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BUDGETARY REFORMS IN THE NON-PROFIT SECTOR:
A comparative analysis of experiences in Health Care and Higher Education in the Netherlands

Tom L.C.M. Groot
Research Memorandum ARCA-RM-99-02
Budgetary Reforms in the Non-profit Sector: A comparative analysis of experiences in Health Care and Higher Education in the Netherlands

1. Introduction

A significant part of economic activity in the Netherlands is concentrated in the non-profit sector. Non-profit spending was 45.1% of gross national product in 1970, 60.3% in 1980 and 59.8% in 1993 (Tweede Kamer, 1994, p. 343). This sector is therefore of great economic importance to the national economy. Knowledge of the major problems in this sector, and how this sector is managed, may contribute to the welfare of society. However our understanding of management in the non-profit sector is very limited. Empirical research tends to treat only some parts of non-profit management, looking at specific subjects such as budgeting (Wildavsky, 1975) and performance evaluation (Hopwood, 1973; Otley, 1978). Most of the empirical work in non-profit management is restricted to one sector, such as the public health sector (Levey & Loomba, 1973; Feldstein, 1979; Reis Miranda et al, 1992), the higher education sector (Lumsden, 1974; Hopkins & Massy, 1981) or central government agencies (Buurma, 1986; Kooiman & Eliassen, 1987). This article tries to overcome some of these problems by evaluating budgetary reforms that have taken place in two different non-profit sectors: health care and higher education. This will provide an opportunity to examine, in a more comprehensive way, the effectiveness of specific changes in the management of non-profit organizations. By evaluating two different sectors we will also be able to draw some general conclusions regarding the applicability of these measures in different non-profit settings.

During the last two decades, the Dutch non-profit sector has undergone many budgetary reforms (Groot & Van de Poel, 1993). At the beginning of the seventies, it became clear that government expenditures had to be firmly controlled in order to balance the state budget. It was generally believed that diminishing the deficit would contribute to the macroeconomic policy of reinforcing private enterprise, and so stimulating economic growth. This led to a government policy on the non-profit sector which aimed at cutting budgets, enhancing efficiency and improving manageability of operations. The health care and higher education sector had similar problems during this period. Each sector had an inherent tendency towards autonomous growth in the supply of services, there was almost no clear understanding of the efficiency and effectiveness of operations, and the organizations in both sectors tended to become strongly bureaucratic (Vos, 1990; Maarse et al, 1991; Groot, 1988, 1992; Koelman et al, 1990). In the main objectives of Dutch budgetary reforms one recognizes the two basic doctrines of New Public Management: placing more emphasis on accountability for results and introducing more private sector management styles and techniques (Hood, 1995).

In the following sections, a detailed description of the budgetary reforms in the health care and higher educational sectors in the Netherlands will be given. As far as data are available, we will also try to assess the effects these reforms had on government’s three general objectives already mentioned: (1) cutting down expenses, (2) improving efficiency and (3) enhancing the manageability of non-profit organizations. Following the separate descriptions of budgetary reforms in each sector, an attempt is made to compare the
experiences of these sectors. The final section of this article presents some general conclusions.

2. The hospital care sector

In this section hospital care, excluding university hospitals, will be considered. Most of the Dutch general hospitals are non-profit private institutions, while most of their costs is financed by government. In 1989 social security paid 63% of the costs of curative health care, government funding paid 10%, insurance companies financed 17%, and other sources 10% (CBS, 1992). From 1939 to 1983 general hospitals were financed based on tariffs for each type of medical treatment, covering the costs of professional services such as surgery, laboratory tests, etc., and on a tariff per patient-day. This tariff covers most of the hospital's direct and indirect costs, such as for nursing, salaried physicians, laundry, maintenance and administration. This system has come to be known as the 'output financing system' of hospitals. The government exercised financial control by deciding on the tariffs, considering the nominal amount, the composition of the tariffs and the way they were calculated. However, econometric cost analysis showed that marginal costs were significantly lower than the average costs, on which the tariffs, and thus the revenues, were based (Van Aert, 1977). Because of this discrepancy between marginal costs and revenues, variances in production volume determined to a great extent the financial position of hospitals. If bed-occupancy rates were below expectations, deficits resulted, while a higher occupancy rate created surpluses. In this situation, it obviously became attractive for hospitals to maximize output, providing more treatments and achieving a high bed-occupancy rate. Hospital management and physicians easily found common cause in the expansion of diagnostic and therapeutic services, enhancing the income of both the hospital and the specialist (see figure 1 for a graphic representation). Since these hospital services, provided that they were recognized by the Ministry of Health Care, were always paid for, this financing system can be characterized as an output-based and open-ended budgeting system.

