

# Hospital Financing in the Netherlands

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**A**s in other industrialized countries, the health care sector is an important element of the Netherlands' economy. As a share of gross domestic product (GDP), national health expenditures in the Netherlands rose from 6 percent in 1970 to 8.2 percent in 1980 (23). The growth rate slowed in the 1980s; by 1991, national health expenditures accounted for only a slightly higher share of GDP at 8.3 percent.<sup>1</sup> Health care expenditures grew by a cumulative increase of 185 percent from 1970 to 1981 but by a cumulative increase of only 51 percent from 1981 to 1991 (2). The importance of health care to the Dutch economy is also illustrated by the fact that health care employment accounted for over one-tenth of total employment in 1991, and investments in the health care sector amounted to 8.4 percent of total investments in the economy (18).

Despite the relatively constant ratio of national health expenditures to GDP over the past few years, major reforms of the Dutch health care system initiated in the late 1980s arguably belong to the most radical planned so far for the 1990s in any OECD country (4,22,24). The main objective of the reforms (which are based on a report of the so-called Dekker Committee, *Willingness to Change*) (4) was to combine a national health insurance system with managed competition to improve efficiency and achieve more effective cost containment. Currently, however, there is substantial uncertainty about the future of the Netherlands' re-



<sup>1</sup> In some publications a higher percentage is found. For example, the *Financial Report on Health (Financieel Overzicht Zorg)*, annually published by the Ministry of Health, mentions a figure of 9.8 percent for 1991 (16). This percentage, however, includes a number of health-related social expenses and, for that reason, should be used carefully in international comparisons.

form process. The stepwise implementation of the Dekker Committee reforms has stopped because of increasing doubts about the ability of managed competition to contain costs and because of strong opposition from some interest groups. The new government that took office in August 1994 has rejected the approach of implementing major reforms to the system, preferring to change its health care system on an incremental basis. Therefore, it is not clear which of the Dekker Committee reforms will be adopted in the future. This chapter presents changes to the system that have occurred and discusses several possible future scenarios.

Prior to the reforms, the Dutch system had (and still has, until or if the reforms are fully implemented) two important social health insurance schemes. The first, the *sickness fund scheme*, which came into force in 1965-66, provides mandatory health insurance to people earning less than a given income and is administered by independent, nonprofit sickness funds. It covers basic health services, which include the services of general practitioners and specialists, ambulatory and outpatient care, and acute hospital care. The scheme is financed by income-dependent contributions from employers and employees (i.e., payroll taxes), determined annually by the central government. In 1991 about 61 percent of the population was enrolled in the sickness fund scheme.

People who earn more than the income ceiling are not entitled to join a sickness fund. Most of these people voluntarily enroll in a private health insurance plan and pay risk-related premiums. The income ceiling explains why the Netherlands has the highest percentage of any national population within the European Community (39 percent) with private health insurance for basic health services. This share is still relatively small, however, compared with the share of the U.S. population that is covered through employer-based private health insurance. Private insurers in the Netherlands offer the same basic benefit package as the

sickness funds, but they are more flexible with respect to copayment rates and amenities (e.g., coverage of private hospital rooms). These arrangements, combined with different risk structures of insurance plans, has led to considerable variation in private health insurance premiums. Private health insurers are not allowed to terminate insurance coverage for high-risk subscribers.

The private health insurance industry has a complicated structure. Private health insurers can operate on a for-profit or not-for-profit basis. Additionally, sickness funds have collectively organized their own private health insurance plans to retain subscribers who pass the income ceiling set for the sickness fund scheme. Private insurers may also offer other kinds of insurance besides health coverage to subscribers. In contrast to the sickness funds that traditionally were regionally organized with almost no competition among them (i.e., most have been regional monopolies), private health insurers have operated nationwide in a competitive market. Since 1994, however, sickness funds have been allowed to operate nationwide to stimulate competition between sickness funds and private health insurers (13).

The second important type of health insurance in the Netherlands is the *exceptional medical expenses scheme* established in 1968, which is national in scope. The entire population, irrespective of income status, is compulsorily insured through this system, which is financed primarily from income-related contributions (22).<sup>2</sup> Originally it covered long-term or chronic care (e.g., nursing homes, psychiatric hospitals, care for the mentally handicapped), but as part of the health care reform process, the scheme now also provides some benefits (e.g., pharmaceuticals) formerly covered by the basic sickness fund scheme or private health insurance. The administration of long-term benefits is handled by the individual's insurer for basic services (22).

<sup>2</sup>The exceptional medical expenses scheme also partially funds social services. The whole population is eligible for social services, which includes domiciliary care and old peoples' homes. These services are financed by the exceptional medical expenses fund, general taxation, and patient out-of-pocket payments (22).

Health care funding is derived from several sources. In 1991, almost two-thirds (64.2 percent) of health expenditures were paid by the social insurance sickness funds, 16.4 percent came from private health insurance (which includes the separate system for civil servants), 10.3 percent were paid from general tax revenues, and the remaining 9.1 percent was paid directly by patients out-of-pocket. (The greater part of patient payments are contributions for the “hotel” costs of long-term care facilities.)

One of the cornerstones of the health reform process in the Netherlands is the introduction of a compulsory, unified *basic health insurance scheme* for people of all income levels designed to eventually replace both the sickness fund and exceptional medical expenses schemes. According to the Dekker Committee, basic insurance would cover the bulk of health and social services, perhaps accounting for as much as 85 percent of expenditures on these services, but there has always been considerable political discussion about this percentage (26). Health services not covered by the basic insurance scheme (e.g., some drugs, dental care for adults, cosmetic surgery (22)) could be covered by voluntary supplemental health insurance. Health insurers would decide the premiums for these supplemental services.

Sickness funds and private health insurers will administer the new scheme and the traditional boundaries between them will probably be eliminated. The basic health insurance scheme is to be partially financed by means of income-dependent contributions determined by the national government and paid into a central fund (tentatively estimated to cover 85 percent of health expenditures) and partially by competitive flat-rate premiums paid directly by individuals to insurers (the other 15 percent) (22). The central fund, in turn, will pay a risk-related premium to the insurer (either a private carrier or a sickness fund) chosen by an individual. Insurers would have an incentive to keep flat-rate premiums low (which could differ among insurers) and the quality of care high to attract consumers (25).

The competitive process envisaged for the health insurance market will be managed by gov-

ernment regulation to counteract possible negative effects of free-market competition (6). Government regulation strictly precludes adverse selection, although there are doubts about the effectiveness of this regulation (27). Sickness funds will no longer be required to contract with all providers; all insurers will be free to contract with the most efficient providers of care (22).

To date, implementation of the managed competition health reforms is still not complete because of political obstacles and many uncertainties about the reforms’ potential to contain health care costs. Several major policy issues still need to be resolved including the following:

- the relative shares of income-dependent contributions versus flat-rate premiums for financing the basic health insurance scheme,
- which health services should be covered through supplemental instead of basic health insurance, and
- the development of a system of risk-adjusted payments from the central fund to the health insurance agencies that administer the basic health insurance scheme (9,13).

## STRUCTURE OF THE HOSPITAL SECTOR

Hospital care in the Netherlands is delivered primarily by private, nonprofit, voluntary institutions. Most former public hospitals (which were often owned by local governments) have been transformed into private entities. Usually, the public proprietor has only formal authority to appoint the members of the hospital board. About 15 percent of acute care hospitals are still public (22). For-profit hospitals were prohibited in 1971 by the Hospital Facilities Act (*Wet Ziekenhuisvoorzieningen*). (Although most hospitals are nonprofit institutions, they can earn surplus revenues.) In addition, the Sickness Fund Act (*Ziekenfondswet*) and the Exceptional Medical Expenses Act (*Algemene Wet Bijzondere Ziektekosten*) prohibit reimbursement of health services provided by for-profit health centers or private clinics.

Acute hospitals can be divided into three categories: general, academic, and special hospitals. General hospitals accounted for almost three-

fourths of all acute care hospitals in 1990. Special (or categorical) hospitals (about 22 percent of acute hospitals) perform only a limited number of medical functions directed at a single category of patients. Examples of services offered by special hospitals include asthma treatment, pediatric care, rehabilitation, and epilepsy treatment. Academic hospitals (about 5 percent of acute hospitals) are best understood as quasi-public entities. The Minister of Education appoints the members of the board, and employees have the status of public servants. Academic hospitals receive supplemental funds from the Ministry of Education for teaching and research activities.

## PHYSICIANS

Acute care hospitals are the domain of medical specialists. Organized in small professional units, specialists deliver inpatient and ambulatory care and daycare within hospitals. Only a small group of hospital physicians, such as ophthalmologists, psychiatrists, plastic surgeons, and orthopedic surgeons, practice part-time outside of a hospital. This may change in the near future, however, as the number of freestanding ambulatory care centers increases.

The majority of medical specialists are paid on a fee-for-service basis. Although the exact number of medical specialists who receive fees for services is not available, a rough indication is that in 1986 about 63 percent of all registered specialists worked on a fee-for-service basis. Unlike the incomes of salaried specialists, their earnings are not included in a hospital's budget. Fee-for-service specialists often pay the hospital in which they work for the use of certain facilities (e.g., personnel in the outpatient setting, supporting physicians, space). Not much is known about these arrangements.

Fees for specialist care are determined in negotiations among the National Association of Sickness Funds (*Vereniging van Nederlandse Ziekenfondsen*), the National Association of Private

Health Insurers (*Kontaktorgaan Landelijke Organisatie van Ziektekostenverzekeraars*), and the National Association of Medical Specialists (*Landelijke Specialisten Vereniging*). Negotiated fees require approval by the Central Agency for Health Care Tariffs (COTG) (see the discussion of hospital operating costs). If the parties do not reach an agreement, the COTG is authorized to establish fees unilaterally. According to the Health Care Tariffs Act, the Minister of Health may give binding instructions to the COTG for specialists' fees (10).

