The size of the Norfolk Island economy

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As early as the 1970s the residents of Norfolk Island had achieved a high level of income per head by international standards. The Commonwealth Grants Commission has recently estimated that in 1995–96 Norfolk Island's per capita GDP was 70 per cent higher than Australia's. After reviewing earlier measurements of the output of the island, this paper provides a critical evaluation of the Commission's estimate of GDP and offers an alternative estimate. It uses the alternative to assess how Norfolk Island compares with Australia in per capita income terms and, relatedly, to question the Commission's findings about the revenue-raising capacity of the Norfolk Island government.

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Norfolk Island lies in the Pacific Ocean about 1,700 kilometres east-north-east of Sydney and 800 kilometres south of Noumea. It is an Australian external territory with a substantial degree of internal self-government. A 1996 census recorded a resident population of only 1,772 persons, including about 700 descendants of the Pitcairn Islanders who were resettled on Norfolk Island in the mid-nineteenth century. Tourism is the principal means of livelihood: 53 per cent of those in employment at the time of the census indicated that they worked in an industry catering mainly for the needs of tourists. The Australian dollar is the currency in circulation.

In 1997, in response to an Australian Government request, the Commonwealth Grants Commission provided 'advice on Norfolk Island's economic capacity, financial and administrative arrangements and government services' (Commonwealth Grants Commission 1997:iii). In its report, the Commission estimated GDP (or, to use the Commission's phrase, the 'size of the Norfolk Island economy') at A$80.347 million in 1995–96. This sum divided by the resident population recorded at the 1996 census gave a GDP per head of A$45,343 which was nearly 70 per cent above the corresponding figure for Australia in 1995–96. This paper provides a critical evaluation of the Commonwealth Grants Commission's estimate of the Norfolk Island per capita GDP and offers an alternative estimate.

Earlier estimates

Norfolk Island does not have a regularly produced series of social accounting statistics. It is, however, probably unique among the small islands of the South Pacific in that there exist isolated annual estimates of the gross product of its tiny cash economy in the second half of the nineteenth century (Treadgold 1988:94–100). The earliest social accounting estimates for the twentieth century—the first attempted for Norfolk Island—were made in 1952 by L.T. Gleeson who was then Officer in Charge of the Economic Branch of the Commonwealth (Australian) Department of Territories. He calculated that in 1951–52 the gross 'national' product of the island amounted to £205,000 (A$410,000). The per capita figure was £173 or only 39 per cent of the level of GNP per head in Australia at that time (Gleeson 1952:72).

Gleeson's estimates are very rough and appear to be distorted by the erroneous inclusion of transfer payments in the form of war pensions received from abroad. Nevertheless, the estimated shortfall in GNP per head relative to Australia is broadly plausible, given the failure of the island's commodity-exporting sector to recover fully from the disruptions of the international depression of the 1930s and World War II.

It was over a quarter of a century before another attempt was made to measure the output of the Norfolk Island economy. In the intervening period, beginning in the early 1960s, the island experienced a phase of rapid economic and demographic expansion. Between 1961 and 1978 the resident population doubled, employment more than trebled, and the value of merchandise imports (albeit at current prices) increased 14 fold. On the demand side, the main stimulus to expansion was the growth of the tourist industry, although for a time this was reinforced by the use of the island as a tax haven. On the supply side, expansion was facilitated by inflows of migrant labour and foreign capital.

The effects of the expansion were captured in a set of social accounts (Treadgold 1979), using data sources that included an economic census of business enterprises on the island, the 1978 census of population and housing, and a survey of tourist and visitor expenditures. The accounts included a domestic production account for Norfolk Island for the years 1975–76 to 1977–78, and income and outlay, capital and overseas transactions accounts for the island for 1977–78 alone. The format and concepts followed as far as possible the Australian national accounts of the time.

The domestic production account yielded a value of GDP at current prices of A$10.9 million in 1977–78, which was equivalent to A$6,450 per head of resident population. The latter figure was approximately equal to that of Australia for 1977–78; and the same was true of the two preceding years. This similarity in output per head of population reflected offsetting differences in output per employed worker and in the proportion of the population that was economically active. Thus, in 1977–78, GDP per employed person in Norfolk Island was only 77 per cent of GDP per employed person in Australia, but the island's unemployment rate was much lower (that is, the percentage of its labour force in employment was much higher), its labour force participation rate was much higher, and a higher proportion of its population was of working age.

