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ESTIMATED EMPLOYMENT AND GROSS NATIONAL PRODUCT IMPACTS OF 1989 TOURISM IN IRELAND

E. W. HENRY
Economic & Social Research Institute

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Abstract:

The employment and Gross National Product (GNP) impacts of 1989 Tourism in Ireland are estimated by Input-Output methodology. Out-of-State Revenue plus Carrier Receipts during 1989 imply some 51,000 manyears of employment and £971m of GNP throughout the Irish economy, by way of direct, indirect and induced impacts. The 1989 Domestic Tourist revenue has a further impact of about 13,000 manyears and £268m of GNP. These combined 1989 impacts of about 64,000 manyears and £1,239m of GNP may be regarded as lower limits, if one allows for some share of a further maximum 25,000 manyears and £361m GNP due to implied Government income and respending, on a 'Balanced Budget' hypothesis. Irish GNP Normal multiplier results are found to be compatible with similar multipliers from other parts of the world.

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1. INTRODUCTION

There is a tendency to think of Tourism as a self-contained industry with neatly-defined borders. But in fact tourism is problematic for the compiler of employment and Gross National Product (GNP) data on the industry, because no discrete sector as such exists. During the course of a year, tourists use parts of the services of transport, hotels, catering, shops, entertainment, etc. But major parts of these services are purchased by business and households. Thus a measurement problem exists, as to the shares of these services purchased by tourists, and the economic impact of tourism by way of employment and GNP.

This measurement problem can be solved by an Input-Output (I-O) model. That the I-O modelling approach is the best available explains its world-wide use for tourism-related employment and income impacts, as detailed in Archer (1977). Because of the definitional problems of tourism, the measurement of tourism-related employment or income is extremely complex. But for policy reasons it is desirable to find some acceptable measures of tourism impacts on employment and income. It will be detailed more fully below how the I-O model may be applied to the problem, what are its underlying assumptions, and which mis-uses of the model are to be avoided.

The revenue of the tourist industry in Ireland during 1982-1989 is shown in Table 1, from data sources of the Central Statistics Office (CSO) and Bord Failte (the Irish Tourist Board). We see three components: (1) Out-of-State revenue, denoted 'Expenditure by non-residents' in the National Accounts; (2) Carrier Receipts mainly of airlines and shipping taking foreign visitors into and out of the State; (3) Domestic tourist revenue, the holiday expenditure of Irish residents who take holidays at home. It should be noted that this excludes other domestic trips for non-business purposes which are usually included as part of total domestic tourism revenue. Items (1) and (2) comprise Invisible Export components for Balance of Payments' accounts.

Table 1 columns (1) to (3) show these Irish 1982-89 Tourism revenues at current prices. Column (4) shows their aggregate, generally increasing from £736m for 1982 to £1,314m for 1989, with a fall-back to £866m for 1986. Columns (5) to (8) show estimates at 1985 prices; in general the

CSO implicit deflator of column (5) versus column (1) has been applied by the writer to obtain deflated value of columns (6) and (7). The aggregate at 1985 prices appears in column (8). For 1982-87 it stays within a range of about £830-960m; a growth of some £100m appears for 1988 and again for 1989.

A major study of Irish Tourism is the Deane (1980) report *'Tourism Policy'*, prepared for the National Economic and Social Council. Difficulties of measuring employment and GNP impacts are described in Chapter 2, with reference to different estimates for the year 1968, which had some background I-O model estimates available.

A more recent and less detailed Deane (1987) study on Tourism in Ireland describes the problems and possibilities of the tourist trade as an employment growth area. Employment impact estimates for 1982 and 1985 are provided, in an I-O framework of the kind described in Part 2 below.

The Archer (1977) report *'Tourism Multipliers: the State. of the Art'* provides a useful background in several ways. It reports on studies of Tourism economic impacts from various parts of the world. It shows how I-O models are widely used for estimating Touristm impacts, and provides several algebraic formulations of such models. it defines 'Normal' and 'Ratio' multipliers, as will be explained below. Chapter 3 of the report discusses 'some weaknesses and limitations' of I-O multipliers, which are best interpreted in an Irish context as:

1. Failing to allow for price inflation and changes in the relative price of imports from the year of the I-O basic data to the Tourism year being analysed;

2. Failing to allow for increasing real output per manyear;

3. Failing to match the I-O sectors and pricing system with those of the Tourism revenue, or *vice versa* ;

4. Applying 'short-run static average annual' multipliers to a Tourism growth situation, especially in a *developing economy*, where capacity constraints might require major substitution of imports, by which 'leakages' the multiplier values would decrease significantly.

In view of the more detailed description in Part 2 below, the following preview of the 'Input-Output Approach' to estimating economic impacts of Tourism will suffice. Out-of-State Tourist expenditure and Carrier Receipts are defined as part of the purchase of 'Final Output' of the economic system. They must be expressed as outputs of economic activities, e.g. Transport, taxes on expenditure, and so on. Thus a 'direct' impact is measurable, such as the GNP and employment of the Transport output purchased by Tourism. But indirect (or 'up-stream') inputs of goods and services are also required to give 'indirect' GNP and employment. All this 'direct' plus 'indirect' GNP and employment implies Household income and its spending, to give further 'induced' effects. If we further treat Government income and outgoings like those of Households we get a fourth-stage induced effect, to be treated with reserve, although estimated and discussed at several points in the paper which follows.

Domestic Tourist expenditure is confined to 'direct' plus 'indirect' as being merely a part of Household income 'generated' within the economic system. By contrast, 'Invisible Export' injections of purchasing power through Out-of-State Revenue and Carrier Receipts permit the full I-O model effect to apply, namely 'induced' as well as 'direct' and 'indirect'.

Following Archer (1977, page 9) we may define a 'Normal' multiplier as the 'direct plus indirect plus induced' GNP or employment per unit (£million) Final Output of a sector, or some weighted average of sector results. However, 'Normal' is also useful to describe this *type* of multiplier (e.g. GNP per £m Final Output), to distinguish it from a 'Ratio' multiplier. The 'Ratio Type I' multiplier is the ratio of 'direct plus indirect' to direct' GNP or employment per £m Final Output (or 'Final Demand'). Ratio Types II and III will be described below in the paper, having larger numerator values than that of Type I.

Let us now consider the Tourism figures of Table 1 in their proper context and background with a view to defining and estimating employment and GNP impacts for 1989 in particular. Ireland has a developed economy with the infrastructure and capital stock of roads, transport equipment, hotels, shops, etc., required by Tourism. The figures of Table 1, including those of 1989, measure Tourism revenues of past years, each being part of an ongoing annual cycle of goods and services being produced and purchased.

A *'short-term national annual average static'* impact approach is possible, as follows. We may regard the 1989 Tourism expenditure on the output of any I-O sector (at say Basic Prices) as worth x per cent of the annual output, if this expenditure purchases x per cent of the output. In other words, for want of better information, we treat the Tourism x per cent purchase as if spread over the year, and also covering x per cent of the sector's GNP and employment.

A very clear exposition of this 'average annual static' assumption appears in the O'Riordan (1984) paper. This writer has pointed out (see O'Riordan, 1984, p.61) that refinement of such multiplier and impact estimates can occur through increased numbers of I-O sectors.

The numbers employed in April seem to be almost identical with 'Average Annual' employment, at the level of the three main economic sectors, per Table 8 of Baker et al. (1990). This means that more detailed April employment figures used in deriving the 1989 employment Normal multipliers used in Part 3 below should be acceptable.

It will be seen in Part 2 below that the 'weaknesses and limitations' (1) to (4) mentioned above have been reasonably corrected in developing the Irish 1989 I-O Normal multipliers used in Part 3 and 4 following. The 1982 basic structure has been repriced at 1989 prices. Larger real output-per-manyear has been allowed for. The special 1982 National Accounting design still applies: a 'Disposable Household Income' row is matched by a 'Household Spending and Saving' column; 'Government Disposable Income' row is likewise matched by a column of Government outgoings and negative savings (Government current deficit); a row for all Savings is matched by a Capital Formation column; a row for Imports of goods and services and Outflows of profits, etc. is matched by a column of Exports plus Inflows. Thus Normal multipliers for GNP (as distinct from GDP) are directly calculable, as outcome of the *average static* model.

Of course, employment and GNP 'crude' estimates are possible without recourse to I-O techniques, as illustrated in Appendix 1 below. The Input-Output advantage would seem to be two-fold: (a) sectoral breakdown improves the precision of the estimates as well as showing which sectors are most significant; (b) the direct, indirect, and induced Normal impacts can be distinguished, up to the degree of detail permitted by the number

of I-O sectors in the model.