A continuing inefficiency in Dutch health care is that specialists' compensation is often very generous. Since the end of the 1970s, expenditures for specialist care have been a source of great concern and several initiatives to reduce them have not had much success. In 1984 the Ministry of Health and the National Association of Medical Specialists negotiated an agreement that in part extended the practice of reducing fees when specialists overprovided services. Implementation of the agreement was a great failure, however, because in part it was impossible to detect when individual specialists overprovided services and there was no explicit expenditure target in place.

Patient cost sharing was introduced in 1988 as a means of curbing the costs of specialist care. Sickness fund patients were required to pay out-of-pocket Dfl25 when visiting a medical specialist.<sup>3</sup> Heavy criticism of this requirement (which was echoed by critics in the parliament) brought an early end to this practice (10).

An interesting development took place in 1989 when a Five-Parties Agreement (*Vijf Partijen Accord, or VPA*) was negotiated among the National Association of Sickness Funds, the National Association of Private Health Insurers, the National Association of Civil Servants Health Insurance, the National Association of Medical Specialists, and the National Hospital Association. The VPA is a good example of self-regulation: the Ministry of Health did not act as a formal partici-

<sup>3</sup>The exchange rate in January 1994 was approximately \$US.0

part in the negotiations but merely approved the results. The VPA had important repercussions for specialists' fees. First, the 1989 level of expenditures was accepted as an expenditure target for specialist care for the 1990 to 1992 period. If the target were exceeded, fees would be retrospectively reduced to compensate for the difference between target and actual expenditures. A second part of the agreement further equalized fees paid by the sickness funds and private health insurers. (Private insurance fees had always been much more generous than sickness fund fees.) Third, fees were restructured to reduce the income inequality among different medical specialties. Fees for some specialties were lowered (e.g., cardiac surgical fees were reduced by 30 percent, cardiology fees by 12.5 percent, and radiodiagnostics fees by 15 percent), and fees for other specialties were raised (e.g., pediatrics fees were increased by 10 percent, and psychiatry and rehabilitation fees by 25 percent) (10).

Not surprisingly, specialists who lost income under the agreement heavily opposed the VPA. Some blamed the National Association of Medical Specialists for the poor bargaining outcome and founded their own association (*Nederlandse Specialisten Federate*). At the other end of the spectrum, another association (*Nederlandse Specialisten Genootschap*) was formed that criticized the National Association of Medical Specialists for its exaggerated attention to earnings and its lack of attention to the quality of care.

Aggregate expenditures for fee-for-service specialist care increased moderately in the 1980s (table 6-1). The ratio of expenditures for specialist care to expenditures for general and special hospi-

**TABLE 6-1: Growth in Expenditures for Fee-for-Service Specialist Care, 1980-91**

| Year | Percentage increase over the previous year |
|------|--|
| 1982 | 8.0  |
| 1983 | 3.8  |
| 1984 | 0.2  |
| 1985 | 3.2  |
| 1986 | 4.3  |
| 1987 | 1.8  |
| 1988 | 2.1  |
| 1989 | 3.8  |
| 1990 | 5.8  |
| 1991 | 10.5                                       |

NOTE Expenditures for dental specialists (orthodontists) are included in the figures.

SOURCE Ministry of Health, *Financial Report on Health* (The Hague: Ministry of Health, various years).

tals rose only slightly during the past decade, from 21.2 percent in 1983 to 22.4 percent in 1991 (table 6-2). Nevertheless, government goals with respect to specialist care were not achieved; for instance, from 1986 to 1987, expenditures for specialist care exceeded government goals by about Dfl100 million. In addition, spending on specialist care has been escalating since 1989 (table 6-1). The Ministry of Health estimated that outlays exceeded the target by Dfl174 million in 1990 and Dfl1360 million in 1992, although these amounts were disputed by the National Association of Medical Specialists.

There are several possible explanations for the failure of expenditure targets. The number of medical specialists has increased and the demand for health services continues to expand. Also, be-

**TABLE 6-2: Hospital Expenditures, 1983-91**

| Millions of Dfl                                  | 1983   | 1991   | Change (in percent) |
|--|--------|--------|---------------------|
| General, special, academic (A)                   | 11,608 | 14,151 | 27.9                |
| General and special (B)                          | 8,882  | 11,064 | 24.6                |
| Fee-for-service medical specialists (C)          | 1,887  | 2,47   | 31.2                |
| Total hospital expenditures (THE) (A+C)          | 12,995 | 16,528 | 27.2                |
| Share of THE in national health expenditures (%) | 33.5   | 31.3   | -2.2                |
| Share of THE in gross domestic product (%)       | 3.4    | 3.1    | -0.3                |

SOURCE: Ministry of Health, *Financial Report on Health* (The Hague: Ministry of Health, various years)

cause the provision of services by other physicians affects an individual physician's income under an expenditure target if that target is exceeded, each physician has an incentive to provide more services to counteract anticipated declines in income from retrospectively reduced fees.

As a result of these and other factors, expenditures for fee-for-service specialist care have risen rapidly in recent years and are likely to continue to do so in the future if nothing changes. Downward adjustments of fees in reaction to target overruns have led to fierce reactions among specialists, who argue that the overruns are caused mainly by the increasing demand for health services. This appears in part to be a false argument, however, because the growth of the population and the share of the elderly in the population have not accelerated since 1989, and it is unlikely that medical technological innovations spurred demand to the extent that specialist care expenditures have risen (12).

## HOSPITAL OPERATING COSTS

### ■ Financing Model

Funding of hospital operating costs can best be conceptualized as a two-level decisionmaking process. At the national level, the policy issue is the share of the country's total health care resources that should be spent on hospital care. At the local level, decisions must be made about the amount of financial resources allocated to individual hospitals during the year.

#### *Aggregate Hospital Budget*

The national government decides the total amount of funds available to fund hospital services. Since the 1970s, the Ministry of Health's annual *Financial Report on Health (Financieel Overzicht Zorg)* has presented an evaluation of past spending on health care and statements about future spending (8). Initially, those statements were merely projections of health outlays; however, over the past decade, they have evolved from expenditure projections to expenditure targets that have not used coercive instruments to achieve

spending goals, and ultimately to expenditure limits that are accompanied by coercive instruments to ensure that the limits are not exceeded. The most frequently used instrument is the reduction of aggregate hospital funds in the following year to offset cost overruns in the previous year. The *Financial Report on Health* has therefore become an important policy document.

Decisions on the aggregate hospital budget are political and largely dictated by a policy of budgetary restraint that has affected all sectors of public spending since the end of the 1970s. Cost containment and expenditure cuts have become top-priority themes in public policy. Hospitals were accustomed to rapid growth of funds prior to the 1980s but have been confronted with increasingly scarce financial resources.

#### *Individual Hospital Budgets*

At the local level, the 1980s saw several major changes in hospital funding. The most radical change occurred in 1983 when the traditional hospital funding scheme was replaced by a new scheme called hospital budgeting.

#### **The Legal Framework**

Prior to 1983, payment of hospital services was regulated by the Hospital Tariffs Act (*Wet Ziekenhuistarieven*). The act, enacted in 1965, was a typical product of the 1960s when neo-corporatist (i.e., self-regulatory) arrangements were popular in policymaking. Decisions on hospital funding were dominated by the Central Agency for Hospital Tariffs (*Centraal Orgaan Ziekenhuistarieven or COZ*), in which representatives of the national hospital and sickness fund associations played an important role. The COZ was responsible for developing policy guidelines for hospital reimbursement. Those guidelines resulted from negotiations between representatives of the hospitals, which wanted generous reimbursement levels, and representatives of the sickness funds, which wanted to pay less. The COZ also approved each hospital's annual budget estimate, which often required an intensive, line-by-line screening procedure. The Ministry of Health's authority in this process was limited (8).

Beginning in 1982, hospital payment changed under the Health Care Tariffs Act, which created a more integrated decisionmaking structure for hospital rates and strengthened the national government's influence over hospital financing. The new act introduced a Central Agency for Health Care Tariffs (*Centraal Orgaan Tarieven Gezondheidszorg, or COTG*). The structure of this agency was a political compromise between the government, which wanted more authority, and the representative organizations, which had a strong lobby in the parliament and did not want to abandon their influence. The COTG is a quasi-nongovernmental body that performs four main tasks:

- developing policy guidelines,
- reviewing and approving rate proposals,
- giving advice to the Minister of Health on rate affairs, and
- providing arbitration in case of conflicts during rate negotiations.

The Ministry of Health has strengthened its formal position in several ways. First, the Minister of Health appoints the members of the COTG board based on consultations with the national associations of employers, employees, health insurers, and health care providers. Several committees (*kamers*) operate within the COTG; their members are representatives of the national associations. Second and more importantly, the law grants the Minister of Health the formal authority to give the COTG binding instructions on the development of policy guidelines. These instructions limit the room for negotiations within the COTG and its committees. (The introduction of hospital budgeting in 1983 was based on such an instruction.) Finally, the Minister has the authority to approve COTG rate guidelines (10).

### Introduction of Hospital Budgeting

Prior to 1983 each hospital prepared an annual budget estimate that was required to take account of COZ guidelines, which regulated allowable hospital costs that could be funded. There were dozens of guidelines, including the maximum amount of spending per patient-day for nursing staff for hospitals of different sizes; the maximum

number of occupied beds per nurse; the maximum number of administrators per 100 occupied beds; and the estimated life and annual depreciation of each class of equipment and building (8). The budget estimate was screened by the local sickness fund and required formal approval from the COZ.

