UNIVERSITY OF ABERDEEN

ABERDEEN PAPERS IN ACCOUNTANCY, FINANCE & MANAGEMENT

WORKING PAPER 00-16

CAPITAL CHARGING IN PUBLIC HEALTHCARE

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ISSN 0962-4627

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Abstract

In those OECD countries which rely most heavily upon universal public healthcare systems, a profound sense of crisis has been produced by the clash between pressures for enhanced provision and the resistance of governments to spending more. In several countries, the ideas of New Public Management have been shaping policy, with the explicit objective of improving the efficiency of resource utilisation. Healthcare systems are both labour and facilities intensive. This paper examines the way in which capital charging for publicly financed healthcare assets has been used as one mechanism within the internal market package of healthcare reform implemented in the United Kingdom in 1991. This financial innovation has been motivated by the belief that productive efficiency has been damaged by the traditional treatment of National Health Service capital as a free good. Experience with implementation has highlighted a number of issues whose full significance had not previously been appreciated, notably: the complex nature of healthcare assets; the importance of purchaser-provider separation in structuring improved incentive systems; and the greater ease of managing a system which has limited interaction with the private sector. Overall, capital charging is a valuable but flawed tool, which is much better than the asset invisibility it replaced.

Capital Charging in Public Healthcare*

1. INTRODUCTION

Capital charging occurs when public or quasi-public providers of public services must explicitly pay for their capital through the mechanism of an annual charge based upon the value of assets used in service provision. Managers held accountable for physical assets are required to pay for them out of revenues derived from contracts or funding allocations. Capital charges are calculated as the sum of depreciation and a 6% interest charge on the current cost value of assets. The rationale is that ending the treatment of capital as a 'free good' will lead to improvements in productive efficiency, via the sharpening up of incentives affecting acquisition and disposal decisions. Governments have traditionally used cash accounting, under which assets are 'expensed' in the year of acquisition and do not appear in balance sheets (Lüder, 1991); the lack of recognition of, and payment for, capital has been widely identified as a potential and actual source of inefficiency. Many public services have a cost structure in which facilities and/or labour costs figure prominently. Capital charging and liberalised pay arrangements can be viewed as a double-pronged attack on existing cost levels.

Rutherford (1983) conceptualised the public sector in terms of budget-financed organisations (dependent upon annual appropriations) and self-sustaining organisations (dependent, apart from capital injections, upon revenues generated from the sale of outputs). The totality of UK reforms since 1979 can be characterised in terms of (i) the transfer to the private sector of most of the then existing public sector self-sustaining organisations, and (ii) a reconfiguration of many of the then budget-financed organisations as self-sustaining organisations, typically fed either by purchasing arrangements or formula-based grants. Indeed, quasi-markets - in which purchasing and provision are seen as separate activities - have replaced the traditional model of vertically integrated in-house provision within key areas of certain industrialised countries' welfare state provision, including public healthcare (Bartlett and Le Grand, 1993; Ferlie et al., 1996; Bartlett et al., 1998). Capital

charging is an essential component of quasi-market reforms, as otherwise there would be huge historically induced disparities; for example, a provider with an older hospital, where functional obsolescence increases labour costs, would be unable to compete with a modern hospital. An essential condition for a 'level playing field' within the quasi-market is that each provider pays for its capital on the same basis.

Capital charging also needs to be set within a macroeconomic context. There are many sources of fiscal stress on governments, independent of changed ideological stances on the role of the state. Many industrialised countries have experienced severe budget deficits and have confronted a growing problem of indebtedness. For those European countries which signed the Maastricht Treaty, the convergence criteria specifying ceilings on budget deficits and on public debt/GDP ratios have become major constraints on fiscal policy. These macroeconomic constraints have intensified the search for means of reducing the costs of government, whether by squeezing more outputs from the same inputs or by withdrawing from certain traditional areas of service provision. A mechanism such as capital charging can be seen as directed towards making more efficient utilisation of the public capital stock.

Capital charging is intended to address a number of distinct problems in public services. A recurrent theme of the policy literature is that two, seemingly contradictory, problems have co-existed. First, viewed as economic units, the delivery organisations responsible for public services have often suffered from capital starvation. Budgetary limits have denied them access to the resources required, for example, to reconfigure their asset base in line with contemporary requirements. In the medium term, this must compromise productive efficiency. Second, the National Health Service (NHS) and similar public bodies have been hoarders of assets because of poor incentive structures. Moreover, again for reasons of annual budgetary limits, they have tended to neglect the

*This research was funded by the Chief Scientist Office of the former Scottish Office Department of Health. Sole responsibility for the views expressed remains with the author.

unglamorous task of asset maintenance. For a variety of reasons, there have been bad investment decisions when the full set of costs relevant to the acquisition of new assets have not been properly taken into account. The conclusion derived from these experiences has been that managers who neither accounted for, nor remunerated, their asset base have been neglectful of asset management. Capital charging is therefore about securing greater alignment between managerial incentives and resource costs.

This paper is structured in the following way. Section 2 considers capital charging as an incentive mechanism in public healthcare. After a brief discussion of its origins in the United Kingdom in sub-section 2(i), the main policy design issues are addressed in sub-section 2(ii). The next three sub-sections examine, in turn, three important technical issues: asset valuation; the design of purchaser budgets; and leakage from the circular flow of capital charges to providers outside the public healthcare system. The final sub-section discusses the relevance of capital maintenance concepts. Section 3 first considers UK implementation, and then turns to points of similarity and of difference between the United Kingdom and New Zealand. Finally, Section 4 makes a provisional evaluation of experience with capital charging, drawing out lessons likely to be of general interest to accountants and public healthcare policymakers.