In summary, ***a short-term national annual 1989 average static*** impact estimate is possible for the Tourism and Carrier receipts, in terms of GNP and employment, in what follows. The rest of the paper comprises four main parts. Methodology and data sources for the Irish 1989 impact estimates comprise Part 2. The employment 1989 impacts are treated in Part 3, with numeric results in Tables 2 to 5, including Normal and Ratio multipliers. Similar 1989 GNP impact estimates appear in Part 4, including Tables 6 to 9. Part 5 addresses comparisons of Tourism impacts with those of other Final Demands within Ireland, as well as some international comparisons set out in Table 10. A few conclusions and observations also appear in Part 5.

2. METHODOLOGY AND DATA SOURCES

The Impact study described below has used the 1989 I-O 'Normal' multiplier results appearing in the Henry (January 1990) report on estimating Irish 1989 GNP and employment multipliers by Input-Output modelling. The purpose of this present Impact exercise is to apply the results of the latter report to Irish 1989 Tourist Revenue Data, and thus estimate the Employment and GNP impacts of 1989 Tourism in Ireland.

For this kind of Impact estimation two data-sets need to be brought together: (a) Tourist expenditure in a format adapted to the I-O model being used; (b) I-O sectoral 'Normal' multipliers for Employment or GNP, at a greater or lesser degree of complexity, e.g. 'Direct plus Indirect' or 'Direct', respectively. Each such 'Normal' multiplier gives the average employment (in manyears) or GNP (in £m) implied by £1m of Final Demand for the output of a particular sector.

Multiplication of (a) by (b), for each individual I-O sector, gives the Employment or GNP impact estimate, to be aggregated over sectors. There are four versions of each I-O sectoral Normal multiplier denoted: (i) 'Direct'; (ii) 'Direct plus Indirect (Partial)'; (iii) 'Direct plus Indirect plus Induced (Complete)'; (iv) 'Government also included in Inter-Industry'. These reveal increasing orders of complexity of economic interaction as one moves from (i) to (iv), and also increasing numerical size of the multiplier. There are, accordingly, four impact estimates for each I-O sector's

employment contribution to the overall impact of Tourist Revenue by way of employment. In the literature, e.g. Archer (1977), the term 'Normal' is used mainly for version (iii) of such multipliers.

But 'Ratio' multipliers are also of interest; these compare 'Direct plus Indirect' employment with 'Direct' employment, in ratio form, to give a 'Type I' ratio multiplier. Types II and III are also calculable, as will be described in Part 3 below, following the methodology of Jordan and Polenske (1988). Similar Ratio multipliers occur for GNP.

The I-O multipliers themselves are derived from a revised 21-sector version of the 1982 transactions in Henry (1983). This revised version of 1982 transactions has been repriced at 1989 estimated Basic Prices. Thus the GNP multipliers and the I-O transaction values are relevant to 1989 economic conditions. Similar 1989 relevance has been imposed on the employment multipliers, by allowing for a 1982-1988 increase in output-per-manyear for each I-O sector; 1989 data are not yet fully available. The Henry (January 1990) report describes the full background and numeric calculations leading to the sets of GNP and employment 1989 multipliers (21-sector), which are used in the present study.

In repricing the 1982 transactions so as to be at 1989 prices, the I-O approach has been to inflate Value Added and Imports of Goods and Services, and then derive consistent sectoral prices, as explained and illustrated in Henry (1986). The 1982-89 price inflators used for repricing reveal a major reduction in the relative price of Imports, which showed only 22 per cent price increase, compared with 40 per cent for Household Income, 50 per cent for Government Income, and 39 per cent for Savings (including depreciation allowance). These price inflator figures appear in Table 4 of Henry (January 1990).

The outcome of the 1982-88 increase in output-per-manyear underlying the estimated 1989 employment 'Normal' multipliers of Henry (January 1990) can be illustrated as follows. Table 1 above shows in column (8) £931.0m for 1982 and £1,155.4m for 1989, as the estimated total Tourism and Carrier revenue at 1985 prices. These figures show a 1982-89 volume growth of 24.1 per cent for total revenue. Appendix 1 below shows related 1982 employment (direct plus indirect plus induced) of 59,000 manyears in 1982 manyear units, versus 64,500 manyears for

1989 in 1989 manyear units, giving a 9.32 per cent apparent growth of employment. Thus the revenue growth of 24.1 per cent for a 9.32 per cent apparent growth of employment implies a 13.5 per cent growth of output per manyear between 1982 and 1989.

A separate 1982-88 estimate of 12.6 per cent growth in GNP per person employed (April numbers) is in harmony with the 13.5 per cent just quoted. Table 6 of *National Income and Expenditure 1988* shows 1982 GNP as £15,464m and that of 1988 as £16,586m, at 1985 prices. Table 2 of *Economic Review and Outlook 1988* shows 1,146,000 persons at work in April 1982, with 1,092,000 for April 1988 in Table 12 of the 1989 issue. These GNP and employment figures imply a 12.6 per cent growth in GNP per manyear between 1982 and 1988 in fair agreement with the 13.5 per cent growth for 1982-89 derived from Tourism revenue, which has a different sectoral weighting pattern to that of total GNP.

One needs to clarify the meaning of the 'apparent'growth of employment between 1982 and 1989, referred to in the penultimate paragraph. The 1989 sectoral or weighted average manyear unit does not have the same meaning as that of 1982 because of changing technology whereby capital has tended to substitute for labour, mainly in Industry and Agriculture. However, one can standardise the employment manyear unit of each sector, taking either the average of 1982 or that of 1989 as the standard unit. For either such unit a real Tourism Revenue growth of 24 per cent implies the order of 24 per cent growth of standardised manyears between 1982 and 1989. Different sector weights for 1989 versus 1982 cause deviation from an exact parallel weighted-average 24 per cent growth of standardised manyear units. This problem has been discussed in Henry (1986).

A related issue of some importance is the 'Direct' employment impact of Tourism, in terms of 'jobs' and growth of 'jobs'. Table 7 of the background Henry (January 1990) report shows great sectoral variations in the selected values of 1982-88 growth of real GDP per employee, used to represent growth in output per employee in the process of deriving the employment multiplier (Normal) estimates of 1989, and drawn from available Irish data on real GDP and employment. Manufacturing sectors show the greatest 1982-88 growth of output per employee (e.g. 72 per cent for Food and 154 per cent for Engineering). By contrast, each of the Transport and Commerce sectors shows only 6 per cent, with 5 per cent for Public and

Professional; thus each of these three sectors displays 1 per cent or less as a linear annual growth-rate of output per employee.

The relevance of this very small growth-rate of real output per employee may be applied to the 'Direct' employment of 1989 Tourism, as shown in Tables 2 and 3 below. Most of the 'Direct' employment occurs in the Transport and Commerce sectors. Thus a real or volume growth of Tourism revenue in the short-term does imply approximately the same 'jobs' or manyear volume growth in the related 'Direct' employment of the Transport and Commerce sectors, according to the 1982-88 results mentioned in the previous paragraph. However, neglible positive or even negative employment growth may emerge for the 'Indirect' and 'Induced' components, to the extent that these relate to outputs of Industry and Agriculture.

Total Tourist Revenue figures for 1989 and earlier years have been compiled by the Central Statistics Office. Their breakdown by item has been made available to the writer by Bord Failte. The full 1989 list of items occurs for Out-of-State Visitors, comprising some twenty-two item heads. The value of each item has been broken down between (a) Retail Margin, (b) Net Price excluding Tax, (c) VAT, (d) Excise Duty. a shorter item-list of some thirteen items comprises the Domestic Tourist Revenue, and a single aggregate comprises Carrier Receipts.

The writer made some further breakdowns of 1989 item value, based on 1985 I-O work on hand. The direct import share of each item has been estimated. Eggs and fish have been deducted from 'Food' and listed as produce of 'Agriculture and Fishing'. The item-group 'Miscellaneous' has been broken down between nine sub-items of likely expenditure, in proportion to 1985 Personal Expenditure estimates. And a subsidy has been estimated for 'Public Transport' cost, making the gross (economic) cost one-third larger than the (net) amount paid for train and bus of CIE.

The final I-O-compatible arrangement of 1989 Out-of-State Visitor Revenue and Carrier Receipts appears in Table 2 column (1); that for Domestic Tourist Revenue appears in Table 3 column (1). Due to lack of I-O detail, Carrier Receipts have had to be treated as output of I-O sector (18). 'Transport Purchased', without further detail by type of transport.

Three background papers deserve mention:

1. The Henry (1986) report on multi-sector modelling of the Irish economy has algebraic and verbal description of Normal employment multipliers, repricing of transactions, and allowance for increased output per manyear. There is also an adequate numeric illustration of all these features.

2. A very clear exposition of relevant methodology of 'average annual' multipliers appears in the O'Riordan (1984) paper on induced employment in marketed services. For each sector a purchase of say 10 per cent of its output is taken to imply 10 per cent of the sector's employment.

3. The Archer (1977) study shows how I-O models are widely used for Tourism impact estimation; it gives different model versions. In conditions of ***developing economies***, it is pointed out that capacity constraints and import substitution need to be taken into account in any estimation of the impacts of a volume growth of tourism revenue.

