An evaluation of expenditure in the private health care sector and its reporting in the national accounts of South Africa

by

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Declaration

I, Nicole Valentine, declare that the work contained herein is my own and it is submitted in partial fulfilment of the Master of Arts Degree by coursework in Economics.

Signed by candidate

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Abstract

There is currently much work underway internationally to improve the accuracy and to refine the detail of accounting for health care expenditures. This research was initiated by the increasing activity in the field of national health accounting, as well as by previous research indicating that the Reserve Bank might be underestimating private health care expenditure in the national accounts. The Reserve Bank estimate of health care expenditure is important as it is the only complete and regularly produced estimate of private sector health care expenditure for South Africa.

It was posited that an independent estimation of private health care expenditure would show that its magnitude is underestimated in the expenditure estimates published by the Reserve Bank for the national accounts. This thesis was upheld by the results of the research. The thesis estimate of private health care expenditure was R15 billion, 39 % higher than the Reserve Bank estimate available at the time. It was also 21 % higher than the final Reserve Bank estimate published in December 1995.

The methodology used to derive the thesis estimate involved a survey of national income accounting concepts and guidelines embodied in the internationally used publication, the 1993 System of National Accounts. Primary data was collected from a wide range of institutions in the South African health sector. Secondary data sources were also consulted in several instances. In particular, the Registrar of Medical Schemes was consulted for medical scheme expenditure estimates as they constitute the largest portion of private sector health care expenditure in South Africa.

The thesis estimate was then calculated for a single year according to the 1993 System of National Accounts guidelines. The year chosen was the government financial year

from April 1992 to March 1993. The year was chosen to coincide with the year chosen for a national health expenditure review. In the presentation of the results, the estimate was broken down in separate "sources" and "uses" matrices, which are being used internationally to present national health accounting information.

From the comparison of the Reserve Bank and thesis expenditure estimates, one of the most important recommendations that emerged was that the Reserve Bank should consult a wider range of expenditure data sources, more timeously and regularly. In particular, it was suggested that the Reserve Bank should negotiate earlier access to the data held by the Registrar of Medical Schemes, as well as cross-check household survey data with independent estimates of out-of-pocket and statutory scheme health care expenditure.

In addition to providing a new benchmark estimate for private sector health care expenditure in the government financial year 1992/93, the breakdown of the estimate into matrices provides a framework that could be used as the basis for the development of more detailed satellite national health accounts, in accordance with 1993 SNA standards.

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INTRODUCTION

Health care reform in all countries has been a search for the Holy Grail, often poorly informed by evidence and driven by sustained advocacy.

Maynard and Hutton, *Hsiao (1992)*

The hypothesis under investigation in this dissertation is simple: it is asserted that the Reserve Bank's estimate of private health care expenditure underestimates actual private sector health care expenditure (McIntyre & Dorrington 1990).

The focus on the private health sector is important for policy purposes because the private sector's role in the funding and provision of health care has grown over recent years (McIntyre *et al* 1995, Hilsenrath & Joseph 1991). The growth of the private sector's role in the funding and provision of health care has, in fact, been a world wide trend, and many nations have responded by increasing their documentation capabilities in the health care sector (Schieber 1995).

In addition to these developments, the new 1993 System of National Accounts includes recommendations for the introduction of satellite accounts. Together with the growth in the private health sector, these recommendations have translated into the development of national health accounts in many countries (Personal Communication - Berman, Director of Data for Decision Making Project, Harvard School of Public Health). Health economists favour national health accounts because they possess the ability to track total health care flows of funds over time, while being comparable with other macro-economic policy aggregates. It is within this context that the ensuing discussion of the documentation of private sector health care expenditure in South Africa takes place.

In evaluating the thesis question, I have discussed the theory of national income accounting and the System of National Accounts guidelines for the classification of health care expenditure in the national accounts. I evaluated the Reserve Bank's estimate of expenditure in the national accounts and presented an independent estimate of expenditure for comparison purposes, as well as presenting a framework for the development of national health accounts.

The same exercise was not undertaken for *value added* in the health sector. The primary reason for this is that the collection and validation of existing data sources would be a full length thesis in itself. Nevertheless, a rough estimate of value added is included in Appendix A and the accounting concepts raised by value added are discussed in Chapter 1. These concepts are important for the development of a complete discussion of national income accounting theory.

