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NORTHERN IRELAND'S EXPENDITURE NEEDS: A PRELIMINARY ASSESSMENT

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On behalf of the Assembly Research and Library Services

The Northern Ireland Executive has been working to establish the level of need for key public services in Northern Ireland relative to England in Health and Social Care, Education, Housing, Training, Selective Financial Assistance to Industry, and Culture, Arts and Leisure. This report provides a contextual summary of the use of needs assessment models in the UK and addresses the current debate over the Barnett Formula. It focuses on the Needs elements of the five available Northern Ireland Needs and Effectiveness Evaluations. It presents a critical overview of the methodologies employed and explores the question of convergence with English spending. It also makes a number of recommendations in relation to the potential use of the Northern Ireland Needs and Effectiveness Evaluations in discussions with HM Treasury and more generally in relation to the Barnett Debate.

Library Research Papers are compiled for the benefit of Members of The Assembly and their personal staff. The Public Finance Unit is available to discuss the contents of these papers with Members and their staff but cannot advise members of the general public.

FOREWORD

This research was commissioned by the Public Finance Research Unit of Research and Library Services to provide a preliminary assessment of the Northern Ireland Needs and Effectiveness Evaluations. The commissioned research conducted on behalf of Research and Library remains the opinion of the author.

The purpose of the research was to support the business of the Assembly and facilitate debate on a key area of policy: the Northern Ireland Needs and Effectiveness Evaluations. The paper presents the expert opinion of Professor Arthur Midwinter. He is currently an adviser to the Finance Committee of the Scottish Parliament and has published on a range of issues including needs assessment, the Barnett Formula and the politics of devolution finance.

The Northern Ireland Executive has been working to establish the level of need for key public services in Northern Ireland relative to England. Detailed needs and effectiveness evaluations have now been carried out in Health and Social Care, Education, Housing, Training, Selective Financial Assistance to Industry and Culture, Arts and Leisure. These six areas account for some 75% of planned expenditure in Northern Ireland. Five of these evaluations have been completed, and were released by the Executive to the relevant Assembly Statutory Committees in August of this year. The evaluations are expected to give a better understanding of how effective these key areas of public spending are in meeting the priorities set out in the Programme for Government.

The report provides a contextual summary of the use of needs assessment models in the UK and addresses the current debate over the Barnett formula. The author argues that the Northern Ireland NEEs do not provide the data to support the argument that Northern Ireland needs are higher than in the Treasury model. The paper also goes on to warn that the revised needs assessments for Northern Ireland would still result in lower allocations than at present. The author suggests that there is a lack of financial data in the public domain to support the Department of Finance and Personnel (DFP) position that convergence is occurring. The author also suggests that the projections on the future rate of convergence, presented recently to the Assembly by the Department, are greater than one would expect.

The report concludes that the Northern Ireland Needs Assessment should be treated with caution. They do not provide a robust case for additional resources and require further research to provide the necessary evidence to support the case for more resources for Northern Ireland

We believe this is a timely piece of research that will be of interest to Members, Assembly Committees, Clerks and Researchers in their deliberations of the Northern Ireland Needs Effective Evaluations, the ongoing debate on Barnett and the draft Budget 2003-04.

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SUMMARY OF KEY POINTS

1. This paper provides a preliminary assessment of the Northern Ireland Executive's Needs and Effectiveness Evaluation (NEE) reports, to assist members to consider their relevance in the budgetary process.
2. It provides a contextual summary of the use of needs assessment models in the UK, considers both judgmental and regression-based approaches, and concludes that the more sophisticated regression-based approaches could not be used to assess the spending needs of the devolved administrations, as this would lack statistical validity. The Treasury model is likely to form the basis of any such review.
3. The paper also addresses the current debate over the Barnett formula, and shows there is much confusion over its principles and practice. In particular, there is doubt over the conventional view that Barnett is a formula for promoting convergence of per capita expenditure across the UK.
4. The NEE reports contain two levels of analysis, the straightforward *updates* of the Treasury model, and *revised* versions of it. The paper argues that these are of little relevance to the resource allocation process in Northern Ireland, and that in the case of the revised models, the objectivity and plausibility of several of the indicators selected, and the weights applied to them, is questionable.
5. The paper makes a number of recommendations to the Assembly. These are:
 - that the Assembly should attempt to obtain time series data from 1991 for comparable devolved expenditure per capita to assess whether a sustained convergence effect has been operating in Northern Ireland;
 - that the Assembly should obtain data which compares Northern Ireland's Needs Assessment indices across the 1979, 1994 and 2002 updates of the Treasury model;
 - that the Assembly obtains for each programme a precise exemplification of the calculation of Northern Ireland's needs index in the revised models;

- That the Assembly obtains a detailed rationale for each change to indicators and weights in the revised models, so their objectivity and plausibility can be independently assessed.
- All of the foregoing recommendations can be provided directly by the Northern Ireland Executive. However, I am concerned that there may be unrealistic expectations that Northern Ireland would gain from a needs assessment exercise. As the Treasury model now stands, it is
clear that it would not do so, and the issue should be treated with caution. In addition, my view is that the Assembly would be well advised to ignore these needs assessments in budget appraisal, as they are at best imprecise benchmarks based on Whitehall decisions.
- Finally, the paper recommends for further research to assist the Assembly's consideration of the Draft Budget in September, to assist in its consideration of the effectiveness element of the NEEs, and to assess the extent to which these evaluations are reflected in the budget for 2003-4.

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1. THE SCOPE OF THE PAPER

1 The Northern Ireland Executive has recently produced Needs and Effectiveness Evaluations for five spending programmes, namely *Financial Assistance to Industry; Education; Housing; Health; and Training and Vocational Education*. The objectives of these reports were twofold. Firstly, to help develop a robust case for changes to the Barnett Formula in the context of the 2002 Spending Review; and secondly, to inform the budget process by helping to provide a better understanding of how effective these major areas of spending are in delivering the priorities the Executive has set out in the Programme for Government (Northern Ireland Executive Budget 2002-3).