3. EMPLOYMENT IMPACT ESTIMATES AND RATIO MULTIPLIERS

Table 2 shows the detailed calculation of the employment impact of Out-of-State Visitors' Revenue and of Carrier Receipts. Column (1) displays the Final Demand stimulus in relevant I-O sectoral arrangement, at Basic Prices. The Out-of-State aggregate is £751.0m and that of Carrier Receipts is £232.0m giving a combined total revenue of £983.0m. Columns (2) to (5) provide sectoral matching of the appropriate Normal employment multipliers, taken from Table 8 of Henry (January 1990). For Carrier Receipts, the only available multipliers are those of sector (18), purchased transport as a whole. The product of stimulus by multiplier appears in columns (6) to (9), as the impact estimates. The three non-zero entries in Government Income (23) row are the outcome of the assumed spending of the £118.14m direct Government Income.

The column (6) direct impact shows that aggregate employment for Out-of-State Visitors is estimated to be above 25,200 manyears, dominated by

the 22,000 manyears of Commerce (19). A further 8,200 manyears due to direct employment for Carrier Receipts gives the column (6) total of some 33,400 manyears of direct employment for Out-of-State and Carriers combined. The average of 34 manyears per £1m of combined Out-of-State and Carrier revenue is shown as the asterisked 'weighted average' at the bottom of column (2).

The direct plus indirect estimates appear in column (7). It needs to be clearly understood that the 'Indirect' or 'upstream' employment comes from ***all sectors,*** not just the sector on whose row it appears. (This comment also applies to the further increments of columns (8) and (9)). As the indirect we see some further 7,000 for Out-of-State Visitors and 500 for Carriers, yielding a total direct plus indirect joint 40,800 manyears - an average of about 41 manyears per £1m, as shown at the bottom of column (3).

The further induced effects of Household Spending yield the aggregate 51,200 manyears of column (8) - an average of some 52 manyears per £1m Out-of-State and Carrier Receipts. Column (9) gives results of supposed Government inclusion as a reacting sector for a balanced budget, and we find a total of some 76,400 manyears - an average of about 78 manyears per £1m receipts, as shown at the bottom of column (5).

The parallel treatment of Domestic Tourist Revenue is shown in Table 3. But only 'Direct' and 'Direct plus Indirect' impacts are calculable, because this expenditure is a part of Personal Expenditure, and its stimulus does not exist as an Invisible Export such as Out-of-State Revenue. Column (1) shows the stimulus, by way of Domestic Tourist Expenditure, £330.9m in aggregate, with the £141.89m of Commerce taking nearly half the total. Columns (2) and (3) show the employment multipliers, a sub-set of those appearing in Table 2 above. Here again, the row Government Income (23) shows the outcome of respending the initial tax receipt of £73.45m. The aggregate direct employment impact is about 8,900 manyears, per column (4). Some 8,000 of this is due to the sector Commerce (19). We see 13,300 manyears as the direct plus indirect impact aggregate, which includes some 2,200 manyears due to supposed respending of £73.45m direct Government Income. This aggregate 13,300 manyears estimated as the employment impact of £330.9m. Domestic Tourist Expenditure gives an average 40 manyears per £1m spent, as appears at the bottom of

column (3). The average direct impact is 27 manyears per £1m revenue, as shown at the bottom of column (2).

A summary of the aggregate impact estimates is in order. Table 4 addresses a structured analysis of employment. Total Invisible Exports by way of the Tourist trade comprise the two items Out-of-State Visitor Receipts and Carrier Receipts, yielding total 1989 receipts of £983m. For this combined Invisible Export stimulus we find a direct impact of about 33,400 manyears. The indirect impact is about 7,400 manyears and the induced impact 10,400. Thus, the 'Complete' impact is 51,200 manyears, yielding an average 52 manyears per £1m stimulus. A further 25,200 manyears emerge on the assumption of complete Government interaction with other sectors for a Balanced Budget, implying a further 49 per cent of the 'Complete' employment impact if this assumption were tenable.

As the Domestic Tourist impact we find 8,900 manyears direct, and a further 4,400 indirect. Thus, some 13,300 manyears appear as the 'Partial' impact, yielding an average 40 manyears per £1m stimulus, of the total £331m expenditure.

Thus, for total Tourism Revenue of 1989 the 'Complete' impact is a combined 64,500 manyears of employment. A further 25,200 manyears is the outcome of assumed Government interaction with all other sectors, to reach a balanced Income-Outgoings level of activity, following the methodology of Jordan and Polenske (1988). We could therefore regard 64,500 manyears as a 'Lower Limit' Impact estimate, and 90,000 manyears as an 'Upper Limit' Impact estimate. In Part 5 below some argument in favour of this approach will be proferred as more realistic than the conservative estimate of 64,500 manyears.

'Ratio' employment multipliers are shown in Table 5, as derived from the aggregates shown in the bottom three rows of Table 2 and the bottom row of Table 3. Following Jordan and Polenske (1988), the definitions are as stated in the headings of Table 5 columns (1) to (3). The Type I ratio is defined as 'Direct plus Indirect/Direct'; Type II extends the numerator of the ratio to include 'Induced' employment. The Type III numerator implies an even broader definition of interaction, so as to include any specified Government activities (of taxing and spending). It is obvious that each available I-O sector can provide multiplier data to make Ratio

results. Table 5 is confined to aggregates, implying 'weighted average' Ratio results.

All the Table 5 ratios are greater than unity, meaning that the Direct impact is only part of a fuller impact. The Type I multipliers of column (1) suggest a 27 per cent extra Indirect employment for Out-of-State Revenue, with 22 per cent extra Indirect for Out-of-State and Carriers combined. Some 49 per cent Indirect occurs for Domestic Tourist spending; thus, a weighted average 28 per cent Indirect employment is estimated for all £1,314m of 1989 Tourism revenue.

Type II and Type III exist only for the Invisible Exports. We see an extra 53 per cent employment impact as the Type II multiplier for Out-of-State and Carriers combined. The Type III ratios are still larger, suggesting a combined outcome of an extra 129 per cent employment, in addition to the Direct impact.

4. GNP IMPACT ESTIMATES AND RATIO MULTIPLIERS

Table 6 shows the detailed calculation of the GNP Impact of Out-of-State Visitors' Revenue and of Carrier Receipts. Column (1) displays the same outcome as that of Table 2 column (1), namely the Final Demand stimulus in relevant I-O sectoral arrangement, at Basic Prices. The Out-of-State aggregate is £751.0m, and that of Carrier Receipts is £232.0m, as should be, to yield a combined total of £983.0m.

Columns (2) to (5) provide sectoral matching of the appropriate Normal GNP multipliers, taken from Table 6 of Henry (January 1990). For Carrier Receipts, the only available multipliers are those of sector (18), Transport as a whole.

The product of stimulus by multiplier gives the Impact results appearing in columns (6) to (9). The negative entry for Government Income (23), in column (6), represents payments abroad of interest on the National Debt, contributions to International Agencies, etc. The other three GNP entries in the same Government Income (23) row are the outcome of the spending of the £118.14m direct Government Income, supposedly. But this same Government Income is direct GNP, when received; thus is added

in at the bottom of columns (6) to (9).

The bottom row of Table 6 shows aggregate GNP results for Out-of-State Visitors' Revenue and Carrier Receipts combined. Against a stimulus of £983m we find £628m direct GNP impact (64%); £761m GNP direct plus indirect (77%), direct plus indirect plus induced £971m (99%). The latter shows a 'Complete' impact of about £1 GNP per £1 stimulus, a good outcome. For Government included as Inter-Industry, the GNP impact is £1,332m, some 136% of the stimulus. These percentages appear as weighted average Normal GNP multipliers, in columns (2) to (5), marked with asterisks.

It can be seen that the 'Complete' GNP impact is about £1 GNP per £1 stimulus for each of the Out-of-State and Carrier components of the combined aggregate.

The parallel treatment of Domestic Tourist Revenue is shown in Table 7. But only 'Direct' and 'Direct plus Indirect' impacts are calculable, because this expenditure is a part of Personal Expenditure, and its stimulus does not exist as an Invisible Export such as Out-of-State Revenue.

Table 7 addresses the GNP Impact. Here also the row Government Income (23) shows the outcome of respending the initial tax receipt of £73.45m. Column (1) shows the stimulus by way of Domestic Tourist Expenditure, £330.9m in aggregate, with the £141.89m of Commerce taking nearly half the total. Columns (2) and (3) show the GNP Normal multipliers, a sub-set of those appearing in Table 6 above.

The direct GNP Impact is about £202m in aggregate, as shown in column (4), and comprising 61% of the total stimulus. The direct Government Income of £73.45m is part of the direct GNP impact shown in column (4). More than half of this impact is the £112.93m estimated for the Commerce (19) sector.

The direct plus indirect impact comprises £268m in aggregate, as detailed in column (5); this is about 81% of the £330.9m stimulus. Here again, the weighted average Normal multipliers for GNP are shown at the bottom of columns (2) and (3) of Table 7.

