23.5
1974	−16.6	+50.1	33.5
1975	−37.1	+58.1	21.0
1976	−62.7	+64.4	1.7
1977	−96.1	+64.6	−31.5
1978	−131.0	+62.8	−68.2
1979	−153.9	+85.2	−69
1980	−225	+105	−120
1981	−315	+105	−210*
1982	−575	+105	−470**

*Estimate
**Forecast

The forecast is based on the estimated cost of interest payments on debt outstanding at end 1981 plus interest on new debt contracted this year on which interest payments arise.

GDP, GNP and the Balance of Payments

Gross Domestic Product if forecast to grow in volume terms by 1¾ per cent this year. However, given the very large increase in net factor payment there is a fall of ¼ per cent in GNP. The balance of payments deficit on current account is forecast to fall from £1.3 billion or 13 per cent of GNP to £1.2 billion or 10 per cent of GNP.

TABLE 13: Balance of Payments on Current Account (£m)

	1981	1982
Exports of Goods and Services	+5540	+6665
Imports of Goods and Services	−7065	−7810
Net Factor Payments	−210	−470
Net Transfers	+425	+415
Balance on Current Account	−1310	−1200

The improvement in the balance of payments on current account is slight given the increase in export volumes of 7½ per cent, the slight rise in import volumes of ½ per cent and the improvement of almost 2 per cent in the terms of trade. The increase in net factor payments is so large that it wipes out most of the gains from these other factors.

The main components of "other income" in Table I Section B are given in Table 14.

TABLE 14: Other Income (£m)

	1981	1982
Trading Profits of Companies	1080	1170
Other Trading Profits	620	725
Rent etc.	185	215
Stock Appreciation	−335	−275
Adjustment for financial services	−330	−360
Total:	1220	1475

Financial Forecasts

Looking to the likely pattern of financing of the Public Sector Borrowing Requirement this year it appears that there could be some improvement in gilt sales. An important factor behind the reluctance to purchase gilts for much of last year was the belief that domestic interest rates were out of line with those of other countries, considering exchange rate expectations and our own domestic circumstances.

Movements in interest rates internationally will depend to a considerable extent on events in the US. There monetary indicators have been rather confusing. While official interest rates have moved down from their peaks in early February the fall in prime rates has lagged behind and is remaining sticky. This is rather surprising considering that M1 is still some $4 billion above the upper end of the target range for the first quarter, although at one point it had been nearly $10 billion higher. The Federal Reserve seems to be content to allow M1 to come back gradually rather than pursue a strict monetarist course. In addition to possible problems with the quality of the data, the Federal Reserve seem to be influenced by the poor performance of the economy in the early part of the year. Contrary to expectations, the recession did not bottom out at the end of 1981. During January industrial production fell by 3 per cent, capacity utilisation dropped further to 70 per cent, retail sales fell 1 per cent in value and personal incomes fell in real terms. These factors would indicate a fall in short-term interest rates in the US. However, any easing will be tempered in view of the overhanging of large Federal Government budget deficits so that interest rates will still remain very high. On balance it would appear that, in general, short-term rates internationally should ease during the next quarter at least. (A possible exception to this is French interest rates.)

On the domestic front the fact that considerable upward adjustment to interest rates since last Autumn will be combining with stabilised or easing pressures on short-term rates internationally should help to quell expectations of further short-term increases here. However, the funding of the new Housing Finance Agency from index-linked securities carrying a real rate of return could divert funds which might otherwise have gone into gilts. A tight liquidity position in building societies could also involve a reduction in their gilt portfolio, which at end-1981 amounted to about £230 million. For the year as a whole, net sales of gilts to the domestic non-bank public of around £250 million are expected.

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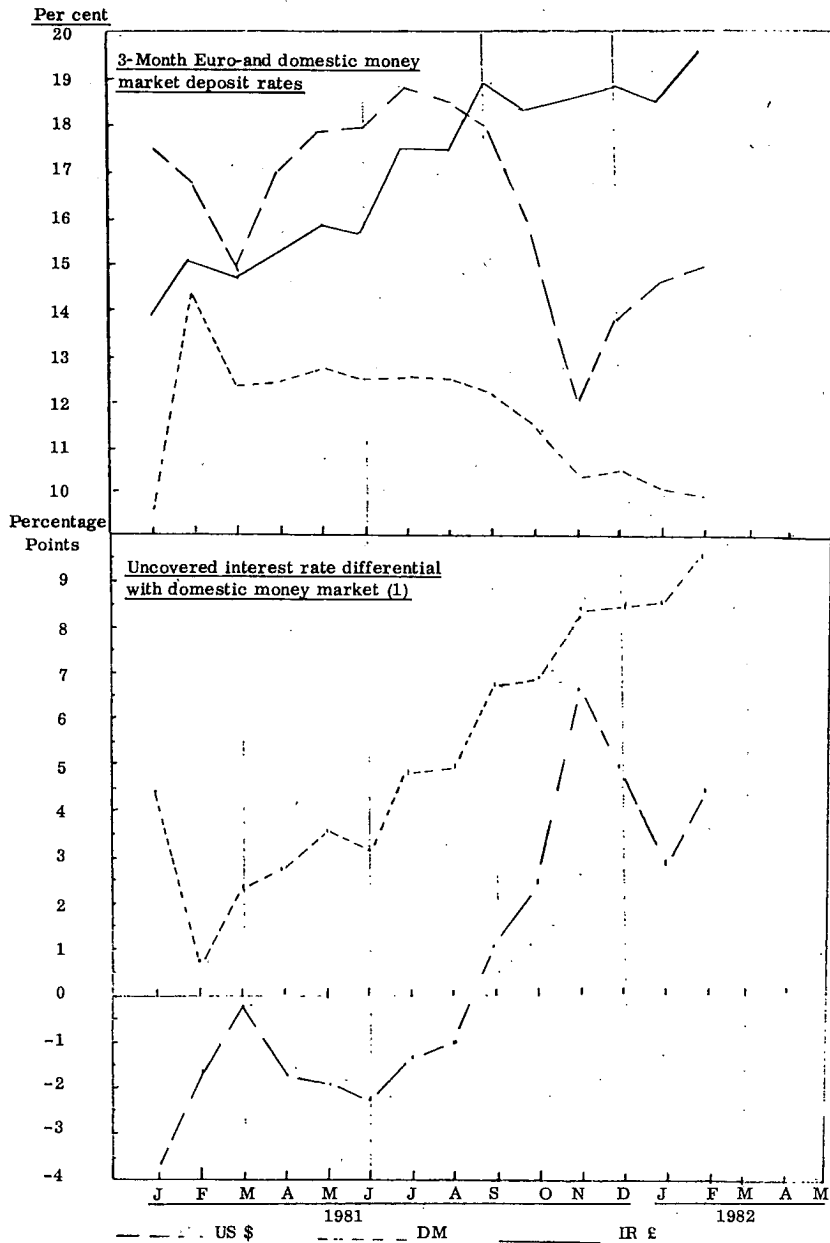
TABLE 15: Public Sector Borrowing Requirement (£m)

	1980	1981	1982
Net Exchequer Borrowing	1217	1722	1850
plus Semi-State Bodies Borrowing	361	516	812
= PSBR	1578	2238	2662
less Sales of securities to domestic			
non-bank private sector	336	224	250
Small savings	52	76	75
= Monetary financing of the PSBR	1190	1938	2337
of which			
— Net External Financing	863	1405	1655
— Other	327	533	682

Data exclude borrowing by Semi-State bodies for current purposes.

The differential between post office deposit accounts and building society share accounts and small bank deposits has been significantly eroded from the favourable position during the first half of 1981 when Exchequer financing through small savings rose most rapidly. In the absence of compensating increases in post office account interest rates this year it seems unlikely that there will be any significant increase from this source in 1982.

After allowance for these likely sources of non-monetary domestic finance, a level of monetary financing in 1982 of about £2,337 million compared with £1,938 million last year is likely. This could involve external financing of around £1,655 compared with an estimated £1,455 in 1981. This comprises an estimated £1,305 in respect of the Exchequer and £350 million as a result of borrowing externally by semi-state bodies. Of the latter, £100 million arises from the expectation of the establishment of foreign currency loan schemes for industry and agriculture over and above amounts allocated in the Public Capital Programme. The balance of the borrowing requirement of semi-state bodies of approximately £460 million is expected to be financed by commercial banks from lending. Such lending is, for the purposes of the credit guideline, regarded as advances to the private sector. Domestic bank lending to the Exchequer is expected to amount to about £220 million. Movement in the net external position of banks are also likely to involve further capital inflows this year. This reflects the expectation of a continuation in the long run trend of increasing net external liabilities of licensed banks and the fact that interest rate differentials (Diagram 2) may be sufficiently attractive to renew demand for foreign currency borrowing. Other capital flows, on which there are no indicators, are assumed to remain at the level of the past two years of around £180 million (excluding reserves revaluation). These changes (Table 16) are consistent with a rise in the official external reserves in the twelve months to December next of about £375 million, which is estimated to represent about 3 months' merchandise imports cover.

The expected evolution of monetary aggregates is shown below (Table 17). In addition to material already discussed, the additional elements in this table comprise commercial banks' lending to the private sector (not including semi-State bodies) and changes in net non-deposit liabilities of the banking system.

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Per cent

20
19
18
17
16
15
14
13
12
11
10

3-Month Euro-and domestic money market deposit rates

Percentage Points

9
8
7
6
5
4
3
2
1
0
-1
-2
-3
-4

Uncovered interest rate differential with domestic money market (1)

J F M A M J J A S O N D J F M A M
      1981   1982

— — ·· US $ — · — — _ DM   _____ IR £

(1) + = domestic interest rates higher than reference currency.

Sources: World Financial Markets, Morgan Guaranty Trust Company, N.Y;
           Quarterly Bulletin, Central Bank of Ireland.

Diagram 2: Selected short-term interest rates and interest differentials.

(1) + = domestic interest higher than reference currency.

*Sources: World Financial Markets, Morgan Guaranty Trust Company, N.Y.;
         Quarterly Bulletin, Central Bank of Ireland.*

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TABLE 16: Balance of Payments Financing (£m)

	1980	1981	1982
Balance of Current Account	−725	−1310	−1200
Net external financing of the Exchequer	583	1255	1305
Change in net external position of semi-State bodies	320	150	350
Change in net external position of banks	400	82	100
Other flows	−182	−50	−180
Change in official external reserves (+ = increase)	+371	+127	+375
of which: revaluations	25	122	—
Level of reserves at end of year	1346	1473	1848
Number of months merchandise imports covered by reserves	3.0	2.7	3.0

TABLE 17: Money Supply (£m)

	1980	1981	1982
Domestic Factors:			
1. Monetary financing of the PSBR	1190	1938	2337
2. Change in Government deposits with Central Bank (+ = decrease)	41.7	8	—
3. Commercial bank lending to the private sector (1)	636.2	657	438
4. Domestic Credit Expansion (1 + 2 + 3)	1867.7	2603	2775
5. *less* change in net non-deposit liabilities	212.0	406	343
External Factors:			
6. Current balance of payments	−725	−1310	−1200
7. Capital flows (excluding banks (2) and public sector external financing)	−84	−50	−180
8. Statistical discrepancy	−4.6	−50	—
9. Increase in M3 (4 − 5 + 6 + 7 + 8)	842.3	787	1052
Percentage increase in M3 (twelve months to December)	16.9	13.5	16.0
DCE as a percentage of M3 at end previous years	37.5	44.7	41.9
Total domestic credit advanced to the private sector:			
Commercial banks	636.2	657	438
ICC	93.5	113	225
ACC	75.4	104	100
	805.1	874	763

(1) Includes lending for current purposes to semi-State bodies.
(2) On a location of branch basis.

The projection for the former of about £440 million in calendar 1982 is based on the private sector credit guideline for the twelve months to February next of 14 per cent. This will give rise to additional credit this year of about £900 million. However, with demand from the semi-State sector expected to amount to about £460 million the balance available to the private sector proper will be significantly less than the £657 million estimated to have been provided in 1981. Indeed, even allowing that additional credit facilities will be provided through ICC and ACC the total amount of additional credit available this year of about £760 million will be about £100 million less than last year (Table 17). The factors underlying changes in net non-deposit liabilities are not well understood. The figure for 1982 is rather arbitrarily put at £50 million less than that in 1981. Given these conditions, Domestic Credit Expansion would

expand by almost 42 per cent of the end 1981 stock of M3, compared with 44¾ per cent last year. Growth of the broad money supply in the twelve months to December would be about 16 per cent compared with 13½ per cent over the same period in 1981.

