



Appendix Three

QPA Review of London Economics Report on "The Environmental Costs and Benefits of the Supply of Aggregates"

Introduction

London Economics (LE) was commissioned by the DETR in September 1997 to “derive and present estimates for the economic value of the environmental impact of the supply of aggregates”. The commissioning of this research followed an announcement by the Chancellor in the July 1997 Budget that

“work is to be carried out on the environmental costs attached to quarrying, including damage to the landscape. Results will inform consideration of whether there is a case for further measures, which could include tax measures, to ensure that these costs are reflected in prices”

The LE report was completed in January 1998, and concluded that average environmental costs of aggregates extraction were £4.63 per tonne, including £2.62 per tonne for rock quarries and £9.00 per tonne for sand and gravel quarries. The results were calculated through contingent valuation, a process by which a sample of people living within a 5 mile radius of seven quarries were asked how much money they would accept as compensation for continuing quarrying.

Due to doubts strongly expressed by the Q.P.A., and also apparent within Government, a peer review of the report was commissioned from Professors David Pearce and Susanna Mourato of University College, London. This peer review concluded that contingent valuation was an appropriate methodology, but that the London Economics report contained major flaws, particularly relating to the survey questionnaire, and further research was necessary.

The DETR then commissioned London Economics to carry out further research. The cost to Government of both London Economics reports is in excess of £500,000.

Second London Economics Report

The Second London Economics report was published in May 1999.

Main Results

The report includes the following headline environmental costs.

	Cost per tonne
Local Environmental Costs	
Rock quarries	£0.34
Sand and Gravel quarries	£1.96
National Environmental Costs	
National Parks quarries	£10.52

These costs per tonne generate a “total” industry cost of £293.1 million (£1.33 per tonne), based upon 1997 land won sand and gravel sales and crushed rock sales, and estimated National Park sales of construction aggregates.

Supplementary Results

The consultants also include costs quoted as “tentative” for other local environmental impacts as follows:

	Cost per tonne
Local Environmental Impacts	
Rock quarries in National Parks	£0.07
Marine Wharves	£8.19
Aggregates recycling sites	£9.57

These figures are not included in the total industry cost as the consultants comment: “the evidence on these sites remains unrepresentative”. The consultants feel that the

number of wharf, recycling, and National Parks sites surveyed was too small for the results to be sound.

Survey Methodology

The local survey was based upon the “willingness to pay” concept (WTP). In a WTP survey, interviewees are asked to value what they would be willing to pay for the removal of an environmental problem. In the second LE report, those surveyed within a five-mile radius of specific quarries and other operations were asked how much money they would be prepared to contribute towards the closure of the quarry - closure representing the elimination of environmental impacts. The proportion of the survey sample quoting a cost was then multiplied up by the same proportion of the total population within a five-mile radius. These results were then combined with other rock and sand and gravel results to produce product averages.

The national survey to calculate the environmental cost of quarrying in National Parks asked interviewees to identify how much they would be prepared to pay to contribute to the ending of all quarrying in the Yorkshire Dales and Peak District National Parks. The figures were extrapolated for all National Parks and the average household cost then multiplied up by the total number of households (23.5 million) to give a national value.

Survey Samples

Local Survey: 7300 people were interviewed around 16 quarry sites (8 rock and 8 sand and gravel). In addition 2331 interviews were carried out in the vicinity of two wharves and three recycling operations, although the results of these interviews have been disregarded by the consultants.

National Survey of National Park costs: 1019 people were interviewed in various locations and the aim was to survey a representative sample of the population.

Report Conclusions

The consultants conclude that the research has provided “reasonably reliable, if conservative” estimates of willingness to pay for averting the environmental impacts of quarrying in these respects:

- The local impacts of sand and gravel quarries
- The local impacts of non-National Park rock quarries
- The national impact of quarrying in National Parks

The survey results are regarded by the consultants as the best information likely to be available for “setting the level of a tax on aggregate extraction or guiding negotiations on any alternative measures”.

The consultants also emphasise that the results are likely to be conservative due to the design of the research, and that “this conservatism should be taken into account when making a decision based upon the results of this research”.

Comments on the validity and consequences of the research results

The confidence in the research results expressed by the consultants is not supported by a number of issues not referred to by the consultants in the main report and conclusions.

In spite of the research title "The Environmental Costs and Benefits of the Supply of Aggregates," the results only estimate costs and ignore any benefits

Following the first London Economics report, the peer review by Professors Pearce and Mourato was critical of the inadequate treatment of benefits.