A summary of the aggregate GNP impact estimates is in order, as set out in Table 8. Total Invisible Exports by way of the Tourist Trade comprise the two items Out-of-State Visitor Receipts and Carrier Receipts, yielding total 1989 receipts of £983m. For this combined Invisible Export stimulus we find £628m GNP as the direct impact. The indirect impact is £133m of GNP with a further induced impact of £210m. Thus, the 'Complete' GNP impact is £971m, giving a response of about £1 GNP per £1 stimulus. A further £361m GNP emerges on the assumption of complete Government interaction with other sectors, for a Balanced Budget, implying a possible further 37% response.

The more limited scope of GNP impact for Domestic Tourism shows £202m GNP direct and £67m indirect, making a £269m GNP impact of £331m stimulus. This gives an average 'Partial' GNP impact of £0.89 per £1 stimulus.

Ratio multipliers of GNP appear in Table 9; a brief description of their meaning has appeared above in discussing Table 5. The Type I multipliers of Table 9 column (1) suggest a 25 per cent extra Indirect GNP for Out-of-State Revenue, with 21 per cent extra Indirect for Out-of-State and Carriers combined. Some 33 per cent Indirect GNP occurs for Domestic Tourist spending; thus a weighted average 24 per cent indirect GNP is estimated for all £1,314m of 1989 Tourism revenue.

We see an extra 55 per cent GNP impact as the Type II multiplier for Out-of-State and Carriers combined, per column (2) of Table 9. The Type III ratios of column (3) are still larger, suggesting a combined impact of an extra 112 per cent GNP, in addition to the Direct impact.

5. COMPARISONS AND CONCLUSIONS

The first section of this final part of the paper shows comparisons within Ireland of 1989 Tourism average employment (per £1m revenue) with averages of some other Final Demand groupings, or I-O sectors. Some international comparisons for GNP or household income are also shown as set out in Table 10. The second section offers a few conclusions as to the important role of Tourism in providing extra employment and GNP, and some inclusion of Government income and spending within the multiplier definition. Irish GNP Normal multiplier results are found to be compatible

with those from other parts of the world.

Comparisons

(a) Within Ireland

For making comparisons, Table 2 column (4) gives most of the data required; this column shows the direct plus indirect plus induced employment per £1m Final Demand of 1989 Out-of-State Visitors and Carrier receipts, by sectors and groupings. We may regard these employment multipliers per £1m revenue as indicative of employment average potential, for a sector or group, at least for 1989 and shortly afterwards.

Out-of-State Visitor Revenue shows an average of 52 manyears (per £1m), which exceeds that of nine of the sectors listed, including Government Income (meaning taxing and respending for a 'balanced budget'). Not shown in Table 2, but also relevant, is the 1989 average employment of Personal Expenditure, about 35 manyears and, thus, less than that of Out-of-State Visitors. The underlying cause of the comparatively large average of Out-of-State Visitor Revenue is its relatively small direct plus indirect import content 21 per cent (per Table 6 column (3) weighted average Out-of-State 79 per cent GNP content), compared with 42 per cent for Personal Expenditure. This latter includes consumer durables and various kinds of direct imports (both merchandise and invisibles), all of which by their import-intensive nature imply employment for countries other than Ireland.

The Carrier Receipts show an average of 49 manyears (per £1m), the same as that of Transport Purchased, again a comparatively large employment average. The weighted average for Out-of-State Visitor and Carrier receipts combined is 52 manyears (per £1m), larger than that of Government Income and of seven of the Manufacturing sectors as listed.

In summary, the Out-of-State Visitor and Carrier receipts compare favourably with many groups of merchandise exports, in terms of average employment intensity. In this regard they also do better than Personal Expenditure and the Government average 'taxing and spending' process of redistributing purchasing power.

(b) International Comparisons

The Archer (1977) international comparisons seem to omit all reference to employment, and generally to present 'Income' multipliers derived from total Tourism expenditure. Archer (1977, p. 2) explains that 'Income' in some tourism models means 'disposable household income', whereas other models include taxes going to Government. It is not always clear what is included in the 'Normal' multiplier results. For this reason 'Income' is used in Table 10 for all non-Irish results derived from Archer (1977) and quoted in Table 10.

This table shows Irish results of 1982 and 1989 for GNP, and derived from Appendix 1, for all Tourism plus Carriers. The two Ratio multipliers are about 1.5. We see a Ratio of about 1.8 for Antigua and 1.3 for Gwynedd. One may expect highly variable results; Archer (1977, p.10) speaks of 'the dangers and limitations of the use of 'ratio' multipliers in isolation as a basis for policy-making and planning'.

The Irish Normal GNP results, again for all Tourism plus Carriers, show values 1.03 for 1982 and 0.94 for 1989. These values agree with 'Income' Normal results for several other countries or regions such an Antigua (1967), Eastern Caribbean (1967), Bermuda (1975), and Missouri State (1967); their multipliers lie between 0.88 and 1.10. Smaller values appear for the Bahamas (1974) as 0.78, and for the Cayman Islands (c.1967) as 0.65.

Much smaller Normal 'Income' multipliers appear for relatively small sub-regions of the UK, of value 0.3-0.5, such as the value of 0.37 for Gwynedd (1973) in North Wales. These small multipliers are due to intense import 'leakages' to sources of the imports lying outside these small sub-regions.

Conclusions

1. Tourism has had an important employment and GNP role for Ireland, by providing or supporting during 1989 some 64,000 manyears of employment and £1,239m of GNP, as a conservative (minimal) estimate. The Transport and Commerce sectors benefited substantially from Tourism activity, and thus provided employment not oth-

erwise available. For Governmental taxing and spending treated as an inter-acting economic agent, some of a further 25,000 manyears of 1989 employment and £361m of GNP could be attributed to Out-of-State Visitors plus Carrier receipts.

2. Per £1m receipts, these latter Tourism revenues compare favourably with many groups of merchandise exports, as sources of employment, at least within 1989 conditions, as estimated.

3. The Input-Output approach shows that a few activity groups provided most of the employment and GNP as illustrated by column (8) of Tables 2 and 6. These are Commerce, Transport, Government Income, Food. 'Commerce' includes hotels and guesthouses, restaurants and pubs, retail margins, entertainment activities. 'Government Income' implies not only employment of Central and Local Government staff, but all employment throughout the State arising from the spending of Transfer Payments. Much of the 'Food' employment is 'upstream' Agricultural employment providing inputs to the Food industries.

4. The 'Ratio' multipliers of Tables 5 and 9 do help to clarify the meaning of the employment impact. Direct employment or GNP alone seriously under-estimates the full impact. Some 53 per cent of 'Direct' is the further 'Indirect plus Induced' employment impact for total Invisible Exports of 1989. Some 49 per cent of 'Direct' is the further 'Indirect' employment impact for total 1989 Domestic Tourist revenue. Similar results hold for GNP.

5. Regarding Government interaction with other sectors, two examples of this assumption are available:

   - Jordan and Polenske (1988, p.331) state that 'each Type III multiplier will be larger than the corresponding Type II multiplier because of the inclusion of induced state and local government spending'. They are referring to individual States within the United States and Canada.
   - Our own Minister for Finance in preparing his annual Budget estimates uses as his *implicit* economic model the full interaction between Government 'taxation and outgoings' and all (other) economic activities within the State, for the coming year; at least this is how it appears to the writer.

Since no I-O-compatible pattern of Government outgoings is readily available, other than the average of 1982 repriced at 1989 prices and excluding any deficit, the writer recommends tentative acceptance of the 1989 ' average ' results of column (9) of Tables 2 and 6. In other words, some Government interaction makes sense and the *'average'* results, as shown in column (9) of Tables 2 and 6, are the only available 1989 estimates. They may be treated as indicative of a considerable induced impact due to inclusion of Government as an interacting economic agent.

6. The international comparisons of Table 10 show that Ireland's Normal GNP multiplier of roughly 1.0 for 1982 and 0.9 for 1989 agrees with similar multipliers for other countries or regions such as Antigua (1967), Eastern Caribbean (1967), Bermuda (1975), and Missouri State (1967). Relatively small sub-regions of the UK show much smaller multipliers, of value 0.3-0.5, due to intense impact 'leakages' to sources of the imports lying outside these small sub-regions.