Appraisal

The forecast we have presented in this Commentary is of an economy experiencing poor growth, high inflation and a large balance of payments deficit on current account. Associated with the poor growth, employment is expected to decline and unemployment to continue to rise. The balance of payments deficit is the principal constraint on action as any attempt to ease unemployment through demand management policies is likely to worsen the external payments deficit.

Demand management policies designed to strengthen the external payments situation would have to be severe. In our forecast for this year we have an improvement of 2 per cent in the terms of trade, an increase in the volume of exports of 7½ per cent and a rise of only ½ per cent in the volume of imports. The very slow rise in the volume of imports reflects the very deflationary impact of the recent budget, even on our assumptions with regard to the outcome. Even with these favourable factors, the improvement in the balance of payments deficit on current account from 13 per cent of GNP to 10 per cent is less than might have been expected — because of the increase in interest payments abroad on Government borrowing. Traditional demand management policies of necessity would have to be even more deflationary to reduce the deficit significantly.

The problem, however, is not solely one of demand management. A surprising feature of recent economic growth is how poor that growth has been given the level of investment. Gross investment as a percentage of GNP has averaged almost 30 per cent in the period 1978-82 — from which growth rates in excess of 5 per cent might be expected. Much of private corporate investment of existing firms does not expand capacity but is required to reduce costs per unit of output as a defensive measure. New foreign investment does increase capacity — hence the growth in exports. However, the effect on capacity of investment undertaken by the State and State agencies is somewhat unclear, as there seems to be little project evaluation, either ex-ante or ex-post. Public investment should provide a return to the Exchequer or to agencies undertaking the investment to finance the servicing of the debt. If the gains are widespread and economy wide, then tax receipts should reflect this at current tax rates or new taxes should tax away some of the gains to service the debt (e.g. the gains from a better road system). If the gains are specific and reflect deliberate policy on redistribution (as with publicly provided housing) then redistributive taxes are required. If investment does not provide a return, no matter how widely defined net benefits are, it should not be undertaken.

If investment of the order of magnitude expeerienced here did result in growth rates in excess of 5 per cent, the nature of our problems would be substantially different. The external payments deficit would then reflect productive investment and would only be a problem if capital markets abroad

functioned imperfectly. It is in this sense that the external payments problem is not solely one of demand management. A fundamental reappraisal of the methods and procedures associated with public investment decision-making is required. It is impossible to predict what effect such a reappraisal would have on the size of the public capital programme.

There is a danger of concentrating too much on numbers rather than the problems that lie behind them. In some respects the focus on the Exchequer Borrowing Requirement obscures the fact that the problem is not the borrowing but the expenditure. It is always possible to design schemes which reduce the Exchequer Borrowing Requirement but which actually do nothing about the problem. For instance, if the State hives off activities to semi-State bodies, then the Exchequer Borrowing Requirement could fall. Similarly, the State could require semi-State bodies to provide a cash payment to the Exchequer—thereby increasing Exchequer revenue but perhaps forcing semi-State bodies to borrow. Very little is to be gained by small schemes. The correct focus is on whether or not the expenditure is worthwhile as outlined above.

In addition to dealing with the nature of investment, the effect of taxation on domestic costs must be considered. We have argued for many years that there is an inevitable conflict between wages as income and wages as costs. This year this conflict is all the more obvious. In manufacturing industry, average earnings are expected to rise by 14 per cent—a fall of 3 per cent in real terms (real disposable income will fall more)—yet labour costs relative to output prices (excluding VAT and excise duties) are expected to rise and, indeed, labour costs are expected to rise relative to labour costs abroad. It is unfortunate that the fall in real incomes is not translated into a competitive gain. Policy should be directed to ensuring that the tax system does not militate against competitiveness—a problem we intend to return to later.

EXPORT TOURISM INPUT-OUTPUT MULTIPLIERS FOR IRELAND

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I *Introduction*

This paper focuses on some difficulties involved in the interpretation of earlier studies and goes on to calculate *upper bound* estimates of some of the principal economic effects of Irish export tourism in 1976. The 1976 input-output data of Henry (1980) form the basis for the calculations herein.

II *Review of Earlier Studies*

There is little point in referring to "the" multiplier in empirical studies unless the model under consideration is clearly specified and the multiplier(s) under consideration is (are) defined fairly precisely; otherwise we may be left in ignorance of the terms of reference and may have to guess what researchers mean by their multiplier estimates. Furthermore, little or no meaning can be attached to comparisons of multipliers from the models of different authors unless the models and other assumptions employed are clearly stated.

There have been two recent studies of the economic contribution of Irish export tourism — that by Deane (1980) for the National Economic and Social Council and an article by Byrne and Palmer (1981).

Deane notes that three earlier studies (all unpublished) have been made to measure the size of a Keynesian multiplier arising from export tourism. Deane provides no precise definition of the multipliers involved. However, he reports that the Economist Intelligence Unit calculated that in 1964 the multiplier was 1.9 and that the Economists Advisory Group obtained an estimate of 1.8 in their calculations for 1967. We have no knowledge of the methodologies of those estimates; however, since fairly detailed input-output data for Ireland were not published until 1970, it may be inferred that input-output analysis was not used. The third attempt to measure an export tourism multiplier was by Bord Fáilte in 1974, which related to 1968 and used input-output analysis. As reported by Deane, that study yielded a multiplier of 2.08. But Deane (p. 67) went on to state that "there is some evidence to suggest that during the period since 1968 leakages from the system have increased . . . and that a multiplier of 1.8, therefore, seems more likely".

From the latter estimate, Deane (pp. 67-68) concluded that "on the basis of a multiplier of 1.8, export tourism revenue (excluding carrier receipts) amounted to £184.6 million in 1977 and had a generative effect on incomes of some £332 million, which is equivalent to about 6.1% of GNP. Carrier

receipts, which amounted to £53.3 million in 1977, are almost certainly subject to a higher leakage rate . . . A multiplier of 1.0 is assumed which suggests a further contribution to GNP of 1%". So "taking both export tourism earnings and carrier receipts, which together amounted to £237.9 million in 1977, it is estimated that an income of £385 million was generated, equivalent to about 7.1% of GNP".

Deane does not explicitly indicate how his estimate of an export tourism multiplier of 1.8 (per £ expenditure by tourists in Ireland) is defined. But it appears from the context in which he arrived at the estimate that it is defined as *the increase in household income, plus the total increase in tax revenue, generated per £ of export tourism expenditure in Ireland, after unspecified leakages have been deducted from that injection, all on that assumption that total tax revenues are automatically spent by government.* This is an unusual way of defining a multiplier in a short-run macroeconomic model. Table 11 of Deane's Chapter 2 indicates that the estimated multiplier of 2.08 in the 1974 Bord Fáilte study was defined along those lines, and his own estimate of 1.8 seems to be an adjustment to that 1974 estimate to take account of an increased marginal propensity to save. (However, the preceding paragraph indicates that when Deane applies the multiplier of 1.8 to export tourism expenditure by tourists in Ireland in 1977, he does *not* deduct direct leakages from that injection along the lines implied by the definition in italics above. Note also that Deane's Table 11 suggests that if it were assumed that government expenditure on goods and services was given, and if the multiplier were defined as otherwise in italics above, then the estimated multiplier in the 1974 Bord Fáilte study would be reduced from 2.08 to 0.8; but Deane does not pursue that consideration.)

We have little basis for making any detailed assessment of Deane's estimates, largely because he does not indicate what assumptions were made in regard to *the structure* of government expenditure induced by increased tax receipts (which is clearly discretionary, as is the decision on whether to spend increased tax receipts in the first instance).

In regard to employment creation generated by total export tourism (including carrier receipts) in 1977, Deane (pp. 70-71) states that on the basis of an estimated 7.1% contribution to GNP in that year, "this percentage of the total employed in 1977 represents some 73,500. It can therefore be tentatively estimated that tourism supported the equivalent of 74,000 full-time jobs"; however, the "method of estimation used assumes a constant relationship between output and employment and will therefore tend to overstate the numbers employed in capital intensive industry and understate the numbers employed in labour intensive industry. Since tourism is generally considered to fall within the latter group the figure derived is, if anything, somewhat of an underestimate."

The study by Byrne and Palmer accepts Deane's estimates but, on one crucial point, seems to misinterpret them. As stated above, Deane, in arriving at an estimate of 1.8, appears to have (implicitly) defined the multiplier in such a manner as to assume that all induced tax revenue was spent by government. However, in settling on an export tourism multiplier of 1.8, Byrne and Palmer apparently do *not* assume that all induced tax receipts are automatically recycled in some (unspecified) form of government expenditure.

That inference follows from their statement (p. 90) that the export tourism multipliers of 1.9, 1.8, 2.08 and 1.8, reported in Deane, "may be compared with studies which suggest government expenditure multipliers which" at most are just over unity. In that context, Byrne and Palmer refer to estimates of fiscal policy multipliers summarised in an article by Colm McCarthy (1979, p. 69) in the Central Bank of Ireland *Quarterly Bulletin,* Summer 1979; however, the studies cited there do *not* regard induced tax revenue as automatically spent. Assuming, then, that Byrne and Palmer have a uniform definition of a national income multiplier in mind, it is apparent that they regard government expenditure on goods and services as exogenous.

Like Deane, Byrne and Palmer suggest that 73,500 full-time jobs can be attributed to export tourism in 1977. They also regard that figure as an underestimate, on the (as we shall argue later, questionable) grounds that export tourism is labour-intensive.

Before proceeding we note that, apart from those reported above, there has been one other published attempt, by O'Connor and Whelan (1973), to estimate a multiplier of relevance to that of Irish export tourism. The O'Connor-Whelan multiplier pertained to total salmon angling export tourism expenditure by sports fishermen in 1970 and was meant by those authors to be no more than a very rough approximation. It seems that this multiplier attempted to represent the coefficient linking Irish value added to export salmon angler expenditure by sportsmen. It was based on the explicit assumption that:

(i)   The marginal import content of the first round of anglers' expenditure was 25 per cent.

(ii) The marginal import content of general consumption expenditure was 40 per cent, and

(iii) direct taxes plus savings were 11 per cent of personal income.

Given those assumptions, O'Connor and Whelan (pp. 41-42) suggest that the multiplier is the coefficient 1.6 in the expression $\Delta Y = 1.6E$, where ΔY is the change in national income at factor cost (value added) induced by a level of export tourism angler expenditure E (which includes expenditure by visiting anglers in Ireland and the associated receipts of Irish international carriers, before deduction of either import content or net indirect taxes).

This writer can comment only tentatively on the derivation and interpretation of the O'Connor-Whelan multiplier of 1.6 which, it should be stated, is the earliest, fairly explicit, published estimate of a Keynesian-type multiplier for Ireland known to him. It seems that government expenditure on goods and services was regarded as given (i.e., that it was not made dependent on induced tax receipts), a procedure which we consider appropriate. However, although O'Connor and Whelan clearly state some key assumptions, this writer remains unsure of central features of the economy-wide model which they had in mind; in particular, he cannot grasp how indirect tax leakages were treated (if at all).

At this point the author wishes to indicate that the foregoing discussion has not sought to devalue the work of previous researchers; rather, his central problem has been one of interpretation.

III *The Multiplier Concept in the Present Paper*

In this paper the notion of an export tourism national income multiplier is defined along conventional Keynesian lines; it is the coefficient linking the change in GNP (an endogenous or dependent variable) to export tourism expenditure (an exogenous or independent variable), given the assumptions that government expenditure on goods and services and net investment are unaffected by changes in export tourism expenditure.[1] Since we cannot, on the basis of these assumptions, accept a hypothesis of an export tourism multiplier of close to 2.0, the assumptions are developed in such a manner as to grant the benefit of doubt, and we arrive at an *upper bound estimate* of the total export tourism multiplier of about unity. Apart from its effect on Irish GNP, the net direct and indirect contributions of export tourism to Exchequer revenue and the balance of payments on current account are also estimated. Finally, the conclusions in earlier studies that over 73,500 jobs in 1977 could be attributed to export tourism, and that the sector is labour intensive, are questioned.