2 My concern is with the first of these topics. The Executive's approach is clearly set out in one of the Needs and Effectiveness Evaluations:

"The initial focus of the exercise was a needs assessment exercise to establish an indication of need in Northern Ireland relative to England in order to inform the Executive, at an early stage on the strength of the case for discussions with HMT on changes to the Barnett formula. The analysis below includes information on relative spending patterns and the needs that the programmes are seeking to address. The approach to such comparisons, using the methodology based on the Treasury's Needs Assessment Study, is to identify the cost factors that affect the level of spending required to ensure comparability and sustain parity in the level of service in NI compared to England" (1).

3 My remit is:

"To provide a preliminary assessment of the Northern Ireland Needs and Effectiveness Evaluations for members, committees and researchers, and to advise them of their relevance to budgetary allocation."

This would require completion within the calendar month to inform the budget discussions between September to November 2002.

4 Within the overall aim of the project, the paper is required to meet the undernoted objectives:

- to provide a contextual summary of the use of needs assessment models in the UK context, including the Barnett formula, and summarise the ongoing debate over the Barnett formula.
- to consider the rationale for developing Needs and Effectiveness Evaluations for Northern Ireland and assess their validity for such purposes;

- to provide a critical appraisal of the methodology used, assessing its robustness and validity for resource allocation;
 - to consider the plausibility and reliability of the indicators, weights and data sets; and
 - to identify the need for further research to assess the implications of the Evaluations for budget allocations in Northern Ireland.
- 5 My approach is to address each of these objectives in turn, in a way which is intellectually rigorous yet intelligible to the non-specialist. Too often this type of evaluation is conducted within the private language of the practitioner, which conceals more than it reveals. The paper therefore provides a summary of the *limits* of such exercises, which are often exaggerated by their proponents.

2. THE ART OF NEEDS ASSESSMENT IN THE UK

- 6 Needs assessment is a regular feature of resource allocation in government, necessary in the absence of market criteria in the public sector. The purpose of the exercise is to estimate what political institutions require to spend to provide services to a common standard in the UK. The emphasis on the word 'assessment' rather than 'measurement' reflects the fact that the techniques are imprecise, providing the broad order of magnitude of spending needed rather than an exact costing. In practice, all needs assessment models require judgement. In *normative* models the needs indicators are selected wholly on a judgmental basis, whilst in *empirical* models, the indicators and the allowances (weights) made for them are determined through statistical analysis. Specialists in the field tend to equate needs assessment with the use of formulae to guide resource allocation, but even in systems of detailed bargaining, the arguments will be made on the basis of the need for or use of a specific service. Needs assessment does not necessarily require a formulaic model with agreed indicators, but it does require a fine meshing of political and technical judgement.
- 7 Needs assessment models are used mainly to allocate resources to service delivery bodies where some criteria of need is required to provide a transparent rationale for the allocations, rather than through direct bargaining between an Executive and its agencies. Health and local government needs assessment

models are the most advanced in the UK. Economists tend to favour *empirical* approaches over *normative* approaches to needs assessment because they provide a mathematical basis for selecting and weighting indicators. My own position is more sceptical, in recognition of the limits to empirical methods. For example, extensive use is made of the statistical technique of multiple regression analysis in resource allocation formulae in health and local government in Great Britain. This is a statistical technique for identifying associations between needs factors – usually demographic, economic or geographic – and the demand for or cost of services. But as the Audit Commission recognised, value judgements and political decisions remain in such approaches (2). The problem is that statistical analysis always contains margins of error. Needs assessment formulae are simplified models of reality, therefore imprecise and requiring interpretation and judgement. Regression analysis can be used to identify associations and relationships, but requires an underlying *causal* theory in which an independent variable influences a dependent variable. For example, the need for education is driven mainly by pupil numbers. However, population sparsity can influence the *cost* of providing the service. Small schools in rural areas tend to have higher costs of provision. The underlying theory is that sparsity *causes* high expenditure – i.e. the statistical association has to be interpreted in terms of cause and effect, because a statistical correlation of itself is not evidence of association. In this case, clearly causality flows from sparsity to costs, not costs to sparsity.

8 In needs assessment models, *needs indicators are assumed to influence the utilisation of or expenditure on services*. The basic aim is:

- to identify the relevant factors;
- to quantify the size of the influences; and
- to assess the strength of such relationships through a statistical model, which is used to predict what public authorities need to spend to provide a standard service.

These statistical models provide a partial explanation for differences in expenditure. In the foregoing example, sparsity will explain some, but not all, of the *variation* in costs between education authorities. Other indicators may increase the degree of explanation, and some will remain unexplained. This is termed the residual (the proportion of variance unexplained).

- 9 Non-specialists are often over-impressed when the regression is expressed in algebraic terms, but the limitations of such methods should be understood. Firstly, although they seek to assess the cost of providing a standard service, in practice, this is never defined, and reliance placed on the regression results to define 'standard' which is then used to distribute the sums available. The underlying assumption is that 'need' will be reflected in either the *usage* of a service, or the *cost* of a service, therefore what is being measured is what authorities would require to spend to provide average usage or average spending relative to the incidence of needs indicators. However, in practice, such systems often rely on proxy measures and a range of potential indicators exist, -e.g. for sparsity or poverty and deprivation. The 'best' formula is seldom obvious, and requires political judgement. Differing formulae, with different resource implications, can often pass the necessary statistical test. Moreover, the underlying assumption is that differences in need will be systematically related to either utilisation or expenditure, but not differences in policy or efficiency, but in practice, *variations will reflect all these factors*. Finally, such models only identify *general* factors, not unusual observations found in a minority of public authorities (3). The greater appearance of objectivity should not be conceived as delivering objective answers. In practice, such formulae are regularly contested by those adversely effected, and a skilled analyst can always provide a plausible and statistically valid alternative.
- 10 These statistically advanced approaches however, are of little relevance to resource allocation to the devolved administrations, which are too few in number to provide statistically valid analysis (4). The regression based systems used for health and local government are among the most complex systems in Europe. Simpler demographic systems are more common, particularly in local government (5). The Treasury Needs Assessment Study of 1979, by contrast, was a heavily judgmental approach, which made more limited use of an evidence base. (6) It was undertaken to try to provide a more rational basis for resource allocation to the territorial departments in anticipation of devolution. When the devolution agenda stalled in 1979, the study was used to justify introducing the Barnett formula. The NAS approach was to identify key client groups and additional factors which influenced expenditure need for particular services. The allowances for these factors were determined judgementally – although informed by experience and evidence – and not by statistical analysis.