The fact that the estimates of GDP per head for Norfolk Island in the second half of the 1970s were in money terms approximately the same as those for Australia does not rule out the possibility that they differed significantly in real terms or, in other words, that price levels differed substantially between the two economies. However, there is no strong evidence to support this possibility. Available price comparisons are confined to only part of the private consumption component of GDP, and here the results are inconclusive. An inter-regional price index for June 1978 suggests that prices for a limited range of consumer goods and services common to Norfolk Island and Australia were on average more than 20 per cent higher in the island; but there were major omissions from the index. They included consumer durables, some of whose prices were up to one third lower in Norfolk Island than in Australia because of the island's low customs duties at that time, and housing, the costs of which (according to census data) were also far lower (Treadgold 1988:236–7).

The Commission's 1995–96 estimate

The Commonwealth Grants Commission used the income approach to obtain its estimate of Norfolk Island's GDP at current prices in 1995–96. It began by estimating the contribution of the island's public sector to gross incomes from productive activity (A$15.3 million). This contribution originated in the general government functions of the Norfolk Island Administration, various government business enterprises and the activities of the Commonwealth Government on the island. Relevant data were reported to be mostly 'of good quality' (Commonwealth Grants Commission 1997:32).

The Commission was faced, however, with 'an absence of comparable private sector data'. (Unlike the situation existing when the social accounts for the late 1970s were prepared, there was no recent economic census of business enterprises to provide a data base.) The Commission therefore derived an estimate of the private-sector contribution to gross incomes from productive activity (A$57.4 million) by taking the total number of private sector employees and applying to this figure the following assumptions

- an average wage per employee in the private sector equal to 90 per cent of the corresponding public sector figure
- an average gross profit per employee in the private sector equal to 80 per cent of the corresponding figure for the profitable government business enterprises.

No specific reasons were given for selecting these particular percentages, although it was noted that the profitable government business enterprises 'being statutory monopolies…should be able to raise above-average profits' (Commonwealth Grants Commission 1997:32n).

The final step was to add indirect taxes less subsidies (A$7.6 million) to the public and private sector contributions to gross incomes from productive activity. The result formed the Commission's A$80.3 million estimate of 'the size of the economy' or GDP in 1995–96. This sum, divided by the resident population, gives a GDP per head nearly 70 per cent above the Australian level for the same year.

There are two reasons why it is difficult to accept a gap of this magnitude in favour of Norfolk Island. First, it implies an implausibly high rate of growth of real GDP per head in Norfolk Island between 1977–78 and 1995–96. In 1977–78 the estimate for nominal GDP per head in Norfolk Island (which was constructed from a data base far superior to that available for the 1995–96 estimate) was about the same as the Australian figure. Over the following 18 years real GDP per head in Australia grew at an average annual rate of 1.8 per cent. Since Norfolk Island's membership of the Australian monetary system would have prevented the long-term rate of inflation in the island from diverging significantly from the long-term rate of inflation in Australia, it follows that if nominal GDP per head in Norfolk Island in 1995–96 were to have reached a level almost 70 per cent above the Australian level in that year, the average annual rate of growth of real GDP per head in Norfolk Island would have to have been as high as 4.8 per cent between 1977–78 and 1995–96. It seems most unlikely that anything like this was achieved, judging from the rate of expansion of tourism, the dominant force in the island economy throughout this period. Between 1977–78 and 1995–96 real tourist outlays per head of resident population are estimated to have increased at an average annual rate of only 1.4 per cent.[1]

The second reason for questioning an estimate of GDP per head nearly 70 per cent above the Australian level is based on the arguments that GDP is a major determinant of household disposable income, and that household disposable income is, in turn, a major influence on private consumption. Even allowing for the possibility of some difference in household propensities to save, these arguments create a strong presumption that a 70 per cent difference in GDP per head would be accompanied by a very substantial difference in private consumption per head in favour of Norfolk Island. Moreover, this presumption is strengthened by the likelihood that household disposable income was higher relative to GDP in Norfolk Island than it was in Australia, partly because of the absence of income tax in the island and partly because of a large net inflow of private property income and transfers from abroad. (In 1977–78 the inflow had been equivalent to nearly 12 per cent of GDP.)

The available evidence, however, does not point to a very high level of consumption per head in Norfolk Island relative to that of Australia. Survey data presented by the Commonwealth Grants Commission (1997:27) itself indicates that in 1995 average household weekly expenditure in Norfolk Island was only 4.5 per cent above the level in New South Wales. Even allowing for a lower number of persons per household in Norfolk Island (1996 census results show 2.2 persons per private occupied dwelling compared with 2.7 in Australia as a whole), these data offer no support for an estimate of Norfolk Island's GDP per head in 1995–96 nearly 70 per cent above the Australian level.