We base our estimate on an explicit input-output model of the economy. Their accuracy is therefore contingent on (a) the extent to which the model captures fundamental structural features of the economy and (b) the accuracy of the data fed into the model. In regard to (b), most of the data used was drawn from the 1980 ESRI paper by Henry; it is therefore subject to some of the reservations indicated in that study. The nature of, and the assumptions surrounding, other data used will be clearly stated. In regard to consideration (b) — the realism of the model — we can state the following:

Firstly, simple input-output models fail to distinguish between the marginal and the average values of parameters; for example, they assume that the marginal propensity to import is the same as the calculated average propensity to import, and that marginal tax rates are the same as the calculated average rates. Due to the fact that in Ireland the marginals for some of those leakage parameters exceed the averages, such assumptions would generate overestimates of national income multipliers pertaining to various kinds of exogenous demand. The assumption that the marginal rate of direct tax equalled the average rate of direct tax is dropped in the calculations which follow. However, we do assume equality of marginal and average propensities to import.

Secondly, the model used assumes that non-tourism exports are independent of export tourism expenditure. To the extent that foreign tourist expenditure in Ireland diverts food away from the non-tourism export market, the resulting multiplier calculations will be overestimates.

Thirdly, the input-output model used suppresses much of the supply-side short-run operation of the economy. But it does not do so entirely; the input-output coefficients used as data below reflect *ex post* the interaction of both supply and demand phenomena. However, to the extent that the naïve treatment of supply ignores pressures on capacity, the ensuing multiplier estimates will be overstatements.

The foregoing drawbacks of the input-output method used do not alarm us, given that the objective is to attain safe *upper bound* estimates of export

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[1] This is the standard kind of assumption made in macro-economic analysis. We admit that in a longer-term context the assumption may be invalid — to the extent that government expenditure is determined by the revenue available.

tourism multipliers. Any alternative formal method would have its own deficiencies. But the dominant advantage of formal over verbal approaches is that they pinpoint the exact assumptions which are being made and facilitate tractability which would otherwise be lacking.

Before going on to the details of the model used, it might reasonably be asked why anyone would be interested in multipliers associated with exogenous final demands. One answer is that such estimates of income generated per unit of exogenous demand are often deemed relevant to the benefit side in cost-benefit analyses. Depending on the criterion function chosen in such appraisals, the net contributions to the Exchequer finances, savings, the balance of payments on current account and employment may also be of relevance. All of those effects of the export tourism sector are accordingly estimated in Section V below.

IV. *Methodology*

This section outlines the general features of the method used to estimate the effects of export tourism on several endogenous national variables. We first consider a simple input-output model of an economy in the absence of export tourism.

As an accounting identity:

(1) $\sum_j X_{ij} + Y_i \equiv X_i; \; i,j = 1,\ldots, n.$

X_i: Gross output of domestic producing sector i.

Y_i: Final demand for the output of producing sector i.

X_{ij}: The amount flowing from producing sector i as an input in order to carry on production in sector j.

So (1) simply states that the gross output of sector i consists of interindustry flows plus the output into final demand.

We now assume

(2) $X_{ij} = a_{ij}X_j$

— that the amount flowing from producing sector j to producing sector j is proportional to the gross output of sector j. So if the X_{ij} and the X_j are known for some base year, the a_{ij} can be calculated as $a_{ij} = X_{ij}/X_j$. Each of the a_{ij} is the amount of input from sector i *directly* required per unit of production in sector j.

We assume that the economy is in equilibrium in the accounting period under consideration (the base year); then the a_{ij} denote both actual and equilibrium input-output coefficients, which we assume constant over the period under analysis. Hence we write (1) as $\sum_j a_{ij}X_j + Y_i = X_i$, or, in matrix notation,

(3) $AX + Y = X$

From (3) we can express the gross output vector X as a function of the vector of final demands:

(4) $X = (I - A)^{-1}Y \equiv RY$

where A is the known $n \times n$ matrix of direct input-output coefficients and I is an identity matrix; thus $(I - A)^{-1} \equiv R$ is taken as known.

The elements of the jth column of R in (4), r_{ij}, denote the outputs from each

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of the producing sectors directly *and indirectly* required per unit of final demand for the output of sector j. Consider, for example, a hypothetical economy in which sector j is shipbuilding and sector i is steel production. Then a_{ij} denotes the value of steel inputs flowing *directly* into the shipbuilding sector per £ output of ships. However, shipbuilding will also have an *indirect* steel input. For example, since steel must be transported to the shipyards, steel will be required to make transport vehicles, etc.; this steel input into the transport sector would be an output of the steel sector *indirectly* required for shipbuilding. The $(i,j)^{th}$ element of the inverse matrix, r_{ij}, would then denote the direct plus indirect output of steel required per unit of final demand for new ships. Hence, if a final demand vector Y is postulated, (4) enables us to calculate the gross output vector directly and indirectly implied by the postulated Y. For example, the coefficient vector r_j in R would denote the vector of direct and indirect gross output requirements from *each* producing sector implied by a unit of final demand for the output of sector j.

If we now assume that imports, (net) indirect taxes and factor incomes (value added) are linked to gross outputs by proportionality relationships, (4) also provides a basis for determining the values of those variables implied by any vector of final demands. Thus:

$$(5) \quad M = \hat{m}X = \hat{m}(I - A)^{-1}Y \equiv \hat{m}RY$$

$$(6) \quad T^i = \hat{t}^iX = \hat{t}^iRY$$

$$(7) \quad V = \hat{v}X = \hat{v}RY$$

where M, T^i and V are vectors of imports, (net) indirect tax revenues and factor incomes (value added) directly and indirectly generated by the final demand vector Y, and m, t^i and v are vectors of sectoral import-output, (indirect tax)-output, and (value added)-output ratios, assumed constant. The hat (^) over those coefficient vectors indicates that they are written along the main diagonal of matrices otherwise made up of zeros.

If the M, T^i, V and X vectors are known for the base year, we can calculate the matrices of parameters in (5) to (7) by applying equations like (2) — e.g., $M_j = m_jX_j$; so $m_j = M_j/X_j$. Then, assuming that our accounting data represent an approximate equilibrium situation, we can use (5) to (7) to simulate or forecast the direct and indirect effects of any arbitrary final demand vector Y on imports, indirect tax revenues and factor incomes.

We use a variant of the above analytic framework to estimate direct and indirect effects of export tourism expenditure. We also estimate its Keynesian multiplier effects (not dealt with explicitly in the above, since Y was taken as given).

We assume that the parameters of the system, A, m, t^i and v have been calculated *ex post* from base year data; so these are taken as known constants. Suppose now that a vector E of export tourism final demand is exogenously applied to the economy. From (4) this has direct and indirect (excluding Keynesian multiplier) effects on gross outputs as given by

$$(8) \quad X = RE$$

The direct and indirect (excluding Keynesian multiplier) effects on imports, indirect tax revenues and factor incomes are then readily found from equations (5) to (7), with Y replaced by E. Thus

$$(9) \quad M = \hat{m}X = \hat{m}RE$$

$$T^i = \hat{t}^i X = \hat{t}^i RE$$

$$V = \hat{v}X = \hat{v}RE$$

In the remainder of this section we concentrate on how to estimate the effects, including the Keynesian multiplier effects, of export tourism on national income at factor cost; the complete import and indirect tax revenue effects can be, and in Section V are, estimated in analogous manner.

We have already found the immediate (first round of the multiplier) effect of the exogenous final demand vector E on the vector of national incomes, from (9). The immediate increase in direct tax revenue is found as $t^d V$, where t^d is the marginal rate of direct taxation. But not all of the remaining $(1 - t^d)V$ in disposable income will be spent. If s is the marginal propensity to save, then the sum of the elements in the vector

$$(10) \quad (1 - s)(1 - t^d)V \equiv \alpha V; \quad 0 < \alpha < 1$$

will be spent, thereby initiating the second round of the Keynesian multiplier. The pattern of this expenditure will in general differ from that in E. Since we regard government expenditure on goods and services, and net investment demand, as exogenously given, we assume that the second round of expenditure takes the form of a vector C of household consumption, the weights in which are those of the consumption expenditure vector which prevailed in the absence of export tourism.

From (7) we find that in the second round of the multiplier process

$$(11) \quad M = \hat{m}RC$$

$$T^i = \hat{t}^i RC$$

$$V = \hat{v}RC$$

As before, only $(1 - t^d)$ of (11) is available for spending and a proportion s of the latter available sum will be saved. Hence the increase in spending initiating the third round of the multiplier process is $\alpha \hat{v}RC$, where α is defined as implied by (10). Along the lines of (9) and (11), this generates a third round increase in value added of

$$(12) \quad V = \hat{v}R \alpha \hat{v}RC = \alpha (\hat{v}R)^2 C$$

As before, a proportion $(1 - \alpha)$ of the increased income in (12) leaks out in direct taxes and savings. Thus the increase in consumption expenditure

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initiating the fourth round of the multiplier is $\alpha^2(\hat{v}R)^2C$, where C is as in (11) and (12), and the resulting fourth round increase in incomes is

$$(13) \qquad V = \hat{v}R\,\alpha^2(\hat{v}R)^2C = \alpha^2(\hat{v}R)^3C$$

The pattern of subsequent rounds of the multiplier process is clear: so summing (9), (11), (12) and (13) and all further rounds, and rearranging terms, we see that the ultimate increase in income (the total multiplier effect) is given by the vector

$$(14) \qquad V = \hat{v}RE + \{I + \alpha\hat{v}R + (\alpha\hat{v}R)^2 + (\alpha\hat{v}R)^3 + \ldots\}\,\hat{v}RC$$

It is not very difficult to show, for the data used in Section V, that the infinite series of matrices in (14) converges. (The author will be happy to provide details, along with a general proof, on request.) It follows that the principal macroeconomic effects of export tourism could be estimated using either equation (14) or,

$$(15) \qquad V = \hat{v}RE + (I - \alpha\hat{v}R)^{-1}\hat{v}RC$$

So as to give insight into the economics involved, we opted for the sequential approach of (14) rather than the instantaneous method in (15). (For example, (15) gives no insight into the nature of the convergence process; (14) does.) However, the interested reader can crosscheck our final solutions (which inevitably involve rounding errors) by applying equation (15).

Some Further Details

The approach actually adopted below is slightly more detailed than that outlined at the beginning of this section:

(i) Some export tourism expenditure bypasses the matrix of X_{ij}'s by leaking directly into imports and net indirect taxes.

(ii) Net indirect taxes are broken down into indirect taxes and subsidies.

(iii) Value added is broken down into factor income accruing to labour and that accruing to capital.

(iv) The employment and capital stock usage per unit of each component of the final demand vector are calculated *ex post* and used in assessing employment creation directly and indirectly due to export tourism, as well as the capital intensity of that sector. Proportionality relationships along the lines of equations (5) to (7) are assumed, thus:

$$(16) \qquad L = \hat{l}X = \hat{l}(I - A)^{-1}Y$$

$$(17) \qquad K = \hat{k}X = \hat{k}(I - A)^{-1}Y$$

where L and K are vectors of labour and capital use entailed by the final demand vector Y, and $\hat{l}$ and $\hat{k}$ are vectors of sectoral labour-output and capital-output ratios (estimated *ex post* and assumed constant for our purposes). The hat over those coefficient vectors indicates that they are written along the main diagonal of matrices otherwise made up of zeros.

V. *Export Tourism: Estimated Effects*

Three sets of calculations are made in this section: (a) The effects on GNP, imports and tax revenues of export tourism expenditure by tourists *in* Ireland. (b) The effects on the same variables of export tourism receipts of Irish-based international carriers (Aer Lingus, B & I Lines and Irish Continental Line). (c) Total export tourism effects, i.e., the sum of those in (a) and (b). We concentrate on 1976 because that is the latest year for which input-output data are available.

Expenditure by Tourists in Ireland

E. W. Henry 1980 (p. 24) has made the following rough estimates (in £ million) of export tourism expenditure by tourists in Ireland in 1976. (Henry's input-output sector numbers are in parentheses.):

Food (1)	23.8	Imports	10.9	
Textiles (2)	2.1	Indirect Taxes	23.5	28.4
Paper (5)	1.4	Subsidies	−6.0	
Other Manufacturing (9)	10.6	TOTAL	137.0	
Agriculture (10)	9.1			
Transport (15)	3.6	$137 - 28.4 = 108.6$		
Trade Margin, Services (16)	58.0			

Henry's study involves an input-output model of the economy in 1976 in which there are 19 producing sectors. Flows from those sectors are measured at producer prices, and all imports are treated as primary inputs.