The specific research objectives were as follows:

1. to provide an overview of national income accounting theory;
2. to provide an overview of the System of National Accounts;
3. to provide an overview of specific national accounting concepts and guidelines related to the health sector;
4. to present a descriptive overview of the financing and delivery of health care in South Africa;
5. to describe how South African Reserve Bank estimates of private health care expenditure are made;
6. to describe how South African Reserve bank estimates are presented in the national accounts;
7. to describe how the data for the thesis was collected;

8. to provide an independent estimate of health care expenditure to that currently estimated as part of private consumption expenditure by the Reserve Bank;
9. to present a framework for the development of national health accounts in keeping with 1993 System of National Accounts standards; and
10. to make recommendations for improving the accuracy and usefulness of Reserve Bank health care expenditure estimates in the national accounts.

Objectives 1 to 3 are covered in Chapter 1. The thesis opens with a discussion of the theory of national income accounting, an overview of System of National Accounting concepts and guidelines, and an overview of recent developments in national health accounting. In Chapter 2, objective 4 is covered as the chapter provides the reader with an overview of the financing and delivery of private health care in South Africa. Objectives 5 and 6 are covered in Chapter 3 where the focus is on the Reserve Bank's estimation and presentation of the private health care expenditure estimates in the national accounts. The description of the methodology in Chapter 4 covers research objective 7. The presentation of the thesis results in Chapter 5 covers objectives 8 and 9. This chapter presents the thesis estimate, broken down into "sources" and "uses" matrices. Finally, objective 10 is covered in the sixth and final chapter of the thesis. This chapter presents several recommendations for improving the reporting of health care expenditure in the national accounts.

CHAPTER ONE

1. THE THEORY OF NATIONAL INCOME ACCOUNTING AND NATIONAL HEALTH ACCOUNTS

> The object of economic analysis is the observed, or at least the observable, economic process. The typical variables in terms of which an economic system is described are the amounts of various goods and services produced, consumed, added to and subtracted from existing stocks, sold and purchased; also the prices at which these purchases and sales are made.
>
> Leontief, *Essays in Economics*

The discussion in this chapter provides an overview of national income accounting theory and the recent development of national health accounts. In doing so, it describes how general macro-economic models of economic activity relate to formalised national accounting guidelines. It also includes a brief overview of national income accounting practice and the state of national health accounts in South Africa.

The first two sections of this chapter briefly describe the historical development of national income accounting and its codification in the System of National Accounts. The following two sections focus more closely on the concept of "economic activity": how it is conceptualised in economic theory; and how the System of National Accounts describes economic activity, highlighting concepts of relevance to the health sector. The next three sections present an overview of different types of accounting systems, focusing on national health accounts and conceptual challenges raised in this system of accounting. The final section comments on national income accounting for private health care and the development of satellite health accounts in South Africa.

1.1. The development of national income accounting

Modern day national accounting refers to the discipline of "social accounting" introduced to economics by John Hicks (Ruggles 1987, Belkaoui 1984). Social accounting broadly refers to the *quantification* and *classification* of economic activity as well as the *application* of information collected to investigate the operation of the economic system (Edey 1967). It attempts to assign symbols to features of abstract economic models of human and institutional economic behaviour. Ultimately, its purpose is to link changes in the quantity of real goods and services to "economic welfare" (Edey 1967, Kanavos & Mossialos 1996).

Early estimates of the income of a nation's inhabitants were made from the 17th century in England to measure the potential tax revenue (Ruggles 1987). Although sources of data and methods of data collection have become more sophisticated, the basic principles are essentially the same. Theorists such as the French Physiocrats deduced that the sum of individual income would be equal to the sum of the value of all "outputs" produced. The ability to calculate estimates of output and income developed in several countries in the early 1900s (Ruggles 1987).

A feature of the development of this branch of economic theory is that many aspects of it were preceded by statistical developments (Ruggles 1987). Kuznet's dataset of American national income published in 1934 illustrates this point. Work on theoretical aspects of the subject by Keynes and later Hicks, were published in 1936 and 1942 respectively. The first true set of national accounts appeared at the end of the Second World War. They were produced by the Englishman, Richard Stone, with the assistance of Keynes (Ruggles 1987).