"102. While the study is intended to estimate the value of disamenity (costs) and benefits, there are in fact no estimates of the benefits that could come from quarry restoration. We are unable to say what bias this imparts to the estimates."

In spite of this clearly identified shortcoming, the error was compounded by the lack of any benefits analysis in the second London Economics report. To put this in context, the lack of any benefits valuation means that the London Economics results explicitly assume, for example, no environmental benefits nor value from quarry restoration. Given that the restoration of quarries to wildlife habitat and to promote biodiversity is an increasingly significant afteruse of sites, the lack of any consideration of such long term benefits is a major omission from the report.

Given the erroneous zero assumption for quarry benefits, the London Economics results have an inbuilt bias towards overstated costs results.

We are puzzled as to why the government's management of the London Economics contract approved the publication of a report which so clearly does not meet the conditions explicit in the title of the report.

This lack of interest in valuing industry benefits is particularly curious when, during an early stage of the research project, a survey sample of 1019 people were asked what effect these quarries had on their quality of life. The responses were as follows:

- Good effect (3%)
- Bad effect (5%)
- Very bad effect (1%)
- None/don't know (90%)

So although half as many respondents reported that local quarries had a good impact on quality of life (3%) as reported a negative impact (6%), the consultants proceeded to ignore this evidence of both positive and negative impacts in the full survey work and focus only on negative impacts.

Low proportion of interviewees identifying environmental problems/costs associated with quarrying

The majority of interviews carried out in the course of this research related to the survey of "local" environmental costs (9631 out of 10,651 interviews). Of this local survey, only 11.6% of those interviewed around quarries, wharves and recycling sites gave a positive bid for quarry closure, and therefore registered an environmental "cost". Consequently, the values of £0.34p per tonne for rock and £1.96p per tonne for sand and gravel in the report represent the views of no more than 11.6% of those

interviewed. Given that higher costs were recorded for wharves and recycling operations, and then disregarded by the consultants, the proportion of local residents quoting environmental costs for sand and gravel and rock quarries was probably well below 11.6%.

When the interviewees were asked in the initial stages of the interviews to identify local environmental issues of concern, only 6% of those interviewed mentioned quarries. The interview process itself clearly encouraged more than this initial 6% to quote an environmental cost. It is extremely questionable if such a small proportion of people expressing positive bids/environmental costs is a valid basis for a decision to introduce an aggregates tax.

In the national survey a higher proportion of interviewees expressed a willingness to contribute to closing down quarrying in National Parks (33% of the sample). However, given that these survey results represent in effect a larger proportion of people apparently willing to pay modest amounts of additional taxation to end quarrying in National Parks, the following comments about the survey questionnaire are significant.

Bias in survey questionnaires to encourage high survey results

The most critical aspect of survey-based work such as contingent valuation is the design and application of the questionnaire. In both the local and national surveys, interviewees were asked to consider two options, one for continuing quarry operations and one for early quarry closure, and then decide if and how much they would be willing to pay through taxation to contribute to the early closure.

For the local surveys, the two options were:

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- a** Continuing operation until planning permission ends
- b** Early quarry closure, based upon the following assumptions:
 - i** Government is considering closing down a number of quarries
 - ii** Local residents can petition for their local quarry to be part of this closure programme
 - iii** The quarry would be closed next year and restored in keeping with local landscape
 - iv** Government would ensure that quarry workers are found other jobs
 - v** No new quarry would be allowed to open within five miles
 - vi** Quarry operators would bear most of the costs of early closure
 - vii** Some costs would fall on the local community through a local tax over the next five years. (This is the environmental cost surveyed by the consultants).

The report states in its description of the survey work that, in asking local residents to make a choice between the continuing operation and early closure options, "a key requirement of CV is that the scenario must be believable ". However, the early closure option given to interviewees was clearly unrealistic, for reasons including:

- 1** Government does not have an early quarry closure programme - this would require primary legislation
- 2** It is debatable if full restoration would be possible with early closure
- 3** Is it realistic that Government would guarantee employment for redundant quarry workers?
- 4** Can Government commit to no new quarries within five miles? - this would require primary legislation

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- 5 Early closure of quarries would require substantial compensation from the local authority. Under existing legislation it is incorrect to assume quarry operators would bear most of the cost of early closure

The effect of the unrealistic early closure option is to make the prospect of early closure appear easy, with minimal downside for anyone apart from the quarry operator (apparently no employment problems, minimal costs to local community, guaranteed restoration, no new quarries, an existing Government quarry closure programme).