Per diem charges operated as the main unit of payment for sickness funds and private health insurers. Per diem charges were calculated by first subtracting from the approved hospital budget those projected revenues from outpatient care and other services for which health insurers were charged separately (*nevenopbrengsten*) and then by dividing the remaining part of the budget by the projected number of patient days.

This traditional funding scheme was open ended because the COZ guidelines did not control the volume of hospital services. Guidelines mandating the maximum number of personnel to patient-days or occupied beds had a perverse effect, giving hospitals an incentive to provide a high level of services to prevent financial deficits and to achieve the growth considered necessary for high-quality care. The funding scheme was also open ended in other ways. In case of hospital deficits, temporary surcharges on the per diem rates were often approved.

Two major handicaps of the hospital funding scheme were that it did not have strong cost containment incentives and it did not encourage hospitals to provide services more efficiently. Policymakers believed that the scheme had contributed considerably to the escalating growth in hospital services and expenditures. Another problem was the labyrinth of COZ regulations, which strongly restricted the autonomy of hospitals.

The introduction in 1983 of a new funding scheme called hospital budgeting (with per diem charges maintained as the primary payment unit) meant that each hospital received an annual prospectively fixed budget under which most of its expenses had to be covered. Interest and depreciation expenses largely remained subject to full reimbursement (after recalculation), however, because they vary widely among hospitals.

Additionally, hospital budgets did not include fees paid to medical specialists as a political compromise to encourage specialists to accept hospital budgeting. The National Association of Medical Specialists effectively prohibited the incomes of their members from becoming part of hospital budgets, fearing that such an arrangement might restrict their professional autonomy and reduce their incomes. This exception has resulted in many managerial problems and is a continuing source of criticism and reform discussions. The major complaint of hospital managers has been that effective cost containment in hospitals cannot be achieved as long as physician fee-for-service payment remains outside of the budget and, therefore, outside the control of hospital management.

Hospital budgeting severed the traditional link between the provision of services and revenues. Because the new funding scheme was designed to improve efficiency, if a hospital spent less than its budget, it could add the surplus to its reserves. Hospitals were held responsible for deficits, however. Budget adjustments to relieve financial problems were no longer allowed.

Hospital budgeting also enhanced the decision-making autonomy of hospitals by eliminating many COZ guidelines that were no longer needed under a fixed budget. The National Hospital Association supported the adoption of the new budgeting system in exchange for greater autonomy.

### From Historical to Functional Budgeting

A problem in any budgeting system is how to determine the initial budget level and subsequent budget increases for individual hospitals. When hospital budgeting was introduced in 1983, the pragmatic approach of “historical budgeting” was chosen. Each hospital received funds equal to its 1982 level of expenses plus an adjustment for gen-

eral inflation and wage increases. In 1983 the government also approved a 0.5 percent increase in aggregate hospital budgets, but funds were reduced in 1985 and 1986.

Historical budgeting made rapid adoption of hospital budgeting feasible and prevented major funding shifts among hospitals. It also created problems, however. Hospitals with relatively low expenses in 1982 claimed that historical budgeting punished efficient hospitals and rewarded inefficient ones—a claim that has been justified by empirical research (11,14). Historical budgeting was also inflexible. Budgeted amounts did not reflect changes in the workload of hospitals, and adjusting budgets to changes in hospital capacity (e.g., beds and medical specialists) also proved difficult because of the absence of clear guidelines.

After some interim steps to address these problems, functional budgeting for general hospitals was implemented in 1988.<sup>4</sup> Functional budgeting rests on a normative allocation model under which the primary goal is to provide equal budgets to hospitals that perform the same tasks or functions. To achieve this, the functional budgeting scheme has three budget components: *availability*, *capacity*, and *production* (or service volume). The availability component part of a hospital’s budget is determined by the size of the population residing in the hospital’s clinical catchment area. The capacity component’s share is determined by the number of authorized beds and medical specialist units.<sup>5</sup> The production component’s share is established in annual negotiations between the hospital’s management and sickness funds and private health insurers regarding the projected volume of services to be provided to the sickness funds’ or insurers’ members (but they do not negotiate the prices for these services, which are set by the COTG). Production (volume) contracts are

<sup>4</sup> Funding of special and academic hospitals differs in some respects from the funding scheme for general hospitals (see box 6-2).

<sup>5</sup> Under the Hospital Facilities Act, hospitals need a certificate of need (CON) for each bed and medical specialist unit to receive social health insurance payments for these facilities (*Wet Ziekenhuisvoorzieningen*).

negotiated for the expected number of hospital admissions, inpatient days, outpatient visits, and daycare visits.<sup>6</sup> Additional contracts are required for some specific high-cost treatments, such as cardiac surgery or renal dialysis (these payment rates are also determined by the COTG) (see box 6-1 and table 6-B1).

The availability component averaged 15 percent of hospitals' budgets in 1992, the capacity component averaged 34 percent, and the production component averaged 48 percent. The remaining 3 percent was for specific high-cost treatments (18).

The availability and capacity components are designed to cover the fixed portion of a hospital's operating costs, and the production component is designed to cover the variable portion. Production contracts act as an instrument for adapting a hospital's funding to changes in demand for its services, making the budgeting scheme more flexible. Production contracts have also increased the role of health insurers in the budgeting process, which was marginal under historical budgeting, and have made the process more decentralized.

The transition from historical to functional budgeting was accompanied by major funding shifts among hospitals. The difference between a hospital's historical and functional budget can either be positive, indicating that the hospital was underfunded under historical budgeting, or negative, indicating that it was overfunded according to the normative allocation model that underpins the functional budgeting scheme. These reallocations may be substantial; for example, if functional budgeting had been introduced immediately and not in increments, 14 hospitals would have faced a negative reallocation of more than 8 percent and 20 hospitals a positive reallocation of more than 8 percent (1). To dampen these effects, a phase-in period required that a hospital's budget

could be adjusted by at most +2 or -2 percent of its budget from the previous year.

The introduction of a production component has made the budgeting scheme more open ended than historical budgeting. The historical budgeting scheme was more or less a closed system, enabling the Minister of Health to impose a cap on aggregate hospital expenditures. The Health Ministry, however, cannot effectively control the volume of production contracts. Production contracting means that the Ministry can only issue expenditure targets for a specific year. If total expenditures are higher than the target for a given year, expenditure cuts in subsequent years are needed to compensate for these overruns.

### Hospital Charges

The determination of a hospital's budget is different from the way in which hospitals get paid. Hospitals receive most of their funds (85 percent in 1992) through per diem charges for inpatient care. Per diem charges are determined by subtracting outpatient services (e.g., outpatient visits, daycare visits, outpatient ancillary services) from the hospital's budgeted amount (consisting of the availability, capacity, and negotiated production components). The net budget is divided by the contracted number of inpatient days, which are weighted by the class of hospital accommodations contracted for (classes usually refer to a private versus a double room) to arrive at the hospital's per diem charge.

Since the beginning of hospital budgeting, hospitals have continued to charge insurers separately for outpatient activities. With respect to inpatient services, each hospital has developed its own policy as to whether it charges insurers an all-inclusive per diem rate (i.e., the costs of surgery and ancillary services are included within the per diem charge) or charges insurers separately for each of

<sup>6</sup> A daycare visit is one in which a patient undergoes minor surgery or other minor treatment in a hospital. After treatment, the patient must stay in the hospital for several hours for recovery and monitoring. The patient does not stay overnight in the hospital, however. An outpatient visit is one in which a patient sees a specialist, receives diagnostic services (e.g., x-rays, echograms, lab tests), or even has minor surgery (e.g., a vasectomy) but leaves the hospital directly after receiving the services.

## BOX 6-1: An Illustration of Functional Budgeting in the Netherlands

The table below illustrates the practice of functional budgeting for a hypothetical Dutch general hospital. The hospital's scores for the various budget parameters (column 3) are multiplied by the corresponding COTG-approved rates (column 2) to arrive at the amount of funds to be budgeted for each budget component (column 4). Rates applied to the availability (a) and bed capacity (b) components are the same for all hospitals. Rates applied to the medical specialization units (c) vary according to the type of specialty and depend on the estimated average utilization of hospital resources for that specialty (for instance, a higher rate is assigned to cardiac surgery than to pediatrics). The rates of the production items (d through h) depend on the size of the hospital, with a larger hospital receiving a higher rate than a smaller facility. This arrangement is justified by the argument that larger hospitals often perform more difficult and expensive treatments than smaller hospitals.

Interest and depreciation expenses (i) are subject to retrospective reimbursement because these expenses vary widely among hospitals, which makes it difficult to develop general policy guidelines for payment. Hospitals receive a normative budget for investments in medical and other equipment (j). Hospitals also receive a normative budget for the number of salaried physicians in the hospital (k). Table 6-3 also shows that the revenues of hospital physicians who are paid on a fee-for-service basis are not included in the hospital's budget. The reallocation amount of the hospital's budget (l) depends on whether the hospital was underfunded or overfunded under historical budgeting. The hospital budget may contain several fixed amounts for specific activities (m) (e.g., a budget for the treatment of AIDS patients or for the utilization of high-cost pharmaceuticals, such as erythropoietin).