Assuming that the Australian data and the census-based figure for the Norfolk Island population are essentially accurate, it follows from the above arguments that the Commission's estimate of a total GDP of A$80.3 million for Norfolk Island in 1995–96 is likely to be a considerable overestimate. Given the reported good quality of data on public sector activities, the main sources of overestimation appear to lie in the crude method used to estimate the contribution of the private sector to GDP. However, the Commission is also certainly guilty of one, and probably two, basic errors in measuring the contribution of the public sector. First, the 'general government' contribution (gross product at factor cost) of the Norfolk Island Administration is estimated by adding to 'general government' wages, salaries and supplements, not the appropriate item of 'general government' consumption of fixed capital, but rather total 'general government' capital expenditure. Second, the estimated contribution or gross product of the activities of the Commonwealth Government on the island (A$3.804 million) exceeds the Commission's own figure for all Commonwealth expenditure on Norfolk Island in 1995–96 (A$3.795 million), a figure which includes some transfers (veterans' pensions of A$0.805 million) and presumably also the value of intermediate inputs.

An alternative estimate for 1995–96

Because of the shortcomings of the Commission's estimate of GDP, an alternative estimate for 1995–96 is constructed here. To avoid the data limitations that hampered the Commission's income approach, the alternative was constructed using the expenditure approach. Thus GDP was obtained as the sum of private and government final consumption expenditures, gross fixed capital expenditure, the increase in stocks and exports of goods and services less imports of goods and services.[2]

Private final consumption expenditure was estimated by converting the survey figure for average weekly household expenditure in 1995 to an annual basis, inflating by the increase in the Norfolk Island retail price index between 1994–95 and 1995–96, and multiplying by the number of occupied private dwellings recorded at the 1996 census. Government final consumption expenditure, gross fixed capital expenditure and the increase in stocks were all estimated by extra-polating forward 1977–78 data, using a range of indicators. Gross fixed capital expenditure was then separated into its general government, public enterprise and private components, using Commission estimates for the first two components. Exports of goods and services were constructed around an Access Economics figure for tourist outlays reported in Commonwealth Grants Commission (1997:36). Other components of exports were estimated either directly from trade statistics or by extrapolation from 1977–78. Finally, imports of goods and services were extrapolated from their 1977–78 estimate, the f.o.b. component according to the increase in the value of total merchandise imports, and the remainder according to the increase in the total turnover of goods and services in the island, that is, the sum of the estimates of consumption, investment and exports (Table 1).

Clearly, the heavy reliance on extrapolation techniques over a period of 18 years means that the alternative 1995–96 estimate for GDP of A$53.4 million cannot be regarded as more than an approximate figure. Nevertheless, it is much more plausible than the Commission's estimate of A$80.3 million, particularly since its implied level of GDP per head of A$30,131 is only 12.4 per cent above the Australian figure for the same year (A$26,808). No less plausible is the estimate of the largest single expenditure component contributing to GDP, namely private consumption expenditure. It yields an estimate of private consumption per head of A$16,791 which is virtually the same as the corresponding Australian figure of A$16,636. This result was, of course, to be expected, given the

Table 1 **Alternative estimate of gross domestic product at current prices, 1995–96** (A$'000)

	A$'000
Final consumption expenditure	
Private	29,754
Government	6,347
Gross fixed capital expenditure	
Private	5,804
Public enterprises	971
General government	616
Increase in stocks	1,315
Gross territory expenditure	44,807
Exports of goods and services	43,615
Territory turnover of goods and services	88,422
less imports of goods and services	35,030
Gross domestic product (GDP)	53,392

Source: Author's calculations.

method of estimation and the similarity between the estimates of average weekly household expenditure in Norfolk Island and New South Wales.

Perhaps the most problematic aspect of the alternative estimate of GDP is the size of the associated surplus in the balance of trade in goods and services. At nearly A$8.6 million, it is equivalent to 16 per cent of GDP. Having regard also to the Australian Government's net current transfers to the island (Commonwealth Grants Commission 1997:69–73) and Norfolk Island's recent history of large receipts of private property income and transfers from abroad (Treadgold 1988:235–6, 242), the trade surplus suggests an even larger (possibly much larger) surplus on the current account of the balance of payments. However, the likelihood that, for its size, Norfolk Island was a very substantial net exporter of capital should not come as a surprise. The 1977–78 social accounts showed a current account surplus equivalent to 21 per cent of GDP.

Accounting for the per capita difference

The Commission's estimate of Norfolk Island's GDP for 1995–96 implies not only an implausibly high estimate of GDP per head of resident population, but also a no less implausible level of GDP per employed person of A$74,395. This estimate, which can be interpreted as a crude measure of the monetary value of labour productivity, is nearly 27 per cent higher than the corresponding Australian level for the same year (Table 2). By contrast, using the alternative estimate of GDP presented in Table 1, a level of GDP per employed person in Norfolk Island is obtained that, at A$49,437, is 16 per cent below the

Australian figure of A$58,759. This result sits much more comfortably with the earlier data for 1977–78 which indicated a 23 per cent shortfall of GDP per employed person in Norfolk Island relative to Australia.