In his *Table 2*, Henry calculates the *direct input-output coefficients* for Irish 1976 transactions. This consists of the matrix A in (3) above and the direct import, indirect tax, subsidy, wage and salary, and profits plus depreciation, intensities per unit of gross output in each of the producing sectors. (See the centre element in the equality in equations (5) to (7) above.) Henry's Table 2 also presents the employment and capital intensities per unit of gross output in each of the 19 producing sectors. (See equations (16) and (17) above.)

Henry's *Table 3* presents the $(I-A)^{-1} \equiv R$ matrix for Irish 1976 transactions (equation (4) above). Those coefficients show the *direct plus indirect* outputs from each of the producing sectors generated per unit of final demand for the output of any of the producing sectors. They also show the direct plus indirect imports, indirect taxes, subsidies, wages and salaries, and profits and depreciation, associated with a unit of final demand for the output of each producing sector. (See the right-hand side of equations (5) to (7) above.)

Combined with the analytic framework outlined in Section IV above, Henry's Tables 2 and 3 form the basis of all the calculations which follow. Therefore it might be helpful if the reader referred to Henry's study concurrently with what follows.

It will be noted from the tourism data above that £28.4 m. of export tourism demand bypassed the X_{ij} matrix, spilling directly into imports and net indirect taxes. The remaining (19×1) final demand vector E (with its 7 positive elements summing to £108.6 m.) was applied to Henry's Table 3 (the $(I-A)^{-1}$

matrix, etc.) to calculate the vector of gross outputs, X, directly plus indirectly implied by E. Having obtained X, Henry's Table 2 (the matrix A, etc.) enabled us to calculate a transactions table for the economy associated with the export tourism final demand vector E. This[2] showed the direct plus indirect effects of export tourism expenditure (excluding carrier receipts) *before any induced Keynesian multiplier effects.* Those (first round of the multiplier) effects are as follows:

First Round Effects:

Imports	£22.0 m.	
Indirect Taxes	£13.9 m.	
Subsidies	− £7.0 m.	
Wages and Salaries	£50.7 m. ⎫	£79.7
Profits and Depreciation	£29.0 m. ⎭	
(SUM)	(£108.6 m.)	
Employment (man-years)		23,171
Gross Capital Stock Used (£ million)		242.18
Capital Intensity = Gross Cap./Employ. = £10,450		

We now estimate the induced Keynesian multiplier effects. From the above calculations we see that the first round effect of export tourism expenditure in Ireland was to increase GNP at factor cost by £79.7 m. Much of the profits in that figure were incomes of self-employed persons, including farm incomes. However, not all of that £79.7 m. was available for spending to initiate the second round of the multiplier process: some of it accrued to the Exchequer in net direct taxes.

From *National Income and Expenditure 1976* (Central Statistics Office, 1978) we find that GNP at factor cost came to £3,929 m. while £735 m. was raised in direct taxes. However, transfer and national debt interest payments to residents from the Exchequer are negative direct taxes; so to find the average direct tax rate on factor incomes we must take account of such payments. In 1976 these roughly equalled tax revenue; thus the average net direct tax rate was roughly zero. However, we are analysing the *increase* in national income generated by tourism. It is the marginal net tax rate that is relevant here, and that was certainly greater than zero: as income increases transfers such as dole payments fall and more people enter progressive income tax brackets. Thus we estimate the tax rate of relevance as 20 per cent.[3] So applying a rate of net direct taxation of .2 to the £79.7 m. of income generated above we find £15.9 m. added to tax revenue; thus the increase in gross disposable income was £63.8 m.

Before we can estimate the second round of the multiplier process we must also estimate the marginal propensity to spend out of the above £63.8 m. in disposable income plus depreciation. From the national accounts we estimate the average propensity to consume out of disposable income in 1976 as .79. We

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[2]This transactions table, and those associated with the further calculations which follow, will be sent by the author to the reader upon request.

[3]Because he did not consider the reaction of transfer payments to changes in national income, Irvine (1974, p. 52), who estimated Irish fiscal multipliers using a model similar to that developed here, used a lower estimate of t^d.

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can reasonably assume that the marginal propensity to consume was less than this, say .75. Bearing in mind that depreciation was a fixed sum, it is therefore reasonable to assume that the marginal propensity to spend out of the above £63.8 m. was no greater than .75. However, to be sure that we do not bias the multiplier downwards by choosing too low a marginal propensity to spend, we grant the benefit of doubt and assume a marginal propensity to spend out of gross factor income of 80 per cent.[4]

Thus we estimate the induced increase in expenditure initiating the second round of the multiplier process as £51.0 m., and increased gross saving = £12.8 m. To estimate how the £51.0 m. was spent we find the structure of personal consumption expenditure (excluding that under export tourism) in 1976, from Henry's transactions table for that year. Let z_i be the ith element of that vector. The weight to be applied to the £51.0 m. in estimating the ith component of the induced consumption expenditure vector is $z_i / \sum z_i$. The estimated weights, along with the resulting induced expenditure vector, are as follows:

Sector	Weights	Induced Expenditure (£ m.)
1. Food	.127	6.48
2. Textiles	.011	.56
3. Clothing	.004	.20
4. Wood	.007	.36
5. Paper	.007	.36
6. Chemicals	.010	.51
7. Structural Clay	.004	.20
8. Engineering	.025	1.28
9. Other Manufacturing	.056	2.86
10. Agriculture, etc.	.049	2.50
11. Solid Fuel	.004	.20
12. Stone, Ores	.000	.00
13. Construction	.000	.00
14. Electricity, Gas	.031	1.58
15. Transport	.019	.97
16. Services	.310	15.81
17. Repair	.000	.00
18. Packaging	.000	.00
19. Residual	.000	.00
SUM		33.91
Imports	.241	12.29 ⎫
Indirect Taxes	.126	6.43 ⎬ 17.09
Less Subsidies	−.032	−1.63 ⎭
SUMS	.999	51.00

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[4]Irvine (pp. 49, 52, 54) assumed a short-run marginal propensity to consume out of disposable income of 0.6. We assume a higher value of the marginal propensity to consume because we wish to attain safe *upper bound* estimates of the export tourism multiplier.

We note that £17.09 m. of the £51 m. in induced expenditure initiating the second round of the multiplier bypassed the X_{ij} matrix, spilling directly into imports and net indirect taxes. The remaining (19×1) final demand vector above, which we denoted by C in Section IV, was applied to Henry's Table 3 $(I-A)^{-1}$ matrix, etc.) to calculate the vector of gross outputs, X, directly plus indirectly implied by C. Having obtained X, Henry's Table 2 (the matrix A, etc.) enabled us to construct a transaction table associated with the final demand vector C. That transactions table indicated the following (second round of the multiplier) effects.

Second Round Effects:

Imports	£7.27 m.
Indirect Taxes	£3.35 m.
Subsidies	−£1.28 m.
Wages and Salaries	£15.46 m.
Profits and Depreciation	£9.07 m.
(Sum)	(£33.87 m.)
Employment (man-years)	6753

Wages and Salaries £15.46 m. + Profits and Depreciation £9.07 m. = £24.53 m.

We have now estimated the first round effects in the Keynesian income multiplier process and those in the first round of induced expenditure, i.e., we have estimated the first two terms in equation (14), namely,

$$(14') \quad \hat{v}RE + \hat{v}RC$$

We have also estimated, among other things, the effects on imports, tax receipts and employment associated with $(14')$.

Summing the relevant estimates above, we may summarise the effects in and associated with the first two rounds of the multiplier process as (£m.):

Imports:	52.46	Net Ind. Taxes:	31.27
Direct Taxes:	15.90	GNP at Factor Cost:	104.23
Employment (man-years)	29,924		

We have yet to estimate the subsequent rounds in (14) for export tourism expenditure by tourists in Ireland, namely,

$$(14'') \quad \{ \alpha\hat{v}R + (\alpha\hat{v}R)^2 + (\alpha\hat{v}R)^3 + \ldots \} \hat{v}RC$$

To do so we proceed sequentially exactly as in estimating the second round of the multiplier process above. Thus we have found, in the second round of the multiplier process, that GNP at factor cost increased by £24.53 m. Some £4.91 m. of this was added to direct tax receipts and £19.62 to gross disposable income; of the latter sum, £3.92 went to gross saving and £15.70 went to increased expenditure to initiate the third round of the multiplier process. The structure of that increased expenditure was estimated using the weights listed above. Some £3.79 m., £1.98 m. and £0.50 m. of it bypassed the X_{ij} matrix by spilling directly into imports, indirect taxes and subsidies, respectively; the remaining £10.43 m. worked itself through the interindustry structure,

generating increased imports of £2.23 m., increased indirect taxes of £1.02 m., increased subsidies of £0.39 m., increased gross factor income of £7.57 m., and increased employment of 2,058 man-years. The latter sum in increased factor income was then taken to estimate further increased direct tax revenue and gross savings, and the resulting residual (£4.85 m.) was then applied to initiate the fourth round of the multiplier process. And so went all subsequent iterations in (14″) above.

All variables under analysis converged to zero by the tenth iteration. Summing the effects at each round gave estimated macro-economic effects of the £137.0 m. in export tourism expenditure by tourists in Ireland in 1976 (£ million):

Imports	Indirect Taxes	Subsidies	Direct Taxes
61.16	51.53	17.20	22.99

Ind. Taxes less Subs	Total Net Taxes	Wages, Salaries, Profits and Depreciation
34.33	57.32	115.16

So, adding indirect taxes less subsidies to gross factor income, we find that the increase in GNP at market prices was some £149.49 m. Given that export tourism expenditure by tourists in Ireland came to £137 m. in 1976, this implies that an upper bound estimate of the multiplier applicable to such expenditure — defined as the coefficient linking the change in GNP (at market prices) to export tourism expenditure — was 1.09. We also note that the effect on Exchequer revenue was a gain of some £57.32 m., while the net contribution to the balance of payments on current account was £75.84 m. Finally, the gain in jobs is estimated at 32,902.

Irish Carrier Receipts from Export Tourism

Carrier receipts from export tourism accruing to Irish-based firms came to £46 m. in 1976. On the basis of data on passenger numbers and fare structures we estimate that £34.5 m. of this was earned by Aer Lingus, while the remaining £11.5 m. accrued to B & I Line and Irish Continental Line.

The method used to estimate the direct and indirect effects, including the Keynesian multiplier effects, of the export tourism earnings of Irish carriers, was slightly more *ad hoc* than that adopted in the preceding subsection.

From the 1969 input-output tables (Central Statistics Office, 1978, Table C2) we find that the *direct* import content of air transport in that year was .4052, while that of sea transport was .1688. Because of rising energy costs, we assume that the direct import contents had increased to .55 and .20, respectively, by 1976. These estimates, along with those of the opening paragraph of this subsection, imply that the direct import content of export tourism carrier receipts was .4624 in 1976.

The *direct* import content of Henry's transport sector (which is an amalgam of transport sub-sectors, including CIE) in his 1976 input-output tables is .2334. We note a difference of .2290 (.4624-.2334) between the two estimates of direct import content. So as to be able to continue using Henry's A and $(I-A)^{-1}$ matrices we adopt a somewhat *ad hoc* approach by allocating

£.2290(46)m. = £10.53 m. as a direct import leakage; we therefore reckon final demand for carrier services in 1976 as £46m. — £10.53 m. = £35.47 m.