TABLE 6-B1: Determination of the Hypothetical Budget of a Hospital, 1988

| Budget parameters<br>(1)               | Rate (Dfl)<br>(2) | Score<br>(3) | Budget component<br>(4) |
|--|-------------------|--------------|-------------------------|
| a. Catchment area (persons)            | 130               | 78,000       | 10,140,000              |
| b. Beds                                | 11,000            | 350          | 3,850,000               |
| c. Specialist units (average)          | 350,000           | 35           | 12,250,000              |
| d. Admissions                          | 900               | 7,500        | 6,750,000               |
| e. Inpatient days                      | 45                | 89,500       | 4,027,500               |
| f. Outpatient visits                   | 115               | 28,000       | 3,220,000               |
| g. Daycare visits                      | 115               | 3,500        | 402,500                 |
| h. High-cost treatments                |                   |              | PM                      |
| i. interest/depreciation               |                   |              | PM                      |
| j. Budget for investments in equipment |                   |              | PM                      |
| k. Budget for salaried physicians      |                   |              | PM                      |
| l. Reallocation amount                 |                   |              | PM                      |
| m. Other                               |                   |              | PM                      |
| Total Hospital Budget                  |                   |              | 40,640,000 + PM         |

NOTE PM= *Pro memoria*: terms for which no figures have been given in the example

SOURCE: Budget parameters and rates are from Centraal Orgaan Tarieven Gezondheidszorg (COTG), *Annual Report (Jaarverslag)*, 1990; scores and the resulting budget components are hypothetical and were provided by the author (J.A.M. Maarse, 1994)

## BOX 6-2: Funding of Special and Academic Hospitals

Special hospitals have been subject to historical budgeting since 1983. The development of a normative scheme, however, does not make as much sense for special hospitals as for general hospitals as most special hospitals are not comparable with each other; for example, there is only one hospital for ophthalmological diseases. Nevertheless, a budgeting system somewhat similar to the functional budgeting scheme for general hospitals has been used for special hospitals. In 1985, production contracts with health insurers were introduced; as with general hospitals, such contracts have increasingly determined a larger proportion of a hospital's budgeted amount. Additionally, the COTG has used some elements of the functional budgeting scheme for general hospitals to determine allowable reimbursable costs for special hospitals. Finally, patient per diem charges are used as the primary unit of payment.

Arrangements for financing capital investments for special hospitals are similar to those for general hospitals. After government approval, interest and depreciation payments are covered through per diem charges. Special hospitals are also subject to Article 18 regulation.

Funding for academic hospitals differs in many respects from the funding of general hospitals. To begin with, academic hospitals receive a budget from the Ministry of Education for teaching and research activities. In 1991 this budget amounted to 25 percent of the total budget for academic hospitals. Moreover, since 1985 budgets for academic hospitals have been based mainly on production contracts with health insurers for an extensive list of high-cost treatments. Examples include neonatology, MRI, open-heart surgery, kidney transplantation, PTCA, renal dialysis, chronic ambulatory peritoneal dialysis, radiotherapy, bone marrow transplantation, rehabilitation, heart transplantation, and IVF. Rates for these treatments are determined by the COTG. Availability or capacity components do not determine any part of an academic hospital's budget. Instead, academic hospitals are paid a much higher rate for high-cost treatments than are general hospitals; academic hospitals receive the entire costs of high-cost treatments, whereas general hospitals are paid only for that portion of the costs not covered by the availability and capacity components. Academic hospitals argue that a considerable discrepancy often exists between allowable rates and the actual costs of providing high-cost services, in part because the rate-setting process often lags behind the growth of medical innovation in academic hospitals. An important similarity between academic and general hospitals is that patient per diem charges are the most important unit of payment. As with general hospitals, there is a trend toward uniform "output pricing" for some inpatient surgical and ancillary services.

Another difference between academic and general hospitals relates to the financing of capital investments. Until 1988, capital investments of academic hospitals were financed by the government, however, capital financing arrangements are now similar to those of general hospitals.

SOURCE: J.A. M. Maarse, 1994

these inpatient services. Because of the different policies: per diem rates charged by different hospitals cannot be directly compared with each other.

The current trend, however, is toward uniform "output pricing" for some inpatient surgical and ancillary services. The COTG has developed uniform, country-wide rates for along list of inpatient clinical services for which hospitals must now

charge separately. Charges for these services will no longer be included within the hospital's inpatient per diem rate, making per diem charges less inclusive. Another trend is that hospitals are increasingly required to charge COTG-determined rates for some high-cost treatments (e.g., renal dialysis, bone marrow transplantation, open-heart surgery) that cover not only the costs of the medical treatment itself but also the costs of ancillary

services such as intensive care and nursing services. Under the reformed health system of managed competition, the COTG has set maximum rates for all services. At least in theory, hospitals can compete by charging lower rates.

Until 1992, inpatient per diem charges rose rapidly in part because hospital costs were increasing and in part because of the somewhat paradoxical effect of using per diem charges as the main unit of hospital payment. If a hospital delivers fewer inpatient days than it contracted for in determining its prospective budget, the hospital is entitled to receive compensation for those undelivered days. The hospital makes up the shortage in its budget through surcharges (i.e., temporary additional charges) on its per diem rates in subsequent years. The higher per diem rates might even include interest payments on funds the hospital borrowed to cover deficits in operating costs in the previous year. The paradox is that a more efficient delivery of hospital services that results in the provision of fewer inpatient days correlates with an increase, rather than a decrease, in inpatient per diem charges in subsequent years. The trend toward output pricing should mitigate this effect since more services will be charged for on a per-service basis. Currently, per diem charges are estimated to account for about 70 percent of total hospital revenues, down from 85 percent in 1992.

If a hospital delivers more outpatient and day-care visits than it contracted for in determining its prospective budget, the hospital must pay back the surplus in the subsequent year by temporarily lowering its per diem rate. On the other hand, if a hospital provides fewer visits than contracted for, the hospital still gets paid for these undelivered services through temporary surcharges on per diem rates in subsequent years.

### Revision of Functional Budgeting

The functional budgeting scheme has been a continuing target for criticism. Hospitals have argued that the initial model was too crude; health insurers warned of certain perverse incentives in the scheme and also advocated a stronger position for themselves in the budgeting procedure. These

criticisms prompted a second major revision of the scheme in 1992, the most important elements of which were as follows:

- The rate for a daycare visit was raised to stimulate substitution of daycare for inpatient care.
- A built-in weakness of functional budgeting was that it encouraged hospital mergers because the rates for production items (e.g., admissions) increase with the size of the hospital. This merger effect was halved.
- The rates for admissions and first outpatient visits were weighted according to the average utilization of hospital resources. The weights were derived from those of the medical specialist units.
- The share of the production component was raised to 51 percent. The rationale for this change was to emphasize production factors and increase the flexibility of hospital budgeting.
- The budgeted amount that hospitals receive for services ordered by general practitioners (mainly laboratory services and x-rays) was increased. To obtain a good fit between the budgeted amount and actual production volume, the budgeted amount was made dependent on production contracts with health insurers.
- Radiotherapy was added to the list of specific high-cost treatments for which separate production contracts were required.

These changes have tempered criticisms of the functional budgeting scheme, although there is no reason to believe that they have ended. The revisions to the functional budgeting scheme have added to its complexity because the number of parameters has increased along with the need for more adequate and timely information.

### Summary

Adoption of the functional budgeting scheme in the Netherlands was the result of political influences and compromises. The fundamental compromise concerned how to achieve the goals of central cost control, on the one hand, and decentralized decisionmaking, on the other. Centralized cost control could be maximized by making

TABLE 6-3: Sources of Hospital Funds, 1991 (as percent of total funds)

| Source                              | General and special hospitals | Academic hospitals | Fee-for-service specialists |
|-------------------------------------|-------------------------------|--------------------|-----------------------------|
| Sickness funds scheme               | 64.0                          | 47.0               | 45.2                        |
| Exceptional medical expenses scheme | 5.5                           | 0.2                | 5.5                         |
| Private health insurance            | 28.0                          | 23.3               | 46.3                        |
| Taxes                               | 0.0                           | 25.2               | 0.0                         |
| Other                               | 2.5                           | 4.1                | 3.0                         |

NOTE: Percentages may not add up to 100 percent due to rounding.

SOURCE: Ministry of Health, *Financial Report on Health* (The Hague: Ministry of Health, 1992)

the hospital budget solely dependent on its capacity characteristics. Decentralized decisionmaking, however, would require more room for negotiations between hospitals and health insurers at the local level. The compromise was found in the introduction of a production component in the hospital budget. The price of this compromise is that the scheme has again become open-ended.

Another important political compromise was the decision not to include specialists' revenues within hospital budgets. The open-ended payment scheme for specialists has placed hospital management under pressure to contain costs and has also contributed to more open-ended hospital expenditures.

Political decisions and compromises also centered around more technical questions, such as these: Which parameters should be selected? What should be the weight of the parameters? Which services should be singled out for special "financial treatment" in the budget? Why do hospitals receive a special budget for AIDS patients and not for other categories of patients? The resolution of these questions is likely have important repercussions for hospital budgets.

### ■ Sources and Allocation of Operating Funds

Table 6-3 demonstrates the major role of the sickness funds in financing hospital expenditures. In 1991, sickness funds paid for almost two-thirds of general and special hospital care, almost one-half

of academic hospital care, and 45 percent of payments to fee-for-service specialists working in those hospitals. The role of the exceptional medical expenses scheme is very limited, funding only about 6 percent of general and special hospital expenses in 1991 (table 6-3). This is hardly surprising, as that scheme finances mainly long-term care. Tax resources are important only with respect to the funding of academic hospitals (25 percent of their funds in 1991), which obtain most of their money from the Ministry of Education. Private health insurance finances a relatively large share of hospital expenditures, especially with respect to payments for medical specialists. In 1991, private insurers paid for slightly more of their costs than did the sickness funds, and funded approximately a quarter of all hospital care (table 6-3).

In 1989, about 60 percent of aggregate hospital expenses went to pay for staffing salaries and 13.5 percent was for medical supplies. Depreciation and interest accounted for 14 percent of hospital operating expenses. The other 12.5 percent was for miscellaneous expenses.

### ■ Operating Expenditures

The introduction of hospital budgeting has had many effects (see, for example, 15), but only the financial ones are discussed in this chapter. A distinction is made between financial effects at the aggregate level and those at the hospital level.