2. CAPITAL CHARGING AS AN INCENTIVE MECHANISM IN PUBLIC HEALTHCARE

(i) Origins and Antecedents of NHS Capital Charging

Capital charging began in the NHS in 1991-92 and will be extended to UK central government in 2001-02; such a difference in timing merits an explanation. The reasons why the NHS went ahead much earlier seem reasonably clear (Heald and Scott, 1996a). Hood (1995) distinguished between ‘motives for’ adopting New Public Management (NPM) tools and ‘opportunities to’ do so. In this particular context, motivations had long existed. First, there had been many years of doom and

gloom about the physical condition and functional suitability of the NHS estate (e.g. Woodbine Parish 1970). Quite apart from its poor inherited condition when created in 1948, there had been a tradition of favouring new build (politicians like opening ceremonies), followed by neglect (nurses make better headlines than building maintenance). An important precursor to capital charging was the Davies Report's (1983) never-implemented proposal for notional rents, calculated on a physical rather than value basis. Further criticism of the condition and management of the NHS estate came from the National Audit Office (1988), Audit Commission (1991) and Meara (1991). Private sector property professionals who had become involved in the NHS tended to be disdainful of its standards of estate management (Pearce, 1988). Second, there was pressure from a few accounting researchers, notably from Professor John Perrin and his colleagues, for asset valuation and depreciation accounting (Perrin et al., 1978; Lapsley. 1981; Perrin, 1984). A system in which capital wastage co-existed with capital starvation was believed to be capable of major improvement.

As to opportunity, a window arose somewhat unexpectedly. The remarkable influence exerted over the Thatcher Conservative Government by Enthoven's (1985) internal market proposal has to be attributed to its timing. Basking in confidence about the 'success' of its enterprise privatisation programme, there grew a belief in Conservative-linked policy circles that an unprecedented opportunity was unfolding to tackle the 'problem' of the core welfare state, starting with the NHS (Green, 1986). The Prime Minister was reputed to be resentful that higher real spending failed to improve the Government's low poll ratings on this issue (Lacey, 1997), which had been further depressed by intense media reporting of local service failures and by a weak departmental minister (Timmins, 1995; Webster, 1998).[1] Thus was provoked the most far-reaching restructuring of the

[1] Timmins (1995) also commented upon the Treasury's cautious attitude about healthcare reform: [Nigel Lawson, the Chancellor of the Exchequer] '... had no wish, ideologically, to subsidise the private sector. Tax concessions, he argued, would be likely to produce "not so much a growth in private health care, but higher prices". Furthermore, Lawson decided that international comparisons all had their own acute problems and that on the measures available the NHS was shown to be both effective and a good buy. Any change to another system would be "out of the frying pan (and not such a bad frying pan at all) and into the fire", he argued. For a government dedicated to containing public expenditure, the NHS remained the best cost-effective device available' (p. 461).

NHS since 1948, involving fundamental change.[2] This contrasted markedly with the musical chairs characteristic of the repetitive 'reorganisations' of the previous multi-tiered integrated structure.[3] Whereas the proposals of Perrin et al. (1978) and Davies (1983) had not been implemented, there was now both a new impetus and an obvious requirement for capital charging as one of the pillars of the internal market.[4]

(ii) Policy Design Issues

Leaving aside the specific provenance of NHS capital charging, certain characteristics of the sector made it fertile, but difficult, territory for such a financial innovation. Potential fertility derived from two principal sources. First, there was wider acceptance of the Perrin view that the serious neglect of the NHS's physical asset base would only be remedied if accounting visibility for assets were established. Though generating much disappointment, partly as a result of exaggerated expectations of ease and speed of implementation (Packwood et al., 1990), internal budgetary reforms had been on the NHS agenda from 1983 (Bourn and Ezzamel, 1987), and had become clearly linked to the introduction of 'General Management' (ie the appointment of 'chief executives' to head organisations at different tiers in the hierarchically managed NHS). Among others, Harrison (1994) characterised General Management as part of a broader process in which political decision-makers used managers as a way of challenging clinical supremacy over resource use, something they dare not do explicitly. These changes of context were conducive to raising the profile of the NHS estate

[2] The key element of the April 1991 reforms was purchaser-provider separation, with a system of contracts (albeit not legally enforceable ones) linking purchasers and providers. Over the next four years, providers were corporatised as NHS trusts and General Practitioner fundholders acquired greater importance on the purchasing side as budgets were delegated to them by Health Authorities. On the post-1991 structure, see Ham (1994).

[3] The essential point about the pre-1991 structure is that NHS healthcare organisations were directly funded to provide healthcare for the resident populations of their specified geographical area. In contrast, from 1991, NHS purchasing organisations were funded to buy healthcare for their resident populations from NHS trusts and other providers, thereby establishing a purchaser-provider separation. The organisational history from 1948 to 1991 would be tortuous to recount for two principal reasons: first, restructurings were a regular response to perceived shortcomings; and, second, there have been different NHS structures in England, Scotland, Wales and Northern Ireland, some solely matters of terminology but others of real substance (Honigsbaum, 1994).

[4] Simultaneous developments were the adoption of accruals accounting in NHS trusts (the corporatised providers) and the application to them of the financial target and External Financing Limit system which the Treasury had developed between 1979-81 for nationalised industries (Byatt, 1984).

and to stimulating innovations in financial management and budgeting (Perrin, 1988). Moreover, the NHS was caught up in the broad-based move of government accounting in the United Kingdom from cash to accruals. A highly significant practical point is that the incremental cost of capital charging, having already valued assets for balance-sheet purposes, is much lower than capital charging on asset values as a free-standing mechanism.

Second, the production structure of healthcare, characterised for the most part by organisations conducting broadly similar activities in different locations, creates interesting opportunities for public sector variants of yardstick competition. A prerequisite of this approach is purchaser-provider separation. Then, the assets of the providers can be valued on a consistent basis, with a mechanism set up through which providers pay capital charges on the assets which they use. The final step in the loop is to augment the budgets of purchasers so that they can, *in aggregate*, afford to pay through contracts the capital charges incurred by providers. This emphasis is deliberate; there is no leakage from the circular flow, but no automatic presumption that each purchaser will have sufficient funds to pay the capital charges of its existing providers. Two aspects have particular importance. One is that those designing and controlling the public healthcare system can choose how much capital charges should 'bite'. The proportion θ of capital charges money distributed on weighted capitation can be set in the range $0 \leq \theta \leq 1$. Then, $(1 - \theta)$ is distributed in proportion to the actual capital charges incurred by purchasers in contracting with providers.[5] The other aspect concerns the consequences of relaxing the assumption that there is no leakage from the circular flow, an issue which is addressed in Section 2(v).