In this period, the costs of hospital care rose significantly, from 4.2% of gross national income in 1958 to 6.3% in 1970 and 7.9% in 1974 (Groot, 1983). It was generally believed that a great part of this cost increase was caused by the output-maximizing behavior of physicians and hospital management. Several cost containment measures were taken, such as the reduction of hospital investments (College van Ziekenhuisvoorzieningen) and a decrease in production capacity by eliminating thousands of hospital beds (Maarse, 1988). While these measures were implemented, cost increases diminished from 8.7% in 1979 to 3.7% in 1983. This obviously was not enough, and therefore the government decided to introduce an external budgeting system on the first of January 1983. In this new system, hospitals receive a fixed budget at the start of each fiscal year, containing all costs except the costs of independent physicians. In the first years these budgets were mainly based on the budget of the previous fiscal year, sometimes adjusted partly for changes in prices and salaries. Meanwhile, some government restrictions on the strict separation between out-of-pocket expenditures

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1 The term 'budgeting' was not used to stress the fact that this system operated on the basis of ex post facto billing by the hospital administration. Ex ante facto agreements on output and budgets did not exist at that time.
and salaries have been abandoned. The aims of this new budgeting system were threefold (Vos, 1990; Maarse, 1991):

1. Controlling and lowering the cost of hospital care.
2. Increasing the opportunities for hospital management and physicians to decide upon the allocation of resources and on the use of medical treatments.
3. Lowering the cost to the government of issuing and monitoring state regulations.

Figure 1: Costs and revenues under the system of Output Financing

![Diagram showing costs, revenues, and volume health care.]

AB = deficit because of negative volume variance CX*
DE = surplus because of positive volume variance X*F

External budgeting clearly is a closed-end budgeting system. The budget was set in advance and the institutions were given the freedom to spend it as they wished. During the fiscal year, however, the budget could not be altered or adjusted to the needs of the institutions. This led to a fundamentally different situation, in which output maximization no longer leads to increased financial resources. A lower occupancy rate now leads to a low occupancy rate profit, while a higher occupancy rate leads to a high occupancy rate deficit (see figure 2).

Under this new budgeting system, hospitals are entitled to accumulate budget deficits and surpluses and activate them on the balance sheet.

From 1983 onwards, the Dutch government changed the grounds on which hospital budgets were determined. The 1983 budget was basically the same as the 1982 budget adjusted for changes in prices and salaries. The 1984 budget included a 0.5% increase in volume, which was brought back to 0% in the 1985 budget. This system is known as historical budgeting. Since budgets are now based on budgets in previous year(s), this system can be characterized as an input budgeting system. This budgeting system has been considered unfair by many participants. The 1983-1985 budgets were based
on the 1982 budget, causing increasing financial problems to institutions which operated cost-effectively in 1982, while providing sufficient funds to hospitals which operated less efficiently in 1982. In 1985, a different system was implemented which was claimed to take the existing cost structure of hospitals into account, making a distinction between fixed costs (determined by the number of beds and the number of certified physicians) and variable costs (depending upon agreements between hospital management and insurance companies concerning number of admissions, nursing days and outpatients). This system was called the Bredero system and in 1985 it was only applied to the budgets for nursing, administration and housekeeping activities, amounting to only 30% of the hospital budget (Maarse, 1991).

Figure 2: Costs and revenues under the system of External Budgeting

In 1988 a similar system was introduced for all expenditure categories in hospitals. This system is called function-based budgeting (COTG, 1987). It contains three elements: fixed costs (related to the being in existence of the hospital), semi-fixed costs (a capacity or function-related component) and variable costs (a production-related component, based on production agreements between hospitals and insurance companies). Refer to table 1 for the composition of an 'average' function-based budget.