TABLE 6-4: General and Special Hospital Budgets and Hospital Expenditures, 1979-91

| Year | Aggregate budget for hospital care (million of Dfl) (A) | Change in budget over previous year (in percent) (B) | Aggregate hospital expenditures (millions of Dfl) (C) | Change in aggregate expenditures over previous year (in percent) (D) | Difference between budgeted amount and aggregate expenditures <sup>a</sup> (E) |
|------|---|--|---|--|--|
| 1979 | No budget   | -  | 6,995   | 9.0  | --   |
| 1980 | No budget   | --   | 7,639   | 9.2  | --   |
| 1981 | No budget   | --   | 8,219   | 7.6  | --   |
| 1982 | No budget   | --   | 8,812   | 7.2  | --   |
| 1983 | 8,812   | --   | 8,874   | 0.7  | -0.7   |
| 1984 | 9,058   | 2.8  | 8,835   | -0.4   | 2.5  |
| 1985 | 9,097   | 0.4  | 9,043   | 2.3  | 0.6  |
| 1986 | 9,165   | 0.7  | 9,228   | 2.0  | -0.7   |
| 1987 | 9,242   | 0.8  | 9,250   | 0.2  | -0.1   |
| 1988 | 9,457   | 2.3  | 9,439   | 2.0  | 0.2  |
| 1989 | 9,706   | 2.6  | 9,86  | 4.5  | -1.7   |
| 1990 | 10,034  | 3.4  | 10,399  | 5.4  | -3.6   |
| 1991 | 10,656  | 6.2  | 11,064  | 6.4  | -3.8   |

<sup>a</sup> A negative percentage in column E indicates that actual aggregate expenditures were greater than the budgeted amount for that year

SOURCE: Ministry of Health, *Financial Report on Health* (The Hague: Ministry of Health, 1992).

Table 6-2 summarizes key information on the growth of hospital expenditures over the past decade. (Total hospital expenditures as calculated in this chapter include hospital payments to medical specialists, which are not included in the OECD's estimates of hospital expenditures.) On average, aggregate hospital expenditures increased by 27 percent over the eight-year period from 1983 to 1991—a very moderate amount under hospital budgeting when compared to growth in the 1970s. For example, for the pre-budgeting period from 1974 to 1983, expenditures for general and special hospital services increased by almost 174 percent.

Table 6-4 compares the aggregate budget for general and special hospitals with actual expenditures over the 1978 to 1991 period. Column A displays the aggregate amount budgeted for hospital care, beginning with the adoption of historical budgeting in 1983. After 1987, budgets may best be considered expenditure targets because of the incorporation of a production component in the flexible budgeting process. The figures in columns A and B indicate that the growth in the aggregate budget was very limited during the first years of hospital budgeting but has increased in

more recent years. Table 6-5 indicates that more than 80 percent of this growth was to accommodate general inflation and wage increases. This large increase is somewhat alarming from the viewpoint of cost control because it suggests that a policy of budgetary restraint is only a temporary option. It maybe possible to curb expenses initially, but after some period of time, increases in hospital expenses may be inevitable. Current and past adjustments of the aggregate budget to relieve work pressures on nursing staffs point in the same

TABLE 6-5: Structure of the Aggregate Hospital Budget, 1991 (millions of Dfl)

|   |        |
|---|--------|
| Final budget from 1990                          | 10,216 |
| Inflation                                       | 87     |
| Wage increases                                  | 343    |
| Adjustment for delays in negative reallocations | -22    |
| Construction activities                         | 66     |
| Bed-reduction                                   | -45    |
| Top-clinical care                               | 11     |
| Total aggregate budget, 1991                    | 10,656 |

SOURCE: Ministry of Health, *Financial Report on Health* (The Hague: Ministry of Health, 1992).

direction. These adjustments are a result of political action by hospital workers who do not want to accept the consequences of a policy of budgetary restraint.

Columns C and D in table 6-4 suggest that there have been three distinct periods of hospital spending trends in the Netherlands. During the pre-budgeting period from 1978 through 1982, aggregate hospital expenditures grew by 33 percent. This growth rate decreased dramatically after the introduction of hospital budgeting. Growth of aggregate expenditures for hospital care declined to about 5 percent over the 1983 to 1987 period. Since the implementation of functional budgeting in 1988, however, aggregate expenditures have tended to rise again, increasing by 19.6 percent over the period 1988 to 1991 period. These figures look different when expenditures are adjusted for the effects of general inflation. Unadjusted expenditures increased an average of 2.8 percent annually over the period from 1986 through 1990, but adjusted growth averaged only 0.2 percent a year (17). The inflation-adjusted figure is even less than the annual growth of the population.

The Ministry of Health claims that hospital budgeting has been a success from a cost containment point of view because the excessive growth in aggregate expenditures prior to budgeting has stopped. This is obviously true for the 1983 to 1988 period, and for the 1989 to 1991 period in which annual increases in aggregate expenditures were still below those in the pre-budgeting period. Nevertheless, the figures allow for conclusions only about the gross effect of hospital budgeting and not about its net effect. The fact that hospital services are increasingly being delivered on an outpatient basis may imply that some of the costs formerly borne by hospitals themselves have been shifted to other sectors of the health care system. Unfortunately, studies of the cost-shifting effect of the substitution of outpatient for inpatient care are not available.

Another test for the effectiveness of hospital budgeting to contain costs is a comparison of actual aggregate hospital expenditures with the aggregate budget for hospital services. Such a comparison is presented in column E of table 6-4. The

figures demonstrate that hospital budgeting was successful over the 1983 to 1988 period. From 1989 to 1991, however, there were sizable gaps between expenditure targets and actual hospital expenditures (i.e., aggregate hospital budgets). Moreover, these gaps coincided with considerable increases in aggregate hospital budgets during those years (see columns A and B).

There are several complementary explanations for the recent gaps between expenditure targets and actual expenditures. First, the government has not sufficiently accounted for the growing demand for hospital services in establishing the targets. Decisions on aggregate funds for hospital care are essentially political, dictated by the necessity to constrain spending. They do not necessarily reflect the growth of hospitals' workloads or cost increases due to technological innovations. This is a general weakness in the system of hospital budgeting. The National Association of Hospitals has repeatedly stressed these points but without much success; politicians simply argue that hospitals should be more efficient.

A second explanation for the excess spending is related to the role of production contracts in the budgeting process. These contracts have weakened the ability of the Ministry of Health to control the aggregate budget for hospital care. The Ministry has displayed too much optimism in setting its expenditure targets, underestimating the total volume of production contracts, perhaps for political reasons. The capacity component in hospital budgeting operates in a similar way. Any delay in the implementation of bed-reduction programs automatically translates into a higher aggregate budget for hospital care, as individual hospital budgets also depend on their bed capacities. It is fair to state that the Ministry has always been overly optimistic about the pace of implementation of its bed-reduction programs.

Third, the gaps between expenditure targets and actual expenditures can be explained in part by the presence of certain expenditure-increasing incentives in functional budgeting that have been overlooked in setting expenditure targets. The first mechanism is the merger effect. If two hospitals merge, the overall budget of the newly merged

hospital exceeds the sum of the budgets that the two hospitals would have received had they remained separate entities. This is because rates for production items are higher for larger hospitals than for smaller ones. As noted earlier, this merger effect has now been halved.

A second mechanism stems from the arrangement whereby interest costs for loans to cover deficits from hospital payment shortages are fully reimbursable. This arrangement does not motivate hospitals to urge a quick payment of their full budget. Total deficits amounted to Dfl1.7 billion in 1991, but this amount was reduced by Dfl500 million in 1992, and administrative measures have been taken by the COTG to prevent new shortages in payments.

A fourth explanation for the failure to achieve the expenditure targets may be that hospitals reacted to the introduction of hospital budgeting by postponing certain investments and other activities. Eventually, costs began to increase again because investments could not be postponed indefinitely. According to this argument, the initial effectiveness of hospital budgeting is in fact partially an illusion. Further research is needed to test this hypothesis.

The growing gaps between the Ministry of Health's aggregate budgets and aggregate expenditures have resulted in increasing political tension between the Ministry and the hospital sector. Problems are caused by the fact that the Ministry requires compensation when its expenditure targets have been exceeded. To the degree that these targets have failed because the volume of production contracts is too high, it can be argued that the Ministry has behaved somewhat inconsistently. On the one hand, it prefers a certain degree of decentralization in the budgeting procedure; on the other, it does not accept the result of decentralized decisionmaking if the result does not satisfy its expenditure target.

The policy of budget restraint has affected the financial position of individual hospitals. Many hospitals have not been able to keep their expenditures within budget. According to studies by the COTG, the proportion of hospitals with deficits has varied between 50 and 70 percent since 1986

(18). At the same time, the proportion of hospitals with a negative reserve has risen from 10.9 percent in 1986 to 15 percent in 1990. These figures clearly illustrate that the introduction of hospital budgeting has placed many hospitals under financial pressure. It is no wonder that hospitals have always associated hospital budgeting with expenditure cuts.

## HOSPITAL CAPITAL COSTS

### ■ Relationship of Operating and Capital Costs

Although investments in hospital construction and certain types of major medical equipment require regional and central government approval, such investments are not financed directly by the government; hospitals take out loans from private banks to financing major capital investment projects. Depreciation and interest payments are fully recoverable through increases in inpatient per diem charges. In contrast to Germany, for instance, there is no dual financing system in the Netherlands as both operating and capital expenses are paid for through hospital charges to health insurers or patients.

Until recently, hospital loans were guaranteed by the national government, which is estimated to have decreased interest payments by 1 percent on average. This arrangement was recently ended to encourage hospitals to behave like other private market companies in obtaining loans for capital investments. Banks regretted this change and even alleged that hospitals had lost much of their attractiveness as investment partners.