[5] The exposition in the paper abstracts from a complexity which does not affect the argument. When the internal market was established in April 1991, most NHS hospitals were managed by Directly Managed Units (DMUs) which were integral parts of the parent health authority. These paid over capital charges (the sum of 6% on average relevant net assets plus depreciation) to their parent health authority which then paid the money to the central government department. However, NHS operational units were rapidly corporatised in a series of five waves, acquiring separate corporate status. These NHS trusts then paid interest on their debt and dividends on their public dividend capital. Although these payments were initially called capital charges equivalents, the distinction quickly disappeared.

One predictable difficulty with such a system is maintaining central steering of the whole. Especially for those who observe only one part, there are hurdles to an understanding of how the system as a whole works. Not least, that can lead to the circular flow being caricatured as pointless money shovelling, fit only to keep accountants occupied. Nevertheless, it is much better to have capital charges in cash, rather than treating them as notional costs which would most probably be dismissed as 'mere bookkeeping'. One of the main steering variables under policy control is the capacity of a capital charging system to operate anywhere on the spectrum running from full reimbursement of actuals to full weighted capitation. Another key decision relates to how much money is top-sliced from the total budget, for activities such as medical education, before the distribution formula is applied.

(iii) Asset Valuation

Attempts to make public services approximate more closely to a private sector model inevitably encounter the twin problems of measuring public sector output and valuing public sector capital. To some extent these difficulties are inherent in the kinds of goods and services provided by the public sector, and to some extent they are institutional, notably in that virtual public monopolies in output markets will mean that second-hand markets for assets such as hospitals, universities and defence installations scarcely exist. The most obvious source of difficulty confronting a proposal to capital charge public healthcare assets thus concerns asset valuation. Operationalisation requires opening and closing valuations of the asset base and a measure of wear and tear during the year.

It is a useful starting point to distinguish between those issues which are *inherent* to healthcare assets, whatever the ownership pattern or market structure, and those issues which derive from *institutional context*, notably public ownership and the structure of the healthcare delivery system. For practical convenience, the following discussion proceeds in terms of hospital assets, particularly

buildings.[6] Regarding inherent issues, hospitals are highly specific but long-lived assets, geared to providing certain kinds of healthcare; generally speaking, they are badly suited for other economic activities. Moreover, many hospitals consist of multiple buildings, reflecting the way in which sites have been adapted over many years as a result of expanded workloads, changes in technology, and changes in modes of healthcare delivery. As to the institutional context, the NHS has no capital market fulfilling the double function of disciplining managers to use assets profitably and of providing market valuations of hospital enterprises. Because the NHS dominates healthcare provision, there is almost no external market for either hospitals or hospital enterprises, so that open market value in existing use cannot be established.

There is a powerful interaction between these two distinct sets of factors. Historical Cost (HC) is simply impractical, as records of acquisition cost typically do not exist, and its use would dramatically tilt the playing field in favour of older hospitals. In practice, all valuations of operational assets have proceeded on the basis of Depreciated Replacement Cost (DRC); this process involves assessment, usually by the District Valuer (a property surveyor who is a central government employee), of the rebuilding cost of a like-for-like asset. This is a well-established basis in the property valuation literature for dealing with this kind of circumstance (Royal Institution of Chartered Surveyors, 1995). Under a Current Cost Accounting (CCA) system, tangible fixed assets should be valued at the lower of replacement cost (RC) and recoverable amount (RA), which is itself defined as the higher of net realisable value (NRV) and value-in-use (EV) (Treasury, 1997, para. 3.2.10).

Five difficulties arise. First, the highly specific nature of hospital assets means that NRV is often extremely low in relation to DRC, and this will be true even when a hospital is functionally ideal for its purpose. For reasons to be explored below, there are practical advantages in adopting the

[6] For a complete exposition of the asset valuation system, comprising land, buildings and equipment, see Mellett (1990) and Heald and Scott (1995).

assumption that, in the case of a working hospital, EV ≥ DRC, thus validating use of DRC for balance sheet valuation. If this assumption that EV ≥ DRC were to be dropped, Mayston (1997a) has correctly noted that the EV of a particular NHS hospital will depend on the future level of government funding of the relevant purchasers.

Second, it seems a practical approach to value every asset and then to sum the values. However, this neglects the aggregation problem. Edey (1974) and Edwards et al. (1987) have stressed that the replacement cost of a system will, in the presence of economies of scale and/or economies of scope, be less than the replacement cost of the individual assets. Accordingly:

$$\Sigma_i RC_i > RC(\Sigma_i\, i) \qquad (1)$$

where RC_i = replacement cost of asset i

$\Sigma_i RC_i$ = sum of the replacement costs of assets replaced individually

$RC(\Sigma_i\, i)$ = replacement cost of the system as a whole

The essential point is that it may well be very much cheaper to build a new hospital than it would be to rebuild all the individual parts. For example, it seems likely that most hospitals, which have typically grown by accretion, could have their capacity replaced in a more efficient way. Valuing all assets separately will often lead to over-valuation.

Third, there is an intractable dilemma with DRC: either assets are valued on the implausible basis that the existing configuration of assets will be replaced, or they are valued on the - potentially manipulable - basis of what managers currently declare to be the relevant Modern Equivalent Assets (MEAs). Attention returns to this issue in Section 3(ii), in which the experience of capital charging in the United Kingdom is compared with that in New Zealand.

Fourth, the way in which hospital sites evolve over time leads to the problem of 'disappearing capital'. By definition, DRC = Gross Replacement Cost – Depreciation. When an extension costing

£x million is added to an existing hospital, it is quite likely that the District Valuer will conclude that ΔDRC < £x million. The logistics of adding to an operational building mean that the combined cost of the original plus the modification is likely to be higher than would have been the case if the modified building had originally been built; one reason is that the building contractor does not have unrestricted control of the site.

Fifth, the age and often poor condition of the NHS estate, coupled with fashions in hospital building design and recent changes in modes of healthcare delivery, mean that an NHS trust's asset base is frequently badly adapted to its present needs. Instead of a Victorian psychiatric hospital or 1960s' tower block - both of which incur operating cost penalties - having 'low' valuations, the like-for-like DRC methodology attaches 'large' valuations to them because of their construction materials and/or type (Heald and Scott 1996c).

