Export Tourism: Input-Output Multipliers in Ireland – A reply

Noel T. Palmer

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EXPORT TOURISM INPUT-OUTPUT MULTIPLIERS FOR IRELAND — A REPLY

Noel T. Palmer*

In the course of an article on "Export Tourism Input-Output Multipliers for Ireland" in the ESRI *Quarterly Economic Commentary* of May 1982 Desmond A. G. Norton derived some estimates in respect of tourism activity and drew comparisions between his estimates and those of others including Byrne and Palmer. The following comments are set out in order to indicate sources of these differences.

There is little point in referring to "the" multiplier in empirical studies of the tourism sector because of the need to incorporate many assumptions in such a study, with each of these assumptions having a bearing on the magnitude of the multiplier. It is the effects of different assumptions which have given rise to the major difference which Norton perceives between his work and that of others. In a study which I undertook with John Byrne we distinguished a range of multipliers based on assumptions, *inter alia,* as to (a) government expenditure on goods and services being exogenous or endogenous and (b) the effects of marginal changes in tourist numbers. We also distinguished differences in multipliers pertaining to tourism spending by out-of-state and within-the-state tourists. We were particularly interested in the economic effects of tourism spending by both out-of-state and within the state tourists.

The major difference between Norton's estimate of the multiplier and that of others arises due to differences in the treatment of tax revenues. *If tax revenue is treated as being recycled Norton's calculations would provide a multiplier of 2.0 in respect of tourism expenditure within the state.* Such a procedure, of course, poses the question of the legitimacy of treating tax revenue in this manner. In the derivation of theoretical multipliers tax revenue is treated as a leakage. However, in conducting studies in applied economics it is necessary to set economic analysis in the context of the prevailing economic circumstances. During the past decade the government has consistently run current budget deficits and government borrowing has constituted an increasing percentage of GNP. There has been an increasing (and unsustainable) level of exchequer borrowing which is externally financed and outstanding foreign debt constituted an increasing proportion of our reserves. In the year in which Norton has chosen to set his work, i.e., 1976, the current budget deficit was 4.4 per cent of GNP, exchequer borrowing was 11.1 per cent of GNP and 64.0 per cent of exchequer borrowing was externally financed. If one perceives the government, when imposing taxation in order to finance its expenditure, as seeing beyond the impact effect of its action then the point is further emphasised. Norton apparently considers that studies in applied economics should ignore the prevailing economic climate and consequently treats tax

*The author is Lecturer in Economics at University College, Dublin.

revenue as being withheld and not influencing decisions of government expenditure. In pursuing this approach he ignores the essence of the Fiscal Drag concept. In a footnote Norton states:

> This (the non-recycling of tax revenue) 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.

However, he does not attempt to render his comment operational by commenting on the calendar period which the long-run entails and thus he sets the fiscal year in question in a timeless zone unaffected by past or present tax revenues.

As an alternative approach a cost/benefit analysis might be undertaken in respect of government's *net* allocation of funds to the sector. In such an approach the tax revenues accruing from the government action could be set against the initiating government injection of funds. The *net* cost of the government's financial intervention could then be compared with any increase in economic activity (multiplier effect) with tax revenue not being recycled. Also this method distinguishes between tax payments and other forms of leakage, e.g., imports.

The question of the recycling of tax revenue is not the only point of issue. Norton's use of average rather than marginal factors distorts his multiplier analysis because of the heavy weighting attributed to electricity and transport in the input/output analysis of tourism. It is particularly important to distinguish between marginal and average factors in the electricity and transport sectors because of the large fixed cost elements in these sectors. These points which are of relevance in the calculation in multipliers and on which Henry (1980) urged caution, are discussed below in the context of capital/labour ratios.

Capital/Labour Ratios

Norton asserts that the tourism sector is more capital intensive than is the economy as a whole. In support of this assertion he quotes Gross Capital Stock/Employment for the economy as a whole in 1976 as £10,651. He contrasts this with his estimate of £11,263 in respect of the Gross Capital Stock/Employment for spending within the state by foreign tourists plus carrier receipts. Norton derives this latter figure from his own estimated raw data as follows:— *tourism spending in Ireland*: Gross Capital Stock £242.18m: Employment (man-years) 23,171 — giving an estimated capital stock per man-year of £10,450 (which is below the average for the economy as a whole). *Thus on Norton's own figures tourism spending within the state is more labour intensive than average.* Norton's corresponding estimates for capital intensity in respect of carriers' revenue from export tourism are:— Gross Capital Stock £48.56m: Employment 2,643 man-years and an estimated capital stock per man-year of £18,370. He then combines these estimates in order to estimate the capital intensity of export tourism spending as £11,263 — *the estimated capital intensity in respect of carriers' receipts from export tourism providing an upward bias to the overall figure.* However, I would question the basis of these calculations as follows.