Despite this shortfall, Norfolk Island's GDP per head in 1977–78 was approximately the same as the Australian level at that time because a higher proportion of Norfolk's population was economically active. Eighteen years later the proportion continued to be higher, as shown by the comparisons in the last three rows of Table 2. A greater proportion of Norfolk's labour force was in jobs; a greater proportion of its population of working age was in the labour force; and a greater proportion of its total population was of working age. It is this set of circumstances that accounts for the alternative estimate of GDP per head for 1995–96 being 12 per cent above the Australian level in that year, even though the alternative estimate of GDP per employed worker is 16 per cent lower than its Australian counterpart.

Revenue-raising capacity

The Commission's over-estimation of the GDP of Norfolk Island would perhaps be of only academic interest were it not for the serious doubt that it casts on one of the Commission's key conclusions; namely that, if the Norfolk Island government increased its revenue-raising effort to Australian levels, it could afford to upgrade the provision of services for which it presently has responsibility to Australian standards, meet associated infrastructure costs, and indeed take on extra responsibilities (Commonwealth Grants Commission 1997:xv, 174, 177).

The Commission used the term 'financial capacity' to describe the amount of public revenue the Norfolk Island government would receive if it increased its revenue-raising effort to Australian levels. The Commission's approach to the estimation of this sum involved essentially three steps. First, Australian public revenue was disaggregated into detailed categories. Second, the effective tax rate for

Table 2 **Norfolk Island and Australia: some comparative data**

	Norfolk Island	Australia
GDP per head, 1995–96	A$30,131	A$26,808
GDP per employed person, 1995–96	A$49,437	A$58,759
Percentage of labour force in employment	99.3 (1996 census)	91.5 (average for 1995–96)
Labour force participation rate (per cent)	77.1 (1996 census)	63.7 (average for 1995–96)
Percentage of population of working age (15 years and over)	79.6 (1996 census)	78.3 (average for 1995–96)

Sources: Table 1; Administration of Norfolk Island, 1996. *Norfolk Island Census of Population and Housing, 6 August 1996—Statistical Report on Characteristics of Population and Dwellings*, Administration of Norfolk Island, Norfolk Island; Australian Bureau of Statistics, 1996. *Labour Force, Australia*, July 1996, ABS Catalogue No. 6203, Canberra; Australian Bureau of Statistics, 1997a. *Australian Demographic Statistics*, March Quarter 1997, ABS Catalogue No. 3101.0, Canberra; Australian Bureau of Statistics, 1997b. *Australian National Accounts: National Income, Expenditure and Product*, September Quarter 1997, ABS Catalogue No. 5206.0, Canberra.

each category was calculated by expressing the revenue raised in the category as a percentage of what was assumed to be its underlying tax base. (For example, the value of imports was chosen as the tax base for customs duties.) Third, the effective tax rates were applied to comparable tax bases on Norfolk Island to obtain, after summation, an aggregate figure for the total public revenue that could be raised on Norfolk Island if the full range of Australian revenue-raising measures were introduced at the effective rates applying in Australia. This final step incorporated, however, some downward adjustments to allow for the ‘special circumstances’ of Norfolk Island. These were the likelihood of smaller yields from income tax (possibly reflecting greater scope for tax avoidance and evasion), cultural factors that restricted the tax base for revenues from gambling, and a lack of capacity to raise revenue from mining.

The Commission’s resulting estimate of financial capacity for 1995–96 was A$15.9 million or A$8,956 per capita, an amount clearly much larger than the A$9.9 million (A$5,771 per capita) of public revenue actually raised in Norfolk Island in 1995–96. Together with A$1.5 million from the undistributed profits of government business enterprises and depreciation provisions, it would have provided sufficient resources to have funded the substantially increased levels of expenditure (A$15.5 million) that the Commission estimated that the Norfolk Island government would have needed to make in 1995–96 in order to have met Australian standards in the provision of public services and associated infrastructure costs. Moreover, there would still have been a surplus of A$1.9 million available for meeting the costs of taking over some of the Australian Government’s remaining responsibilities in relation to Norfolk Island (Commonwealth Grants Commission 1997:173).

The problem with these findings is that the Commission used its A$80.3 million estimate of GDP in 1995–96 and some of the factor income components of this estimate as tax bases for estimating various components of potential public revenue for the island. Hence, even accepting the Commission’s methodology, the A$15.9 million figure for the island’s financial capacity is almost certainly an over-estimate.