It is essential to be clear exactly what is being concluded here; hospital assets are difficult assets to value, especially within the NHS institutional context. This is neither an argument to abandon asset valuation, nor one to convert to HC. Sweating assets harder is one of the key ways in which capital charges, and indeed the entire reform package, can generate real benefits. The disposal of unnecessary holdings of land and buildings[7] releases resources for new investment, and better use of existing space reduces investment requirements.

The motivation for the assumption that EV ≥ DRC derives from the asset-specificity of hospitals and from the institutional context of NHS near-monopoly. In this context any estimate of EV is highly problematic. An NHS manager, not disciplined by a capital market in which shareholders seek financial returns, would be incentivised to seek asset write-downs even in the case of well-

[7] Though dependent on property market conditions, there is still scope for securing substantial asset sale proceeds. In January 1998, the NHS Executive estimated that the open market value of surplus hospitals which had not been transferred to NHS trusts in England was £1.2 billion. Although it cannot be shown that this is directly the consequence of capital charging, the issue of rationalising the estate has undoubtedly acquired a much higher profile.

designed, newly constructed hospitals. Moreover, NRV does not in this context provide much of a floor to valuation. These circumstances illustrate the classic dilemma of whether the emphasis should be on the efficient use of existing capacity in the short-run, or on the efficient adjustment of the capital stock.

Whereas Vickrey (1987) always gave primacy to the short run, the argument here is that the greater weight ought to be attached to the long run. When there is new investment in NHS hospitals, the capital charging system will condition decision-makers to expect replacement cost capital charging throughout the asset's life. This feature raises two issues. First, and entirely contrary to the rhetoric about the level playing field extending to the private sector, there is no comparability with private hospitals who simply do not account in this way. In practice, this has not been particularly important; the relevant clinical capacity has not existed in the private sector and there has not been any sign of NHS purchasers being culturally disposed to outsource core requirements.[8]

Second, capital charging can be interpreted as a system of shadow pricing of assets, set at a level considerably higher than public sector financing costs. This is attributable to the use of DRC asset valuation and to the use of the Treasury's 6% real opportunity cost of capital; these both exceed by considerable margins the HC of assets and actual financing costs. Naturally, the use of capital charging within a quasi-market rests upon the assumption that ownership of particular assets brings to the provider a stream of revenues out of which capital charges can be paid. There is a potential conflict between *ex ante* project appraisal on a DCF basis (especially if this includes benefits not accruing as revenues) and a financial appraisal which focuses exclusively upon monetary flows, including DRC-based capital charges. This leads to a concern about potentially conflicting signals regarding redevelopment proposals, where NHS trust managers are likely to emphasise the financial dimensions on which *ex post* performance appraisals will be conducted. The willingness of NHS

[8] The principal use made by the NHS of private sector hospitals has been to use their excess capacity in certain specialisms to deal with above-target treatment waiting lists.

policymakers to accept this re-orientation is probably derived from a loss of confidence in the NHS system of project appraisal (Mooney and Henderson, 1986); appraisals were often used to sanction schemes chosen on other grounds. The greater financial emphasis is seen in part as a means of strengthening managerial resolve against politically favoured schemes.[9]

(iv) Design of Purchaser Budgets

Once a capital charging system has been implemented for providers, two further matters of system design must be addressed. The amounts allocated to purchasers need to be set at a level which allows providers in aggregate to pay capital charges back to the relevant ministry, so that these net off against gross expenditure. A spectrum can be defined from *full reimbursement* (whereby each purchaser's budget is set so that it can afford the actual capital charges of its actual providers) to *full weighted capitation* (whereby only the characteristics of the relevant client group affect budgets, not the characteristics of individual providers). The financial pressure encountered by those purchasers buying from high-cost providers will be transmitted through to such providers, who will be expected to reduce their costs. However, questions arise as to whether some elements of such capital charging differentials are beyond managerial control (e.g., high local property costs) and, if so, whether these should be compensated, in whole or in part.

Capital charges money (i.e., those funds distributed to purchasers to enable them to pay capital charges) can either be kept separate or integrated into revenue budgets. In order to analyse purchasing, it is necessary to note that three, possibly divergent, numbers will be relevant to each health purchaser in each time period: ***target*** expenditure (i.e., the amount which the formula-based model run by the central agency indicates that this purchaser ought to be spending); ***permitted*** expenditure (i.e., the amount which this purchaser is funded to spend, which may be different from

or equal to target expenditure); and ***outturn*** expenditure (i.e., the amount actually spent by this purchaser). The reason for the differences between target and permitted expenditure is that the central agency may judge that elimination of all existing differences, both upwards and downwards, is best accomplished over a transition period so as to avoid unmanageable increases and dislocating reductions. Divergences between permitted and outturn represent either overspends (against which the central agency must have effective sanctions) or underspends (indicating that less patient care has been bought than the budget would have allowed). If the money with which purchasers are to pay capital charges is kept separate from other purchasing money, the above argument needs to be reworked in terms of six numbers rather than three.

A quasi-market brings together formula-funded purchasers with providers who must pay capital charges on their assets, whose existing configuration is inevitably heavily conditioned by past decisions. The ultimate goal of funding models is to detach purchaser allocations from the particular circumstances of their existing providers. In the interim, the impact can be softened either by (i) retaining some element of reimbursement of actual capital charges rather than moving to 100% weighted capitation, or by (ii) incorporating elements within the weighted capitation formula which proxy for differences in actual capital charges. For example, if rural areas actually have more hospital beds per head of population than urban areas, the full rigours can be attenuated either by partial reimbursement of the higher actual capital charges or by building a population sparsity factor into the weighted capitation formula. The methods of calculation for target and permitted expenditure become paramount. The 'unification' of capital charges money and other revenue funding assumes importance because of one practical consideration. Safety netting (i.e., the toleration of cases where permitted expenditure exceeds target expenditure) will hitherto have been done separately for capital charges funding and for revenue funding. Unification means that safety netting occurs at a higher level of aggregation, leading to a reduction in its cost. For example, some

[9] An obvious problem for the NHS Executives (the central policymaker in each of the four countries) is that, though responsible for the efficient development and delivery of NHS services, they are directly controlled by ministers with

purchasers will find that, though they had in the past been safety netted for other revenue funding, their gains from the move to full weighted capitation for capital charges reduces, or even eliminates, their safety net.