Table 1: Irish Tourism Revenue and Carrier Receipts, 1982-1989, at Current Prices and at 1985 Prices

	At Current Prices				At 1983 Prices			
Year	Out of State Revenue £m	Carrier Receipts £m	Domestic Tourist Revenue £m	Total 1+2+3 £m	Out of State Revenue £m	Carrier Receipts £m	Domestic Tourist Revenue £m	Total 5+6+7 £m
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1982	355.0	120.8	260.3	736.1	449.0	152.8	329.2	931.0
1983	390.0	130.0	283.0	803.9	446.7	148.9	325.2	920.8
1984	442.0	149.0	250.7	841.7	466.1	157.1	264.4	887.6
1985	518.0	167.0	269.2	954.2	518.0	167.0	269.2	954.2
1986	492.2	157.0	216.6	865.8	474.2	151.3	208.7	834.2
1987	564.0	167.0	290.7	1,021.7	527.0	156.0	271.6	954.6
1988	655.0	187.0	311.1	1,153.1	598.9*	171.0	284.5	1,054.4
1989	751.0	232.0	330.9	1,313.9	660.4*	204.0	291.0	1,155.4

Footnote: Data sources are the Central Statistics Office and Bord Failte. Columns (1) and (5) of Table 1 appear in the National Accounts as 'Expenditure by Non-Residents', at current prices and deflated, respectively. The implicit deflator derived from Columns (1) and (5) has been applied to data of Columns (2) and (3) to yield the estimates shown in Table 1 Columns (6) and (7).

* Deflators derived from Personal Expenditure on Goods and Services.

Table 3: Employment Impact of 1989 Domestic Tourist Revenue in Ireland

Input-Output Sector of Final Demand Stimulus		1989 Domestic Tourist Expenditure in 21-sector I-O system	Normal Employment Multipliers: Manyears per £ million Final Demand		Employment Estimates Prices for 1989, in Manyears	
		£m	Direct	Direct plus Indirect	Direct (1) x (2)	Direct plus Indirect (1) x (3)
		(1)	(2)	(3)	(4)	(5)
Oil refining	(2)	4.01	2.38	2.54	9	10
Agriculture, forestry, fishing	(6)	1.11	47.55	63.80	53	71
Food	(7)	46.65	5.39	42.75	251	1,994
Drink & tobacco	(8)	12.99	9.36	21.38	122	278
Paper & printing	(12)	4.87	21.36	28.89	104	141
Chemicals, etc.	(13)	0.73	7.06	13.09	5	10
Transport, purchased	(18)	11.29	35.24	37.53	398	424
Commerce	(19)	141.89	56.35	57.52	7,996	8,161
Government Income	(23)	73.45	0.00	30.55	0	2,244
Imports	(25)	33.91	0.00	0.00	0	0
Total Domestic Tourist Expend		330.90	27.01*	40.29*	8,938	13,333

* Weighted average

Table 2: Employment Impact of 1989 Out-of-State Visitor Revenue in Ireland and Carrier Receipts

Input-Output Sector of Final Demand Stimulus		1989 Out of State Visitor Expenditure in 21-sector I-O system £m (1)	Normal Employment Multipliers: Manyears per £million Final Demand			
			Direct (2)	Direct + Indirect (3)	Direct + Indirect + Induced (4)	Govt. inc. as Inter-Industry (5)
Oil refining	(2)	4.08	2.38	2.54	3.17	4.16
Agriculture, forestry, fishing	(6)	1.37	47.65	63.80	77.91	96.65
Food	(7)	58.00	5.39	42.75	55.31	74.09
Drink & tobacco	(8)	18.23	9.36	21.38	33.01	58.74
Textiles	(9)	2.05	18.54	28.74	38.73	57.81
Clothing & footwear	(10)	13.18	43.00	51.05	62.22	83.46
Paper & printing	(12)	7.67	21.36	28.89	41.21	65.21
Chemicals, etc.	(13)	1.15	7.06	13.09	22.31	42.16
Clay, cement, glass	(14)	7.33	13.13	28.40	39.69	66.31
Other manufacturing	(16)	2.34	17.42	17.81	33.87	58.29
Transport, purcnased	(18)	49.57	35.24	37.53	48.77	75.77
Commerce	(19)	389.90	56.35	57.52	66.84	97.98
Government Income	(23)	118.14	0.00	30.55	49.60	75.95
Imports	(25)	77.99	0.00	0.00	0.00	0.0
Out-of-State Visitor Expenditure		751.00	33.54*	42.72*	53.10*	78.35*
Carrier Receipts (Extra)		232.00	35.24	37.53	48.77	75.77
Out-of-State Visitors plus Carrier Receipts		983.00	33.94*	41.49*	52.08*	77.74*

* Weighted average

Table 2 (Ctd.): Employment Impact of 1989 Out-of-State Visitor Revenue in Ireland and Carrier Receipts

Input-Output Sector of Final Demand Stimulus		Employment Estimates for 1989 in manyears			
		Direct (1) X (2)	Direct + Indirect (1) X (3)	Direct + Indirect + Induced (1) X (4)	Impact for Govt. also incl. as Inter-Industry (1) X (5)
		(6)	(7)	(8)	(9)
Oil refining	(2)	10	10	13	17
Agriculture, forestry, fishing	(6)	65	88	107	133
Food	(7)	313	2,480	3,208	4,297
Drink & tobacco		171	390	602	1,070
Textiles	(9)	38	59	90	119
Clothing & footwear	(10)	567	673	820	1,100
Paper & printing	(12)	164	221	316	500
Chemicals, etc.	(13)	8	15	26	49
Clay, cement, glass	(14)	96	208	291	486
Other manufacturing	(16)	41	42	79	137
Transport, purchased	(18)	1,747	1,360	2,417	3,756
Commerce	(19)	21,970	22,426	26,060	38,201
Government Income	(23)	0	3,609	5,860	9,973
Imports	(25)	0	0	0	0
Out-of-State Visitor Expenditure		25,190	32,081	39,879	58,838
Carrier Receipts (Extra)		8,176	8,707	11,315	17,579
Out-of-State Visitors plus Carrier Receipts		33,366	40,788	51,194	76,417

* Weighted average

TABLE 4: Employment Impact Summary for 1989 Tourism in Ireland

thousand manyears

Category of Tourist Revenue (and Amount)	Direct (1)	Indirect (2)	Induced (3)	Impact for Government also included as Inter-Industry (Balanced Budget) (4)
Out-of-State Visitors (A) (£751.0m)	25.19	6.89	7.30	18.96
Carrier Receipts (B) (£232.0m)	8.18	0.53	2.60	6.27
Total Invisible Exports (A) + (B) (£983.0m)	33.37	7.42	10.40	25.23
Domestic Tourist (£330.9m)	8.94	4.39	-	-
Total Revenue (£1,313.9m)	42.31	11.81	10.40	25.23

Table 5: Ratio Multipliers for Employment Impact of 1989 Tourism in Ireland

Category of Tourist Revenue (and Amount)	TYPE I Direct plus Indirect/ Direct (1)	TYPE II Direct plus Indirect plus Induced/ Direct (2)	TYPE III Impact for Govt. also included as Inter-Industry/ Direct (3)
Out-of-State Visitors (A) (£751.0m)	1.27	1.58	2.34
Carrier Receipts (B) (£232.0m)	1.06	1.38	2.15
Total Invisible Exports (A) + (B) (£983.0m)	1.22	1.53	2.29
Domestic Tourist (£330.9m)	1.49	-	-
Total Revenue (£1,313.9m)	1.28	-	-

Table 6: GNP Impact of 1989 Out-of-State Visitor Revenue in Ireland and Carrier Receipts

Input-Output Sector of Final Demand Stimulus (1982 Revised Table A: 21 Sector version)		1989 Out of State Visitor Expenditure in 21-sector I-O system £m (1)	Normal GNP Multipliers derived from 1982 Revised Table A at 1989 prices £per £Final Demand			
			Direct (2)	Direct + Indirect (3)	Direct + Indirect + Induced (4)	Govt. inc. as Inter-Industry (5)
Oil refining	(2)	4.08	0.0307	0.0403	0.0529	0.0671
Agriculture, forestry, fishing	(6)	1.37	0.5038	0.7900	1.0751	1.3435
Food	(7)	58.00	0.1397	0.6896	0.9432	1.2123
Drink & tobacco	(8)	18.23	0.3935	0.6918	0.9268	1.2954
Textiles	(9)	2.05	0.3597	0.5685	0.7703	1.0436
Clothing & footwear	(10)	13.18	0.4332	0.6140	0.8396	1.1438
Paper & printing	(12)	7.67	0.4697	0.6722	0.9211	1.2649
Chemicals, etc.	(13)	1.15	0.3686	0.5750	0.7613	1.0456
Clay, cement, glass	(14)	7.33	0.3549	0.7059	0.9339	1.3153
Other manufacturing	(16)	2.34	0.7521	0.7644	1.0887	1.4386
Transport, purchased	(18)	49.57	0.6637	0.7349	0.9617	1.3486
Commerce	(19)	389.90	0.7959	0.8238	1.0119	1.4580
Government Income	(23)	118.14	0.0933	0.3258	0.7106	1.0882
Imports	(25)	77.99	0.0	0.0	0.0	0.0
Out-of-State Visitor Expenditure		751.00	0.6305*	0.7858*	0.9954*	1.3571
Carrier Receipts (Extra)		232.00	0.6637	0.7349	0.9617	1.3486
Out-of-State Visitors plus Carrier Receipts		983.00	0.6384*	0.7738*	0.9875*	1.3551*