Partly because the much lower estimate of GDP presented in this paper is not separated into factor income components and partly because of inadequate detail in the Commission’s presentation of its calculations, it is not possible to quantify the extent of the over-estimation by re-working the Commission’s calculations. However, it is possible to revise an alternative, ‘broader measure’ of financial capacity presented by the Commission (Commonwealth Grants Commission 1997:159). The Commission’s broader measure was obtained, in effect, by adjusting total public revenue in Australia in 1995–96 for the equivalent of Norfolk Island’s ‘special circumstances’, expressing the outcome as a percentage of GDP for Australia (24.04 per cent), and then applying the percentage to the Commission’s estimate of GDP for the island. When the resulting amount of A$19.3 million is revised by using the alternative estimate of GDP presented here, it becomes only A$12.8 million, a downward revision of more than a third.

The Commission’s preferred estimate of financial capacity of A$15.9 million would not be subject to the same proportionate degree of revision because not all the disaggregated tax bases on which it is built depend on the Commission’s estimate of GDP and its components. Nevertheless, a downward revision of only 12 per cent would be enough to eliminate the A$1.9 million surplus that the Commission's preferred estimate suggests would have been available in 1995–96 for funding additional responsibilities; and any greater downward revision would reduce estimated financial capacity below the level that, according to the Commission's figures, would have been required to upgrade the provision of public services to Australian standards and meet associated infrastructure costs.

The probability that a revenue-raising effort comparable with the Australian effort would not have been sufficient to allow Australian standards of public services and infrastructure might seem relatively low, given that the alternative, lower estimate of Norfolk Island's GDP still implies a GDP per head higher than that of Australia. The probability is, however, strengthened by three factors. First, the allowance for Norfolk's special circumstances means that, in fact, its assumed revenue-raising effort would not have been fully comparable with Australia's. Second, a failure to maintain the physical capital stock of the island's public sector appears to have contributed to particularly high infrastructure spending requirements. (In per capita terms, the Commission's estimate for 1995–96 is nearly three times the level of public investment in Australia in that year.) Finally, there must be a strong likelihood that the island suffered significant cost disadvantages in the provision of many public services because of its remoteness and the diseconomies arising from the tiny scale of its public sector operations.

Conclusions

The Commonwealth Grants Commission appears to have greatly exaggerated the size of the Norfolk Island economy. The Commission's methodologically flawed estimate of GDP for 1995–96 translates into a level of output per head of population nearly 70 per cent above the Australian level. A difference of this magnitude implies an implausibly high rate of per capita growth since the late 1970s, and is inconsistent with independent evidence on household expenditure levels in Norfolk Island and New South Wales.

The alternative estimate of GDP for 1995–96 is as much as a third lower than the Commission's estimate. It suggests a level of output per head only 12 per cent above the Australian level. Output per employed person appears, indeed, to be 16 per cent below its Australian counterpart; but this shortfall is more than offset by the much higher proportion of Norfolk Island's population that is economically active.

The alternative estimate of GDP also suggests that the Commission has drawn an excessively optimistic picture of the revenue-raising potential of the Norfolk Island government. As a consequence, there must be considerable reservations about the Commission's conclusion that the Norfolk Island government has the financial capacity to achieve Australian standards in the provision of services, meet associated infrastructure cost, and assume additional powers.

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Notes

[1] The estimate is derived using a figure for total nominal tourist outlays of A$40.4 million in 1995–96 (an Access Economics estimate reported in Commonwealth Grants Commission 1997:36) and a corresponding figure of A$8.741 million in 1977–78 (Treadgold 1988:242). Nominal outlays were converted to real outlays by deflation with a composite price index constructed by splicing the Norfolk Island retail price index and the Australian consumer price index.

[2] As in previous attempts to measure the output of the island economy, data difficulties precluded the inclusion of an imputed value for non-market primary production (and consumption). This item was undoubtedly of major importance in the nineteenth century, and probably still of some importance when Gleeson (1952) prepared his estimate of GNP. It was much less significant by the late 1970s. Its omission from both the Commission's and the alternative estimate for 1995–96 is judged as unlikely to be a source of serious distortion.

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Response

The Commonwealth Grants Commission was invited to submit a rejoinder to Malcolm Treadgold's article 'The size of the Norfolk Island economy'. The following response was prepared by Catherine Hull, Assistant Secretary at the Commonwealth Grants Commission responsible for revenue capacity asssessments. The Commission has not examined the article and the comments provided are the responsibility of the author.

The Commonwealth Grants Commission's *Report on Norfolk Island 1997* estimated that the size of the Island's economy in 1995–96 was about A$80 million. The preceding article suggests that the Commission's estimate is too high because

- a flawed approach was used to measure the size of the economy
- the estimate translates into a level of output per head of population that was nearly 70 per cent above the Australian level and implies an implausible rate of growth for the Norfolk Island economy
- an alternate method of calculating GDP produces an estimate of A$53.4 million which is more consistent with other indicators.