The availability component relates to the costs of maintaining the basic functions of a hospital. The basis is the number of potential patients depending on a specific hospital, which usually corresponds to the number of inhabitants living close to the institution. Hospitals receive about $40 for each such 'adherent patient'. Semi-fixed costs are fixed in the short term but variable in the longer term, depending on managerial decisions on the number of functions and their capacity (these are therefore discretionary costs). This category contains two elements. There are semi-fixed costs for nursing (the 'hotel function') depending on the number of officially recognized beds per hospital, and for the number and category of specialists serving in the
policlinic. These specialists are called 'gate specialists'. Each type of specialist has been priced according to costs for diagnostic testing, treatment and after-treatment care. The variable costs are related to agreements between hospitals and insurance agencies concerning the number of admissions, first outpatient visits, nursing days and days of day-care (see table 2 for an overview of these cost elements). This overview also demonstrates that over the years the importance of the production-related component in the budgeting system has increased, meanwhile decreasing the significance of the availability component.

Table 1: External function-based budgeting system (COTG, 1987)

<table>
<thead>
<tr>
<th>Components</th>
<th>Cost Behaviour</th>
<th>Relative Amount</th>
<th>Decision on parameters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Availability</td>
<td>Fixed</td>
<td>25%</td>
<td>By recognition</td>
</tr>
<tr>
<td>Hotel Capacity</td>
<td>Semi-fixed</td>
<td>10%</td>
<td>Recognition</td>
</tr>
<tr>
<td>Functional Capacity</td>
<td>Semi-fixed</td>
<td>25%</td>
<td>Recognition</td>
</tr>
<tr>
<td>Production</td>
<td>Variable</td>
<td>40%</td>
<td>By negotiation</td>
</tr>
</tbody>
</table>

Table 2: Parameters used in function-based budgeting for an 'average hospital' (in Dutch guilders, 1 guilder equals roughly 0.5 US dollars) (Vos, 1990).

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Availability</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adherence</td>
<td></td>
<td>130</td>
<td>80</td>
</tr>
<tr>
<td>2a Hotel capacity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of beds</td>
<td>23,000</td>
<td>11,000</td>
<td>11,000</td>
</tr>
<tr>
<td>2b Functional capacity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of specialists</td>
<td>60,000</td>
<td>350,000</td>
<td>353,000</td>
</tr>
<tr>
<td>3 Production</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Admission</td>
<td>180</td>
<td>900</td>
<td>1,150</td>
</tr>
<tr>
<td>Nursing days</td>
<td>25</td>
<td>45</td>
<td>60</td>
</tr>
<tr>
<td>Daycare</td>
<td>80</td>
<td>115</td>
<td>410</td>
</tr>
<tr>
<td>First outpatients visits</td>
<td>15</td>
<td>115</td>
<td>150</td>
</tr>
</tbody>
</table>

In the beginning of the nineties, the aim of government policy was to introduce market forces in financing the Dutch health care. This was first done by

2 Other specialists receive patients only by referral from polyclinical specialists. These specialists are included in the model as an additional charge on the costs of 'gate specialists'.

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requiring agreements between hospitals and insurance agencies for the variable costs in hospital budgets. The next step was the introduction of external budgeting of insurance agencies in 1991. A fixed total budget for insurance agencies transferred some of the financial risks to these agencies, stressing the importance of having effective financial control over hospitals. In the first years, these risks were limited to 10% of total costs. From 1996 onwards, insurance companies are expected to bear the financial risks related to the costs of medical treatments and of medicines.

Consequences of the Budgetary Reforms in the Hospital Sector

While the budgetary reforms in the Dutch health care sector took place, the performance of general hospitals changed in several ways. Shortly after the introduction of the external budgeting system, expenditures stayed well within budgetary limits. Starting with the Bredero system and later on during the function-based budgeting system, expenditures increasingly exceeded the budgets (see figure 3). This development parallels the increasing importance budgets place on the production-related components. Cost control therefore appears to have only been successful under the historical budgeting and Bredero budgeting system.