1.2. International national income accounting developments

A single text on national accounting standards guides the practice of countries when formulating their national accounts throughout the world. This publication is known as the System of National Accounts (SNA). The first edition was published by the United Nations in 1952. An expanded version was published in 1968 and continues to be used today. The second edition was collectively published by various international organisations in 1993. These organisations were the Commission of the European Communities, the International Monetary Fund, the Organisation for Economic Co-operation and Development, the United Nations and the World Bank. Although most countries aim to switch to the newer edition, this transition will occur slowly as information systems will have to be adapted for the purpose.

1.2.1. Changes between the 1968 and 1993 System of National Accounts

The most important changes introduced by the 1993 System of National Accounts, when compared with the 1968 System have been:

1. to increase the flexibility of the classification system through the use of social accounting matrices;
2. to enlarge the coverage of economic sectors within national income accounting through the use of satellite accounts;
3. to increase their applicability to developing and developed countries alike;
4. to distinguish between increases in Gross Domestic Product, associated with increasing prices, and increases in economic activity or in volumes of goods and services (Commission of the European Communities 1993);
5. to delineate the "financial corporate sector" as a new innovation of the accounts, because of the increasing importance of that sector in the economy;

6. to require the separate reporting of government expenditure for "individual" and "collective" services (The Commission of European Communities 1993; 4.104) (This addition marks a useful distinction between public and private services and is of particular significance to the health sector); and

7. to require that expenditure on health be presented as a standard breakdown of private consumption expenditure.

The new 1993 SNA has introduced a system of social accounting matrices and satellite accounts in recognition of the need for more flexibility in the presentation of data. Social accounting matrices (discussed in section 1.5 in detail) have the flexibility to emphasise certain concepts in the national accounts, such as the underlying asset structure of the economy. The introduction of satellite accounts goes one step further than social accounting matrices, by documenting details which are not revealed in the central national accounting framework (Commission of the European Communities 1993). Examples of these are matrices of the flow of funds from sources to uses; consumption by demographic characteristics (e.g. age, gender); and the provision of additional information not used in the accounting system (examples in the health sector include: life expectancy; infant mortality rates).

1.2.1.1. Satellite accounts

Satellite accounts are described in the SNA framework in the following manner:

"Satellite accounts or systems generally stress the need to expand the analytical capacity of national accounting for selected areas of social concern in a flexible manner, without overburdening or disrupting the central system.... Typically, satellite accounts or systems allow for:

1. the provision of additional information on particular social concerns of a functional or cross-sectional nature;
2. the use of complementary or alternative concepts, including the use of complementary and alternative classifications and accounting frameworks, when

needed to introduce additional dimensions to the conceptual framework of national accounts

3. extended coverage of costs and benefits of human activities...". (Commission of the European Communities 1993, 21.4).

Within the field of health economics, compatibility between the SNA and the development of any framework for satellite health accounts is important because health economists frequently compare expenditure aggregates for the health sector with expenditures in other sectors. For these comparisons to be valid, it is necessary to compare like with like. Comparisons of health expenditure to gross domestic product (GDP) or gross national product (GNP) are frequently used as starting points for further analysis of the health sector (Evans et al. 1989). Furthermore, inter-country comparisons of health care systems frequently compare ratios of health care expenditure to GDP in an attempt to measure activity in the health sector as a percentage of total economic activity (Maxwell 1981, Kanavos & Mossialos 1996)[1]. However, although health expenditure over GDP is a popular aggregate to use, it is erroneous to place expenditure and production in the same ratio. Health expenditure should be measured over an aggregate expenditure measure like gross domestic expenditure (GDE). The thesis health expenditure estimates will be presented over gross domestic expenditure in the results chapter, but because of the popular use of expenditure over domestic product in the literature, this ratio will also be presented.

As pointed out in SNA 21.4 above, satellite accounts should also be compatible with other accounts prepared according to the SNA guidelines. However, there is

[1] Although these practices are common, those using them commit a classification error. Health expenditure (as a current expenditure item) should be measured as a percentage of Gross Domestic Expenditure (GDE). In the abstract, domestic expenditure, domestic production and factor income equal one another for a specific economy. Although ratios in the aggregate may equal one another, for a single section of economic life, they may differ. So, an analytical approach that relies on incorrect classification should not be encouraged. Another source of difference is the residuals between differing aggregate estimates which inevitably occur in practice.

room for satellite accounts to introduce "alternative classifications and accounting frameworks" as needed by the specific area of focus. This implies that some of the classification rules and definitions may differ from SNA rules for the purpose of better describing the activities in question. These deviations and alterations are acceptable as long as "the links with the central framework are made explicit" (Commission for the European Communities 1993, 2.248). In summary, the stipulation that satellite accounts should be flexible but compatible with the system of national accounts, highlights the importance of using the SNA framework as a point from which to embark on the development of more detailed national health accounts.