11 Discussions of the purposes and methodology of this study are numerous, but it is important to distinguish between the *formal account* of the study in the public domain, and *interpretations* based on the recollections and perspectives of participants gathered by researchers. Secondly, the study is often used to argue the case for a new needs assessment - despite the caveats made in the original document - by critics of the present block and formula system who believe its outcomes are unfair, usually to particular parts of the UK (7). The current system is often described simply as the Barnett Formula, although the formulaic element only applies at the margins, and historic expenditure patterns are of much greater significance. The *baseline* forms the core of the new budget, and the *formula* allocates shares of expenditure changes on a population basis. The Barnett Formula is named after Joel Barnett, the Chief Secretary to the Treasury at the time it was introduced. Basically, it provides that, when new plans for public expenditure are being settled, the devolved administrations receive increases in comparable expenditure programmes with England based on their population shares. As it only applies to changes in spending plans, the underlying baselines remain unaffected.

3. CRITICISMS OF BARNETT

12 Barnett was introduced in 1978 for Scotland and Wales, and extended to Northern Ireland in 1980. As one former administrator has noted '*the ability of such a system to meet local needs adequately depends upon the adequacy of the pre-existing baseline established by custom and usage*' (8). Critics of the block and formula approach argue that it is not needs based, even when they themselves recognise that "needs cannot be objective". (9) In practice however, *allocations* continue to reflect the higher needs which it is argued the devolved administrations have, because the historic spending totals were themselves determined by arguments over needs relative to the benchmark of English spending, even though need was not defined in formulaic terms. That is, British Governments have long recognised that the expenditure needs of the three territorial departments were above the UK average, even if the extent of that greater need has not been measured with precision (10).

13 A related criticism is that the present system will result in *convergence*, the gradual equalisation of per capita spending across the UK, and this would be inequitable given the much higher needs of devolved administrations whilst others criticise it for *failing to deliver convergence*. However, in practice, the objective of applying the Barnett formula was to bring closer alignment between need and spending, not to promote convergence. There is much confusion over principles and practice. It is well recognised that the theory that the strict application of the Barnett formula would lead to convergence is correct. However, full convergence has never been policy, and in practice, changing population relativities and spending allocations made *outwith* the formula have operated to maintain higher levels of per capita spending in the devolved administrations. This was confirmed in the recent paper by the DFP in Northern Ireland (11).

14 Because of the importance of the baseline, Barnett is seen by observers as protecting the historic spending advantages of the devolved administrations. Advocacy of a new needs assessment often reflects territorial interests, in the expectation of 'gaining' from such an exercise. Given the politics of needs assessment, that is a rash assumption to make (12).

15 The Treasury study was undertaken as part of the preparation for Scottish and Welsh devolution from the period 1976-1979. The report noted that the Government intended that devolved expenditure would be settled in the annual expenditure round, on the basis of an assessment of relative needs made jointly with the devolved administrations. The study gathered relevant objective indicators to help make informed decisions on public spending. It inferred that the formula would *not* be deterministic in resource allocation, as

"no neat formula could be devised to produce fair shares for Scotland (and England, Wales and Northern Ireland) in varying circumstances from year to year. The task involves judgements of great complexity and political sensitivity....." (13).

16 Indeed, the report is replete with caveats about the *limitations* of the exercise, and the need for political acceptability. For our purposes, the key points were:

- it is a long-established principle that all areas of the UK are entitled to broadly the same level of public services and that expenditure on them should be allocated according to their relative needs:

- in no service was it possible to express the main policies in terms of the achievements of clearly defined standards;
- provision according to needs does not mean that identical provision is made in all areas;
- not all factors taken into account were quantifiable;
- it is not therefore reasonable to construct a single coherent model of policies, standards and levels of service to which could be related all the objective information needed to determine relative expenditure needs;
- the results were by no means final.
- the departments who have carried out the study agree that the methods of assessment are a long way from providing a wholly definitive means of expressing the relative expenditure needs of the four countries.

17 Their conclusion, therefore, is that the needs assessments were imprecise, and not suitable for use directly in resource allocation. To quote from the report directly:

“the study does not provide a method of determining allocations, but is a display of relevant data intended to help towards better-informed judgements” (HM Treasury 1979 p 30, para 7.8)

18 The approach was mainly a client group method, which identified client numbers, the additional needs of certain categories of people for each service, and additional costs of differing circumstances (e.g. sparsity) of delivery. Deviations from this approach were necessary to treat existing *road networks* and *housing stocks* as objective factors driving expenditure needs. The results of the study record all three devolved administrations having expenditure needs *above* the position in England, but with Welsh having spending levels marginally below need.

Table 1: Needs and Spending Indices, 1979

<i>Nation</i>	<i>Needs Index</i>	<i>Spending Index</i>
England	100	100
Scotland	115	122
Wales	108	106
Northern Ireland	130	135

Source: HM Treasury 1979

19 The methodology therefore adopted the *principle* of funding a standard service, but did not *measure* this in any way. For most services it used a *weighted population model* in which client group numbers form the basis of the expenditure need, with additional allowances for secondary factors added to it. Weights are applied to client group numbers. These weights were not determined through regression analysis, but by judgement. In the case of housing it produced a composite measure described as a weighted sum of specific indicators. The approach was to consider:

“...what evidence was available to support their own expert, but subjective judgement” (para 4.21)

20 These judgements were informed also by evidence of needs and cost variations from local government spending. Where possible, decisions were made by consensus between the departments and the Treasury but major disagreements remained, for example, over the weight to be applied for morbidity in the *health* service. The report refers to various speculative judgements being made in selection and weighting of indicators, so the outcome is tentative. These included

- in *personal social services*, weights were obtained from a subjective interpretation of fairly limited evidence’, (para 5.8);
- in *education capital*, weights employed were simply a subjective judgement in the absence of objective evidence (para 5.12);
- in *local environmental services*, the group could not reach even a provisional judgement on the weights required to combine them (para 5.20);
- in *law, order and protective services*, the report records “the limitations of the approach to assessing relative needs” and “the lack of objectivity in some key indicators”, making it a reasonable but broad reflection of expenditure needs. (para 5.26);
- in *industrial and economic activities*, factors were identified but *not* weighted.