Figure 3: Budgets and expenditures of Dutch hospitals (in years 1982 to 1995)

If we look more closely at the real costs of hospitals since 1975 (see figure 4), a few significant changes can be detected. In the first place, real costs already stabilized before the introduction of the external budgeting in 1983 because of reductions of hospital investments and elimination of hospital beds. Together with the introduction of the external budgeting system in 1983, real operating costs of general hospitals decreased sharply. This decrease converted into a slight cost increase during the partial introduction (by the Bredero system in 1985-1987) and to a sharp cost increase during the full implementation of function-based budgeting. This is partly due to a slight increase in the number of admissions ('no. of intakes' in figure 4), ad-
missions per inhabitant ('no. of intakes / inhabitant' in figure 4) and the number of policlinical visits. The number of nursing days and mean hospital stay ('mean duration of stay') have been decreasing constantly since before the introduction of the external budgeting system. It looks as if budgetary reforms did not influence greatly the length of hospital stays. Shortly after the introduction of the external budgeting system the number of intakes was reduced while the number of policlinical visits increased: in-house treatment was obviously substituted by policlinical treatments. It has been argued that substitution of in-house stays by policlinical treatments lead to more efficient use of hospital resources. Efficiency of operations seems therefore to have benefited slightly from the budgetary reforms, although this benefit lasted only until the beginning of the nineties: since 1990 both the number of intakes and policlinical visits increased steadily. It seems as if the more components of the budget become dependent on hospital activity, the more successful hospitals become in increasing these activities. This gives the impression that the manageability of organizations has not improved significantly: despite attempts to reduce costs, the number of nursing days and the number of intakes do not seem to reduce drastically as a result of the budgetary reforms. The reasons may be that external factors not directly under control of hospital managers, like demographic factors (a large and growing part of the population is composed by elderly), increasing demand for medical care, technological developments and price increases of medicines and equipment outperform the impact of controllable factors.

*Figure 4: Performance of general hospitals during the period 1975 to 1995 (1975 = 100)*
3. The University sector

The development of the Dutch higher education system can be divided into three distinct phases (CBS, 1965-1991; Groot, 1988):

1. During the sixties, Dutch universities experienced sharply increasing student enrollments while receiving an increasing budget, in real terms, per student enrolled every year;
2. During the seventies the number of students continued to increase while the real budget per student enrolled became fixed;
3. During the eighties the number of enrollments stabilized and began to decline while state funding per student enrolled declined in real terms.

Until 1970 Dutch universities were financed on the basis of direct negotiations between university governors and the Minister of Education. In the early seventies, the first allocation model called ATOOM was introduced. This model allocated state funds to universities in accordance the number of students enrolled. Funds for research and other activities were also directly related to student numbers. Many considered this situation to be unjust, making it impossible for universities to specialize as mainly education oriented or mainly research oriented institutions. In 1978 therefore, the Ministry introduced a new budgeting system: the ITT model. This model allocated funds for teaching and research separately. Moreover, the teaching load now consisted of a fixed part and a variable part, making variations in the size of the budget only partly dependent on variations in student numbers. The fixed part was dependent on the number of ‘specializations’ offered, while the variable part was based on the number of students actually enrolled. The ITT model was employed to implement severe cutbacks in university budgets, urging universities to accept many more students while their budgets declined. The ITT model provided longer term projections which also served as a basis for four-year budget agreements between the Ministry and the universities.

As time passed, the ITT model was increasingly criticized, mainly because of the following dysfunctional effects it generated:

1. ITT (as well as ATOOM) induced universities to maximize teaching load. This could be attained by lowering success rates, so that students would remain longer in the university system.
2. ITT did not measure either the actual research load of academics nor the research output. Thus the model did not provide incentives to academics to maintain or enhance their research output.
3. ITT did not represent adequately the existing cost structure of universities. This diminished the credibility of ITT with policy makers.

In 1983, the Ministry decided to fund universities to a greater extent on output. To accomplish this aim the following two measures were introduced:

\footnote{ATOOM stands for ‘Ambtelijk Technisch Overleg Over Middelenverdeling’, to be translated as ‘professional-technical consultation about the allocation of means.’}

\footnote{It was called ‘Intentionele Taakstelling en Toewijzing’. Translated in english: ‘Intentional Task Assignment and Budget Allocation’.