1.3. A general description of economic activity

Out of Keynes's work came an aggregate demand theory of the economy, where economic activity in the form of production was driven by expenditure, itself an expression of "want" or "demand". Within the broad category of expenditure, two types of expenditure can be identified: expenditure related to current consumption and expenditure related to future consumption. In summary, one way of describing the economic activity of an economic region is for it to be given as numerical values of "production" for the purposes of "consumption" and "investments" in that region.

"By 'production' we mean the organisation of human activity with the object of bringing into existence, at given places and times, valuable goods and services." (Edey 1967, 12). In this sense, production is the process of adding value, and does not necessarily refer to the making of a commodity or service. Very importantly, as production is a value added concept, when estimating the value of "production", we exclude the value of all "intermediate" consumption, which refers to the value of all goods and services used in the production of another good or service.

"By 'consumption' we mean the enjoyment, usually accompanied by some measure of physical destruction, of the fruits of production in a way that satisfies the wants of members of the community" (Edey 1967, 12). It is conveniently assumed that consumption occurs as "the fruits of production" pass into the hands of the consumer (*ibid.*). "Investment" or "capital formation" is a type of "addition to wealth" (*ibid.*). To the extent that the production in any one period is not consumed within that same time period, it is available for future consumption.

Two other features of this model need to be elucidated. Firstly, "value" would generally be fixed at "value in exchange" and therefore market prices would determine the value of production (but there are some exceptions to this discussed in section 1.4). Secondly, in theory and in practice, the point when time changes from being "current" to "future" seems to have been arbitrarily set. By convention in the national accounting framework to be discussed in section 1.4, consumption occurring in the same calendar year as production has generally been considered "current".

The features of production (Y), consumption (C) and investment (I) modelled by Lord Keynes have been formulated algebraically into an aggregate relationship as:

$Y = C + I = C + S$.....(1).

The value of production that was not consumed represents at once an investment by firms, and savings (S) by households. Aggregate savings is the difference between income and consumption and includes personal and corporate savings. The relationship of aggregate savings to investment is therefore that of an identity and is explained by the following reasoning. The production of unconsumed goods must make use of household resources (land, labour and capital). In return, households

must receive an increase in their command over final output but need not use it all for (current) consumption purposes.

When the government and foreign sectors are added, the number of transactors expands to four and the relationship described in (1) becomes:

$Y = C + I + G + (X-M)$.....(2).

"Government" is an economic entity which purchases goods and services from firms and, or, itself provides the goods and services. This concept of government includes central and local authorities (as well as social security funds). The government's activities includes "productive" and "redistributive" activities. An example of a "productive activity" would be expenditure on "roads and hospitals and schools which may last for many years during which they provide services" (Edey 1967, 53). A distinction is therefore drawn, both in theory and in practice, between current and capital government purchases. The government's "redistributive activities" would be expressed through taxation and transfers. With the addition of government in the formulation, the aggregate savings entity in model (1) would include personal savings, corporate savings and government savings or dissavings.

A comment should be included on the 'definition of the "government sector"'. In the national accounting framework social security funds would fall under the "government" because they are financed by compulsory contributions, that is contributions extracted by virtue of the government's legal "right" to do so. However, Edey's definition states that government is the (legal) entity which purchases or provides goods and services on behalf of households. Modification of Edey's definition of government to include social security funds is therefore necessary, because services from these funds are usually in the form of *money*

transfers, as opposed to purchases: money is transferred from the government to households (Edey 1967, Villacres 1991).

In model (2), the "foreign sector" is represented by exports less imports (X-M). Exports, the sale of output to foreigners increases the national income for distribution while the purchase of output from foreigners shrinks total national income. If one assumed that the economy were represented by the simple model described in (2) and its transactions were to be captured in a bookkeeping system, the following accounts would be used to record transactions: a firm's production account; a household account; a government account; an external account, for the "rest of the world"; and a capital (savings) account. Although this description of a bookkeeping system for recording economic activity is simplified, it illustrates the link between accounting systems and macro-economic theory. The use of an accounting framework for categorising and presenting the economic activities described above, has grown in the range of economic activities it covers and become accepted practice amongst governments internationally (Commission of the European Communities 1993).