It therefore concludes that the Commission has been much too optimistic in its assessment of the revenue-raising capacity of the Norfolk Island government and questions the conclusion that the Norfolk Island government has the financial capacity to achieve Australian standards in providing services, meet associated infrastructure costs and assume additional powers.

While accepting that the Commission's estimate of GDP for Norfolk Island is not perfect because of the unavailability of all of the necessary data, I believe that the estimate of GDP used in the Commission's report is based on reasonable assumptions and is probably conservative. As a result, I do not believe revenue-raising capacity is overstated or that there should be concerns about the Commission's conclusions.

Commission's estimate of GDP

The Commission chose an income approach to measure the size of the Norfolk Island economy, or its GDP, for two reasons. It was considered that the components of the income approach were more useful in estimating revenue-raising capacity, and that the data supporting this method were more reliable.

Measuring GDP in any small economy is likely to be difficult because of data deficiencies that usually accompany the need for privacy. As noted in the Commission's report, data on public sector activities on Norfolk Island were available and of good quality. However, private sector data were not available. The best that could be found were from the Australian Bureau of Statistics Norfolk Island Household Expenditure Survey of 1995. The Commission decided that the results of that survey were unreliable and could not be used to estimate GDP using an expenditure approach.

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The survey results were based on 217 households out of a sample of 520 selected to participate. While the 217 households represented 30 per cent of Norfolk Island's population, the response rate of 40 per cent suggested that there was likely to be some bias in the results. In fact, several sources reported to the Commission that

- those that had responded would not have been keen to divulge personal information to 'the government'
- it was highly probable that higher income households had not responded.

I am not certain why the author of the paper extrapolated so many of the components of his estimate of GDP as data were available on government final consumption expenditure, gross fixed capital expenditure, and imports and exports. Other data, such as increases in stocks, could have been constructed using accumulated capital expenditures. The approach taken by the author ensures that errors built into the original estimate, which was made 18 years ago, were carried forward and compounded with new errors in the unspecified 'range of indicators' used in the extrapolation. As noted by the author, the estimate certainly 'cannot be regarded as more than an approximate figure' (p70, this issue).

The Commission's decision to use the income approach to the measurement of GDP meant that an estimate of the private sector's level of output was required. It used data on the numbers of employees in the government and private sectors and made some assumptions about their relative contribution to the economy. It assumed that

- average wages for each employee in the private sector were 90 per cent of the public sector figure
- gross profit for each employee in the private sector was 80 per cent of the figure for the profitable government trading enterprises.[1]

These assumptions were made on the basis of information gained through visits to Norfolk Island and discussions with members of the government, representatives of the private sector, the public service, the managers of government trading enterprises and the community. They were considered by the Norfolk Island government and private sector representatives when a draft report was distributed and discussed at a public conference.

At that conference, there was general support for the Commission's assumptions. However, the view that the private sector would only make 80 per cent of the profit per employee that emanated from the profitable government enterprises was considered by the Norfolk Island government and representatives of the private sector to be conservative. The Commission chose to maintain this low percentage because it believed that the trading enterprises were monopolies that should be able to make above average profits. In addition, it made a conscious decision that its measure of GDP should be seen as conservative. Its estimate of the private sector contribution may thus be an understatement.

It is however consistent with the Access Economics (1997:21) estimate that the tourism sector contributed A$41.4 million to the Norfolk Island economy in 1995–96 and the 1996 Norfolk Island Census figure that 53 per cent of the resident working population had a job directly related to tourism. The same productivity in the non-tourism element of the private sector would imply a total economy of about A$78 million. The Commission also noted that some estimates put the size of the economy at over A$90 million (implying a private sector contribution of A$70 million).

The GDP estimate of A$53.4 million calculated in the paper implies a private sector output of only about A$30 million (compared with a Commission estimate of A$57 million). This would imply that

- average wages in the private sector were very much lower than those in the public sector (maybe 45 per cent of the public sector level)
- that gross profit per employee in the private sector was substantially less than that of employees in government trading enterprises (perhaps as low as 40 per cent).

These results seem somewhat unlikely.[2]

The Commission's estimate has also been criticised because it used

- general government capital expenditures, rather than the consumption of fixed capital, to derive a measure of the output of this sector
- a measure of the output attributable to the Commonwealth Government of A$3.804 million, when the report showed total Commonwealth expenditure on Norfolk Island to be A$3.795 million.

General government capital expenditures were used as a proxy for consumption. An assets register that included stock valuations for the general government sector was not available and depreciation is not shown in the general government accounts as they are prepared on a cash basis. The Commission decided to use capital expenditure to estimate capital consumption because, over the long term, depreciation of stock approximates capital expenditures—particularly in an economy in which the population is not growing.