\footnote{For each institution, the number of specializations was higher than the number of faculties.}
1. The introduction of *conditional funding of research* (Hazeu, 1983). Universities were invited to define specific coherent research programs, linking several research projects to a common theme. The quality of these programs had to be confirmed by faculty and university officials as well as by external experts in the same field of expertise. The Ministry then financed these programs for a five-year maximum period, after which an assessment of the quantity and quality of publications would determine whether government funding should be continued.\(^6\)

2. A *new budgeting system* was implemented: the PG model\(^7\) (Ministry of Education, 1982; 1983). This model had the following main characteristics:

- separate funding of university tasks, such as teaching (fixed and variable costs, based on number of students enrolled), research (separation between teaching-related, fundamental and conditionally funded research) and social services (mostly patient care and projects for international cooperation, with funding determined by negotiation for specific activities or projects);
- a large part of research funding was based on research proposals and research output (such as the number of Ph.D. degrees awarded);
- the PG model tried to capture as closely as possible the existing cost structure of the universities.

Shortly after the implementation of these measures, the Minister came to the conclusion that they would not lead to the necessary budget cuts in the short term. It was therefore necessary to implement two very strong additional economizing measures. In 1983, a mixed committee of government and university officials decided on a drastic cutback program, reallocating and concentrating faculties between universities to lower the number of different teaching and research centers. This operation, known as the TVC operation ('division and concentration of tasks'), resulted in a cutback in government spending of 130 million US dollars over 1984-1987. A few years later, a second round of drastic and structural measures were taken in more or less the same way.\(^8\) This operation was known as the SKG operation ('allocation of opportunities to growth') and yielded savings of 65 million US dollars in the period 1987-1991.

The PG model has been in use for ten years. During this period, the model has been changed frequently in order to keep up with the peculiarities of each university. As time passed, these changes made the model very complex. By 1990, because of the many complex relations in the model, it was no longer clear what consequences a slight change in one of the exogenous variables would produce for the budget of a specific university. The model wasn't predictable any more, and therefore was no longer useful as a management control instrument. It 'imploded' under the heavy weight of its own complexity. Therefore, the Ministry introduced the HOBEK model in 1993.

\(^6\) In the event, no funding was discontinued after the first round of evaluations because there was a feeling that this period has been too short to make a far-reaching decision.

\(^7\) This is the 'Personeel-Geld Model', to be translated as the 'Positions-Money Model'.

\(^8\) The only difference was that this operation was planned solely by the Ministry of Education, without the participation of university officials.
The HOBEK model no longer attempts to give a reliable representation of the existing cost structure of universities. Instead, the main purpose is to provide a simple and transparent model that enables university officials to make their own calculations. The main purpose of this model is to influence the behavior of university officials and academics, to improve teaching efficiency and enhance both the quality and quantity of academic research. The variables included into the model are therefore more output-oriented and also more objective. In fact, HOBEK concentrates on four main objectives:

- Shortening the length of stay of students in the university system.
- Two factors were introduced in the model: it would not pay for students staying longer than four and a half years in the university, and the budget is partly based on the number of degrees issued by the university.
- Granting a significantly greater portion of research based on considerations related to the expected value of research to society. This approach gave parliament more say in the direction of scientific research.
- Enhancing the productivity of academic research by granting money for each dissertation and by certifying and funding 'research schools' that give Ph.D. students a specialized training in research methods and techniques.
- Giving stimulus to universities to cooperate and eventually integrate with polytechnics by funding them on an average price per student: the marginal costs per student are less, so there is some incentive to work on a larger scale.

In 1990 and in addition to these measures, the Association of Universities in the Netherlands (VSNU) took the decision to introduce a new system of quality care in university research which took effect in 1993 (VSNU, 1990). Under this system, once in every five years the quality of university research in each of the disciplines is evaluated by a committee consisted of internationally renowned peers.

Consequences of the Budgetary Reforms in the University Sector

During the seventies it became clear that cost control was necessary, but the existing ATOOM budgeting system appeared not to be useful for this purpose. Because the ATOOM model tied the budgets strictly to student numbers, a rise in enrollments caused an automatic increase in university budgets (see also figure 5).