Therefore several of the key policy choices for the centre revolve around seemingly technical aspects of the distribution formulae to purchasers. Of particular importance is where in the range 0 - 1 is set the proportion θ of capital charges money distributed on weighted capitation. At $\theta = 0$, there is no bite. In contrast, at $\theta = 1$ the funding received by particular purchasers takes no heed of the current asset configurations of their particular providers. There are two issues to address. First, concerns about upwards biases in the valuation of the inherited capital stock should encourage the setting of a target θ^* considerably below 1; exactly how far below will be a matter of informed judgement. Second, whatever the chosen value of θ^*, a phased transition from $\theta = 0$ to θ^* is needed to ease the process of adjustment; the time profile of this transition is again a matter of informed judgement.

(v) Leakages from the circular flow of capital charges

The most unexpected feature of the proposals announced in *Working for Patients* (Secretaries of State for Health et al., 1989) proposals was the explicit inclusion of private sector healthcare providers on the level playing field; NHS purchasers were instructed to be neutral between NHS and private providers. When an NHS purchaser switches contracts to the private sector, there will be a leakage out of the circular flow to the private sector of that part of the contract price which would otherwise have enabled an NHS trust to pay its capital charges (Mellett, 1990). Greater interaction between the NHS and the private sector undoubtedly puts greater pressure upon the asset valuation system upon which capital charging rests. In particular, there is undoubtedly a tendency

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partisan agendas and expectations of short incumbencies.

for the non-MEA DRC method to overvalue certain kinds of assets, and thereby to bias make-buy signals. One of the lessons of the 1991-98 period is that central steering of the system is easier when, as in Scotland compared to the South East of England, there is less interaction with the private sector. Research fieldwork in Scotland has identified cases where the disposal value of NHS psychiatric hospitals is about 10-20% of DRC (Heald and Scott, 1996c); this can introduce dysfunctional incentives for purchasers to divert business to other providers, including those operating outside the capital charging net, even when this is not the least resource cost option. In practice, however, leakage of capital charges to private hospitals has stayed at a very low level.[10]

Potentially far more important in terms of leakage from the circular flow are payments relating to PFI-financed hospitals. The Conservative Government launched the Private Finance Initiative (PFI), a project described as bringing the benefits of private sector management and finance to public procurement. Having been bitterly critical of the PFI whilst in opposition, the new Labour Government elected in May 1997 has revamped it, on the grounds that this is the only way of resuming a significant health capital programme within public expenditure constraints. In essence, a private consortium builds a new hospital and operates it, except for clinical services which are provided by the NHS trust, on contracts with durations of 30-60 years.[11] There is not the space here to evaluate the PFI (see Mayston, 1997a,b; Broadbent and Laughlin, 1999).[12] The obvious point to note is that different NHS providers will face different systems of capital remuneration: in the case of a PFI-financed hospital, there will be a schedule of payments specified in the confidential

[10] Leakage out of the circular flow has remained at a low level, totalling 3% of capital charges in England in 1999/2000; much of this relates to leasing assets instead of buying them, rather than to procurement of healthcare from the private sector. In future, however, leakage will increase as a result of PFI-financed assets coming on stream.

[11] The PFI was portrayed by the previous Government as a means of securing greater efficiency in the acquisition and management of public service assets (Treasury, 1993); it frequently asserted, without evidence, that the introduction of private sector disciplines would lead to savings in both capital investment requirements and in operating costs which more than offset higher financing costs. Outside commentators have stressed the off-balance sheet character of these assets which provide a way of reducing the level of public expenditure and of public borrowing (Institute for Fiscal Studies 1993). Unsurprisingly, there is a vigorous controversy about whether PFI hospitals should be on- or off-balance sheet for NHS trusts.

[12] In his critique of NHS capital charging, Mayston (1996, 1997a,b) puts much emphasis on the problems ensuing from the PFI, treating them as a dysfunctional consequence of capital charging. This causal link between capital charging and the PFI is unsustainable; rather the PFI has been a much more high-profile policy, undertaken for a mixture of

contract, whereas in the case of the Exchequer-financed hospital, capital charges will depend upon future indexation and revaluation. A crucial difference between private and Exchequer finance is that Exchequer finance is front-loaded - it scores when the asset is built. In contrast, in the case of PFI-financed assets, the public expenditure is scored when lease payments are made over the life of the contract. Possibly more important, there is an explicit statutory guarantee to the private consortia that the Secretary of State stands behind an NHS trust with a PFI hospital in the case of default. Quite apart from the incentive effects on the consortia, there is the obvious point that ministers would pressurise NHS purchasers to avoid default by an NHS trust, effectively making the leakage a first claim. This super-imposition of a policy initiative favouring privately financed assets outside the capital charging net may undermine confidence in the capital charging system for publicly financed assets.

(vi) Conflicts over the relevant concept of capital maintenance

Recourse to the concepts of capital maintenance which underpin debates on financial reporting brings a number of pertinent considerations more clearly into focus. There is an inevitable tension between Operating Capability Maintenance (OCM), defined as maintaining intact the entity's productive capacity, and Financial Capital Maintenance (FCM), defined as maintaining the purchasing power of the owner's investment in the entity. Byatt (1986) emphasised that, in the absence of a capital market, accounting has to serve a dual function in the public sector, reporting both OCM and FCM.

Writing specifically about UK nationalised industry accounts, Byatt (1986) wished to structure those accounts so that they would simultaneously show (a) whether the entity was maintaining intact its capacity to produce the present level of output; and (b) whether the government's cash

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budgetary pressure and ideological motives. On the origins of, and motivations for, the PFI, see Treasury and Civil Service Committee (1993) and Treasury Committee (1996).

investment in that entity was maintaining its purchasing power (Whittington, 1988). Divergences between OCM and FCM are customarily driven by relative real price reductions/increases in the cost of capital assets; the usual presumption is that trend reductions in the real cost of capital assets will render profit targets defined in terms of OCM less demanding than those defined in terms of FCM. Accordingly, managers may earn returns which are sufficient to maintain the operating capability of their asset base without satisfying the external owner's requirement to maintain financial capital.