21 It is not surprising that the Government of the day did not utilise the work as a resource allocation model, but used it simply as a benchmark to inform decisions. It has to be said political judgement rather than precise measurement remains necessary today, as needs assessment is not rocket science, even with the

recent statistical developments considered, and the problem is more complex as we can no longer assume a common policy framework across the UK as devolved administrations have policy discretion. The Treasury decision, therefore, to continue the simpler block and formula approach, was clearly the best option available, when needs assessments can only provide the broad orders of magnitude of expenditure need differences rather than precise measurement. One recent major study concluded that

“...the introduction of the (Barnett) formula indicated that the Treasury accepted that the current balance of spending between the UK and the territories identified in the review was sufficient to justify entrenching it through introducing a population formula” (14)

22 Critics of the current system often assume that the absence of a needs formula means that it is by definition inequitable. In practice, the allocations have been built up on the basis of arguments over needs, and accepted by successive governments as providing acceptable differences in expenditure for the territorial departments. Under devolution, some advocates of change believe a needs assessment exercise is necessary to legitimise the block grant system, whilst other simply assume that the particular territorial concern would benefit from such a shift (15).

23 Treasury remains conscious of the limits of needs assessment, as their evidence to the Treasury Committee on the Barnett formula in 1998 reveals. To sum up, they argue that *‘there is no scientifically objective way of saying which factors justify, which level of expenditure’* (p 14) and at the *‘end of the day it is a matter of political judgement’* (p 134). The 1979 study itself was by *‘no means an objective exercise’* (p 136) and it is *‘important not to underestimate the scale of an exercise aimed at comparing relative need’* (p 175).

24 A recent Treasury statement confirmed that official support for Barnett remains, as it

“has proved very durable. Although it is not set out in stone, there are no plans to review other than for routine updating of technical factors such as population factors, unpredictability factors and Resource Accounting and Budgeting. It is not clear what the implications for the devolved administrations would be of a review of needs and what would replace Barnett”. (16)

25 Moreover, a review would not resolve the issue, but simply alter the basis of disagreement away from the inadequacies of Barnett to the choice of indicators

and the weights applied to them. The arguments over resource allocation are fundamental, and would remain so after a needs assessment exercise, although the focus of the argument will change to the needs model rather than the Barnett formula. This is acknowledged in a recent report for the Assembly, which noted that there are “endless arguments” about needs-based systems such as Standard Spending Assessments, and that the 1979 study was

“as much a political exercise as it is a technical exercise. It is not a silver bullet and it is not a panacea, it is not nuclear science certainly, it is an attempt to get a broad view and that broad view is influenced by the political dimension as much as anything else”. (17)

- 26** Advocates of needs assessment often regard it as providing a rational basis for resource allocation but the state of the art is a long way from providing a holy grail. In practice, needs assessment is a political and technical exercise, in terms of the selection and weighting of indicators given the range of potential variables.

4. NEEDS ASSESSMENT IN NORTHERN IRELAND

- 27** The current Needs Assessment exercise in Northern Ireland was conducted by the Department of Finance and Personnel and the Economic Policy Unit in consultation with all Government Departments, and compares devolved expenditure in Northern Ireland with England on health, education, environment, housing, roads and transport, employment and enterprise. The Needs Assessment 2000/1 report states that the methodology is based on that used by the Treasury in the 1979 study. It takes each expenditure programme in turn and breaks it into a number of sub-programmes with current and capital expenditure components, identifies a number of objective factors deemed to influence need for expenditure and applies weights to each of these based on the proportional amount spent by England on each component. These are aggregated and expressed as a percentage of English spending, with England scoring 100. In 1994, the Treasury model was updated, and indicators reviewed, as part of a Treasury exercise. In the current exercise, a similar approach was followed, except that the revisions to the indicators and weights reflect judgements made within the Northern Ireland Executive departments, *not decisions agreed with the Treasury and the other devolved administrations*. The results of the 1994 update have not been published, though these were contested by the Northern Ireland

Office at the time. (Updated indicators are simply those used in 1979 with current data).

- 28** The Treasury methodology is normative and judgmental. As indicated earlier, it is a client group method, in which clients are regarded as the primary determinants of expenditure need for a service. Further secondary indicators are selected which cause additional need for a cost of services. These same principles underpin grant distribution methodologies in the NHS and local government. The key difference, however, is that in empirical models, indicators are selected and weighted through a combination of judgement and evidence, with statistical validation the test for inclusion in the formula.
- 29** In essence, the model is a *causal* model of need, in which the independent variables (demography, geography, socio-economic factors) have a causal relationship with the dependent variable (expenditure or service usage). Indicators have three criteria to pass for inclusion in the formula. These are that the indicators should be:
- *objective* measures of need, unaffected by behavioural, policy or efficiency differences;
 - *plausible* determinants of need, and
 - *statistically validated* through regression analysis.
- 30** The Treasury approach relies on objectivity, plausibility and judgement. That is, the *weights* applied to the indicators may be informed by evidence, but are not determined by statistical analysis as in regression models. This places a heavy emphasis on the *objectivity* and *plausibility* of the indicators as key tests of the relevance of indicators.
- 31** For evaluation purposes, therefore, it is essential that the underlying plausibility arguments are *transparent*, and based on *realistic assumptions*. It should also be noted that a few services are not included in the Treasury model, and these departments have produced original models using the same approach.
- 32** The key issue of interest to politicians and the public is what impact a change from the Barnett formula to a needs-based formula would have on the Northern

Ireland budget. The underlying assumption in the Record of Seminar on Budget 2002 in the Assembly earlier this year is that Northern Ireland is disadvantaged by Barnett, and the Executive raised this with the Treasury in budget negotiations regarding its low level of percentage increases in expenditure, which would promote convergence with England.

33 The assumption is mainly based on interpretations of the impact of Barnett *at the margins*, and reflects ...“ *a concern that the Barnett formula is not satisfactorily meeting our needs and the Executive is committed to challenging that*” (p 1)

34 The paper goes on to focus on how the Barnett formula promotes convergence of per capita spending in Northern Ireland towards the English average, and that it is this convergence effect which concerns the Executive most (p 26), particularly when the nominal increase in England is of the order of 10%, then “*you get massive convergence effects*”.

35 Regrettably this is simply a projection of convergence using data in the Spending Review, but research has shown that in practice, because of a combination of population change and non-formulaic decisions *outwith* the formula, little evidence of convergence in terms of spending per capita has been found to date. (18) Moreover, the DFP has not *produced* the data on which its projection is based to permit independent evaluation.