A consumption figure could have been estimated using a method based on depreciated accumulated capital expenditures, such as the perpetual inventory method used by the Australian Bureau of Statistics. However, given that the 1995–96 capital expenditure of the general government sector of Norfolk Island was only A$616,000 (a small contribution to the A$80 million GDP figure), the Commission did not believe such an approach was warranted. Again, it considered that the amount used was probably an underestimate of true capital consumption because its examination of the public accounts suggested that the Norfolk Island government was running down its capital stocks.

On the other hand, the estimate of Commonwealth output used by the Commission in calculating GDP may be too high because of the small error of A$9,000 pointed out in the paper. But reducing the estimate by this amount, or as much as A$900,000 implied in the paper,[3] would have little impact on the final outcome.

The fact that the Commission's estimate implies a level of output 70 per cent above Australian levels was acknowledged in the report. Moreover, the following extract from the report indicates that the Commission considered such a differential to be plausible.

> Table 1 provides some selected statistics for the Norfolk Island and mainland economies. It shows that Norfolk Island's estimated gross product per capita is 70 per cent above that of mainland Australia. The relatively better performed Norfolk Island economy is consistent with an export-oriented economy where income is generated from a wider population base (particularly tourists) than the local community. Compared with mainland Australia, the estimates show that Norfolk has both a higher average per capita profit (142 per cent higher) and higher average per capita wages (5 per cent higher). This is consistent with its
>
> - higher workforce participation rate (76.5 compared to 63.7 per cent)

- higher proportion of the relevant population in full-time employment (87.2 compared to 69.1 per cent)
- negligible unemployment
- possibly, longer working hours (many people seem to have more than one job) (Commonwealth Grants Commission 1997: 39–44).

The criticism that the high level of output translates to an implausibly high average annual rate of growth in GDP of 4.8 per cent is rejected for a number of reasons.

- The paper uses a 1977–78 base to derive the growth estimate. While it asserts that good data were available to derive the original estimate, it is unclear just how reliable it was. During its inquiry, the Commission was frequently told by people on the island that Norfolk Islanders are usually resistant to providing information to government and have a tendency to understate income levels. In addition, even the Australian Bureau of Statistics revises its estimates of GDP and acknowledges that the statistical discrepancy of quarterly GDP income and expenditure estimates can be as high as 7 per cent (Australian Bureau of Statistics 1990:234). Thus, the 1977–78 base used by the author could well be underestimated, and growth rates overestimated.
- A growth rate of 4.8 per cent is not implausible for a small isolated economy at a different stage of development to the mainland, especially when times have been (relatively) good.
- Tourist numbers increased by 30 per cent from 1979–80 to 1995–96 and Access Economics estimates that tourism contributed A$41.4 million to the Norfolk Island

Table 1 **Selected statistics, Norfolk Island and the mainland, 1995–96**

	Norfolk Island	Mainland
Economic statistics		
Gross product (A$ per capita)	45,343	26,735
Wages and salaries (A$ per capita)	13,735	13,131
Gross profit (A$ per capita)	24,829	10,274
Population statistics		
Percentage aged 65 and above	13.5	11.3
Percentage aged 15 to 65	66.0	66.3
Percentage in the workforce	76.5	63.7
Labour force statistics		
Percentage in full time work	87.2	69.1
Percentage in part time work	12.8	22.5
Percentage unemployed	-	8.5

Notes: Norfolk Island economic statistics were estimated. Its population and labour force statistics were compiled from *Norfolk Island Census of Population and Housing, 6 August 1996*. The assumptions used to calculate Norfolk Island's gross product, wages and salaries and gross profit figures are given in the footnotes to the *Commission's Report on Norfolk Island, 1997*: Table 4-1.
Sources: Figures for Australia were compiled from Australian Bureau of Statistics, 1996. *Australian Economic Indicators, May*, ABS Cat No 1350.0, Canberra: Tables 1.4, 6.1 and 9.2; Table L-7 from the *Commission's Report on Revenue Grant Relativities, 1997 Update*.

economy in 1995–96. Other export industries (including mail order) have also grown. Although early data on government revenues are not given in the Commission's report, it shows that these grew by 16 per cent from 1993–94 to 1994–95 and 13 per cent from 1994–95 to 1995–96.

The paper also claims that the Commission's estimate that GDP per capita is nearly 70 per cent above the Australian level is invalid because it does not translate into a substantial difference in private consumption between Norfolk Island and Australia. Again, the author of the paper relies on evidence from the flawed Household Expenditure Survey to suggest that household weekly expenditure on Norfolk Island is only 4.5 per cent above the level in New South Wales. I noted earlier the unreliability of this survey for Norfolk Island, and its probable bias in favour of the less well off.