When estimating the gross capital stock requirement in respect of tourism expenditure in Ireland, Norton employs a heavy weighting in respect of "electricity and towngas". Electricity is the most capital intensive sector of the economy with a capital stock per man-year which is 2.2 times greater than the next most capital intensive sector.[1] In Norton's calculation, the weighting in respect of the electricity capital stock for tourism is 3 per cent. He shows an electricity capital stock requirement of £6.51 million out of a gross capital stock of £242.18 million *in the first round* of the multiplier process. I consider that he overestimates the electricity Gross Capital Stock requirement of the tourism sector so that this weighting in respect of such a capital intensive industry gives an upward bias to Norton's estimate of a Gross Capital Stock requirement of £242.18m in respect of export tourism. In 1976, which is the year in which Norton has set his analysis, the ESB peak load was 1478MW and this demand was experienced on February 4th. During the period 2nd May '76 to end of Aug. '76, the ESB peak load was 1190MW and even this demand was experienced at 12.30 hours which is not a time of peak demand by the tourist industry. The inordinate importance of the foregoing may be illustrated by considering that if the electricity capital stock requirement were removed, then based on this fact alone, Norton's estimate of the capital intensiveness of tourism spending within the economy would be reduced from £10,452 to £10,170. Also, since the tourist season coincides with a relative valley period in the context of the overall annual demand for electricity the ESB has flexibility in their choice of generation fuels; this flexibility would confer a cost advantage to the ESB so that the use of average cost and average import content for electricity generation in respect of tourism activity is questionable.

The extent to which one can meaningfully consider capital stock in respect of export tourism, while ignoring domestic holidaymakers, as Norton does, is questionable also. If one were to include the appropriate figures in respect of domestic tourism Norton's calculation in respect of the capital intensiveness of the tourism sector would be reduced due to these people creating no demand for access transport capital. In 1976, all domestic trips including personal amounted to £64.9m with £57.0m being attributed to domestic tourism.

In Norton's input/output analysis of carrier receipts from export tourism, 78 per cent of the entire capital stock employed pertains to the transport sector. There is a large fixed cost element in access transport and during the year in question access transport was not subject to capacity constraints. In this circumstance it is not meaningful to consider marginal changes in tourist numbers as placing cost incurring pressure on the capital capacity of the stock of access transport. In addition Norton ignores the earnings of £26.5m by Irish carriers in respect of import tourism,[2] these earnings cannot be treated as if attributable to a separate capital stock. How can these earnings be excluded in calculating the capital intensiveness of the tourism/transport sector? A subsidiary point is the extent to which it may be necessary to maintain access transport for reasons other than tourism.

In respect of carriers receipts, 80 per cent of Norton's first round leakage of £10.48m is due to transport costs which must be assessed in the light of the

[1]See Henry (1980).

[2]*Irish Statistical Bulletin* – June 1978 – p. 97.

above comments regarding the effect of marginal changes in tourist numbers on total transport costs. By failing to distinguish between marginal and average factors in this high fixed cost sector Norton projects marginal increases in tourist numbers as requiring not only additional transport capital stock but pro rata increases in fuel costs etc.

It may seem that the various figures in respect of capital intensiveness are merely a ranking, so that questions raised above regarding average versus marginal factors would cancel out in a comparative study, since they are common to all sectors of the economy. This approach would not be acceptable for the following reasons: —

(i) In respect of carrier receipts, Norton applies a weighting of 78 per cent, which is greater than the weighting of 3 per cent which applies to transport in the economy as a whole. Because of the dominance of transport with its large fixed cost element in carrier receipts, the question whether marginal increases in tourist numbers could be catered for without increasing the supply of transport is of crucial importance.

(ii) The nature of the timing of demand of the tourist sector for electricity services, which creates no demand for the highly capital intensive electricity-generating capital stock, but rather improves the load factor of plant already in existence to cater for peak periods of demand.

(iii) As an indication of the order of magnitude of these factors it may be noted that in Norton's calculation 31 per cent of the import leakage in respect of tourism expenditure pertains to transport and electricity.

In addition to bearing on estimates of the capital intensiveness of the sector, the above factors influence also estimates of the magnitude of the multiplier.

We specifically stated that the employment attributable to the sector had been derived using the methodology adopted by the working group of the National Tourist Office of the EEC in their report on *The Economic Significance of Tourism within the European Community* (British Tourist Authority, 1975)[3]. Utilising this methodology the initial injection of tourism spending is increased by the appropriate multiplier and the resultant figure is expressed as a percentage of GNP. This percentage figure is then considered to be the proportion of total employment which is attributable to tourism activity. The magnitude of the multiplier employed has (obviously) a crucial bearing on the level of employment which is estimated using this methodology. Also, the method assumes a constant relationship between output and employment and consequently imparts a downward bias in respect of labour intensive industries.

To sum up, in referring to his estimates Norton continually refers to them as upper bound estimates, however, it should be noted that he derived and applied these estimates on the assumptions that (i) tax revenue is not recycled, and (ii) marginal factors are the same as average even in capital intensive industries (viz: transport and electricity) which are given a heavy weighting in respect of tourism activity and (iii) Norton treats export tourism as being independent of and separate from domestic tourism. He then ignores this latter activity.

[3]Byrne and Palmer (1981) p. 88.

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