36 In the 1979 study block spending in Northern Ireland was 35% above England, whilst Treasury calculations for the Treasury Committee Report of 1998 found block spending to be 32% higher. The 1979 study assessed Northern Ireland's expenditure need at 30% above England, and in the 1994 update, the figure was 22%. As the report also notes, it is

“an exceptionally difficult exercise to get exact comparisons on this. Even when you do that, the results are quite sensitive to errors in calculating the objective factors and in calculating comparable English spending”. (p.28)

37 The convergence effect only applies to marginal changes in expenditure. It does not take account of decisions taken *outwith* the Barnett formula, and population changes can offset the trend. The problem for analysts is that the only available data in the public domain is for identifiable expenditure, which includes non-block spending. Block spending accounts for around 90% of identifiable expenditure, so it provides a reasonable proxy. However, definitive judgements would require

precise spending data. To assist Members consideration of the issue, I have used the Treasury's identifiable expenditure data for the devolved services to which Barnett applies. This excludes agriculture, fisheries and food; law, order and protective services, and social security. My calculations are set out in Table 2 below, and show no overall convergence over the five-year period, indeed the pattern is inconsistent. For devolved services, the Northern Ireland Index is 135, and this increases to 142 when *all* identifiable expenditure is used.

Table 2: Identifiable Expenditure on Devolved Services Within Barnett

Year	<i>NI Spending Per Capita</i>	<i>England Spending Per Capita</i>	<i>Index (E=100)</i>
1996-7	2599	1985	131
1997-8	2664	2014	132
1998-9	2770	2090	133
1999-2000	2920	2209	132
2000-1	3235	2398	135

(Source: HM Treasury Public Expenditure Statistical Analysis)

38 The Needs and Effectiveness Evaluation reports vary in the presentation of data regarding need. If we want a simple comparison with the Treasury model, then all that is required is a straightforward update of the 1994 results with current data. However, the exercise was complicated by the inclusion of revisions to the model as part of the exercise of challenging the adequacy of the current allocations. Further, in the case of vocational training and financial assistance to industry, there was no existing Treasury model, and these were developed in-house. At a Public Finance Seminar held by the Department of Finance and Personnel on 19/20 September, it was reported that Northern Ireland's Need is 126, which is *below the current spending index*. It must be stressed, however, that obtaining accurate current data is problematic.

39 The results of the NEE reports can only be tentative, as they have not been accepted by the other departments and administrations. Of the five programmes

examined, the results in education and health have the most significant implications in terms of resource allocation as together these account for around 62% of the current Departmental Expenditure Limit. It should also be remembered that the DEL accounts for only 54% of the devolved budget, (and excludes Annually Managed Expenditure such as Social Security) but this is the element to which the Barnett formula is applied. (In Scotland, the DEL accounts for around 84%).

40 In the other programmes, housing, vocational education and training and financial assistance to industry, all the current needs models considered whether updates or revisions *would allocate less to Northern Ireland* than current spending, with shortfalls of £120m in housing; £110m for FAI; and £10m for VET. In the case of education, the paper calculates a revised need index of 134, and the final result argues that *need exceeds expenditure* by £114m, or 8%. The revised health model adds £100m to health spending.

41 The health report is a major piece of research, which provides detailed consideration of a whole range of needs variables. Again, its *revised* model would provide additional resources to Northern Ireland compared with the simple *update* model which is 8% above England, and NI expenditure is £20m *below* this need (ie less than 1%). The cumulative effect of these calculations *does not* suggest that one could be confident that opening up the Barnett formula would result in resource gains for Northern Ireland. On the basis of the Treasury model developed in 1994, the result would be a lower allocation than at present. On the two new services for which the models were developed by the department, lower allocations are also predicted. In housing *both* Treasury and NI models would result in lower allocations. For health, the update would be broadly neutral (+0.9%) whilst the revised model would increase the health allocation by 7%. The question is *how robust* are the revised models. These findings are summarised below:

Table 3: Differences Between Needs and Expenditure in Northern Ireland

<i>Needs Assessment Exercise</i>	
<i>Programme</i>	<i>Difference</i>
Housing	-£120m
Financial Assistance to Industry	-£110m
Vocational Education and Training	-£10m
Health	+£100m
Education	+£114m
Total	-£26m

Source: Needs and Effectiveness Evaluations Reports

5. PROBLEMS WITH THE REVISED MODELS

42 The reports seek to highlight weaknesses in the current Treasury model which could be raised in any review of the Barnett Formula, but also to inform resource allocation decisions in Northern Ireland. For the analyst, the main difficulty is that these revised models operate on the same methodological basis as the Treasury model, whereby indicators are selected and weighted on the basis of ‘informed judgement’ or ‘interpretations of research evidence’ – in contrast to regression-based models whereby the weights to be applied are determined empirically through the statistical analysis.

43 In this section, I concentrate on these *elements* of the revised models where the objectivity and plausibility of the new indicators is questionable, and where further research evidence is needed to strengthen the analysis. In such an exercise the reports should set out in a transparent way the *rationale* for the changes and the *evidence* on which the judgement is made. In practice, several reports fail to do this, and the gaps are highlighted below.

44 The *housing* analysis is based wholly on the executive summary as the main report concentrates on effectiveness evaluation, not needs assessment. It

identifies the undernoted variables as the key needs indicators – number of public sector houses per capita; number of housing benefit recipients per capita; public sector stock condition; private sector stock condition; and number of homeless persons per capita. It focuses on revisions to the existing model, whilst acknowledging that for several indicators the effectiveness of the Housing Programme has *reduced need* relative to England.