We have estimated the final demand for transport affecting the interindustry structure as £35.47 m. We plug this £35.47 m. into the final demand vector and estimate the resulting gross outputs, X, from (4), where Y now has only one positive component (final demand for transport). Having obtained the X vector we go to Henry's matrix A of input-output coefficients and use equations like (2), (5), (6) and (7) to construct a transactions table corresponding to the postulated final demand vector. These calculations led to the following (first round of the multiplier) effects:

First Round Effects:

Imports	£10.48 m.
Indirect Taxes	£1.25 m.
Subsidies	− £0.54 m.
Wages and Salaries	£18.65 m. ⎫
Profits and Depreciation	£5.63 m. ⎬ £24.28 m.
(Sum)	(£35.47 m.)
Employment (man-years)	2643
Gross Capital Stock Used	£48.56 m.
Capital Intensity = Gross Cap./ Employ.	£18,370

In estimating the second and subsequent round multiplier effects we proceed exactly as in estimating the same effects for export tourism expenditure by tourists in Ireland. Thus the above estimates indicate an increase of £24.28 m. in gross factor incomes in the first round. Some £4.86 m. of that goes in direct taxes and £3.88 m. is allocated to gross savings. The residual £15.54 m. is spent, thereby initiating the second round of the multiplier process. We assume that the structure of that expenditure is as indicated by the list of weights in the preceding sub-section. Some £3.75 m. of the increased expenditure bypasses the interindustry structure by spilling into imports, while the direct leakages into indirect taxes and subsidies are £1.96 m., and £.50 m., respectively; so expenditure affecting the domestic interindustry structure increases by only £10.33 m. This yields the following (second round of the multiplier) effects:

Second Round Effects:

Imports	£2.22 m.
Indirect Taxes	£1.02 m.
Subsidies	− £0.39 m.
Wages and Salaries	£4.72 m.
Profits and Depreciation	£2.76 m.
Sum	£10.33 m.
Employment	2060

We next manipulated the above increase of £7.48 m. in gross factor incomes to generate third and subsequent rounds of the multiplier process. It was found that all relevant variables converged to zero after eight iterations. Summing

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the effects at each round gave the following estimated macroeconomic effects of the £46 m. in export tourism expenditure on Irish carriers in 1976 (£ million):

Imports	Indirect Taxes	Subsidies	Direct Taxes
29.61	5.57	1.81	7.01

Ind. Taxes less Subs.	Total Net Taxes	Wages, Salaries, Profits and Depreciation
3.76	10.77	35.06

Adding indirect taxes less subsidies to gross factor income, we find that the increase in GNP was £38.82 m. Given that carrier receipts were £46 m., this implies that the multiplier applicable to such expenditure was 0.84. We also note that the estimated gain in Exchequer revenue was some £10.77 m., while the net contribution to the balance of international payments on current account was £16.39 m. Finally, the gain in jobs was estimated as 5620.

Total Efects of Export Tourism, 1976
We now bring together our estimates for 1976 of the effects of export tourism expenditure by tourists in Ireland (£137 m.) and those of the effects of export tourism carrier receipts (£46 m.); a total of £183 m.:

Imports	Gross Savings	Indirect Taxes Less Subsidies
£90.77 m.	£24.88 m.	£38.09 m.

Direct Taxes	Total Net Tax Receipts	Gross Factor Income
£30.00 m.	£68.09 m.	£150.22 m.

Adding indirect taxes less subsidies to gross factor income gives an increase in GNP of £188.31 m. Hence our upper bound estimate of the overall multiplier — the coefficient linking the change in GNP to total export tourism expenditure — is 188.31/183 = 1.03. The estimated gain in Exchequer revenue was £68.09 m. and the net contribution to the balance of payments on current account is reckoned as £92.23 m. Finally, the total contribution to employment was some 38,522 jobs (man-years).

We can make a partial cross-check on the accuracy of our calculations by invoking the national accounting identity

$$\Delta S - \Delta I \equiv \Delta G - \Delta T + \Delta X - \Delta M,$$

S: Saving	I: Investment
G: Govt. Exp. on Goods and Services	T: Net Tax Receipts
X: Exports	M: Imports

Substituting our estimates into the identity gives $24.88 \equiv -68.09 + 183.00 - 90.77$, or $24.88 \equiv 24.14$, yielding a satisfactory cumulative rounding error of £0.74 million.

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VI. *Conclusions*

Several of our upper bound estimates on the contribution of export tourism to the Irish economy in 1976 have been summarised in the preceding subsection. Our principal conclusions are:

(i) We cannot accept an assumption in some earlier studies that total export tourism is relatively labour intensive. Using Henry's transactions table (his Table 1) we calculate the average capital intensity in the economy as a whole as (Gross Capital Stock)/Employment = (£11,023.9 m.)/1,035,000 = £10,651 in 1976. From the calculations at the two stages in Section V we estimate the capital intensity of the total export tourism sector as £(242.18 + 48.56) m./(23,171 + 2,643) = £11,263. Thus total export tourism, according to that estimate, is more capital-intensive, and less labour-intensive, than average economy-wide production. That is because, although export tourism expenditure by tourists in Ireland is of about average capital intensity, the export tourism activity of the international carriers is well above average in capital intensity. We add that our estimate of the capital intensity of total export tourism is an understatement, due to identifiable rounding errors. A major factor accounting for all high capital intensity is seasonality. The advantages of extending tourism outside peak periods is obvious.

(ii) Defining the relevant multiplier as the coefficient linking the change in GNP to total export tourism expenditure in a model in which government expenditure on goods and services and net investment are taken as exogenous, we cannot accept any estimate which places that multiplier anywhere close to 2.0. Our upper bound estimate for the total export tourism multiplier is 1.03; however, because of the assumptions of the model used (recall the discussion in Section III) and because of further assumptions in Section V, it is almost certainly less than unity. Our upper bound estimate of 1.03 is a reflection of the fact that our upper bound calculation of the multiplier applicable to export tourism expenditure by tourists in Ireland is 1.09, while the upper bound calculation applicable to carrier receipts is 0.84. If the author were asked to make a notional adjustment to the estimates from the formal model by mentally "correcting" the assumptions which biased his calculated overall multiplier upwards, he would *guess* that the "true" multiplier was in 1976, and still is, in a neighbourhood of 0.8.

(iii) A recent study by Bradley, Digby, Fitzgerald, Keegan and Kirwan (1981) estimates the export tourism multiplier at a low level of 0.5 in 1977. In that study, which is the latest available revision of the Central Bank/Department of Finance econometric model, the export tourism multiplier was defined as the change in 1977 GNP generated per £ change in exports of tourism services in 1977; carrier receipts were excluded from the calculation. However, it would seem that the multiplier estimate of those researchers is unduly low, and that an appropriate revision of the estimated marginal propensity to import applicable to export tourism, which we believe to be too high in that model, would yield an export tourism multiplier of about 0.7 in that model. Such a finding would not be inconsistent with the conclusions in (ii) above.

(iv) Two earlier studies, discussed in Section II, estimated that total export tourism earnings, at £237.9m. in 1977, generated a GNP increase in 1977 of

£385m., or about 7.1 per cent of GNP. We pointed out difficulties in the interpretation of those studies. Applying our multiplier of 1.03 (estimated from 1976 data) to receipts of £237.9m. in 1977 gives an increase in GNP of £245m., equal to about 4.6 per cent of GNP in that year; however, that is an upper bound estimate.

(v) With government expenditure on goods and services regarded as exogenous, and applying the GNP weight of 4.6 per cent in (iv) above to the figure of 1,036,000 for total employment in that year (Byrne and Palmer, 1981 p.89), would yield an estimate of total export tourism-generated full-time employment in 1977 of some 47,656. However, that would be an overstatement because our multiplier is an upper bound estimate and because the total export tourism sector is, according to our calculations, more capital-intensive than the economy-wide average.

(vi) Since the multiplier and most other calculations in this paper have yielded upper bound estimates, it follows that the calculation of the contribution of export tourism to the balance of payments on current account, reckoned at £92.23m. in 1976, is almost certainly a lower bound estimate.

(vii) The foregoing obsevations on export tourism multipliers should not be construed as implying that further growth of export tourism should not be encouraged. It is now well known that *all* Keynesian income multipliers are quite low for the small open economy of Ireland. Furthermore, the relatively sizeable gains in the balance of payments, in Exchequer receipts and in domestic savings, summarised for 1976 at the end of Section V, are important additional benefits from the export tourism sector.

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A STUDY OF LABOUR FORCE FLOWS 1961-80

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Changes in the labour force can usefully be discussed starting from the framework of the basic identity

$$\Delta \text{ Population} \equiv \text{Natural Increase} \pm \text{Net Migration}$$

Interpreting "natural increase" in a labour force context to denote the growth that would occur in the population aged 15 and over in the absence of migration, this identity can be expanded to

$$\text{Natural increase} \pm \text{net migration} \equiv \Delta \text{ number at work}$$
$$+ \Delta \text{ number unemployed} + \Delta \text{ number not in labour force}$$

or

$$NI \pm NM \equiv \Delta E + \Delta U + \Delta NLF \qquad (1)$$

This identity provides the rationale for the equations estimated in Walsh, (1968; 1970-71; 1974) and Keenan (1978), where ΔU is (arbitrarily) designated the "dependent" variable.

In this earlier work simple linear equations of the general form

$$\Delta U = a + b \Delta E + c NM^+ \qquad (2)$$

were estimated and the results used to explore the manner in which annual changes in employment and in net migration affected the level of unemployment.

The results obtained from the period 1951-71 reported in Walsh (1974, p.118) are very similar to those reported for the period 1951-66 in Walsh (1968). A representative* equation is:

$$\Delta U_{na} = 10.88 - 0.51 \ \Delta E_{na} + 0.33 \ NM \quad \overline{R}^2 = 0.58, \ DW = 1.31$$
$$(5.1) \qquad (5.0) \qquad\qquad (4.8)$$
$$\text{(t-ratios in parenthesis)}, \quad na = \text{non-agricultural} \qquad (3)$$

These results suggest that (non-agricultural) unemployment tends to increase by about 11 thousand annually due to the growth of the labour force, but this potential increase is offset by 510 for every 1,000 net increase in (non-agricultural) employment and by 330 for every 1,000 rise in emigration. On the whole, this equation seemed to provide a coherent, if very much *ad hoc*, view of the interrelationships between the main labour force aggregates in Ireland during the 1950s and 1960s.

It is clear, however, that the specification used involves certain restrictive assumptions. In particular, the intercept of the estimated equation subsumes the combined effects of changes in the numbers not in the labour force and the

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+ In the actual analysis it is necessary to use figures for *total* annual net migration as an annual series based on flows for the population aged 15 years or over is not available.

* Various definitions of E and U were tried.

"natural increase" of the working-age population, that is, NI + ΔNLF. There is, however, no reason for this sum to remain stable, and if it varies over time the postulated relationship will fit the data less closely than one which allows for this possibility explicitly. There are two alternative approaches to this issue. One consists in obtaining more detailed information on the annual potential increase in the population aged 15 and over, and on the various components of ΔNLF, so that it becomes possible to pinpoint more of the flows aggregated into this catch-all category. Another possibility is to subdivide the period into meaningful sub-periods and estimate the relationship separately for each of these, allowing for the intercept and other coefficients to differ between sub-periods.

The availability of a new, consistent labour force data set allows progress to be made in both these directions. The greater part of those data was given in Sexton (1981). In the present paper the data have been extended to provide a consistent series of annual labour force estimates for a longer period (1961-80) than that presented in the above-mentioned work which covered only the period 1971-79 as well as the individual Census years 1961 and 1966. Furthermore, an additional relevant variable has been estimated — the numbers aged 15 years or over in full-time education. The actual figures are given in the Appendix which also contains some methodological notes describing the methods of estimation used.

In the first place, data on the growth in the numbers in education (ΔED) isolate one component of ΔNLF. Secondly, the nineteen observations now available on a consistent basis facilitate tests for the stability of the relationship between sub-periods. The purpose of the present article is to report on the results from these extensions to the earlier research.

Table 1 sets out the results of re-estimating the basic model with ΔED included for (a) the entire period 1961-80 and (b) two sub-periods, 1961-71 and 1971-80. The first equation in the table is strikingly similar to that reported in the earlier research. Neither the inclusion of the new data for the period 1961-71, nor of the additional observations for 1971-80, nor the introduction of the educational variable ΔED caused any material change in the results compared with those reported in the earlier research. When the period is split into two subperiods, however, it is immediately apparent that the relationship is not stable over the entire twenty years. Specifically, comparing the equations for the two sub-periods it may be seen that while the coefficient and significance of ΔE do not differ appreciably between periods, there is a major difference between the two intercepts and in the coefficients and significance levels of the migration variable. In fact, the net migration variable does not attain significance at all in the later period and its coefficient is near to zero. The educational flow variable has a larger and more significant coefficient in the earlier sub-period probably reflecting the impact the Free Secondary Education scheme introduced in September 1967. Overall, these differences are highly significant statistically as between periods and the hypothesis that the relationship is stable over the entire period 1961-80 is rejected at the 0.025 significance level (based on the usual F-test).

More detailed investigation is possible using estimates of the labour market and migration data classified by sex. Table 1 also contains the results of estimating the basic relationship for each of the three periods for males and

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TABLE 1: Regression Analyses representing the effect on unemployment of net annual changes in employment, net external migration and numbers in education (aged 15 +) for the period 1961-'80.