The concern of Treasury economists has been with FCM (e.g., Spackman, 1991), the achievement of which would ensure that public organisations were facing the opportunity cost of capital. The essential concern has been that, given the combination of indexation using specific price indexes, revaluation on expert judgement, and technological progress, success in achieving 6% on average relevant net assets may disguise a failure to achieve an appropriate rate of return on public capital. In view of the earlier examples of 'disappearing capital' in the NHS, and the likelihood of falling real replacement costs, this concern is readily understandable.

Different stakeholders may, however, have different perspectives. Service users would be concerned whether a governmental unit has achieved OCM (indicating a continuing capability to render service). Perrin (1984, p. 72) contended that an accruals accounting system would make more transparent the source of tax reductions during the life of particular governments: though 'the notion of a continuing obligation to maintain capital stock has appeared to conflict with the supremacy of Parliament', 'it might seem only fair that governments should be made to report on their capital maintenance via depreciation accounting, so that electors may better know, for example, how far public spending cuts involve running down the public sector's capital stock'. There are clearly important issues of intergenerational equity for citizen/taxpayers, as when inherited infrastructure is allowed to fall into disrepair by one generation.

Discussion of OCM and FCM in the context of the financial reporting of commercial enterprises takes as axiomatic that assets generate revenues. This discussion resonates with another debate. Mautz (1988) contended that the accounts of not-for-profit organisations such as governments should distinguish between *assets* (which generate positive cash flows) and *facilities* (which, whilst fundamental to the service delivery objectives of the organisation, generate negative cash flows). Pallot (1990) identified as crucial to this distinction Mautz's assumption that assets must generate a benefit stream involving cash inflows. In the case of many government assets, a benefit stream can be identified which does not take the form of cash (e.g., motorists' time savings) or, when it could be transformed into cash, is not fully appropriable by the owner of the facility. Monitoring whether government decisions confront the opportunity cost of capital becomes more difficult when returns do not take the form of cash. This is where the New Zealand distinction between the central government's *ownership* and *purchaser* roles becomes useful. As purchaser, the focus should be on OCM, with sufficient resources being required from taxation to sustain future service delivery. As owner, the focus should be on FCM.

The discussion above of asset valuation demonstrated clearly how an OCM system will quickly lose track of financial performance from the ownership perspective. There are two further issues which merit attention. First, a significant problem confronting NHS trusts is that a considerable proportion of their older assets are listed as historic buildings, thereby making modification more expensive and substantially reducing their adaptability for non-health purposes (NHS Executive et al., 1995). As a matter of UK government policy, public bodies are not compensated for the costs which they incur in conferring 'heritage benefits' upon the community. Second, the ownership perspective should, in principle, track the open market value in alternative use of NHS assets, rather than the open market value in existing use (which is used for land valuation). In practice, this has been a less significant issue than expected: the unsuitability of most hospital buildings for other economic

purposes means that only a few exceptional sites might have higher values in alternative use. This is attributable to both the need to write off existing buildings and to the property market collapse of the early 1990s.

3. EXPERIENCE WITH CAPITAL CHARGING IN PUBLIC HEALTHCARE

(i) Implementation in the United Kingdom

Effective implementation of capital charging was predictably slow; the NHS's IT weaknesses are renowned. Nevertheless, the sheer scale of the task ought to be acknowledged, in an environment where asset registers often did not exist and where, when they did, they were usually inaccurate. The exercise was handicapped by the fragility of the central agencies which were understaffed, lacked recognition from policy-makers, and were repeatedly weakened by the poaching of staff by NHS trusts. A consequence of these difficulties is that implementation of capital charging became in some locations marginalised from decision-making, being perceived as a financial accounting exercise.

An NHS Estates survey (1994), directed towards NHS trusts' chief executives in England, found that both the acquisition of new assets and the disposal of underused or 'low-value' assets had been influenced by capital charging. Chief executives believed that capital charging would lead to a 'more cost effective and better maintained estate'. Similarly, Heald and Scott (1996b) found strong support for capital charging by NHS managers (accountants and estates/operations) in their 1994 Scotland-wide survey of providers. Managers reported themselves to be less likely to invest in new facilities and more likely to dispose of existing assets. Most intended that budgetary devolution would cover capital charges, but few had accomplished this at the date of the survey. Despite the

early move in Scotland towards weighted capitation, the effect on providers had been softened by the willingness of most purchasers to use other revenue money to meet any shortfalls in capital charges funding. This survey also found strong support for replacement cost valuations.

A powerful case can clearly be made for capital charging. Nevertheless, it is important not to lose sight of the condition for a policy improvement: the benefits of capital charging (greater cost consciousness about assets) must be greater than the direct (staff and computing) and indirect (dysfunctional behaviour) costs of implementation. Capital charging should make decision-makers choose how best to spend (e.g., between buildings and nurses), whilst containing the costs of operating such a system well below the benefits. The operationalisation of such a test is inevitably bedevilled by the simultaneity of various policy and environmental changes, making it difficult to disentangle causation. There is likely to be a continuing UK debate about the effects of NHS capital charging: for example, Professor Irvine Lapsley who, as a member of the Perrin team (Perrin et al., 1978; Lapsley, 1981) can be viewed as a policy architect, has expressed doubts about what has so far been achieved (Lapsley, 1997). Nevertheless, the UK Treasury has taken encouragement from the NHS experience and capital charging will be extended to all central government assets as part of Resource Accounting and Budgeting - the project for adopting private sector financial accounting and reporting principles and practice in central government, with public expenditure planning being conducted on that basis.

(ii) Comparison with the New Zealand experience

In terms of system architecture, the UK and New Zealand versions of the 'public contract' model (Wagstaff, 1995; Hirst, 1996) of healthcare are very similar. In this case, emulation ran from the United Kingdom to New Zealand, whereas the pattern in terms of public management reforms is customarily the reverse. A brief comparison is illuminating, drawing attention to contextual issues

and providing background to the undoubted international influence of these reforms (Jérôme-Forget et al., 1995; OECD, 1993, 1995; Maynard and Bloor, 1996).