* Weighted average

Table 6 (Ctd.): GNP Impact of 1989 Out-of-State Visitor Revenue in Ireland and Carrier Receipts

Input-Output Sector of Final Demand Stimulus		GNP Estimates for 1989 £million at 1989 prices			
		Direct (1) X (2)	Direct + Indirect (1) X (3)	Direct + Indirect + Induced (1) X (4)	Impact for Govt. also incl. as Inter-Industry (1) X (5)
		(6)	(7)	(8)	(9)
Oil refining	(2)	0.13	0.16	0.21	0.27
Agriculture, forestry, fishing	(6)	0.70	1.08	1.48	1.85
Food	(7)	0.36	39.99	54.71	70.32
Drink & tobacco	(8)	7.17	12.62	16.89	23.61
Textiles	(9)	0.74	1.17	1.58	2.14
Clothing & footwear	(10)	5.71	8.09	11.07	15.07
Paper & printing	(12)	3.50	5.15	7.07	9.70
Chemicals, etc.	(13)	0.43	0.66	0.98	1.20
Clay, cement, glass	(14)	2.60	5.17	5.84	9.64
Other manufacturing	(16)	1.76	1.79	2.55	3.37
Transport, purchased	(18)	32.90	36.43	47.67	66.85
Commerce	(19)	310.32	321.21	394.53	568.47
Government Income	(23)	- 11.03	38.49	83.95	128.56
Imports	(25)	-	-	-	-
GNP in the form of Direct Government Income		118.14	118.14	118.14	118.14
Out-of-State Visitor Expenditure		473.53	590.15	747.57	1,019.19
Carrier Receipts (Extra)		153.97	170.50	223.12	312.87
Out-of-State Visitors plus Carrier Receipts		627.50	760.65	970.69	1,332.06

* Weighted average

Table 7: GNP Impact of 1989 Domestic Tourist Revenue in Ireland

Input-Output Sector of Final Demand Stimulus (1982 Revised Table A: 21 Sector version)		1989 Domestic Tourist Expenditure in 21-sector I-O system £m (1)	Normal GNP Multipliers derived from 1982 Revised Table A at 1989 prices £per £Final Demand		GNP Estimates for 1989 £million at 1989 prices	
			Direct (2)	Direct + Indirect (3)	Direct (4) (1) x (2)	Direct + Indirect (5) (1) x (3)
Oil refining	(2)	4.01	0.0307	0.0403	0.12	0.16
Agriculture, forestry, fishing	(6)	1.11	0.5038	0.7900	0.56	0.88
Food	(7)	46.65	0.1397	0.6896	6.52	32.17
Drink & tobacco	(8)	12.99	0.3935	0.6918	5.11	8.99
Paper & printing	(12)	4.87	0.4697	0.6722	2.29	3.27
Chemicals, etc.	(13)	0.73	0.3686	0.5750	0.27	0.42
Transport, purchased	(18)	11.29	0.6637	0.7349	7.49	8.30
Commerce	(19)	141.89	0.7959	0.8238	112.93	116.89
Government Income	(23)	73.45	- 0.0933	0.3258	- 6.85	23.93
Imports	(25)	33.91	0.0	0.0		
			Direct Government Income >		73.45	73.45
Total Domestic Tourist Expenditure		330.90	0.6305*	0.8113*	201.89	268.46

* Weighted average

Table 8: GNP Impact Summary for 1989 Tourism in Ireland

£ million at 1989 prices

Category of Tourist Expenditure (and Amount)	Direct (1)	Indirect (2)	Induced (3)	Government included as Inter-Industry 'Balanced Budget' (4)
Out-of-State Visitors (£751.0m)	473.5	116.6	157.4	271.6
Carrier Receipts (£232.0m)	154.0	16.5	52.6	39.8
(Invisible Exports £983.0m)	(627.5)	(133.1)	(210.0)	(361.4)
Domestic Tourist (£330.9m)	201.9	66.6	-	-
TOTAL (1,313.9m)	829.4	199.7	210.0	361.4

Footnote: In the background to the above results GNP includes direct Government Income (by way of VAT and Excise) of £118.14m from Out-of-State Visitors and £73.45m from Domestic Tourist revenue, counterbalanced by £10.81m and £2.82m, respectively, of subsidies on CIE Rail Passenger and Bus services. Underlying the results of columns (2) to (4) of Table 8 is the supposed respending of these Government receipts in proportion to average 1982 Outgoing patterns, and yielding the outcome in 'Government Income (23)' row of Tables 6 and 7.

Table 9: Ratio Multipliers for GNP Impact of 1989 Tourism in Ireland

Category of Tourist Revenue (and Amount)	Type I Direct plus Indirect/Direct (1)	Type II Direct plus Induced plus Indirect/Direct (2)	Type III Impact for Govt also included as Inter-Industry/ Direct (3)
Out-of-State Visitors (A) (£751.0m)	1.25	1.58	2.15
Carrier Receipts (B) (£232.0m)	1.11	1.45	2.03
Total Invisible Exports (A) + (B) (£983.0m)	1.21	1.55	2.12
Domestic Tourist (£330.9m)	1.33	-	-
Total Revenue (£1,313.9m)	1.24	-	-

Table 10: Comparisons of Irish Tourism Normal and Ratio Multipliers with those of other countries

Country or Region, and Year	Description	'Normal': Direct + Indir. plus Induced per unit of Tourist Revenue	'Ratio': (Dir. + Indir. + Induced)/ Direct	Source of Multiplier data
Ireland, 1982	GNP for Total Tourist Revenue plus Carrier Receipts	1.03	1.51	Appendix 1: 757.2/736.1 and 757.2/501.2
Ireland, 1989	GNP for Total Tourist plus Carrier	0.94	1.49	Appendix 1: 1239.1/1313.9 and 1239.1/829.4
Antigua, 1967	'Income'	0.37	1.79	Archer (1977, p.51)
Eastern Caribbean, 1967	'Income'	1.07		Archer (1977, p.53)
Bermuda, 1975	'Income'	1.10		Archer (1977, p.49)
Missouri State, 1967	'Income'	0.38		Archer (1977, p.49)
The Bahamas, 1974	'Income'	0.78		Archer (1977, p.49)
Caymen Islands, c. 1967	'Income'	0.65		Archer (1977, p.49)
Gwynedd, N Wales, 1973	'Income'	0.37	1.34	Archer (1977, pp.49 and 55)
St Andrews, Scotland, 1965	'Income'	0.34		Archer (1977, p.49)
South-West England, 1973	'Income'	0.33 - 0.47		Archer (1977, p.49)
Greater Tayside, c. 1972	'Income'	0.32		Archer (1977, p.49)

Appendix 1:

Crude estimates of Tourism-Related Irish Employment and GNP for 1982 and 1989, compared with Input-Output Model estimates

In the absence of input-output analysis, it is possible to find crude estimates of employment and GNP attributable to Tourist plus Carrier revenue, by way of simple ratios involving Total Final Demand plus Credit Inflows, Total GNP, and Total Employment. A crude range between rough lower and upper limits may be suggested for each of employment and GNP. It is informative to do this exercise for 1982 and 1989, as the more refined I-O-based estimates are available for these two years, for comparison. All values are at current prices.

For 1982 Out-of-State plus Carrier plus Domestic:

Cruce

(a) Total Tourist + Carrier Revenue £ 736.1m

(b) Total Final Demand 20,796.8} + Credit Inflows 584.6} £21,381.4m

(c) Total 1982 GNP £12,454.6m

(d) Total 1982 Employment 1,146,000 manyears

The ratio (a)/(b) = 0.03443 may be applied to (d) and (c) to give

Tourist-related Employment 39.4 000

GNP £ 428.8m

These estimates may be regarded as lower limits, because Tourism is known to have less than average Final-Demand-import-plus-outflows content.

For supposed 'zero-import' content apply the ratio (a)/(c) = 0.05910 to give notional upper limits:

Employment 67.7 000

GNP £ 736.1m

Sources: National Income and Expend. 1988, Tables 8 and 30a.

Economic Review and Outlook, 1988, Table 12 employment data.

Refined (Input-Output Model)

Employment	'000 manyears
Direct	34.6
Indirect	7.0
Induced	7.5
* Govt respend. of direct receipts.	9.9
	59.0

GNP	£m current
Direct	501.2
Indirect	67.8
Induced	89.5
* Govt respend. of direct receipts.	98.7
	757.2

* For consistency with 1989 results.

Source: Background to the Deane (1987) paper.

For 1989 Out-of-State plus Carrier plus Domestic:

Crude

(a) Total Tourist + Carrier Revenue £ 1,313.9m

(b) Total Final Demand 37,431 } + Credit Inflows 1,272 } £38,703m

(c) Total 1989 GNP £20,704m

(d) Total 1989 Employment 1,102,000 manyears

The ratio (a)/(b) = 0.03395 may be applied to (d) and (c) to give

Tourist-related Employment	37.4	000
GNP	£ 702.9	m

Again, these estimates may be regarded as lower limits, for supposed excess import-plus-outflows content.