Period	Intercept	Net changes in Employment (ΔE)	Net changes in Nos. in Education (ΔED)	Net Annual Migration (NM)	
(1)	(2)	(3)	(4)	(5)	
		Total			
1961-'80	10.21	−0.66 (9.02)	−0.49 (1.38)	+0.38 (7.21)	(R^2 = 0.891) DW = 2.04
1961-'71	10.97	−0.93 (7.22)	−1.09 (3.42)	+0.20 (2.47)	(R^2 = 0.922) DW = 1.99
1971-'80	16.84	−0.77 (9.32)	−0.55 (1.30)	+0.04 (0.33)	($R2$ = 0.960) DW = 1.86
		Males			
1961-'80	5.39	−0.74 (8.34)	−0.37 (0.68)	+0.40 (4.95)	($R2$ = 0.886) DW = 1.45
1961-'71	4.99	−0.93 (6.73)	−0.99 (1.56)	0.08 (0.41)	($R2$ = 0.897) DW = 2.11
1971-'80	8.20	−0.78 (6.02)	−0.03 (0.04)	−0.04 (0.13)	($R2$ = 0.897) DW = 1.02
		Females			
1961-'80	2.44	−0.31 (4.01)	−0.26 (1.24)	+0.20 (4.59)	(R^2 = 0.624) DW = 2.41
1961-'71	2.86	−0.50 (1.85)	−0.40 (1.21)	0.20 (2.21)	(R^2 = 0.542) DW = 2.44
1971-'80	4.29	−0.36 (2.81)	−0.56 (1.02)	0.11 (0.85)	(R^2 = 0.658) DW = 2.36

The figures in parenthesis in columns (3), (4) and (5) are the t-values.

females separately. The general conclusions that are supported by these results are similar to those inferred from the data for the totals but some additional points should be noted. The coefficient of ΔE is consistently lower in the female than in the male equations and the closeness of fit of the equations is higher for males. This indicates a large element of randomness in the female unemployment series and also reflects the fact that a fairly substantial proportion of the variation in female unemployment is attributable to influences other than those covered by the specified explanatory variables. For example, factors such as changes in the level of participation significantly affect the female labour market situation. More interestingly, the net migration variable does not attain statistical significance for males in either of the two sub-periods, although it is highly significant in the equation for the entire period.

The most important finding from this extension of the earlier research concerns the relationship between net migration and changes in unemployment. The original results suggested that if emigration rose by 100, the stock of unemployed persons remaining in Ireland would fall by between 30 and 40 persons. The results presented in the present paper suggest that this result does not hold over the years 1971-80, when no association between net migration and changes in unemployment is discernible, and that even for the

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years 1961-71 the relationship is weaker than the earlier results suggested, mainly as a result of the absence of an association in the case of males. For both sexes combined, it seems that 100 emigrants reduced unemployment by only 20 even in the years 1961-71 and, even more surprisingly, this effect is entirely attributable to the relationship between female migration and female unemployment.

The sizeable rise in the intercept for the later sub-period shown in all these results is capable of the interpretation that unemployment has tended to increase more rapidly in recent years due to autonomous factors such as the higher natural growth of the working age population. The results in Table 1 suggest that in the absence of net changes in employment, or in the numbers in education and with no migration, unemployment tended to rise by almost 17,000 a year over the period 1971-80, compared with 11,000 over the earlier period. The rather surprising result for males requires further comment. The results for the two sub-periods suggest that the overall effect of net migration is a significantly weaker influence than is indicated by the single regression equation covering the entire nineteen year period. Since the intercept in the equation for the latter sub-period is considerably higher it is possible that part of the variation which is subsumed into this constant term (when the data for the full nineteen-year period are used) may have been picked up by the net migration variable. There is the likelihood of an association here as there are similarities in the patterns of change. The rate of autonomous growth in the working age population escalated in the later interval and net migration changed from being a sizeable outflow to being an inflow (also of considerable extent) between the two periods involved. It will also be noted that the Durbin-Watson statistic is considerably lower for the equation for males in the second period which indicates the existence of other non-random influences.

In view of the labour market flow identity which forms the point of departure for these equations, the weak association between migration and the change in unemployment in the years after 1971 is surprising. One possible explanation is that the migration flows in these years were (a) relatively smaller and (b) contained a preponderance of non-active persons. We have no direct evidence on the second point, but it is supported by the greatly changed age structure of the more recent migration flow. During the period 1971-79, the overall net inflow of 109,000 of all ages involved a net inflow of 49,000 children aged under 15 years old and an influx of women aged 30 years or more (over 32,000). More detailed examination of the migrant flows in each five-year age group reveals that the labour force change associated with the more recent in-migration is considerably smaller than that in earlier periods when the net outflows were more heavily concentrated among young adults. This would be expected to reduce the coefficient of the migration variable in the equations under discussion, but to the extent that children and other non-active persons tend to migrate as part of households in which there is at least one economically active person, a correlation between migration and the labour force variables should persist. The showing of the migration variable in the equations in Table 1 indicates that this is not the case during the years 1971-80. This may be confirmed by regressing net migration on changes in unemployment and in employment:

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$$NM = 8.83 + 0.40\Delta U + 0.12\Delta E, \quad R^2 = 0.133 \ldots \ldots \quad (4)$$
$$(0.32) \qquad (0.13)$$

Using the series for changes in the numbers aged over 15 not in the labour force (ΔNLF) derived from Table B of the Appendix the correlation between NM and ΔNLF is 0.73, which is considerably higher than that between NM and ΔE (-0.34) or NM and ΔU (0.36). This suggests that in recent years fluctuations in migration have been associated with (or have given rise to) fluctuations in labour force participation rates. The manner in which this has happened is worthy of further investigation, which would require more detail on the composition of the flows into the non-active, adult population.

A further consideration that should be taken into account in the interpretation of these data, and any statistical analysis based on them, is the necessarily tentative nature of the annual estimates of the variables involved. The annual migration estimates, in particular, are obtained as a residual from the (known) natural increase of population and the estimated pattern of annual population changes in intercensal periods (see Hughes, 1980). These residuals are extremely small when compared with the gross totals from which they are derived and the associated errors of estimation for the *annual* figures can clearly be very large in relative terms, even though the aggregate net migration for each intercensal period is accurate. The longer intercensal period from 1971 to 1979 would tend to add to the difficulties of deriving reliable annual estimates.

A further complication could arise due to changing patterns of employment and the increasingly uncertain distinction between part-time or casual employment and the "not in labour force" status. The complexities of assigning the population to alternative labour force categories are discussed in some detail in the text of The Results of the 1979 Labour Force Survey. The dividing line between "employed" and "not in the labour force" is shown, for example, by the data in Table E for the 1979 Labour Force Survey, where the population aged 15 and over "with a job last week" is cross-classified by Principal Economic Status (PES). The relevant data are summarised in Table 2. Between 1977 and 1979, the numbers "with a job last week" rose by 50 thousand, but the numbers "at work" according to PES rose by 67 thousand. (The latter is the measure that corresponds more closely to ΔE in our equations). Thus, 17,000, or over a quarter of the total increase in employment in these years as measured in the revised labour force series, represents a net transfer of people with a casual or temporary job to more permanent employment. Corresponding to this part of the rise in the numbers employed is, of course, a fall in the numbers outside the labour force according to PES but, nonetheless, "with a job last week". The Labour Force Surveys show the following totals in this category.

	1975	1977	1979
(thousands)	32.1	38.5	22.3

Source: Labour Force Survey 1979 Results, Table E.

It appears, however, that the recorded employment increase arising from this transfer does relate to individuals who increased their average level of gainful activity (i.e., paid work). The figures for average hours worked for person

"with a job", whether relating to persons inside or outside the labour force, were virtually the same in the 1977 and 1979 Surveys (44 hours and 20 hours respectively). If there has been a tendency to include persons in the labour force (defined according to PES) without an associated increase in working hours than one would expect the second average to be significantly smaller in 1979. Much of the fall between 1977 and 1979 is, in fact, accounted for by the decline of 14 thousand in the number of women with a job "last week" whose PES was "engaged in home duties".

TABLE 2: Increase in Employment According to Alternative Definitions — 1975-79 (000)

Increase in numbers employed according to:	1975-77			1977-79		
	Males	Females	Total	Males	Females	Total
(i) Principal Economic Status	11.1	1.3	12.4	43.3	23.7	67.0
(ii) "Job last week"	12.6	5.7	18.3	40.7	9.1	49.8

Source: *Labour Force Survey 1979 Results,* Table E.

This type of growth in employment is helpful in explaining our finding of a relatively weak link between changes in employment and in unemployment, especially for females during the period 1971-80 (Table 1). Growth in employment that takes the form of increasing the number of hours worked by those who were previously in occasional or part-time employment affects participation rates as measured in the labour force data we have used, rather than confirming the link between changes in employment and employment posited in the equation estimated in Table 1.

With regard to the comments made earlier relating to the apparently weaker association between variations in unemployment and in net migration as indicated by the data used, it must be borne in mind that what we are examining here are net *annual* changes which do not reflect the cumulative change over a period of time. The total population in 1971 was some 54,000 lower than it would otherwise have been due to the effect of net emigration over the previous five years and, obviously, this must have eased the domestic labour market situation. Conversely, the cumulative net inflow of 109,000 persons between 1971 and 1979 must have accentuated the unemployment problem even though, as indicated previously, the impact may have been somewhat less on account of the considerably higher proportion of economically inactive persons among the returning migrants. In fact, an inspection of the age profiles of the intercensal net migration flows for 1966/71 and 1971/79, when considered in association with the pattern of participation rates, suggests that the labour force was some 45,000 lower at the end of the earlier period, and some 25,000 higher at the end of the second (longer) interval due to the effect of net migration. Another relevant feature of the 1971/79 period is that many of the returning migrants were skilled operatives who took up positions that would not necessarily have been filled from among the ranks of the unemployed. This kind of occupational mismatch problem became manifestly clear during the buoyant 1978/79 period when severe skill shortages occurred (particularly in technology oriented areas) even though the overall level of unemployment remained very high.

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Another consideration which has to be borne in mind is that the unemployment figures used do not include persons seeking work for the first time as it is not possible to compile a reliable annual series of such estimates. While the inclusion of this additional component would probably not affect the derived relationship between unemployment and changes in the employment level, or with the net migration variable, the educational variable (ΔED) would probably attain a considerably higher level of significance if unemployment were measured in this more comprehensive way.

In summary, this note has updated and extended earlier empirical analysis of the relationships between the main labour market flow variables. Some important contrasts between the 1961-71 and 1971-80 periods, and between the results for males and females are documented and possible interpretations of these findings are suggested.

APPENDIX

Estimates of the Labour Force and Other Components of the Adult Population

The annual estimates of employment and unemployment for the period 1961-80 used in this paper are compiled on the basis of the concepts adopted in Labour Force Surveys. Official annual estimates on this basis are now available for the period from 1975 to 1980 but it is necessary to adjust the Census based estimates for earlier years to coincide with the new concepts in order to obtain a consistent and comparable series over the whole period of the study. As indicated in the text, such a consistent series for 1971/80 was given in Sexton (1981) and the methodology employed in making these adjustments is described in Appendix II of that publication. The present paper includes, in addition, annual estimates of the labour force on the adjusted basis for the period from 1961 to 1970. The method of compilation is basically the same as in the earlier work. However, for the period 1966-71 particular account has also been taken of the influence of the introduction of Free Secondary Education in September 1967; this has affected not only the level, but also the trend, indicated by the new estimates in relation to the existing Census based estimates for this period. An inspection of the age classifications of the labour force given by the Censuses of 1961, 1966 and 1971 show clearly that labour force growth during this time arose exclusively from the 15 to 24 year age group (in fact the older age groups had a negative offsetting effect) and any major social initiative relating to this age group was bound to have a significant effect on the labour force as a whole. In fact, the size of the workforce in 1971 was only marginally up on 1966 (having increased by 15,000 in the previous five years) and it is plausible to assume that there must have been an actual fall in the years after 1967 when the full impact of the Free Secondary Scheme took effect. The labour force estimates for this period, given in Tables A and B following, have been calculated taking into account the increasing size of the adult population, the trend in labour force participation rates and the numbers aged 15 years or over in Education which were derived independently from data on school enrolments compiled by the Department of Education. Age classifications of persons in Education are not available for the first few years of the 1960s; however, the aggregates were available by grade and it was possible to compile age based estimates using the cross-sectional relationship between age and grade for the year 1964 contained in the Report "Investment in Education".