First, there is a remarkable contrast between the two countries in terms of policies towards public expenditure on health during the period when capital charging was being implemented. UK expenditure continued to grow in real terms, adjusting cash expenditure by the GDP deflator. In contrast, there was a sharp reduction in New Zealand real public expenditure on health. Unlike the UK position, the purchaser budgets were not augmented to allow Crown Health Enterprises (CHEs) (the counterpart to NHS trusts) to pay capital charges to the Treasury. Ministers took the view that corporatisation would unleash such efficiency savings that CHEs would be able to pay capital charges; in fact, they did not (Controller and Auditor-General, 1997). Financial innovations such as capital charging are sometimes caught up in quasi-ideological arguments about public service values and organisational culture. For example, Davis (1994) welcomed UK capital charging for exactly the same reason that such innovations are often treated with suspicion inside public service organisations: that it would bring changes which are prerequisites for eventual privatisation. Although it is always risky to speculate about the ultimate intentions of political decision-makers, a much better case can be made that the internal market reforms in New Zealand were envisaged as inferior substitutes for, and precursors to, privatisation and real markets.

Second, reforms of the New Zealand health sector were much more closely integrated into the government-wide reform package (Pallot and Ball, 1997). In contrast, as recounted above, the UK internal market reforms were a free-standing episode, contrasting markedly in terms of the pace of their implementation with the more leisurely approach in central government. New Zealand undoubtedly has a more centralised governmental system than the United Kingdom, with the NZ Treasury brokering power over departments on a scale which has no counterpart in the latter. This capacity to make the system move undoubtedly contributes to a less pluralistic system; views about

the benefits or otherwise of New Zealand reforms are considerably more polarised than in the United Kingdom (Kelsey, 1995; Evans et al., 1996; Scott, 1996; Silverstone et al., 1996).

Third, the United Kingdom had far more of the pre-conditions in place for implementing purchaser-provider separation than had New Zealand. In particular, there was nearly 20 years of experience of weighted capitation funding of health authorities, and a tradition of commissioned independent research on the geographical pattern of need for healthcare (Carr-Hill et al., 1994). This work provided a foundation for purchaser budgets, and the internal market brought no sudden geographical shifts in funding. UK ministers were much more wary than their New Zealand counterparts about inflicting pain on their citizens in anticipation of long-term gains. Such factors obviously interacted with the differences in public expenditure policy mentioned above.

Fourth, one important technical difference between the United Kingdom and New Zealand is that the latter has adopted across government an MEA approach to the implementation of the DRC valuation method; this is described as 'optimised DRC'. A systematic comparative study, highlighting the trade-off between the two approaches, would now be valuable. Pending such a study, there is a strong argument in the United Kingdom for a sample valuation on an MEA basis, in order to indicate the extent of divergence between the two valuations. Once these steps have been taken, there would remain a choice between altering the UK valuation basis and re-setting $\theta < 1$.

Fifth, evaluation again emerges as the Achilles' heel of NPM. Undoubtedly, evaluation is technically difficult and can be expensive. An obvious issue relates to how the separate contributions of the individual parts of the NPM package can be isolated; there will be circumstances when the package as a whole has to be evaluated, and clues about relative contributions depend upon finding different packages which, under broadly comparable conditions, have produced differential results. Under such circumstances, perfection should not become the

enemy of the good, provided that there is a degree of competitive pluralism in the evaluation business. However, the problems seem more deep-seated. Despite the enthusiasm of NPM for evaluating others, it does seem to bring with it an anti-evaluation culture. This is more marked in New Zealand where the Treasury has developed a synoptic view of the proper role of government (Horn, 1995), and where there is suspicion that calls for evaluation signal doubts and cloak resistance to action. One manifestation is the lack of Value-for-Money (VFM) work undertaken by the Audit Office. In contrast, the UK problem relates less to the resources put into evaluation, more to the lack of imagination with which those resources have been used. Much recent official rhetoric about measuring outputs, not inputs, provides a disturbing echo of Williams' (1967) call for systematic evaluation more than 30 years ago.

4. ASSESSMENT

This final Section makes an assessment of capital charging in public healthcare, structured in a way which meets the requirements both of those evaluating reforms in place and of those wishing to draw lessons relevant to policy development in different national settings (Rose 1993).

First, it is important to keep separate debates about sector resourcing (public expenditure on public healthcare, whether expressed in absolute amounts or relative to GDP) from those about management mechanisms within public healthcare. At the highest levels of budgetary policy-making, successful implementation of NPM tools should be seen as a pre-condition for higher resourcing, where that can be demonstrated to be justifiable, and not as an excuse for denying it. A considerable amount of the criticism of capital charging (e.g. Froud et al., 1998; Shaoul, 1998) comes from those suspicious of the former UK Conservative Government's 'real intentions' about the future of public healthcare. Some basis for this concern was provided by the way in which the 1988 review of NHS funding became pre-occupied with market-like mechanisms and lost sight of

funding (Timmins, 1995). Appropriate management, budgeting and accounting reforms are vital for the delivery of better VFM from public expenditure on healthcare. There is always a delicate balance to strike: keeping the pressure on is a good way to secure improvements in organisational performance; overdoing it will be severely damaging to the achievement of goals which are difficult to quantify reliably. Whilst tools such as capital charging are not panaceas, they have a useful contribution to make if combined with sufficient attention to the functioning of the overall system. Attention to system architecture is crucial. For example, Maynard (1998) has argued for cash-limited budgets and 'single-pipe' tax finance as the best mechanisms for expenditure control, and cautioned against the view that the tapping of new non-tax sources of finance would 'solve' the NHS funding 'crisis'. His principal concern was that user charges and extended private insurance would herald a more fragmented funding system, which would in turn promote healthcare cost inflation; there is an obvious link between these concerns and the pitfalls identified above, notably in relation to PFI-financed assets and possibly Lottery-financed assets[13] undermining the core message of capital charging. Crucially, there will always remain the issue of how much funding should be injected into this single pipe.