- 45** However, the report argues that there are fundamental weaknesses in the Treasury model which presents a distorted and misleading picture. The 1979 Treasury study assessed Northern Ireland's needs at 159, compared with an expenditure index of 135. The revised model shows needs have fallen to 123. The three significant factors are household/dwelling balance, substandard dwellings and overcrowding for housing capital, and public sector housing stock and loan charges for housing current spending.
- 46** There are two fundamental doubts over the housing report. Firstly, although it *asserts* that the Treasury model has a number of data and methodological limitations which required improvements to be incorporated into the model, it does not set these out in the report. *Therefore, we have no basis to judge whether the revisions made are valid, and as these increase Northern Ireland's needs index from 112 to 123, they should be set out transparently for independent audit.* (See Housing Executive Summary pp 243) The problem is a needs assessment formulae must exclude factors which reflect the policy choices of the devolved administrations – on the grounds that Devolved Administrations should not attract resources simply because they *choose* to incur expenditure for specific purposes. Secondly, the report points to a number of *policy issues* of relevance to the Northern Ireland situation (p 3), but these would *not* be regarded as objective criteria for use in a needs assessment model (although they could be discussed directly with the Treasury in budget bargaining).
- 47** The refinements to the Treasury model proposed for housing cannot be assessed, because they are not identified, therefore the rationale for their selection and weighting is unknown. *It cannot be assumed that these changes would be acceptable to the Treasury.*
- 48** The *Financial Assistance to Industry* report adopted the Treasury methodology to "identify the cost factors that affect the level of spending required to ensure

comparability and sustain parity in level of service". (p2) It observes that the FAI study is complex as other services have "much clearer responsibility to meet a defined need". It ranked the indicators of need in order of importance, noting that it was difficult to identify a client group, and made use of micro-economic indicators related to regional competitiveness.

49 The indicators in order of ranking were:

- productivity gap with major industrialised countries;
- non-employment rate;
- business R & D per employee;
- % of employees involved in R & D;
- fatal injuries per employee;
- exports per employee;
- % regional GDP due to tourism;
- % of firms without a web presence.

50 These indicators were calculated as a weighted average composite indicator. This report has similar weaknesses to the housing report. It does not produce a rationale for the selection of the indicators which sets out the merits of the case in a transparent way. Obviously, the last factor has some relationship with industrial development but it is not treated systematically in this report. In addition, the report suggests two local factors for consideration, the need to develop the gas industry and to react to the poor image abroad. These would be regarded as *policy objectives* rather than need indicators, as they reflect institutional choice, not relative need.

51 The report itself concludes that the needs assessment is limited and it recognises the influence of departmental policy in the selection of indicators. Thus:

"These factors made the DETI Needs calculation more uncertain and less deterministic. This means the figure for required expenditure is subject to a substantial margin of error. The overall total derived should therefore be seen as providing a rough indication only" (p 10).

52 These weaknesses make it of limited value in decision making. It constitutes a crude benchmark rather than a reliable needs assessment basis for informing resource allocation.

- 53** The *vocational education and training* report sets out its overall purpose as to provide an assessment of the need for and the effectiveness of the use of resources provided for vocational education and training in Northern Ireland, to ensure a better framework for policy decisions, and their link with budgetary allocations and the achievement of better value for money. The study does not cover *all aspects of departmental* activity. The report notes that the 1979 Study did not contain needs indicators for Vocational Training related programmes, so the department developed a new model based on the main client groups. Consideration was given to making allowances for sparsity and building costs, but discounted for lack of robust evidence to support these.
- 54** In the case of the *Employment* programme, the study identifies the number of 16 and 17 year olds not in education and the number of Disability Living Allowances Claimants as client groups. Six indicators are included in a weighted measure, and it concludes that the needs index for Northern Ireland is 113, which translates into an expenditure need some £10m *below expenditure*. The paper also notes the significantly lower proportion of DLA claimants who participate in the programme - which raises doubts over its validity as a need indicator – despite its benefit to Northern Ireland in the analysis (Index=248). This model is fairly straightforward, even though there is no existing Treasury model for assessment.
- 55** In the *Higher and Further Education* programme, the paper *adds* two additional factors to the Treasury model, which is based mainly on student numbers, with additional weights for differences in staffing, course and maintenance costs. The needs index produced is 122, although this is heavily influenced by the model for further education. The paper does not quantify this effect, or the weight given to part-time students in the analysis. The impact is significant however, as the needs index falls to 107 when part-time students are excluded, reducing the expenditure need figure of £434m to £382m, compared with expenditure of £360m. This treatment of part-time students requires *further exposition and justification*. So too, does the inclusion of a measure relating to *population without qualifications* as an indicator for higher education.
- 56** The *education* report is based mainly on the Treasury model, driven by pupil numbers, with weighting for age distribution, nursery age children, salary costs, deprivation, free school meals, special educational needs pupils, trends in school

population, and sparsity, substantial accommodation and instruction costs. This delivers a needs index of 134 relative to England.

57 The paper notes that over the last decade there has been a reduction in need caused by school roll decline, a process, likely to continue in future years. Nevertheless, the much greater proportion of pupils over 5 (per head of population) is the primary determinant of expenditure need. Revisions to the Treasury model include:

- increasing the deprivation weighting from 1% to 6%;
- revising the school meals factor to reflect free meals only;
- adjustments to the work need indicator for capital expenditure;
- adjustment to the cost difference indicator.

58 The adjustments for deprivation make a modest difference to the needs assessment. The more significant impact is from the adjustments to the capital needs indicator which increases the effect of population change and of the substantial backlog. The shift from a measure based on population growth to pupil populations for minor works is plausible. It is more difficult to assess the merits of introducing a *backlog* of work measure. How does this differ from a measure of substandard estate? *The paper provides no evidence to support this assertion, yet it has a crucial impact on the Needs Index.*

59 The adjustments made to the Treasury model significantly increase the needs index. In the absence of an exposition of the logic and the data underpinning this judgement, an objective assessment of the merits of the change is impossible. *It should therefore be interpreted with caution, and there should be no assumption that this would be acceptable to the Treasury.* As the report notes:

“Whilst most of the changes to the model are based on evidence-based analysis there are a few that are necessarily more subjective in nature. Therefore, whilst the results indicate that Northern Ireland is currently underfunded in relation to education, the sensitivity of the model to a few of the assumptions (my emphasis) used in its construction means that the precise scale of underprovision is less certain”

The needs assessment for current expenditure is fairly robust. The needs assessment for capital expenditure is less convincing because of the inadequate data presented.