It was also necessary to adjust downwards by 5,000 each of the original annual totals for the numbers in Education for the years from 1975 on as the timing of the yearly count was altered at that time (it was brought forward from February to September.).

TABLE A: Population Aged 15 Years or Over Distinguishing Persons at Work, Unemployed and Economically Inactive, 1961-80

Year	Males At Work	Un-employed	Labour Force	In Education	Other Inactive	Total Population 15+	Females At Work	Un-employed	Labour Force	In Education	Other Inactive	Total Population 15+	Total At Work	Un-employed	Labour Force	In Education	Other Inactive	Total Population 15+	Year
1961	746.4	34.8	781.2	34.9	151.8	967.8	271.3	7.7	279.0	31.1	663.3	973.4	1017.7	42.5	1060.2	66.0	815.0	1941.2	1961
1962	750.1	32.3	782.4	36.9	152.8	972.1	271.6	8.3	279.9	33.1	664.6	977.6	1021.7	40.6	1062.3	70.0	817.4	1949.7	1962
1963	750.3	36.7	787.0	40.1	151.3	978.4	272.3	8.3	280.6	35.5	667.5	983.6	1022.6	45.0	1067.6	75.6	818.8	1962.0	1963
1964	756.1	33.2	789.3	42.7	150.9	982.9	272.6	9.0	281.6	38.0	668.3	987.9	1028.7	42.2	1070.9	80.7	819.2	1970.8	1964
1965	760.2	31.7	791.9	44.9	150.4	987.2	272.6	9.3	281.9	40.3	668.7	990.9	1032.8	41.0	1073.8	85.2	819.1	1978.1	1965
1966	759.5	32.9	792.4	48.6	148.5	989.5	275.2	7.4	282.6	42.5	669.0	994.1	1034.7	40.3	1075.0	91.1	817.5	1983.6	1966
1967	761.1	34.8	795.9	50.3	148.4	994.6	277.5	7.1	284.6	43.3	671.8	999.7	1038.6	41.9	1080.5	93.6	820.2	1994.3	1967
1968	758.2	38.4	796.6	53.7	148.3	998.6	274.4	7.8	282.2	48.7	673.3	1004.2	1032.6	46.2	1078.8	102.4	826.5	2002.8	1968
1969	759.3	36.5	795.8	58.4	148.3	1002.5	273.3	6.9	280.2	52.5	676.1	1008.8	1032.6	43.4	1076.0	110.9	829.3	2011.3	1969
1970	751.1	44.9	796.0	61.5	153.0	1010.5	272.6	7.5	280.1	57.5	679.3	1016.9	1023.7	52.4	1076.1	119.0	835.8	2027.4	1970
1971	756.1	41.1	797.2	64.4	158.4	1070.0	274.3	8.4	282.7	60.6	683.8	1027.1	1030.4	49.4	1079.9	125.0	842.2	2047.1	1971
1972	759.6	47.1	806.7	67.0	163.2	1036.9	279.8	9.5	289.3	63.7	691.3	1044.3	1039.4	56.6	1096.0	130.7	854.5	2081.2	1972
1973	772.0	43.7	815.7	69.0	170.5	1055.2	287.7	8.7	296.4	66.9	701.1	1062.4	1059.8	52.4	1112.2	135.9	869.5	2117.6	1973
1974	782.3	43.7	826.0	70.2	177.9	1074.1	295.2	8.8	304.0	69.0	708.3	1081.3	1077.5	52.5	1130.0	139.2	886.2	2155.4	1974
1975	775.9	59.6	835.5	72.7	185.7	1093.9	297.1	13.4	310.5	72.0	717.8	1100.3	1073.0	73.0	1146.0	144.7	903.5	2194.2	1975
1976	767.4	74.7	842.1	79.5	191.3	1112.9	296.6	15.3	311.9	77.5	730.6	1120.0	1064.0	90.0	1154.0	157.0	921.9	2232.9	1976
1977	784.5	72.4	856.9	82.6	190.1	1129.6	298.8	16.2	315.0	81.5	740.7	1137.2	1083.3	88.6	1171.9	164.1	930.8	2266.8	1977
1978	800.8	69.0	869.8	84.5	191.7	1146.0	309.2	16.0	325.2	85.2	742.2	1152.6	1110.0	85.0	1195.0	169.7	933.9	2298.6	1978
1979	824.0	58.4	882.4	85.5	198.4	1166.3	321.0	15.6	336.6	88.0	747.5	1172.1	1145.0	74.0	1219.0	173.5	945.8	2338.3	1979
1980	838.2	57.2	895.5	86.2	199.6	1181.3	324.8	16.7	341.5	91.3	752.3	1185.1	1163.0	74.0	1237.0	177.5	951.9	2366.4	1980

TABLE B: Net Annual Changes in the components of the adult population and in the labour force

Period	Males						Females						Total							Period
	At work	Unemployed	Labour Force	In Education	Other Inactive	Total Population 15+	At work	Unemployed	Labour Force	In Education	Other Inactive	Total Population 15+	At work		Unemployed	Labour Force	In Education	Other Inactive	Total Pop. 15+	
1961/62	+3.7	-2.5	+1.2	+2.0	+1.1	+4.3	+0.3	+0.6	+0.9	+2.0	+1.3	+4.2	+4.0		-1.9	+2.1	+4.0	+2.4	+8.5	1961/62
1962/63	+0.2	+4.4	+4.6	+3.2	-1.5	+6.3	+0.7	0.0	+0.7	+2.1	+3.2	+6.0	+1.8		+3.4	+5.2	+5.6	+1.5	+12.3	1962/63
1963/64	+5.8	-3.5	+2.3	+2.6	-0.4	+4.5	+0.3	+0.7	+1.0	+2.5	+0.8	+4.3	+5.2		-1.8	+3.4	+5.1	+0.3	+8.8	1963/64
1964/65	+4.1	-1.5	+2.6	+2.2	-0.5	+4.3	+0.0	+0.3	+0.3	+2.3	+0.4	+3.0	+5.1		-2.2	+2.9	+4.5	-0.1	+7.3	1964/65
1965/66	-0.7	+1.2	+0.5	+3.7	-1.9	+2.3	+2.6	-1.9	+0.7	+2.2	+0.3	+3.2	+0.9		+0.3	+1.2	+5.9	-1.6	+5.5	1965/66
1966/67	+1.6	+1.9	+3.5	+1.7	-0.1	+5.1	+2.3	-0.3	+2.0	+0.8	+2.8	+5.6	+3.9		+1.6	+5.5	+2.5	+2.7	+10.7	1966/67
1967/68	-2.9	+3.6	+0.7	+3.4	-0.1	+4.0	-3.1	+0.7	-2.4	+5.7	+1.2	+4.5	-6.0		+4.3	-1.7	+8.8	+1.1	+8.4	1967/68
1968/69	+1.1	-1.9	-0.8	+4.7	0.0	+3.9	-1.1	-0.9	-2.0	+3.8	+2.8	+4.6	0.0		-2.8	-2.8	+8.5	+2.8	+8.5	1968/69
1969/70	-8.2	+8.4	+0.2	+3.1	+4.7	+8.0	-0.7	+0.6	-0.1	+5.0	+3.2	+8.1	-8.9		+9.0	+0.1	+8.1	+7.9	+16.1	1969/70
1970/71	+5.0	-3.8	+1.2	+2.9	+5.4	+9.5	+1.7	+0.9	+2.6	+3.1	+4.5	+10.2	+6.7		-2.9	+3.8	+6.0	+9.9	+19.7	1970/71
1971/72	+3.5	+6.0	+9.5	+2.6	+4.8	+16.9	+5.5	+1.1	+6.6	+3.1	+7.5	+17.2	+9.0		+7.1	+16.1	+5.7	+12.3	+34.1	1971/72
1972/73	+12.4	-3.4	+9.0	+2.0	+7.3	+18.3	+7.9	-0.8	+7.1	+3.2	+9.8	+18.1	+20.3		-4.2	+16.1	+5.2	+15.0	+36.4	1972/73
1973/74	+10.3	0.0	+10.3	+1.2	+7.6	+18.9	+7.5	+0.1	+7.6	+2.1	+7.2	+18.9	+17.8		+0.1	+17.9	+3.3	+16.7	+37.8	1973/74
1974/75	-6.4	+15.9	+9.5	+2.5	+7.8	+19.8	+1.9	+4.6	+6.5	+3.0	+9.5	+19.0	-4.5		+20.5	+16.0	+5.5	+17.3	+38.8	1974/75
1975/76	-8.4	+15.1	+6.6	+6.8	+5.6	+19.0	-0.5	+1.9	+1.4	+5.5	+12.8	+19.7	-9.0		+17.0	+8.0	+12.3	+18.4	+38.7	1975/76
1976/77	+17.1	-2.3	+14.8	+3.1	-1.2	+16.7	+2.2	+0.9	+3.1	+4.0	+10.1	+17.2	+19.3		-1.4	+17.9	+7.1	+8.9	+33.9	1976/77
1977/78	+16.3	-3.4	+12.9	+1.9	+1.6	+16.4	+10.4	-0.2	+10.2	+3.7	+1.5	+15.4	+26.7		-3.6	+23.1	+5.6	+3.1	+31.8	1977/78
1978/79	+23.2	-10.6	+12.6	+1.0	+6.7	+20.3	+11.8	-0.4	+11.4	+2.8	+5.3	+19.5	+35.0		-11.0	+24.0	+3.8	+11.9	+39.7	1978/79
1979/80	+14.2	-1.1	+13.1	+0.7	+1.2	+15.0	+3.8	+1.1	+4.9	+3.3	+4.8	+13.0	+18.0		0.0	+18.0	+4.0	+6.0	+28.0	1979/80
	-	-	-	-	-	-	-	-	-	-	-	-								

TABLE C: Estimates of Annual Net Migration Flows for the Period 1961-80

Period	Males	Females	Total
	000		
1961/62	−7.0	−7.9	−14.9
1962/63	−3.9	−4.3	−8.2
1963/64	−7.8	−8.8	−16.6
1964/65	−9.2	−10.3	−19.5
1965/66	−9.7	−10.9	−20.6
1966/67	−6.2	−7.2	−13.4
1967/78	−7.3	−8.4	−15.7
1968/69	−7.3	−8.5	−15.8
1969/70	−2.7	−2.8	−5.5
1970/71	−2.0	−2.3	−4.3
1971/72	+6.0	+4.7	+10.7
1972/73	+7.2	+5.6	+12.8
1973/74	+9.2	+7.1	+16.3
1974/75	+11.2	+8.8	+20.0
1975/76	+9.2	+7.1	+16.3
1976/77	+5.6	+4.4	+10.0
1977/78	+3.7	+2.9	+6.6
1978/79	+9.0	+7.0	+16.0
1979/80	−2.3	−2.1	−4.0

It is also necessary to comment on the annual net migration estimates in Table C above. With regard to the total figures, the data for the period from 1961 to 1971 have been taken from Hughes (1977) while the figures for the annual periods after 1971 have been derived from the annual CSO population estimates in association with data on natural increase (in fact, Hughes' estimates for the earlier period were calculated in the same way). The estimates of net migration for males and females have been obtained by applying to the total figures, the male/female ratios of aggregate net migration for the various intercensal periods involved (i.e., 1961/66, 1966/71, 1971/79, 1979/81). It must be borne in mind that this adds one more element of estimation to these already tentative figures (see text) and this should be taken into account in interpreting the results based on them.