1.4. Economic activity in the national accounting framework

The description of economic activity within the national accounting framework has several of the features discussed in the general description of economic activity. This is an important observation as the framework supports information used for making decisions based on general economic models. Areas of agreement and divergence are highlighted in the following paragraphs that list the most important features of this framework.

1. It is a numerical description based on a system of double entry accounts that are compiled for a given time period. The double entry system provides a check on the arithmetic and completeness of the data. Some national accounting authorities make reference to a "quadruple" entry accounting system (Rosen 1972, Commission for European Communities 1993). By doing so, they draw attention to the fact that when recording transactions for the whole economy, entries are made by the fictitious national accountant for *both* parties to the transaction. By contrast, for a single business, the company accountant would only be concerned with making entries for the company and not for its transaction partner as well. The foreign sector is an exception to this rule. In addition, the compilation of accounts for successive time periods creates a continuous flow of information regarding economic activity (Commission of European Communities 1993).

2. Within the accounts, gross domestic product (GDP), which was conceptualised in section 1.3 as "Y", a "net value added concept", is defined in three ways: " in terms of domestic expenditure; as domestic production; and as the income accruing to factors from that production" (Silver and Mahdavy 1991, 124). Similarly, Edey refers to the conceptualisation of "ex post national income" in three ways: "as the value of the net product of the community [*value added*], as the sum of factor incomes within a given period, or as the aggregate of expenditure on final output of goods and services net of indirect taxation" (Edey 1967, 97).

3. Note that the economic activities of production, consumption and investment estimate actual and not *intended* levels of activity underlying the Keynesian theoretic model. Also, the numbers traditionally reflect a flow of the command over resources and not monetary flows.

4. The SNA is designed to record complete sets of economics transactions at different levels of aggregation in both "flows" or "current" accounts, "accumulation" accounts and "balance sheets". By so doing, it reports "a full sequence of accounts" for transactions of resident institutional units (economic

agents); institutional sectors (groups of agents) and the economy as a whole (Commission for European Communities 1993, 4.2).

1.4.1. Terminology and classification issues

At a very general level, the SNA distinguishes between two different types of institutional units or transactors: households and legal entities (Commission for European Communities 1993). "Legal entities" refer to units of production (for-profit or not for profit) or government units (including social security). At a more detailed level of analysis, four of the five "components" of the model referred to in section 1.3 have been named "institutional units" or "transactors" within the SNA. These transactors form the core of the "home" economy (Raymond 1991). They are: households; corporations; government units; and non-profit institutions (NPIs).

A further distinction can be made between two major classes of transactors in these institutional sectors. In the first class there are transactors of production, consumption expenditure and capital formation. In the second class there are transactors of the income, outlay and capital finance accounts. The first class deals with the units responsible for the flow of goods and services relevant to production, consumption and the accumulation of capital. The second class refers to financial units that are responsible for directing flows of funds that will facilitate production and consumption decision making. These classes are presented in a matrix in figure 1-3. The category for the "rest of the world" or foreign sector is included because, although it is not a unit of the *domestic (home)* economy, its account includes transactions which relate both to the flow of goods and services and to financial flows where one party to the transaction is from the home economy.

Figure 1-1: Taxonomy of Institutional Sectors as Transactors in the Economy

Institutional Units	Transactors I - involved in the purchase and sale of goods and services	Transactors II - involved in organising the sources and uses of finance
Non-financial corporations	Industries	Corporate and quasi-corporate enterprises
Government units, including social security funds	Producers of government services	General government
Private non-profit institutions (NPIs) serving households	Producers of private non-profit services to households	Private non-profit institutions serving households
Households	Households	Households, including non-financial private unincorporated enterprises
	International sector	International sector

Source: Commission of the European Communities (1993)

These institutional units constitute the primary pieces of the economy and can be grouped into five mutually exclusive institutional sectors for the purposes of the national accounting classification system. These sectors correspond to the institutional units, regrouped from the "transactor" classes and are termed: business (non-financial corporations), households, government units, financial corporations and private non-profit institutions. The International Monetary Fund (IMF) included the "rest of the world" or "international sector" as an additional "sector" (IMF 1986, Commission for European Communities 1993, 1.14).