### ■ Determining Capital Requirements

#### *Hospital Construction*

Major hospital capital expenditures in the Netherlands have been subject to strong public regulation during the past two decades. Governmental approval of new hospital construction occurs during the hospital planning process regulated by the Hospital Facilities Act (*Wet Voorzieningen Gezondheidszorg*), initially implemented in 1971 and revised in 1979. Hospital construction re-

quests must be included in the regional hospital facilities plan for each of the 27 regions in the Netherlands. This plan is prepared by regional governments and comes into force after final approval by the Ministry of Health. Sickness funds are not permitted to pay the operating costs of services provided with capital equipment that has not received government approval.

The process of regional hospital planning has not been a great success. At the end of 1988, only one regional plan had been approved by the Minister of Health, and two plans had been sent to the Minister for approval. Hospital planning is generally considered a very bureaucratic process. This is due in part to the complicated framework of the Hospital Planning Act, which gives all interested parties numerous opportunities to delay the planning process. Planning is also hindered by political competition among hospitals for investment approvals.

Because of delays in hospital planning, the Ministry of Health created new instruments to bypass the Hospital Facilities Act. The most important instrument was a hospital building ceiling introduced in 1974 that limits hospital capital expenditures. This ceiling equals the sum of the approved building expenditures for one year, assumed to be 50 percent of total investment expenditures. The use of ceilings has strongly reduced building production (7). In 1980 the ceiling was 1.7 percent of total health care expenditures but in 1990, it was only 1.2 percent. The low ceiling has resulted in a huge backlog of building projects, estimated at Dfl6.6 billion at the end of 1989. Hospitals are concerned about the backlog, emphasizing its possible consequences for the quality of care.

The Netherlands' aggregate hospital investment budget is divided into several sections. At present there are 12 provincial sections, a section for national projects, a section for small investments for which a more rapid procedure applies, and a general reservation section for bottlenecks and calamities. Nineteen criteria have been developed to allow for preparation of a priority list for investments for each section that is published annually by the Ministry of Health. As this list in-

dicates, a greater priority has been given to the nonacute care hospital sector. The share of general and special hospitals in total investment spending was 60 percent in 1988, dropping to 39 percent in 1991.

Regional governments play a major role in deciding which hospital projects will be funded at the regional level, subject to the central government's priority list. Hospitals use all their political muscle to lobby for a favorable decision. The General Account Office has concluded that factors that influence final decisions are difficult to comprehend and generally ad hoc.

In 1991, the approval procedures prescribed in the Hospital Facilities Act were simplified to reduce bureaucracy and to enhance hospitals' autonomy with respect to investment decisions. To achieve those goals, the category of investments not subject to government approval has been extended considerably. The COTG has developed a model for budget allocations for these investments, with the amount of resources for each hospital dependent on the number of square meters of the facility. Annual depreciation has been set at 10 percent of investment costs for all hospitals. Hospitals still need government approval for new large construction projects, however.

### ***Investments in Major Medical Equipment***

Article 18 of the Hospital Facilities Act enables the Ministry of Health to regulate high-cost care and investments in medical equipment. By means of a licensing system, the Minister concentrates equipment in certain hospitals to improve the quality of care, reduce expenses, and prevent uncontrolled growth. Hospitals have a strong interest in obtaining Article 18 facilities because these facilities confer greater status and a larger budget.

Medical technologies are regulated under Article 18 if they are very expensive, require very specialized knowledge, or are ethically controversial. In 1990, Article 18 applied to renal dialysis, kidney transplantation, radiotherapy, complex neurosurgery, heart surgery, percutaneous transluminal coronary angiography, neonatology, clinical genetic research, and in vitro fertilization

**TABLE 6-6: Number of Hospitals with Article 18 Facilities, 1990**

| Article 18 facilities       | Hospitals |
|-----------------------------|-----------|
| Renal dialysis              | 48        |
| Kidney transplantation      | 8         |
| Radiotherapy                | 21        |
| Neurosurgery (main centers) | 16        |
| Heart surgery               | 14        |
| PTCA diagnostics            | 50        |
| PTCA treatment              | 12        |
| Neonatology                 | 11        |
| Clinical genetic research   | 9         |
| In vitro fertilization      | 12        |

SOURCE: Ministry of Health, *financial Report on Health* (The Hague: Ministry of Health, 1992).

(table 6-6). In 1993, bone marrow, liver and pancreas transplantation, and positron emission tomography were added to the list. Computed tomography, nuclear medicine, and magnetic resonance imaging are not regulated by Article 18.

Article 18 does not work very well in practice. One of its defects is that licensing procedures are too slow and time consuming. Many hospitals invest in facilities before they have been licensed under the article (3). Another criticism is that Article 18 suffers from lack of information on costs and effects as well as lacking flexibility. Building activities tend to be much more effectively regulated than investments in major medical equipment.

### Minor Investments

Hospitals must cover smaller capital investments that do not require a license from their own budgets, which contain a special component for such investments. A fixed lump sum allows hospitals

to make their own decisions about small capital purchases.

### ■ Capital Expenditures

According to the Central Office for Statistics, total investment in the institutional health care sector (excluding academic hospitals) amounted to Dfl 1.2 billion in 1983, equaling 3.1 percent of national health expenditures. In 1990, investments increased to Dfl 2.6 billion (including academic hospitals), equaling 5.3 percent of national health expenditures.

### HOSPITAL INDICATORS AND TRENDS

One of the most pervasive trends in the Netherlands' hospital sector has been consolidation of acute care hospitals during the past decade, as evidenced in table 6-7. This process has led to an almost complete disappearance of small general hospitals; only 13 general hospitals had fewer than 200 beds in 1992. The average number of beds in general hospitals increased from 349 in 1981 to 437 in 1990 (table 6-8). A similar process of consolidation also took place in special hospitals (table 6-7). However, special hospitals are still usually small in terms of bed size (e.g., 10 hospitals had fewer than 50 beds in 1992).

Rapid consolidation within the hospital sector has resulted largely from hospital mergers. Merging is often the only way for small hospitals to survive. Hospitals also consider mergers as a way to improve the quality of care, strengthen their organizational and financial capabilities, end rivalries among hospitals in times of scarce financial resources, and reduce uncertainties associated with health care reform. Recent mergers of medium-sized general hospitals are mainly the result of an

**TABLE 6-7: Concentration of Acute Care Hospitals, 1981-90**

| Number of acute care hospitals | 1981 | 1990 | Change (in percent) |
|--------------------------------|------|------|---------------------|
| General hospitals              | 172  | 120  | -30.2               |
| Academic hospitals             | 7    | 9    | +28.6               |
| Special hospitals              | 48   | 36   | -25.0               |

SOURCE: National Hospital Institute, *De Intramurale Gezondheidszorg in Cijfers* (The Inpatient Sector in Figures), 1991.

TABLE 6-8: Capacity of Acute Care Hospitals, 1981-90

|                       | 1981   | 1990   | Change (in percent) |
|-----------------------|--------|--------|---------------------|
| General hospitals     |        |        |                     |
| Number of beds        | 60,021 | 52,423 | -12.7               |
| Number of specialists | 5,057  | 5,830  | 15.3                |
| Beds per hospital     | 349    | 437    | 25.2                |
| Academic hospitals    |        |        |                     |
| Number of beds        | 6,748  | 7,579  | 12.3                |
| Beds per hospital     | 964    | 842    | -12.7               |
| Special hospitals     |        |        |                     |
| Number of beds        | 6,143  | 4,687  | -23.7               |
| Number of specialists | 422    | 350    | -17.1               |
| Beds per hospital     | 128    | 130    | 1.6                 |

SOURCE: National Hospital Institute, *De Intramuraal Gezondheidszorg in Cijfers* (The Inpatient Sector in Figures), 1991

unintended incentive in the hospital funding scheme, discussed earlier.

The decreasing number of hospitals and hospital beds has also been stimulated by Ministry of Health policies. The Ministry has been eliminating the perceived overcapacity in the acute care sector, arguing that "a built bed is a filled bed." The bed-to-population ratio decreased from 4.2 per thousand population in 1981 to 3.5 in 1990 (18). The latest Ministry target is 2.8 beds per thousand population.

Ironically, the Ministry is concerned that the trend toward larger hospitals, which often seek the latest in medical technology and treatment facilities, will result in an oversupply of high-technology clinical care. A recent government report raised the issue of whether these second-wave mergers are a desirable development from the perspective of cost containment and quality of care (20).

Since the mid- 1980s, consolidation in the acute care sector has been accompanied by an increasing number of freestanding ambulatory care centers. Den Hartog and Janssen (5) counted 44 private health centers (*priveklinieken*) in 1992. This development reflects the spirit of entrepreneurial medicine and is clearly linked to the increase in market-oriented thinking within the Netherlands' health care system. It is unclear yet to what extent these centers will become a permanent element of the Dutch hospital system. Currently, such centers have contracts only with private health insurers as

the Sickness Fund Act does not permit sickness funds to contract with private health centers.

The declining number of hospital beds and the concurrent growing number of specialists in general hospitals reflect another trend in hospital care. The hotel functions of hospitals have lost importance and the treatment of patients has received more emphasis than ever before. The specialist-to-population ratio increased from 3.5 medical specialists per 10,000 population in 1981 to 3.9 in 1990, and the specialist-to-bed ratio increased from 8.4 to 11.1 over the same period.

Another trend, evidenced in table 6-9, is the substantial decline in the volume of inpatient care over the 1981 to 1990 period, accompanied by substantial growth in outpatient care and daycare. The percentage of same-day surgeries in seven main categories of surgery increased from approximately 15 percent in 1985 to 28 percent in 1990. The growth of outpatient care and daycare appear to be mainly the result of new developments in medical diagnostics and treatment. Another important stimulating factor was the introduction of hospital budgeting for inpatient services in 1983, which gave hospitals an incentive to expand outpatient and daycare.