The ITT model was a new departure: budgets were less dependent on student numbers and the government dictated severe budget cuts by economizing on personnel (salaries) and lowering student-staff ratios. Real expenditures actually declined, while student numbers continued to rise. This combination caused the real operating expenditures per student to fall sharply. The introduction of the PGM model weakened the budgetary pressure, mainly because this model tried to reflect exactly the existing cost structure of each university. This made it quite easy for university managers to claim additional financial assistance. The financial problems eventually motivated the Minister to take two drastic measures: the TVC and SKG operations. Both operations were aimed at restructuring the university system by reducing and reallocating teaching and research capacity. From figure 5 it becomes apparent that these operations did not lead to immediate and significant reductions in real operating expenditures.
The efficiency of operations in research seems to have benefited from the budgetary reforms. If we look at the most important output indicators (see figure 6), it becomes clear that the productivity of academic work has increased considerably. From 1986 onwards the increase in number of f.t.e. academic staff for research is lower than the growth in number of dissertations and of scientific publications. It is, however, not entirely clear whether this is a consequence of the budget system used. The number of publications was already increasing during the ITT period, although it was only after 1983 that the number of publications determined, in part, university budgets. The situation is quite different when the dissertations are concerned. The figures indicate that the introduction of the conditional funding of research in 1983 caused a sharp increase in the production of dissertations. Since the writing of a Ph.D. thesis takes four to five years, one can see the increase in the number of dissertations taking place from 1987 onwards, four years after the introduction of conditional funding of research.

In assessing the impact of the budgetary reforms on the manageability of institutions, two major developments seem relevant. The first is a drive towards budget systems which finance individual tasks, making a distinction between teaching, research, social services, and so forth. Identifying different university activities enables university managers and Ministry officials to monitor and control each activity separately. The second development is a change from input budgeting to output budgeting. More and more, budgets are based on the number of publications and yields in teaching, leading to a (generally speaking) more 'output-oriented' attitude of Dutch academics. Elaborate planning and budgeting models, like the PG model, do not seem to contribute much to the manageability of institutions. Because of its complexity, the PG model became an instrument in the hands of bureaucrats and highly specialized model builders, in stead of a tool for university decision-makers. The introduction of HOBEK marks a turning point in this respect: HOBEK's transparency generated clear and unequivocal signals to university administrators what decisions they needed to take in order to effectively manage the financial position of their institution.
4. Comparing the two sectors

During the seventies and eighties government policy towards the two non-profit sectors was aimed at reducing cost and improving efficiency. In order to achieve these objectives, the government introduced several budgetary reforms in each of the sectors. These changes were not identical and, in a sense, were even antithetical. In health care, the existing output budgeting system was replaced by a mixed system, consisting partly (around 60%, see table 1) of input budgeting (budgeting of capacity and functions) and partly (some 40%) of output budgeting (budgeting of treatments and nursing days). In the higher education sector the existing input budgeting system was replaced by a more output-based budgeting for research and in part for teaching, together around 30% of total budgets, and by process-based budgeting (mainly for teaching, some 70% of the budget).

The changes in both sectors are antithetical: while the health care sector is drifting away from output budgeting, one can see the higher education sector trying to introduce more output-based budgeting. A logical explanation for this is that it is not only technological characteristics, which determine the appropriate control system, but also managerial objectives. In this case the two sectors had different problems to overcome. The health care sector had severe problems because of over-production of health care services. Government policy was aimed at diminishing this over-production by putting an end (at least partly) to output-based budgeting. The higher education sector’s severest problem was just the opposite: under-production of research. In this case, the Ministry developed an output-based budgeting system, giving incentives to academics to generate a larger research output.

The current budgeting systems used in health care and higher education are mixed systems: partly output- and partly input-based. Comparing these
budgeting systems, it becomes clear that output budgeting has not been very
effective in controlling costs. In both sectors it produced incentives to in­
crease output. In the health care sector, the 'output financing system' stimu­
lated hospitals to maximize health care services. In the higher education
sector, the PG model stimulated teaching and research activities, preventing
operating costs from continuing to decline. These increases in output caused
cost increases, outweighing the attempts to economize.