Take the ratio (a)/(c) = 0.06346 to give notional upper limits:

Employment	69.9	000
GNP	£ 1,313.9	m

Source: Various tables of the April 1990 issue of the Quarterly Economic Commentary re. Employment and National Accounts.

Refined (Input-Output) Model

Employment	'000 manyears
Direct	42.3
Indirect	11.8
Induced	10.4
	64.5

GNP	£m current
Direct	829.4
Indirect	199.7
Induced	210.0
	1,239.1

Source: The content of the present paper.

Comment on these 1982 and 1989 Results

The I-O employment estimates for both years lie within the crude suggested range, but relatively near the suggested upper limit. The I-O estimate of GNP exceeds by 3 per cent the 1982 suggested upper limit, but lies below it for 1989 by some 6 per cent.

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DISCUSSION

W.K. O'Riordan: It is a pleasure to propose the vote of thanks to Dr. Henry for his paper on tourism. The work has been very carefully done; it is obvious that a great deal of detailed and, no doubt, frustrating work has gone into preparing the vast amounts of data which are needed to produce such a paper. There is no need to emphasise the importance of the subject matter. Tourism is obviously one of our bigger industries and it has the ability to turn non-tradables into tradables.

In my opinion it is the standard multipliers (for both income and employment) which Dr. Henry calculates that are the most important outcome of this paper. The ratio multipliers are interesting but, to me, they are of relatively minor importance. The standard multipliers show the number of units of some endogenous variable which are created by one unit of an exogenous variable like out-of-state tourist expenditure. From a theoretical, and particularly from a practical, point of view these convey the greatest amount of information.

It is gratifying to see careful work like Dr. Henry's leading to results which, above all, are credible. In the last decade most research has produced income multipliers of about unity. This is a considerable change from earlier times when values between 2 and 3 were acceptable. We must remember that even a multiplier of unity is only possible if there are sufficient unused resources in the economy to produce the additional output required to satisfy the increased demand. However, given our high level of unemployment and the sectors from which the tourist industry draws most, it seems realistic to believe that the necessary 'slack' exists in the economy.

The size of a multiplier naturally depends on the elements of the economy which are included in the multiplier process. Dr. Henry has given a good deal of thought to the part played by the Government sector in the process. Assume that we are discussing the income multiplier for out-of-state tourist expenditure. This will measure the total addition to income in Ireland generated by one unit of tourist expenditure. Part of that expenditure will go in the first instance to the government in the form of taxes. *If* these additional taxes lead to additional expenditure on the part of the government, then this must be included as part of the multiplier process. I believe that, in the present fiscal situation, any additional tax

receipts will lead to additional expenditure, so I believe that it is right to include the government sector in the multiplier process. However, Dr. Henry is wise to show this effect separately in his tables, because some will feel uneasy about including it.

The one part of the paper about which I feel any unease is the inclusion of domestic tourism. Domestic tourism is an endogenous variable. It can only exist because people in Ireland receive income which is generated by various forms of exogenous expenditure, including out-of-state tourism. One can only calculate a multiplier (in the sense in which this term is normally used in economics) for a variable whose level is not linked to the level of national income. There is nothing formally incorrect in carrying out the exercise in regard to domestic tourism which is contained in this paper. However, there is a danger that those who, for personal gain, wish to seek unjustified advantages for the tourist industry will include the domestic tourism when they make claims about the effects of that industry on income and employment. It is true that a multiplier effect results if Irish consumers are induced to *switch* their tourist expenditure from foreign holidays to holidays at home. However that is a separate matter.

It is the task of academic economists to provide information on which accurate and informed policy decisions can be based. I believe that Dr. Henry's paper has made an important contribution to this end.

Sean Barrett: It is a pleasure to second Bill O'Riordan's vote of thanks to our speaker. Dr. O'Riordan has covered the estimation aspects and in a division of labour between proposer and seconder I will concentrate on the overall economic significance of Dr. Henry's valuable paper.

The tourism sector is an Irish success story of recent years. The number of overseas visitors to Ireland increased form 1.8 million in 1986 to 3.1 million in 1990 and our earnings increased from £649m to £1,139m in the same period. This growth of 69% in overseas visitor numbers and 55% in real earnings from visitors followed a twenty-year period of stagnation in Irish tourism. The 1985 White Paper on Tourism estimated that real revenues increased by only 5% between 1964 and 1984 (Table 1).

The latest CSO Tourism and Travel Quarterly shows that the 1986-90 increases in visitor numbers were: Continental Europe 124%; Great Britain 65%; North America 33% and Other Areas 55%. By route of travel to Ireland the increases were; Cross channel Air 134%; cross channel sea 26%; Continental Europe 105% and Transatlantic 12%. These figures show the impact of one of the important policy decisions taken during the period under review - the deregulation of Anglo-Irish aviation in May 1986. They show also an increasing use of the UK as a "landbridge" by continental visitors. The proportion of Continental Europeans coming directly to Ireland fell from 74% to 68% between 1986 and 1990. In the case of North American visitors the fall in the proportion travelling directly to Ireland fell from 59% to 49%. While visiting more than one country may be increasing as part of a holiday access fares and capacity provided are also important. The Anglo-Irish routes experienced the most dramatic regulatory change. Change on the Continental European routes occurred at a slower pace under EC reforms in aviation. On the North Atlantic routes to Ireland the markets became less competitive compared to the services between North America and Britain. The impact of the change in access transport policies is illustrated by the estimate in the 1984 White Paper on Transport that the number of tourists by air from Britain to Ireland fell by 50% between 1975 and 1983 (p.28).

Macroeconomic Management

Tourism was a significant beneficiary from the period of "expansionary fiscal contraction" (McAleese, Irish Banking Review, Summer 1990) in

the macroeconomic management of the Irish economy between 1986 and 1990. Domestic tourism was stimulated by cutting the standard rate of tax from 35 to 30p and cutting indirect taxes and grew by 40% in real terms between 1986 and 1989 as Table 1, Column 7 indicates. 1991 is the first year for almost two decades in which border counties in the Republic are competitive with Northern Ireland for items such as alcohol. Price is important in tourism. The Governor of the Central Bank and the Secretary of the Department of Finance with their responsibilities for monetary and fiscal management are de facto Ministers for Tourism.

The results of the improved macroeconomic management of the Irish economy since 1987 have been dramatic in tourism. By contrast the industry hardly grew at all during the fiscal irresponsibility of the 1970s to mid-1980s. The Price Waterhouse Report (1987) showed how much the competitiveness of Irish tourism had declined in this period and the revival is a consequence of the improved management of the Irish economy. The departure in the 1991 Budget and PESP from the standards of fiscal management which applied during the 1987-89 period is a blow to the tourism sector both by reducing the disposable incomes of Irish taxpayers and reducing our competitiveness vis a vis countries where fiscal rectitude is still operated. The Irish belief that economic growth is caused by government agencies and their spending is not supported by reference to tourism. The rapid growth in tourism revenues occurred as the administration and promotion budget of Bord Failte was cut by 30% in real terms between 1985 and 1989. By coincidence I was a director during this period. The immediate identification of increases in economic outputs with increases in public expenditure, beloved of the Irish media and the "social partners", is not supported by the rapid growth of Irish tourism since 1986.

The policy implications of this paper deserve attention from our policy makers. Column 8 of Table 1 shows that total tourism revenues fell by 10% in volume terms between 1982 and 1986 before commencing an increase of 38.4% by 1989. The employment growth estimates in the paper refer therefore to the 1987-9 rather than to the 1982-6 period of decline. The employment impact summary data for 1989 in Table 4 of 42,310 direct and 11,810 indirect jobs in tourism in 1989 in Ireland gives a total of 54,120 jobs. Allocating the output increase between 1986 and 1989 to the 1989 employment data would imply that some 15,000 jobs

were created in tourism during the 1986-89 recovery. The 11% volume increase in the expenditures by out of state visitors in 1990 would also have increased the 1989 employment of 40,790 estimated in Table 4. Some 40,000 extra persons were at work in 1990 compared to 1986 and it appears from the material in the paper that over 20,000 of these jobs arose from the growth of tourism. Table 1 understates the achievements of 1986-89 by including them with the 1982-86 period of decline.

The employment record of Irish tourism is treated with ambivalence by the Irish public and the social partners. We do not esteem selling dinners to foreigners nearly as much as hiring more nurses, teachers and Gardai. Under the PESP we are bringing in legislation to abolish part-time jobs. Tourism is highly seasonal in Ireland. Demand also fluctuates by hour of day and day of the week. Nonetheless, at the behest of the social partners it is to pay more for part-time labour. On the other hand public sector posts abolished at a cost of £138m special loan from the Central Bank between 1987 and 1989, are being restored in 1990 and 1991.