The nursing home sector has surpassed the acute care hospital sector with respect to the volume of inpatient days, exceeding that volume by more than one million days in 1990. The prominent position of nursing homes in the Dutch health

TABLE 6-9: Provision of General Hospital Services, 1981-90

|  | 1981   | 1990   | Change (in percent) |
|--|--------|--------|---------------------|
| Admissions (in thousands)              | 1,392  | 1,308  | -6.0                |
| Inpatient days (in thousands)          | 18,149 | 13,882 | -23.5               |
| First outpatient visits (in thousands) | 3,364  | 5,625  | 67.2                |
| Outpatient visits (in thousands)       | 16,276 | 18,757 | 15.2                |
| Daycare (in thousands)                 | 0      | 365    | NA                  |
| Average length of stays (in days)      | 13.0   | 10.6   |                     |
| Average occupancy rate                 | 82.8%  | 72.5%  | -18.5%              |
| Production per 10,000 inhabitants      |        |        |                     |
| Admissions                             | 974    | 871    | 10.6                |
| Inpatient days                         | 12,704 | 9,248  | -27.2               |
| Outpatient visits                      | 11,393 | 12,496 | 9.7                 |
| Daycare                                | 0      | 243    | NA                  |

SOURCE: National Hospital Institute, *De Intramurale Gezondheidszorg in Cijfers* (The Inpatient Sector in Figures), 1991

care system is also illustrated by the fact that the total number of nursing home beds for long-term care increased by more than 9 percent during the last decade—from 47,380 in 1980 to 51,682 in 1990—where as the number of acute care beds declined by more than 11 percent between 1981 and 1990.

## FUTURE DIRECTIONS

Before analyzing the future of hospitals in the Netherlands, the Dutch hospital budgeting scheme's strong and weak points are assessed. The budgeting scheme is only an instrument for allocating financial resources to hospitals. Hospital budgets can be used in combination with a policy of cost restraint and expenditure cuts or in combination with a more generous funding policy.

The main advantages of the scheme areas follows:

- Hospital budgeting has improved cost control over the earlier traditional, open-ended funding scheme. Cost control was most effective under the historical budgeting scheme; functional budgeting has been less successful. Yet increases in aggregate hospital expenditures before the introduction of hospital budgeting exceeded growth of expenditures after the adoption of functional budgeting.

- The introduction of production contracts between hospitals and health insurers has contributed to the flexibility of the budgeting scheme. These contracts have made it possible to more easily adjust hospital budgets to changes in workload.
- Hospital budgeting has enhanced the prospects for more efficient delivery of hospital services. If a hospital spends less than its budget, it can add the surplus to its reserves. Hospitals, however, are held responsible for their deficits; budget adjustments to relieve financial problems are no longer allowed.
- Hospital budgeting has improved hospital management by giving hospitals greater decisionmaking autonomy. The traditional open-ended scheme did not encourage effective management.
- The transition from historical to functional budgeting has improved the equitable allocation of funds among hospitals.

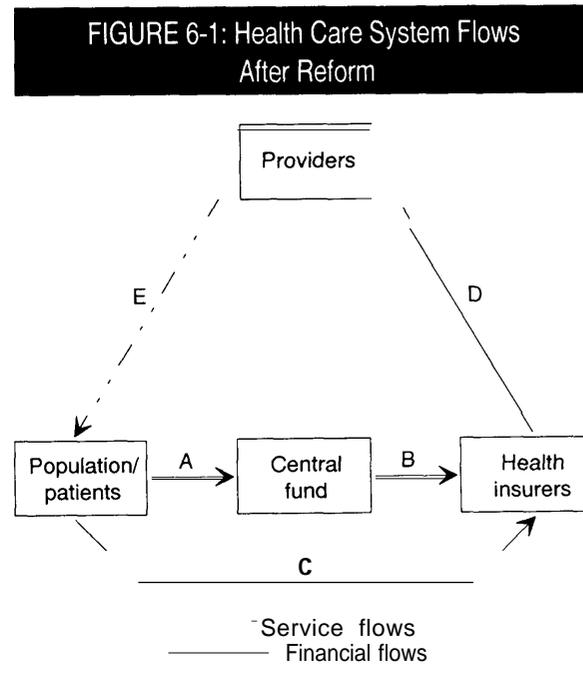
The scheme's main disadvantages are as follows:

- Government decisions on the aggregate amount of financial resources for hospital care are essentially political, dictated by the necessity to constrain expenditures. They do not necessarily reflect the growth of hospital workload or cost increases due to technological innovation.

- Hospital budgeting may negatively affect the quality of care.
- There is some inconsistency in the functional budgeting scheme. On the one hand, the Ministry of Health has accepted the introduction of production contracts to increase flexibility; on the other, it does not accept overruns of its expenditure targets when the volume of production contracts is higher than expected.
- From an administrative point of view, it would be simpler to transfer to each hospital one-twelfth of its budget every month. However, such payments are incompatible with a multitude of health insurers. The system of inpatient per diem charges and additional charges has been maintained, but this has made hospital budgeting more complicated.
- The incomes of hospital-based medical specialists who are paid fees for their services are not included in the hospital budget, which adds to the complexity of hospital management.
- The financial situation of many hospitals appears to have deteriorated after the introduction of hospital budgeting. The degree to which this has happened appears to depend on the quality of hospital management, however.

Certain aspects of the future of hospital financing can be investigated by exploring the impact of ongoing health care reforms in the Netherlands. Such an investigation can be only speculative at present, however, because many uncertainties persist concerning the eventual fate of the health care reform process.

Figure 6-1 shows that under the reformed health care system, there will be two flows of payments from the population/patients to health insurers. Each person will pay income-dependent payroll taxes into a central fund (A), which will then be channeled to health insurers through a



SOURCE: J.A.M. Maarse, 1994

system of risk-adjusted payments (B).<sup>7</sup> The second flow consists of flat-rate premiums collected directly from consumers that are determined by health insurers (C). Health insurers contract with physicians, health care institutions, and other providers to deliver services to the insurers' members (D). Health insurers eventually will be allowed to contract selectively with all providers, although currently, selective contracting applies only to noninstitutional providers. Providers deliver health services to patients (line E). Figure 6-1 is a simplification insofar as individuals can opt for some cost sharing when selecting insurance coverage.

The new framework for health care has important implications for health insurers. Under the traditional scheme, sickness funds were reim-

<sup>7</sup> Under health system reform, payments from subscribers to sickness funds for health-related expenditures have changed to a new system called "sickness fund budgeting." Since 1993, risk-adjusted payments from the central fund to the sickness funds have been based on age and gender, but a large part of the difference between the budget of a sickness fund and its historical expenditures is calculated to prohibit gross reallocations among sickness funds. This difference will be gradually reduced according to a sliding scale until only risk-adjusted payments are made. When, or if, the new health care financing system is fully operational, both sickness funds and private health insurers will be reimbursed according to the system of risk-adjusted payments.

bursed through employee/employer payroll contributions for all of their payments to hospitals if these costs were reasonable and conformed with national guidelines. The arrangement did not encourage sickness funds to enter into hard negotiations with hospitals or other providers because extensive bargaining over costs did not benefit the funds (11). In contrast, the introduction of risk-adjusted payments under the new system compels insurers to pay more attention to costs. Risk-adjusted payments impose a limit on financial resources from the central fund to health insurers. Flat-rate premiums also introduce incentives for cost containment. If an insurer does not effectively control its expenses, it will have to raise its premiums, perhaps weakening its competitive position and causing it to lose subscribers. Because private health insurers are allowed to operate as an administering agency under the reforms, they too now have to deal with the new budgeting system (27).

Although the eventual fate of health care reform in the Netherlands is still uncertain, it already has had a substantial impact on the health insurance industry. One of the most conspicuous changes is mergers between sickness funds, which have resulted in a decrease in the number of funds from 53 in 1985 to 26 by the end of 1992. During the same period the number of private health insurers decreased from 69 to 59. There has also been a rapid growth in strategic alliances between sickness funds and private health insurers, mainly to increase market share. Mergers strengthen their organizational and financial position in the health insurance market and give them some protection against the uncertainties and financial risks related to ongoing health reforms.

Health care reform will continue to have a large impact on the role and position of health insurers. Cost containment and improved efficiency have gained more importance in recent years. In theory, there are three major strategies for health insurers to contain costs. The first is to practice some form of medical underwriting. As noted earlier, this strategy has been formally prohibited, although the regulations may not be entirely effective (27). The second strategy is to control insurance admin-

istrative costs. The third focuses on the insurer-provider relationship. One of the goals of health care reform is to encourage health insurers to be stronger bargaining agents for the purchase of health services than they were under the previous system. The transition from the traditional supply approach to controlling health care costs (e.g., control of beds and specialist units) to a demand approach is expected to improve efficiency and the quality of care and may also help reduce health care bureaucracy. The new purchasing role for health insurers has caused them to redefine their relationship with hospitals.

Health insurers face at least four major problems, however, in adapting to their new role under the reforms. The first problem is the mismatch between the financial responsibilities that health insurers are required to bear under the reformed system and the instruments they have to fulfill these responsibilities. This is particularly acute with respect to capital investments. The Hospital Facilities Act strongly limits the decisionmaking power of insurers by creating an institutional separation between the planning and financing of investments. Planning and investment decisions are made during the planning process, but insurers have to pay any increase in operating costs associated with these decisions. Transferring more financial responsibility to health insurers necessitates a much greater voice for them in investment decisions. The National Association of Sickness Funds has already expressed its desire to obtain formal authority to influence the capacities of hospitals. To date, the planning of hospital capacities is still under the jurisdiction of regional and national governments, and the partial dismantling of that system has been slow.