- 60** The *health and social care* report provides the most extensive discussion and thorough analysis of the needs assessment issue although important gaps remain. It shows close correspondence between need (108) and expenditure (107) for health and personal social services recording levels similar to Wales but lower than Scotland, using the Treasury model. Its modifications to the Treasury model increase the need index to 117, and it advocates further adjustments which would increase it to 121. It too notes that “the fact that Barnett makes no allowance for differential need is a critical obstacle in securing the additionality required” (para 44).
- 61** The report makes two sets of proposals, one which is based on objective evidence, and a second based on professional judgement supported by related research. This does *not* mean that the changes proposed have been subject to empirical validation through statistical testing, but simply made on the basis of interpreting research evidence.
- 62** The theory of need set out in the model places heavy emphasis on the impact of ‘deprivation and social isolation’ on need for services, and on sparsity as a cost factor. It notes that the 1994 Treasury update still contains assumptions based largely on informed judgements rather than research, and notes the developments in health needs assessment for resource allocation between health authorities *within* the nations of the UK. However, the update did *reduce* the weighting for *morbidity*, based on statistical results in the English NHS model – which is dubious practice and should be challenged. It is not sensible to assume that a statistical relationship found in England which has low levels of morbidity is relevant to allocations for the devolved administrations.
- 63** It notes that Northern Ireland has a high proportion of young people, and a low proportion of elderly people in contrast with England, although the former is now in decline, whilst the latter is growing. This has implications for needs assessments, as these groups have higher costs in terms of health care. Expenditure on the very young (0-4) tends to be above average, and on the elderly significantly above. It claims these population changes require a 1% increase in spending per year, (although similar calculations for Scotland published recently in the Scottish Budget document assume an increase of only 0.23% over the next three years (p102).

- 64** The Treasury model is based on population, weighted for age; morbidity; deprivation; fertility; and sparsity for Hospital and Community Health Services. The model for Family Practitioner Services is similar although the weightings differ. In Personal Social Services, the needs assessments are based on three population groups, (under 18, 18-64, 65+); deprivation weightings based on poverty, isolation and poor housing; disability and sparsity; density (children only); and resource cost differences based on earnings variations of professionals which is lower in NI and higher in London.
- 65** The paper recommends no fewer than fourteen adjustments to the Treasury model but regrettably, the information and data base on which such changes are recommended does not receive systematic exposition in the text. For example we are consistently told that Northern Ireland has a larger *rural* population than England (which it has) and receives an additional 12.5% for each person in rural areas (defined as *district council areas with a population density of less than 1 person per hectare*) but not provided with the specific measures, or evidence on sparsity costs. This is a gap in the analysis.
- 66** Of these 14 recommendations, six benefit England relative to Northern Ireland whilst the others benefit Northern Ireland and a few have significant resource implications and these are discussed below.
- 67** The first of these is that “the balance between the importance of morbidity and deprivation as needs factors has been shifted to give these *equal weight*”. (Main Report p 215). This decision is based on Northern Ireland research, and professional judgement, but this judgement is problematic, on grounds of plausibility.
- 68** There is no clear argument made in the paper over how deprivation/poverty *impacts* on health needs over and above increasing the prospect of poor health. We know that people in poverty are more likely to be in poor health, but that should be reflected in higher morbidity levels. In common sense terms, people need health care because they are ill, not because they are poor. This is recognised in the original Treasury study, which observed that:

“Deprivation will be reflected to a large degree in morbidity, but it also affects health care requirements in other ways e.g. those suffering social deprivation may require longer hospital stays to compensate for home conditions” (18).

- 69** By contrast, in the personal social services, deprivation is considered to be the most important additional factor. The Treasury arguments in the two cases differ, in that deprivation reflects *additional costs* of health care (longer stays) but *greater need* for social care (Interestingly, similar arguments were made over deprivation and PSS in Scotland, but statistical testing in recent years has failed to provide the necessary empirical validation and deprivation weightings have been retained in the formula on the basis of ‘expert judgement’.)
- 70** The report argues the case for a greater weighting for deprivation on the basis of NI research and professional judgement. It does not seem plausible that poverty would have a greater effect on need for health care than morbidity, when the causal connection would be greater poverty leads to greater morbidity which requires greater health expenditure. The conceptual weakness in the report is that this judgement is based on research which *treats* morbidity and deprivation as constitutive elements of health need, rather than being distinctive factors. This is the approach used in the York model in England (19). The report argues that “work on the Acute PoC allocation formula in Northern Ireland suggests that morbidity only accounts for around 14% of the explainable differences in needs which is much less than the 77% assumed in the Treasury model”. (Para. 290).
- 71** In such an approach, the assumption is that need cannot be measured directly, and therefore it is the *combined* explanatory power of the variables selected in a multiple regression which matters. This is often confusing for non-specialists, particularly when - as they often do – plausible indicators record negative relationships! Thus the York approach uses measures of morbidity and deprivation interchangeably as measures of need, and given the high degree of overlap between the variables (the statistical term is multicollinearity) it is not surprising that the Standardised Mortality Ratio (SMR) measure only ‘explains’ 14% of the variance. (This is the measure used in the 1979 Needs Assessment Study). In the work for the Arbuthnott Committee in Scotland eighteen variables passed the necessary statistical tests for a range of diseases, although the SMR measure was most consistently found to be in a statistical relationship with need. (20) The Treasury model separates conceptually the impact of morbidity and deprivation, whereas the departmental argument for greater weighting of

deprivation is based on an assumption that these are both measuring health need in the same way. *My own view is that the Treasury approach is correct, but this is an area where consensus is unlikely. In short, Northern Ireland would have to convince the Treasury of the need for change, and the outcome would be uncertain.*

- 72** The current Treasury model's assessment of Northern Ireland's additional need to spend delivers a weighting of +8% which is close to the existing differentials in terms of *morbidity* (+7%). Although the department sees merit in using other measures of morbidity such as the Jarman Index and the Standardised Illness Ratio, these are both subjective measures and should not be preferred over objective indicators such as SMR (21). The arguments for SMR are that they:

“ broadly reflect the cumulative morbidity and social experience of an area and provide more stable and comprehensive measures of morbidity than utilisation rates (or indeed contemporaneous deprivation indices)”. (22)

The case for change, either in the indicators of morbidity, or the weighting for deprivation, is not convincing.

- 73** The second issue refers to the *sparsity* weightings. On plausibility grounds there is a clear-cut case for expecting sparsity to result in additional costs of rural service provision. The report notes that “a cautious adjustment has been made to a number of sparsity factors based on NI research, which provides details of the costs of supplying community and ambulance services in rural rather than urban areas”. (Page 2.15 Main Report). However, no indication is given of the rationale for or the scale of the adjustment made.