As a consequence the early closure option in the local survey questionnaire will tend to generate support and positive bids, but on the basis of outcomes which are currently unachievable.

The national survey compounded this approach by asking interviewees to choose between continuing operations and early closure options which were both inaccurate and unrealistic. The current policy option quoted a policy of further quarrying at existing levels, and "some new quarries will also be allowed to open". This option disregards the current status of National Parks policy, within which the prospect of "some new quarries" is pretty unlikely. The early closure option for National Parks includes the misleading elements of the local survey, but is based upon the complete closure of all quarries in the Yorkshire Dales and Peak District National Parks (the consultants extrapolated the results to all National Parks). The National Parks survey also confirms that respondents should not worry about job losses associated with the closures because "quarries nearby would expand their operations and workers would have little difficulty in finding suitable jobs". Once again the "no downside" option of quarry closures would encourage positive bids.

The Adequacy of the Survey Sample

The consultants surveyed 8 sand and gravel and 8 rock quarries. This compares with a total number of 734 sand and gravel and 512 rock quarries identified in the report, so the survey sample was 1.3%. The results of the sample sites were grossed up by production criteria, the implicit assumption being that the surveyed quarries were entirely representative of the total, with “average” levels of environmental impacts. Given, however, that there are huge variations between the impacts of individual quarries, a considerably larger sample of quarry locations than 16 should have been surveyed within the £500,000 budget. A possible reason why more sites were not surveyed was that this would have reduced the number of interviews per site, and given the likely low proportion of positive bids, could have generated very low or zero external costs for a higher number of sites than the existing survey.

The QPA asked the DETR and London Economics for the environmental costs associated with each quarry surveyed, but this request was refused, confirming the likelihood of large cost variations from site to site. Interestingly, the individual site results were published in the discredited first London Economics report, so the refusal of Government and consultants to provide such results from the second report suggests a concern that these detailed results would also raise questions about the validity of the report’s overall results and conclusions.

It is also very curious that 2331 interviews were carried out at five wharf and recycling sites, and the results disregarded because the samples were “unrepresentative”. It should have been clear that these samples were either representative or unrepresentative before these interviews were carried out, suggesting that the results were only labelled as unrepresentative when the results were known. It has been suggested that these results were disregarded because it

may have been "politically embarrassing" for the research results to indicate much lower environmental costs for quarrying than recycling, once the survey results were known.

Government Manipulation of the Survey Results

In spite of the total valuation of £293 million calculated for crushed rock and sand and gravel extraction by London Economics, Government has consistently and erroneously claimed that the research showed an environmental cost of £380 million (e.g. in Treasury evidence to the House of Commons Environmental Audit Committee on 18 January 2000). The difference between the surveyed cost (£293 million) and the Government's claimed cost (£380 million) is that the Government has added over £80 million to the surveyed costs on the assumption that if people had been surveyed about the environmental costs of quarrying in Areas of Outstanding National Beauty (AONBs), the extra cost would be over £80 million. The basis for this assumption is that if questions about AONBs had been included in the survey work, respondents would have given precisely the same responses with regard to AONBs as they did to the National Parks element of the London Economics survey work. This assumption is entirely without foundation. At no stage in the survey work did the consultants ask respondents to consider the valuation of quarrying in AONBs, and the survey results include no data on AONBs. None the less, Government has plucked a figure of over £80 million out of the air and added this figure to the London Economics valuation of £293 million. Having spent over £500,000 on the research work, Government has taken the results and increased the value by 30% (from £293 million to £380 million) without any survey evidence or results as a basis for doing so.

This manipulation of the survey results to push up the costs by 30% is entirely

discreditable and unscientific. Why bother to fund such expensive survey work if Government is then prepared to take such arbitrary action to inflate the survey results? This willingness to inflate the costs calculated by the survey is in striking contrast with the refusal of the consultants and Government to countenance any consideration of valuing benefits such as quarry restoration.

Implications of the Research Results

Officially, the results were intended to guide policy. The consultants clearly felt that the results could be used to set taxation levels. However, a key result from the research is that there is some level of externality or environmental cost associated with quarrying, and that these perceived externalities will vary significantly from site to site.

In practice, taxing aggregates by volume as a proxy for externalities will do little to reduce these externalities. Given the serious questions which in practice remain over the validity of the research results as a justification for tax, the environmental benefits of the voluntary/regulatory New Deal package proposed by the QPA (and since rejected by Government) have been given added emphasis.