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STATISTICAL APPENDIX

		Output Indicators				Employment		Output per Head	
		1	2	3	4	5	6	7	8
		Manufac-turing	Trans-portable Goods	Elec-tricity Output	Cement Sales	Manufac-turing	Trans-portable Goods	Manufac-turing	Trans-portable Goods
		1973 = 100	1973 = 100	G.W.H.	000 Metric Tons	000's	000's	1973 = 100	1973 = 100
1976		108.2	107.3	8443	1500.4	196.7	206.7	113.8	112.5
1977		115.9	115.4	9127	1516.5	202.9	213.9	118.1	117.0
1978		125.6	125.1	9815	1751.7	208.8	219.9	124.4	123.3
1979		133.3	132.9	10853	2067.8	217.4	229.1	126.8	125.8
1980		131.9	131.6	10733	1814.9	215.1	227.1	126.8	125.6
1981		135.7	134.1	10767	1812.5	207.7	219.6		
Quarterly Averages or Totals									
1979	I	125.8	124.3	3051	375.5	213.2	224.0	122.0	120.3
	II	141.3	140.3	2582	574.1	216.6	229.2	134.9	132.7
	III	129.1	130.9	2365	616.1	218.6	230.5	122.1	123.1
	IV	137.1	135.9	2855	502.1	221.1	232.5	128.2	126.7
1980	I	132.4	130.8	3022	424.8	217.9	229.3	125.7	123.7
	II	142.4	143.1	2502	495.0	216.2	229.1	136.2	135.4
	III	124.0	124.8	2358	476.9	214.1	226.2	119.8	119.6
	IV	128.8	127.5	2851	418.2	212.1	223.6	125.6	123.6
1981	I	128.6	126.9	2885	410.2	208.2	219.8	127.7	125.2
	II	144.2	142.2	2546	516.6	207.0	219.5	144.1	140.3
	III	131.8	132.3	2408	488.8	207.5	220.1	131.4	130.4
	IV	131.8	134.8	2928	396.9 335.2	207.8	219.0		
1982	I								
	II								
	III								
	IV								
Quarterly Averages or Totals Seasonally Corrected									
1979	I	130.6	130.1	2707	440.2	214.1	225.6	126.2	125.0
	II	132.9	131.8	2844	525.3	216.9	228.6	126.7	125.0
	III	134.8	134.5	2753	591.8	218.3	230.0	127.7	126.8
	IV	134.7	134.8	2584	495.2	220.1	232.0	126.6	126.0
1980	I	137.5	137.0	2681	498.0	218.9	231.0	129.9	128.6
	II	133.8	134.3	2755	452.9	216.5	228.4	127.8	127.5
	III	129.1	127.9	2745	458.1	213.8	225.7	124.9	122.9
	IV	127.3	127.1	2580	412.4	211.1	223.1	124.7	123.5
1981	I	133.1	132.5	2560	480.9	209.2	221.4	131.6	129.7
	II	135.4	133.4	2738	461.7	207.2	218.8	135.1	132.2
	III	137.1	135.6			207.4	219.7	136.9	133.9
	IV	136.7	134.5			206.8	218.6		
1982	I								
	II								
	III								
	IV								

Unemployment	Prices							
9	10	11	12	13	14	15		
Live Register Av. Monthly	Consumer Price Index	Agricultural Price Index	Import Unit Value	Export Unit Value	Terms of Trade	Price of Stocks + Shares		
000's	Nov. 1975 = 100	1975 = 100	1975 = 100	1975 = 100	1975 = 100	1953 = 100		
107.8	114.4	125.7	119.0	123.5	103.8	456.2	1976	
106.4	130.0	153.9	139.3	142.3	102.1	572.9	1977	
99.2	139.9	174.0	146.2	151.6	103.7	867.3	1978	
89.6	158.5	184.2	165.9	165.5	99.8	928.0	1979	
101.5	187.3	179.3	195.6	180.8	92.4	912.5	1980	
127.9	225.6	213.1				946.6	1981	
Quarterly Averages or Totals								
97.7	150.2	189.8	151.8	158.0	104.1	971.6	1979	I
89.8	155.0	196.0	159.2	162.4	102.0	994.3		II
85.6	161.4	183.5	170.9	165.3	96.7	889.5		III
85.4	167.2	172.0	172.7	166.9	96.6	856.6		IV
92.0	173.5	180.4	183.6	174.9	95.3	888.3	1980	I
94.0	186.3	186.3	192.6	181.0	94.0	887.3		II
103.9	191.8	176.2	194.8	183.4	94.1	909.5		III
116.0	197.7	179.0	205.3	185.9	90.6	964.9		IV
125.8	209.9	202.9	221.4	194.1	87.7	942.3	1981	I
124.3	218.1	213.2	231.3	206.2	89.1	1012.8		II
126.8	230.4	213.9	236.8	213.7	90.3	960.5		III
134.5	243.8	212.0	236.6	218.2	92.2	870.6		IV
	249.5					827.6		
							1982	I
								II
								III
								IV
Quarterly Averages or Totals Seasonally Corrected								
93.1	149.6	188.1					1979	I
90.9	152.6	189.9	No Seasonal Pattern					II
88.6	162.7	186.9						III
86.0	169.2	176.0						IV
87.5	172.8	178.8					1980	I
95.1	183.4	180.5						II
106.8	193.3	179.4						III
116.6	200.1	183.2						IV
121.7	209.1	201.2					1981	I
125.5	214.7	205.0						II
129.5	230.9							III
134.7								IV
							1982	I
								II
								III
								IV

	Money Earnings Weekly Averages		Real Earnings			Consumption Indicators	
	16	17	18	19	20	21	22
	Manufac-turing	Trans-portable Goods	Manufac-turing	Trans-portable Goods	New Cars Regis-tered	Retail Sales Value	Retail Sales Volume
	1973 = 100	1973 = 100	1977 = 100	1977 = 100	Total	1975 = 100	1975 = 100
1976	176.8	176.7	97.4	97.3	69514	119.6	102.2
1977	206.3	206.1	100	100	82310	143.0	106.9
1978	236.2	235.7	106.4	106.3	105582	170.2	116.3
1979	271.3	271.1	107.9	107.9	95938	197.7	120.3
1980	321.2	321.0	108.1	108.1	91032	226.8	119.3
1981					103922	268.2	118.6
Quarterly Averages or Totals							
1979 I	250.9	250.6	105.2	105.1	31544	186.1	119.0
II	261.8	262.9	106.4	106.9	28387	195.5	121.6
III	283.6	282.0	110.7	110.1	23658	200.4	120.2
IV	288.9	288.9	108.9	108.9	12349	208.2	120.4
1980 I	302.3	301.5	109.8	109.5	34241	218.7	122.8
II	318.3	318.6	107.6	107.7	23589	222.0	118.5
III	318.8	318.2	104.7	104.5	20517	224.5	115.7
IV	345.2	345.6	110.0	110.3	12592	242.0	120.5
1981 I	346.2	344.6	103.9	103.6	35496	254.5	120.6
II	373.3	371.4			29153	261.5	119.1
III	383.8	385.2			32094		
IV					7179		
1982 I							
II							
III							
IV							
Quarterly Averages or Totals Seasonally Corrected							
1979 I	255.2	255.4	107.6	107.8	26463	185.7	118.7
II	261.0	261.1	107.7	107.9	23935	195.4	121.6
III	281.6	280.6	109.2	109.0	24541	201.7	120.5
IV	287.2	286.9	106.3	106.3	18711	208.1	120.2
1980 I	307.5	307.3	112.3	112.3	28801	218.0	122.2
II	317.3	316.4	108.9	108.7	19890	221.9	118.6
III	316.6	316.6	103.3	103.5	21283	225.2	116.0
IV	343.1	343.2	107.4	107.7	19083	242.2	120.5
1981 I					29518	253.9	120.1
II						261.8	119.3
III						278.0	120.1
IV						279.1	114.7
1982 I							
II							
III							
IV							

	Government			Monetary Developments					
23	24	25	26	27	28	29		
Current Revenue	Current Expenditure	Current Deficit	Money Supply M3	All Banks Domestic Credit Government	Non-Gov.	External Reserves		
£m	£m	£m	£m End Period	£m End Period	£m End Period	£m End Period		
1470	1672	201	2799.6	682.0	2088.0	955.5	1976	
1757	1966	209	3257.3	836.0	2639.5	1200.7	1977	
2023	2421	398	4117.2	902.6	3475.2	1251.9	1978	
2384	2905	521	4986.3	1005.9	4350.5	974.7	1979	
3155	3708	553	5828.6	1132.6	5050.7	1346.0	1980	
3973	4796	823	6615.9			1473.1	1981	
	Quarterly Totals			Monthly Totals				
515	656	141	4364.6	908.4	3793.9	1138.0	1979	I
435	711	276	4673.3	928.0	4058.2	993.9		II
689	724	35	4684.5	977.1	4256.0	933.6		III
745	814	69	4986.3	1005.9	4350.5	974.7		IV
751	777	26	5003.1	875.8	4607.8	960.7 '	1980	I
783	1013	230	5103.7	952.5	4585.8	979.7		II
726	870	144	5447.8	1123.1	4773.0	1164.4		III
895	1047	152	5828.6	1132.6	5050.7	1346.0		IV
871	1076	205	5950.5	1124.1	5381.7	1322.7	1981	I
936	1188	252	6020.4	1201.5	5511.6	1191.7		II
970	1245	275	6395.1	1217.8	5785.0	1071.8		III
1196	1287	91	6615.9	1277.4	6053.6	1473.1		IV
							1982	I
								II
								III
								IV
	Quarterly Totals (S.C.)			Monthly Totals (S.C.)				
474	655	181	4341.6	913.7	3738.1	1093.2	1979	I
463	707	244	4677.0	946.5	4007.0	1086.2		II
718	754	36	4685.9	964.1	4179.0	945.0		III
732	787	55	4847.8	971.8	4336.0	924.0		IV
692	775	83	4985.7	882.5	4538.3	923.0	1980	I
833	1008	175	5109.9	968.5	4533.1	1070.7		II
757	906	149	5459.8	1100.9	4688.1	1178.5		III
880	1013	133	5669.4	1095.0	5034.6	1275.8		IV
802	1073	201	5922.8	1134.6	5299.4	1270.6	1981	I
			6030.3	1222.4	5452.0	1302.4		II
			6414.2	1201.0	5680.1			III
								IV
							1982	I
								II
								III
								IV

		Visible Trade Indicators					Exchange Rates	
		30	31	32	33	34	35	36
		Imports (Value)	Exports (Value)	Import Excess (Value)	Imports (Volume)	Exports (Volume)	Effective Index	Sterling
		£m	£m	£m	1975 = 100	1975 = 100	Dec. 1971 = 100	Per IR£
1976		2334.9	1858.7	476.2	115.3	104.0	78.90	1.0000
1977		3090.9	2518.2	572.7	129.9	122.2	77.01	1.0000
1978		3713.1	2963.2	749.9	148.8	134.8	77.57	1.0000
1979		4817.5	3501.1	1316.4	170.3	146.1	77.08	0.9646
1980		5419.6	4130.9	1288.7	162.6	157.9	74.01	0.8862
1981		6572.8	4845.7	1727.1			67.75	0.8002
Monthly Averages								
1979	I	368.9	248.3	120.6	170.9	130.2	77.86	0.9999
	II	423.0	276.4	146.6	185.4	141.5	76.92	0.9624
	III	405.7	308.8	96.9	167.2	154.8	75.85	0.9239
	IV	411.5	333.5	78.0	167.7	165.3	77.73	0.9728
1980	I	476.6	319.6	157.0	182.8	150.5	75.85	0.9276
	II	440.0	334.4	105.6	160.9	153.2	74.71	0.9026
	III	433.2	356.6	76.6	156.6	161.3	74.65	0.8905
	IV	458.1	363.1	95.0	157.2	162.0	70.75	0.8231
1981	I	511.7	339.6	172.1	162.7	145.0	67.24	0.7686
	II	557.2	405.5	151.7	169.6	162.9	66.57	0.7730
	III	572.6	419.4	153.2	170.4	162.7	67.85	0.8177
	IV	549.4	450.7	98.7	163.4	171.3	69.32	0.8407
1982	I	598.7	417.4	181.3				
	II							
	III							
	IV							
Monthly Averages. Seasonally Corrected.								
1979	I	361.1	264.5	96.6	163.6	140.9		
	II	403.7	276.5	127.2	179.6	143.8		
	III	425.0	302.5	122.5	179.5	150.3		
	IV	415.0	318.8	96.2	168.1	154.4		
1980	I	466.5	346.0	120.5	178.7	165.2		
	II	423.8	334.8	89.0	154.8	155.6		
	III	453.3	349.0	104.3	165.2	158.0		
	IV	464.4	349.2	115.2	158.8	152.2		
1981	I	504.1	361.0	143.1	158.7	155.0		
	II	537.6	406.9	130.7	164.0	165.9		
	III	597.7	414.2	183.5	179.1	159.7		
	IV	555.4	434.0	121.4	164.0	162.8		
1982	I	587.8	442.8	145.0				
	II							
	III							
	IV							

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