Norfolk Island taxable capacity and its ability to provide Australian-standard services

As the Commission's measure of the size of the Norfolk Island economy is not overstated, I do not accept that its measure of the Island's capacity to raise revenue is overstated. Even if the Commission's estimate of GDP were high, revenue capacity could only have been overstated by the extent to which the private sector outputs were used in the calculations. Information provided in the report suggests that, even if the paper's estimate of Norfolk Island's GDP were correct, the maximum overestimate would be some 12 per cent.[4] On this basis, Norfolk Island would still have the capacity to collect A$13.9 million, if it raised revenue at mainland standards.

In concluding that the Norfolk Island government had the financial capacity to meet Australian standards of services, the Commission

- calculated revenue-raising capacity by applying Australian mainland tax rates to Norfolk Island tax bases, adjusted[5] to take account of the real constraints Norfolk Island faced in collecting revenue
- took into account the additional services required and the higher costs of providing all services on Norfolk Island due to its remoteness, scale diseconomies and so on
- allowed for the backlog of infrastructure requirements.

The figures provided in Table 8-4 of the Commission's report (reproduced here as Table 2) justify the conclusions that the Norfolk Island government has the financial capacity to

- meet the obligations associated with its existing government functions, in terms of both service provision and infrastructure requirements
- fund some additional services.

Using the paper's estimate of GDP would, at most, lead to the conclusion that Norfolk Island may not have the capacity to fund any additional responsibilities.

In relation to these, the Commission suggested that no discussion on possible transfers take place until the Norfolk Island government had met its existing service obligations. The Commission also noted that administrative capacity was the main factor limiting the ability of Norfolk Island government to deliver services.

Table 2 **Illustrative 1995–96 Norfolk Island budget, assuming mainland expenditures and revenue-raising effort**

	Amount (A$'000)
Revenue at mainland revenue-raising effort[a]	15,900
Less	
Recurrent expenditure[b]	7,500
Extra recurrent expenditure to provide mainland standards[c]	2,470
Surplus on recurrent account	5,930
Plus	
Undistributed profits of business enterprises[d]	280
Funds from depreciation provisions	1,200
Total funds available for capital expenditure	7,410
Less annual capital requirement	5,500
Surplus, estimated	1,910

[a] From Table 7-12.
[b] Total 1995-96 expenditure of the Revenue Fund less capital expenditure ($620 000) and expenses recovered from business enterprises ($600,000).
[c] From Table 8-2.
[d] Surplus of business enterprises for 1995–96 ($2,100,000) less revenues at mainland revenue efforts for landing fees, Healthcare levy and transfers from business enterprises ($1,620,000). Actual revenue from the Workers Compensation Levy (about $200,000) has also been deducted as the analysis assumes it is part of pay-roll taxation.
Source: Commonwealth Grants Commission, 1997. *Report on Norfolk Island 1997*, Australian Government Publishing Service, Canberra.

Conclusions

I believe the Commission used a conservative but realistic estimate of the size of the Norfolk Island economy in its report. The Commission visited Norfolk Island on several occasions and held extensive discussions with the government, the public service, the private sector and the community. The size of the economy was discussed with all interested parties on the Island. The Commission's judgement, based on the knowledge and experience it gained, was that the estimate derived and the assumptions used were consistent with the best information available.

If there are flaws in the estimate, they are due to data deficiencies that will affect all measures of GDP. The Commission rejected the use of an expenditure-based estimate because it was considered less reliable, due largely to problems with the Household Expenditure Survey results. The income-based measure was also more useful for its estimates of revenue capacity.

The difference between Norfolk Island's per capita level of output and Australia's per capita output is not unexpected, given the conditions on the Island. The growth rate implied for the Norfolk Island economy is not implausible, particularly if the base is incorrect and probable flaws in the household expenditure data are recognised.

The Commission's conclusion that the Norfolk Island government has the financial capacity to achieve Australian standards of service provision and meet infrastructure costs stands. The question of additional responsibilities can easily wait for another day.

Notes

1 The figures for the three subsidised enterprises (KAVHA, Bicentennial Integrated Museums and the Healthcare Fund) were not included.

2 Other possible assumptions, such as average wages in the private sector remaining at 90 per cent of the public sector figure and private sector profits being 25 per cent of trading enterprises profits, are equally unlikely.

3 A$9,000, plus A$805,000 for war veterans' pensions and another amount for the value of intermediate inputs.

4 Only 36 per cent of the Commission's estimate of Norfolk Island's taxable capacity is dependent on estimates of private sector output.

5 Adjusting the tax base does not reduce Norfolk Island tax effort at all.

References

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