- 74** In the *Hospital and Community Health Services* element, a sparsity adjustment of 12.5% is made, to compensate for the extra cost of providing services in rural areas. The report also suggests that the weighting could be as high as 30% on the basis of NI research, as it only relates to travel-related services. No consideration has been given to providing a sparsity weighting for hospital services, which has just been introduced in Scotland, and there is merit in pursuing it further.

- 75** The sparsity weighting for *General Medical Services* is based on Rural Practice Payments. These payments are currently under review, and therefore further updating will be necessary.

- 76** In the case of *Personal Social Services*, the report argues that the additional per capita cost associated with providing services in rural areas could be as high as 30%. Unfortunately, the NI research evidence is not presented, and although the argument is plausible, I would expect differing weights for residential care services from home care services. (Scottish evidence is that residential care is more common in rural Scotland, but statistical testing has *not* recorded evidence of higher costs. My own view is that this reflects the limitations of the statistical technique, but no sparsity weighting is allowed for Scottish social work authorities).
- 77** Whilst the health and social care report is the most developed of the papers, it too contains important weaknesses in terms of the realism of its assumptions, and the plausibility of the arguments which are made – all of which need to be transparent in the report, rather than simply referred to in the text.

6. CONCLUSIONS AND RECOMMENDATIONS

- 78** My remit is to provide a preliminary assessment of the needs assessment elements of the Needs and Effectiveness Evaluations. As a preliminary assessment, it is based on reading the documentation and assessing and interpreting the arguments on the basis of the materials presented, and my own knowledge of the subject matter. I have not been able to undertake any original research to assist the process. However, the Assembly's scrutiny role is to probe the assumptions and arguments of Executive proposals, and this paper is consistent with that function.
- 79** Firstly, it is necessary to comment on the underlying assumption running through the documents that the Barnett formula has an adverse effect on Northern Ireland. It is important to recognise that the formula element only applies to expenditure changes; that Northern Ireland historic expenditure advantage is largely protected in the baseline; that Barnett does not apply automatically to in-year changes and that specific problems can be raised in negotiation with the Treasury. In sum, any attempt to assess the convergence issue should be based on *total outturn expenditure*, not on the percentage increase in budget.

Moreover, the differentials will be affected by relative population change, and projections in *Population Trends* suggest that Northern Ireland's rate of increase will be less than England's over the next twenty years, thus partially *offsetting* any convergence effect. Further information is required from the Executive to assist the Assembly's consideration of this issue, who has not yet produced the figures to support this argument.

80 My first recommendation is that ***the Assembly should attempt to obtain time series data from 1991, for comparable devolved expenditure per capita, to assess whether a sustained convergence effect has been operating in Northern Ireland.***

81 Secondly, evaluation of the impact of the Treasury model is hampered by the failure to systematically distinguish between the results of the simple *update* models, and the *internally revised* models reported in the Needs Evaluation and Effectiveness reports. The 1994 update showed a fall in Northern Ireland's expenditure needs but the 2002 update position is not shown.

82 My second recommendation, therefore is for ***the Assembly to obtain data which compares Northern Ireland's Needs Assessment indices across the 1979; 1994 and 2002 updates of the Treasury model.***

83 My third concern is with the absence in the NEE reports, even in the case of health, of a systematic presentation of the indicators used and the weights applied in the revised models. It is important that the underlying calculations are assessed in the public domain, not asserted in departmental reports. My third recommendation is that ***the Assembly obtains for each programme, precise exemplification of the calculation of Northern Ireland's needs index.***

84 My next concern is over the needs discussions in each report which are problematic as no consistent approach is adopted. In the absence of valid statistical testing, it should be made clear that revisions which are evidence-based are nevertheless *judgements*, and the basis of these judgements should also be transparent. Only when the *rationale* for changing indicators and their weights is clear can we assess whether the tests of *objectivity* and *plausibility* have been met. As the reports currently stand, there are problems with the *objectivity* of both policy-based indicators suggested for vocational education and

training, and financial assistance to industry, and of the self-reported or judgmental indicators considered in the health report. Moreover, there are further doubts over the *plausibility* of revisions to indicators and weights in the revised models for housing, education and health and social care. Therefore, ***my fourth recommendation is that the Assembly obtains a detailed rationale for each change to indicators and weights in the revised models, so their objectivity and plausibility can be independently assessed.***

85 My fifth concern is over the resource implications of the report in terms of the implications of opening up the Barnett Formula issue, and in using the reports to inform budgetary decisions. On the first point, the evidence gathered in this report does not suggest that Northern Ireland would be certain to gain from a new needs assessment exercise. I believe that the Assembly should treat this issue with caution, as the Treasury model as revised in 1994 records significantly reduced need in housing and health, whilst the Executive's own work suggests a similar outcome for vocational education and training and financial assistance to industry. In my view, the Assembly should concentrate on the scope for bargaining over distinctive circumstances outwith Barnett rather than reopening the funding arrangements. ***I would recommend, therefore that the Assembly seeks clear evidence from the Executive that convergence will be significant, and that this will result in inadequate funding in total before reaching a view, as the budget is still growing in real terms.***

86 On the second issue, my view is that in allocating budgets the Assembly should *ignore calculations* based on the application of the Barnett formula. This is because the pattern of expenditure increases between departments reflects Whitehall priorities, which will be different from Northern Ireland. These are not intended to be prescriptive and departmental spending needs should not be reduced to mechanistic formula in this way. Rather objective data should be used to guide the resource allocation process, not determine it. ***I would recommend that the Assembly ignores needs assessments in budget appraisal for at best they are imprecise benchmarks based on Whitehall negotiations, and invite departments to argue their case for resources on the basis of changing needs.***

87 Finally, I have not considered Effectiveness Evaluations at all, and would ***recommend to the Assembly that it obtains independent appraisal of these reports by appropriate specialists for the Subject Committees.***

88 In conclusion, the Assembly should treat these revised models of needs assessment with caution. They do not provide a robust case for additional resources, and require significant further work to provide the systematic exposition of evidence and arguments which the Assembly requires. Finally, the Assembly should continue to monitor the development of public spending per capita in Northern Ireland in contrast with England, not simply focus on the percentage increases in the DEL element to which Barnett applies. The evidence on convergence to date remains unclear and unconvincing.

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