Second, the problems of evaluating the impact of particular tools are pronounced. Healthcare systems are formidably complicated, and it is always difficult to isolate the effects of particular changes. This has undoubtedly been true of the NHS, whether the change in question has been the

[13] Donated assets currently play an insignificant role, except in connection with special-purpose childrens' hospitals. In some of these, as much as 50% of average relevant net assets is donated, with obvious repercussions for the ability of paediatrics departments in neighbouring NHS trusts to compete. Not too much concern has, however, been accorded to this, in part because of a belief on the part of the medical establishment that centralising paediatrics is desirable on clinical grounds. In other parts of the NHS, donated assets relate to some specialist machines, the largest of which are scanners. Indeed, with a *de minimis* level of GRC = £5,000 for asset recognition, many trusts have virtually no donated assets. In the NHS, donated assets are not capital charged, thus giving a competitive advantage to trusts which hold them, but they are depreciated in the normal way, as a means of securing consistency in cost measurement. The reason for expecting that donated assets might grow in significance derives from the spectacular financial success of the UK National Lottery, launched in 1996. It seems likely that public opinion, regularly treated to media stories about the NHS being in crisis, will tire of Lottery funds being spent on new concert halls, sports stadia and millennium projects. If Lottery funds were to be diverted to NHS capital, this step could bring a huge amount of 'free' capital (exactly what capital charging is designed to suppress); the UK Government would not dare to capital charge Lottery-financed assets in the NHS, having not done this on prior distributions. Moreover, there would be a significant distortion of the level playing field, which remains essential to purchaser-provider separation. A surge in Lottery-financed assets, though politically popular, would indicate that the rationale for having capital charging was being forgotten.

introduction of General Management, successive attempts to secure clinical involvement in resource management, the impact of capital charges, or the effects of the internal market. A further difficulty is that lasting benefits take longer to harvest than the time horizon of political decision-makers and media commentators, and are beyond the timescale that academic researchers can resource. A thought experiment helps, by comparing the NHS in 1983 with the NHS in 1998. Although each successive budgeting and financial reform has been perceived to have been less than fully successful, certainly against professed objectives, the cumulative changes in the managerial and budgetary environment since 1983 are undeniable and, on balance, strongly positive. Building up managerial capacity, including financial capability, has been an important achievement over this prolonged period, though more remains to be done to push the message down to lower levels of decision-making (Marriott and Mellett, 1994).

Third, capital charging is a valuable but flawed tool, which is much better than the asset invisibility which it replaced. Arguments couched in terms of the first best must be treated with caution. When discussing tools such as capital charging, it is important to recognise two levels to the debate. For the reasons enumerated in Section 2(iii), there will always be controversy about asset valuation in a setting such as the NHS. Moreover, it will always be possible to point to the possibility of perverse incentives confronting some micro-level decision-makers. Although such concerns should be monitored for substance, there is a different perspective when viewing the NHS system from the centre. Capital charges represent in the range 5-15% of hospital revenue costs, with much of the rest being labour costs. Given total budget size, success in reducing these, and in securing proceeds from asset sales, is one way of augmenting resources for patient care in a harsh climate for public expenditure. It is mistaken to argue, as does Shaoul (1998, p. 95), that the problem definition was wrong in 1989 because ‘Capital costs were not a major cost’. Quite apart from the large absolute amounts, reconfiguring the NHS asset base is undoubtedly one way of securing more efficient labour utilisation. The issue deserving of the closest attention is the potential tension, discussed

above in Section 2(iii), between the signals given by *ex ante* project appraisal and *ex post* financial performance assessment.

Fourth, there is an issue - much broader than affecting capital charging alone - about the capacity of the 'centre' (ie the NHS Executives in each of the four health departments) to steer the NHS. On a managerial level, the centre has been understaffed, experienced disruptive staff turnover and has been buffeted by fashions, of which the PFI is currently the dominant one. Moreover, the intense media coverage of everything that happens in the NHS and high rates of ministerial turnover are inimical to the long time scales needed for the measurement of outcomes and the assessment of performance. The task is to steer the system from where it is currently moored to a better anchorage. Looking back over the period since *Working for Patients* announced that capital charging would be introduced, it is clear that this topic has not received enough top-level policy attention. An important example is that the transition to full weighted capitation was done mechanically, as a low-level exercise. Given the valuation problems enumerated above, a strong case could have been made for holding $\theta < 1$, as a recognition that capital charges should 'bite', but not too deeply until experience has been gained. A side effect of this lack of debate was the development of a number of misunderstandings about how capital charging worked - notably, the failure to recognise the circular flow and then claim that capital charging was damaging patient care by diverting resources.[14]

Fifth, though there is only space to tackle this briefly, there is the question of how capital charging fits into both the NHS internal market reforms and into NPM more generally. The commitment to establish the NHS internal market was undoubtedly the trigger for the adoption of capital charging:

[14] Contrary to Froud et al. (1998) and Shaoul (1998), capital charging cannot - provided there is no leakage - reduce the resources available in aggregate for patient care, though it may affect the geographical distribution of those resources. The fact that different NHS trusts find different percentages of their income being absorbed by capital charges is a consequence both of different asset holdings (some have more adjustment to make) and of differences in the mix of clinical activity. Those trusts with capital-intensive activity mixes should be receiving higher prices from their purchasers. In some cases, problems will arise when the purchasers of patient care from such a trust have in the past

in effect, pulling down off the shelf a proposal which had long been in circulation and could have been - but was not - implemented as a free-standing reform. Following the election of a Labour Government in 1997, it is still unclear what substantive difference the declared 'abolition of the internal market in April 1999' will make, though there will be no direct impact on capital charging, as purchaser-provider separation will stay.[15] The indirect effects are more difficult to predict, especially those relating to trust mergers in areas where there has been actual or potential competition. As regards NPM more generally, the idea of quasi-markets was undoubtedly favourable to the adoption of capital charging. However, other NPM tools such as the PFI may be damaging to it. For example, this paper has shown that the vulnerability of the NHS financial system to strategic behaviour by the private sector means that a large degree of inter-penetration brings the danger of system instability.

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been 'over target' and are losing from the operation of the distribution formula which each year attempts to move purchasers closer to target.

[15] Much terminology will certainly change, with 'commissioners' replacing 'purchasers' as one reflection of the downplaying of market language.

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ISSN 0962-4627