The second problem concerns contracting for hospital care. As noted previously, decisions about the aggregate budget for hospital care are political and do not necessarily reflect hospitals' workloads. Health care reform means that hospital budgets will now be determined by health insurers, which are expected to negotiate with hospitals regarding the expected volume of care. But for how much care should an insurer contract? What knowledge is necessary to contract for sufficient

care? What if a patient sues an insurer for not having contracted for sufficient care? Instead of negotiating with hospitals for production contracts, it might make more sense for health insurers to negotiate charges for hospital services or to develop a system of case-based payments using diagnosis-related groups or patient management categories. There is still a long way to go because health insurers lack such experience. Insurers may also secretly prefer that government continue to regulate planning affairs because government guidelines protect them against patient complaints about waiting lists.

The third problem is that health insurers have to negotiate with hospitals over the costs of services, but the necessary cost information is still largely unavailable. In the past, such information was unnecessary.

Fourth, health insurers need a strategic management approach to their relationship with providers. They can no longer afford to maintain a mere administrative, pay-the-bill attitude. The development of a strategic management approach to negotiating contracts with providers is a time-consuming process, however, and it requires new investment in personnel and knowledge.

Whatever the outcome of such transition difficulties, there is no doubt that health care reform will fundamentally change the relationship of health insurers and hospitals in several ways. To begin with, health insurers are likely to become much more involved in hospital affairs than they were in the past, which hospitals will increasingly have to accept. Detailed, complex negotiations between hospitals and insurers are inevitable. Many insurers have already used production contracts to induce shifts of inpatient care to outpatient settings. There is also ample evidence that negotiations with hospitals have been broadened to include other issues, such as investments in medical equipment, beds, specialist units, and other facilities.

Furthermore, there is speculation that functional budgeting will eventually be dissolved and replaced by other, more decentralized schemes. Health insurers have often criticized their re-

stricted role in this scheme, and hospitals have always argued that the scheme is not flexible enough.

Additionally, hospitals may have to deal with more health insurers under the new system than they do now. Hospitals currently conduct most of their financial business with one sickness fund—the regional monopoly—along with a large number of private health insurers that appoint one insurer as their regional representative. Often the regional sickness fund pays for 60 to 70 percent of hospital costs. The trend toward rapid concentration of health insurers and increasing competition among them may erode the strong bilateral relationship of a hospital and its principal health insurer. Under one possible scenario, the group of principal insurers negotiating contracts with an individual hospital will become more diverse, in which case the hospital will have to negotiate with three or four big insurance carriers. An alternative scenario is that the relationship of a hospital and its principal insurer will grow more intense as a result of health insurer mergers.

As a reaction to changes in the insurance sector, hospitals may begin to develop networks to strengthen their market position and to preclude a “divide and conquer” policy by health insurers. Networks might consist of agreements between different types of providers at the regional level to provide a full range of inpatient and outpatient care or may consist of a group of hospitals providing a particular type of care, such as acute care.

Hospitals and health insurers have begun to manage the changes in their relationship. Hospitals that have had good negotiating experiences with health insurers over production contracts often consider health insurers as potential partners instead of opponents with skewed interests in cost control. Some insurers have been willing to find solutions to a hospital’s financial problems by adjusting contracts to its needs. Recent experiences have convinced many hospitals that health insurers may be even more promising partners in the future than are regional or national governments. Health insurers may also be willing to provide extra funds to hospitals to reduce waiting lists so that

the insurers are better able to market themselves and attract more subscribers.

A good partnership with health insurers is also indispensable to hospitals now that the government has stopped guaranteeing investment loans. Long-term contracts with health insurers for services are essential for hospitals to establish financial credibility with commercial banks. Commercial banks are expected to become important stakeholders in hospital financing, which may affect hospital decisionmaking. How their role will develop remains to be seen.

Health care reform will also affect the relationship of medical specialists and hospital management. The introduction of hospital budgeting placed this relationship under substantial pressure. Most specialists are still paid on a fee-for-service basis, giving them an incentive to maximize their personal income; hospital management is responsible for keeping costs within the tight limits of the hospital's budget. Some argue that the political compromise that produced this situation represents an obstacle to fully integrated and comprehensive hospital management. The introduction of an aggregate budget for medical specialist expenditures in 1988 as part of the Five Parties Agreement aggravated this problem as individual specialists have an even stronger incentive to provide more services.

In 1994, the report *Gedeelde zorg: betere zorg*, released by a commission chaired by the Netherlands' former prime minister (Mr. Biesheuvel), strongly recommended that specialists' revenues be brought under the constraints of hospital budgets. The recommendations of the Biesheuvel commission have been accepted by the new government as an important part of its health care reform program. Perhaps not surprisingly, specialists did not welcome the recommendations, although there have been some local experiments with reforming specialists' reimbursement methods. It is expected that these local experiments will eventually result in a new payment scheme for specialist care under which specialists' revenues become part of the prospectively negotiated budget between hospitals and health insurers. One proposed

idea would be to link specialists' revenues and hospitals' production contracts with health insurers.

The hospital financing system in the Netherlands has been undergoing rapid changes since the beginning of the 1980s. This process, which began with the introduction of hospital budgeting, will lead to further changes. Those changes are not only financial; they also have a large effect on the relationships among the three parties involved in hospital care: hospital management, medical specialists, and health insurers.

## REFERENCES

1. Centraal Orgaan Tareven Gezondheidszorg (COTG), *Annual Report (Jaarverslag)*, 1990.
2. Central Office for Statistics, *Costs and Finance of Health Care* (The Hague: Centraal Bureau voor de Statistiek, 1992).
3. de Roo, A.A., and Maarse, J.A.M., "Understanding the Central-Local Relationship in Health Care, a New Approach," *International Journal of Health Planning and Management* 5(1):15-25, 1990.
4. Dekker Committee, *Willingness to Change (Bereidheid tot Verandering)* (The Hague: DOP, 1987).
5. den Hartog, M. and Janssen, R., *Privéklinieken nader onderzocht, Medisch Contact* 14(5):585-590, 1993.
6. Donaldson, C., and Gerard, K., *Economics of Health Care Financing: The Visible Hand* (New York, NY: St. Martin's Press, 1993).
7. General Account Office (Algemene Rekenkamer), *Planning en bouw van ziekenhuisvoorzieningen* (Den Haag: SDU, 1990).
8. Glaser, W.A., *Paying the Hospital: The Organization, Dynamics and Effects of Differing Financial Arrangements* (San Francisco, CA: Jossey-Bass Publishers, 1987).
9. Kirkman-Liff, B., and Maarse, J.A.M., "Going Dutch," *Health Services Journal* 102(5321):24-27, 1992.
10. Lieverdink, H., and Maarse, J.A.M., "Negotiating Fees for Medical Specialists in the Netherlands," *Health Policy*, 31:81-101, 1995.

11. Maarse, J.A.M., "The Insurer-Provider Relationship in Health Care: From Administration to Strategic Management: The Dutch Case," *European Journal of Public Health* 3:72-76, 1993.
12. Maarse, J.A.M., "Fixed Budgets in the Inpatient Sector: The Case of the Netherlands," paper prepared for the seminar Health Care Management of Cost and Quality under Fixed Budgets, Celle (Hanover), Germany, Mar. 23-25, 1995.
13. Maarse, J.A.M., "Health Care Finance in the Netherlands," *Revue d'Economie Financière*, 1995 (forthcoming).
14. Maarse, J.A.M., Molin, E., and van der Horst, A., "Ziekenhuisbudgettering en Doelmatigheid," *Tijdschrift voor Sociale Gezondheidszorg* 71:27-33, 1992.
15. Maarse, J.A.M., van der Horst, A., and Molin, E., "Hospital Budgeting in the Netherlands: Effects Upon Hospital Services," *European Journal of Public Health* 3:101-107, 1993.
16. Ministry of Health, *Financial Report on Health* (The Hague: Ministry of Health, 1991).
17. Ministry of Health, *Financial Report on Health* (The Hague: Ministry of Health, 1992).
18. Ministry of Health, *Financial Report on Health* (The Hague: Ministry of Health, 1993).
19. Ministry of Health, *Financial Report on Health* (The Hague: Ministry of Health, various years).
20. Ministry of Health, *Nota positionering Ziekenhuiszorg* (Report on Positioning of Hospital Care), Rijswijk, 1992.
21. National Hospital Institute, *De intramurale gezondheidszorg in cijfers* (the inpatient sector in figures), 1991.
22. Organisation for Economic Cooperation and Development, *The Reform of Health Care: A Comparative Analysis of Seven OECD Countries* (Paris: OECD, 1992).
23. Schieber, G.J., Poullier, J.P., and Greenwald, L.M., "Health Care Systems in Twenty-Four Countries," *Health Affairs* fall;10(3):22-38, 1991.
24. Schneider, M., et al., *Health Care in the EC Member States* (Amsterdam: Elsevier, 1992).
25. van de Ven, W.P.M.M., "From Regulated Cartel to Regulated Competition in the Dutch Health Care System," *European Economic Review* 34:632-645, 1990.
26. van de Ven, W.P.M.M., and Schut, F.T., "Should Catastrophic Risks be Included in a Regulated Competitive Health Insurance Market?," *Social Science and Medicine* 39(10):1459-1472, 1994.
27. van de Ven, W.P.M.M., and van Vliet, R.C., "How Can We Prevent Cream Skimming in a Competitive Health Insurance Market? The Great Challenge for the 90's," P. Zweifel and H.E. French (eds.), *Health Economics Worldwide* (Dordrecht: Kluwer Academic Publishers, 1992).