In order to economize drastically, additional measures had to be taken, both
in the health care sector and in higher education. It seems that mixed budg­
eting systems alone are not capable of generating drastic cost-cutting be­
havior in these non-profit sectors. A very effective additional measure, used
in the health care sector, is 'historical budgeting'. In the university sector the
additional measures, like the TVC and SKG operations, were aimed at ad­
justing teaching and research capacities.

5. Conclusions

In both sectors, government policy was strongly oriented towards controlling
costs and this aim strongly influenced the budgetary reforms in the early
eighties. The most effective measures were not the most elaborate budgeting
systems, but the simple ones like the historical budgeting and the ITT model.
In order to enhance the effectiveness of cost control measures, additional
structural measures were taken aimed at reducing production capacities in
each sector. In the hospital sector measures were taken to reduce the number
of hospital beds, in the university sector the number of teaching programs
were reduced and reallocated (by the TVC and SKG operations).

The efficiency of operations improved in some areas but certainly not in all.
It seems as if in operational decisions where the interaction with patients or
students (co-)determines the outcome and efficiency of operations, like
length of stay in hospitals and success rate in teaching, no significant
improvements in efficiency have been realized. In operational decisions with­
out much participation by clients, like the decision in hospitals to treat pa­
tients in-house or policlinically, or the decision in universities to allocate
more time to research in stead of teaching, the data seem to confirm some
improvement of efficiency.

In both sectors decisions have been taken to enhance the manageability of
organizations. In the hospital sector, market forces have been introduced by
involving insurance agencies in contracting arrangements with hospitals.
The presumption behind this idea is that insurance companies have more
detailed information and in-depth understanding of hospital operations than
government officials have. In universities less detailed planning and budg­
eting models are employed, stressing the autonomy of university institutions
have in making operational decisions. In both sectors the Dutch government
adopted a more decentralized style of decision making.

This study only scratched the surface of the impact budgetary reforms had
on cost control, efficiency of operations and manageability of organizations.
Given the little amount of information available and the highly aggregated
nature of it, we were only able to reach tentative conclusions. Next to the
budgetary reforms studied, many more exogenous factors not included in
this study exert influence on the conduct of hospitals and universities. The
aim of this study however was limited from the outset. We were mainly in-
interested in two broad questions. The first is: do budgetary reforms in two non-profit sectors differ, and if so, what differences can be identified? The second broad question is: can we possibly attribute some changes in conduct by non-profit organizations to the budgetary reforms implemented? As we have shown in this paper, budgetary reforms do indeed differ between non-profit sectors and some seem to have been caused by the budgetary reforms. However, the history of budgetary reform shows that the Dutch government used additional measures to support budgetary reform in each of the sectors. Furthermore, the data give reason to believe that more exogenous factors that budgetary measures impact on the performance of non-profit organizations. We could very well advance in our research by taking the indications from this paper and test them more rigorously in settings or one or a limited number of organizations undergoing a process of budgetary reform.

References

Anthony, R.N., Herzlinger, R.E. (1980), Management Control in Nonprofit Organizations, Richard D. Irwin, Inc., Homewood Ill., USA
CBS: Centraal Bureau voor de Statistiek (1961), Kosten en financiering van de gezondheidszorg in Nederland 1958, De Haan, Zeist
COTG: Centraal Orgaan Tarieven Gezondheidszorg (1987), Functiegericht budgettering: Algemene ziekenhuizen, Nota, COTG, Utrecht
Feldstein, P.J. (1979), Health Care Economics, John Wiley & Sons, New York, USA
Groot, L.M.J. (1984), Intramural health care budgeting, Effective Health Care, 2/2, Elseviers, pp. 69-81
Herzberg, F. (1966), Work and the Nature of Man, Cleveland, World.


Koelman, J.B.J., Vries, P. de, Boorsma, P.B. (1990), *Bekostiging van het specifieke hoger onderwijsbeleid*, University of Twente, CSHOB


Ministerie van Onderwijs en Wetenschappen (1983a), *Het plaatsen-geld-model, een korte toelichting op het nieuwe financieringsmodel voor het wetenschappelijk onderwijs*, Info 1, Department of Information, Den Haag


Vught, F.A. van (1987), *Plan- en Marktcoördinatie in het Hoger Onderwijs*, lecture, 17 December, CSHOB, University of Twente

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