Measurement Problems

The measurement problem in tourism is well explained on page 1 of Dr. Henry's paper. Tourists "use parts of the services of transport, hotels, catering, shops, entertainment etc. But major parts of these services are purchased by business and households". We think of hotels, guest houses and coach tour companies as tourist organisations but the industry extends much wider. Page 342 defines four measures of tourism output - Direct, Indirect, Induced and Government-Induced. The direct expenditures of tourists on, say, the transport system should obviously be included. The indirect effects are the upstream inputs of goods and services resulting from direct expenditures. The induced effects are the results of the household incomes of the direct and indirect effects. The government-induced effects are the result of the recycling of tax revenues by the government. I believe that measures 1 and 2, the direct and indirect effects, are solid.

I am concerned about the induced and government-induced effects. If we eliminate leakages multipliers become infinity. We also run out of GNP pretty quickly by engaging in massive multiple-counting. Domestic tourism spending is hardly different from any other type of consumer expenditure and it is difficult to see the significance of the estimate of its indirect

effects.

Section 5 refers to the "relatively small direct plus indirect import content of 21 per cent compared with 42 per cent for personal expenditure". I have problems with that proposition. The Tourist arrives in a plane or boat made outside Ireland. He rents a car (imported) and fuels it. He eats dinner cooked in an imported oven. His wine is imported. How does tourism expenditure have a lower import content than Irish peoples' personal consumption? Is it because others import goods on behalf of the tourist?

In Section 3 it is stated that the model gives direct employment of 8,200 man-years due to direct employment from the carrier receipts of tourists. This estimate is based on the multipliers of sector 18, purchased transport as a whole. I feel that the model errs in this estimate which may reflect the high employment levels relative to receipts of railway and bus companies. The 8,200 jobs in the carriers attributed to their tourist earnings are approximately the employment total for the four Irish access transport carriers, Aer Lingus, Ryanair, B and I Line and Irish Continental. These companies have four products however. They carry people in and out of the country and freight in and out of the country. It is difficult to see how all their jobs can be attributed to inward tourism.

Dr. Henry deserves our best thanks for bringing a most important topic to the Society and giving us valuable insights on the tourism process. It is also an Irish success story since 1986 and one which has frequently been overlooked. The implications of the success of Irish tourism for macroeconomic management have been ignored in the general slippage in economic management under the PESP and recent budgets. Well over half the 40,000 extra people at work in Ireland in 1990 compared to 1986 owed their jobs to tourism. In the recent slippage in the national finances we walked away from the policy which generated those jobs. I hope that it is not too late yet for the message of this paper to sink in among those in charge of economic policy.

References

McAleese, D., 1990. Ireland's Economic Recovery, *Irish Banking Review*, Summer.

Price Waterhouse, 1987. *Improving the Performance of Irish Tourism*, Dublin, Government Publications.

White Paper on Tourism Policy, 1985. Dublin, Government Publications.

Tom Ferris: I congratulate Dr. Henry on his paper. Dr. Henry has brought a cold analytical ability to play in evaluating a sector that generates quite heated debates in the real world; in particular heated debate on the quality of the numbers of visitors (and revenue generated from tourism) and the realism of the employment figures for tourism. Taking Dr. O'Riordan's point about "credible numbers", it was reassuring to see that official estimates fitted quite well with Dr. Henry's estimates for employment in tourism. For example, the official employment estimate for 1989 was 75,000 jobs in tourism and this figure could be seen to broadly equate with the *minimal* 64,000 jobs cited by Dr. Henry, *plus half* his 25,000 jobs flowing from Governmental taxing and spending. Finally, Dr. Henry's paper has much useful material that will help to analyse the tourism industry, which has been earmarked as a growth industry in Ireland and for which the Programme for Economic and Social Progress has set ambitious targets for the years 1991 to 1993 - including the creation of 15,000 new jobs in tourism.

Reply: I am deeply grateful to Dr. William O'Riordan for proposing the Vote of Thanks, and to Dr. Sean Barrett for seconding it. I appreciate very much their kind and supportive comments that the paper is useful towards Tourism policy. I also thank Mr. Tom Ferris, Dr. Michael Casey, Mr. Brian Deane, and others who contributed to the Debate.

Some questions and criticisms have occurred. I propose to mention these, first quoting the name of the speaker, and then responding briefly. I finally refer to three "Further Aspects".

Dr. W.K. O'Riordan: "Should Domestic Tourism be Included?" I argue yes, that this phenomenon is observable each year, as a part of Personal Expenditure. The fact of "Salthill" or "Enniscrone" for holidays in Ireland is an annual measurable statistic. I find it difficult to accept the line of reasoning that "it might have been spent on something else". In fact it wasn't, for the year 1989 at least.

Dr. Sean Barrett: Regarding his discussion of "Measurement Problems", I accept that the *direct* employment attributed to Carrier Receipts may be too large. At the end of the discussion I suggested that Tourism experts might well have *direct* employment estimates better than those of some sectors as given in the paper; in which event they should of course use

them.

The import content (direct plus indirect) estimated for Tourist Expenditure versus Personal Expenditure (P.E.) is derived from the available annual data for 1989, typical of other years also. The P.E. purchases include consumer durables having a high import content, but do not allow for the import content of the whole background capital stock, of course. By contrast, the Tourist purchases do not include such consumer durables; hire of cars and purchase of bus and train tickets are treated as current purchases of services, without inclusion of import content of background capital stock of the various transport sectors. However, the comparison of import content of Personal versus Tourist may be of limited validity because of Personal including consumer durables explicitly (Household Capital Goods), whereas Tourist expenditure does not.

For purposes of clarification, I wish to point out that Input-Output multipliers by their algebraic form ***cannot*** have "infinite" values. They take the form

$$m^1 = v^1[I + A + A^2 + A^3 + - - -] \qquad (1)$$

The row vector m^1 of n elements is the Multiplier set resulting from resource vector v^1 of positive or zero elements pre-multiplied into the square (n,n) matrix in the brackets [ ]. This matrix has as first element the unit matrix I and successive terms of the power series in A, where A is the "Inter-Industry" matrix of non-negative elements, each in value less than unity. The power series converges to a finite sum under the usual (Hawkins-Simon) conditions. Thus the matrix expansion in the brackets is the typical "Leontief Inverse" of dimension (n,n) having non-negative elements in the value-range zero to less than 2.0. There is therefore no possibility that the product of this matrix by row vector v^1 could yield resulting elements of infinitely large magnitude in the vector m^1.

Dr. Conall Fanning: "Not enough GNP to go round, if all sectors start expanding together".

The correct use of the multipliers means that the rules of National Accounting are always obeyed. This means each £1m. of Final Demand is

exactly "filled in" by $x\%$ GNP *direct plus indirect*, and $(100-x)\%$ Imports plus Outflows. The macro-Analogue of this is that Total *Final Demand* (i.e. "GNP Expend. on Goods and Services") *is equal* to Total GNP (by Sector or Origin) plus Purchases of Imports of Goods + Services (i.e. Outflows of Purchasing Power for these).

We force a larger response per unit stimulus, if we reduce Final Demand, by pushing Household (Personal) Income and Spending into "Inter-Industry". But for a given Annual I-O Transactions Table, this reduced Final Demand stimulus will still induce the correct GNP etc. response, not a larger (or smaller) GNP, if the model is being used correctly.

These aspects are numerically illustrated in the Henry (1986) report "Multisector Modelling of the Irish Economy". We are all the time discussing "average annual static" multipliers, etc.

Also, in this context, all Final Demand has an "indirect" or "upstream" impact. Final Demand has "Personal Expenditure" by Irish Residents as one component, of which a share is "Domestic Tourism". So there is no possibility of zero "Indirect" impacts for Domestic Tourism.

Mr. Bill Keating: queried April employment versus annual employment. The I-O model will take the best available detail, e.g. Tourism *man-hours* in each sector versus the man-hours on all other demands, as direct employment. There is scope for much improvement of employment detail and, of course, several more sectors would be desirable.

Further Aspects:

1. The Capital/Investment aspect is outside the scope of the paper. This, of course, is a further real dimension, which exists for all other economic activities, as well as for Tourism. There is an I-O application, re "direct plus indirect" Capital Cost (or Intensity) per unit final demand, along the lines of the usual methodology. You need "average capital stock" per £million sector output, to start with. The set (or row) of such coefficients is treated like Employment to get "Capital Stock" multipliers.
2. *Marginal* Impacts of Tourism is a separate issue, in general. But

tonight's paper did explain that a volume growth of EXPORT Tourism does imply closely similar proportionate growth in *direct* Services' employment, for observed constant real output per man-year in such Services (page 13).

3. Tonights' paper may fairly be regarded as a "Stock-Taking" of where we have reached, in measuring the impacts of Tourism in Ireland. Several of the points listed above imply better answers possible, through further (more detailed) research and analysis. Within this year a new I-O table for 1985 should be completed, having some 40 sectors, with much more detail of Transport and Services. This would need repricing at (say) 1989 prices, to re-estimate the impact estimates of tonights' paper.

   Some very interesting I-O investigations should prove possible, in the near future.