1.4.2. Important national accounting concepts

In addition to the four features of the national accounting framework described above, there are three concepts requiring further elucidation. The first one is the relationship between value added and the measurement "GDP"; the second is what

is meant by "services" in the SNA; and thirdly, what is meant by "the private sector".

1.4.2.1. Value added and the measurement of GDP

Value added plays an important role in the economic conceptualisation of "production" and of GDP within the national accounting framework (Rosen 1972). Value added is conceptualised as a residual, or balancing, item that measures the value of production (Commission for European Communities 1993) and to illustrate the concept, the calculation of *value added* in production is contrasted with the value of a *transaction* in figure 1-2 below.

Figure 1-2: Demonstrating the Calculation of Value Added in the Production of a Drug

	Value of Transaction	Value Added
Agricultural company	50	50
Pharmaceutical manufacturer	500	450
Wholesaler	605	105
Retailer	910	305
Total	2065	910

The value added concept can be calculated as "gross value added" or "net value added".

"Gross value added is defined as the value of output, less the value of intermediate consumption; net value added is defined as the value of output less the values of both intermediate consumption and consumption of fixed capital" (Commission of the European Communities 1993, 6.205).

Intermediate consumption, in contrast to final consumption, refers to inputs (goods or services) to a production process which are used up during a given accounting period. Final consumption consists of goods or services consumed by households. In a few instances, final consumption may include own-account goods or services retained by producers or households. In order to calculate net value added, capital consumption needs to be deducted, but the estimation of capital consumption is extremely difficult. For this reason, although the net concept is theoretically more correct, the accounts provide room for the reporting of both gross and net value added.

Authors refer to there being two most commonly used approaches to measuring GDP in national income accounting as: the income (payments, uses) approach and the product (output, sources) approach. Strictly speaking, they are referring firstly to the measurement of the nation's income, and secondly, to the measurement of the national product. The income approach is a summation of all current incomes for residents of the economy in a given year. The standard by which income is judged to be included is whether the payment "in money or in kind represents a contribution by a factor of production towards current output" (Rosen 1972, 69). Instead of being concerned with the distribution of income amongst the factors of production, the product approach attempts to calculate the value of total output. Intermediate values are excluded and only value-added is summed across all production in order to remain true to the original concept of production as the creation of value.

1.4.2.2. The nature of services

A feature which distinguishes services from goods is that by the completion of production, services need to have been provided to the consumer; the sale cannot generally be separated from the production process. Goods, on the other hands, can be held for months after production before being provided to the consumer. Another less clear distinction between services and goods is that goods are physical objects,

whereas services usually take the form of a *change* produced upon a physical object. This distinction has been clouded by the recent development of services embodied on videotape or in electronic format, which are physical media of delivery with many characteristics of "goods".

"Services" are said to cause changes to the following: consumption goods; the physical or psychological condition of people; or the economic state of an institutional unit (e.g. through insurance or financial intermediation), and these changes may be temporary or permanent. Of significance to our later discussion of health services, is that certain beneficial services provided to households, are not included in the production boundary of the SNA. Whereas domestic services paid for employing domestic staff are included in the accounts, services provided by members of the household to serve themselves are not included. Examples of excluded services that relate to health care are the care of "sick, infirm or old people" (Commission of European Communities 1993, 6.20). There is more of a tendency to exclude "services" than "goods" produced by households. The main rationale for the exclusion of most own-account services produced by households is that their production is intended for the household alone, whereas in the production of goods, there is some possibility that excess goods produced may not be consumed by the household and exchanged in a market instead. Other objections include the difficulty in ascertaining the imputed value of the services produced and the consequences for the definition of "unemployment", were such households activities included in the measurement of production. Similarly, these services resulting from "household production" are excluded from the estimation of household consumption (Commission of European Communities 1993).

The calculation of the value of services provided by the insurance industry has certain particular characteristics because of the nature of services provided by the industry. The business of insurance is "to provide institutional units exposed to

certain risks with financial protection against the consequences of the occurrence of specified events" (Commission of the European Union 1993, 6.135). Insurance companies generally do not make explicit charges for their services but charge a premium at the beginning of the period for which the premium holder is covered. A portion of that premium is used for expenses incurred within the period and another portion is translated into reserves which accumulate until the date of payment. The value of their services therefore needs to be estimated indirectly.

The various components needed to calculate the value of output are:

1. actual premiums earned, which is equal to total premiums earned in the accounting period less the change in the value of reserves (amounting from the portion of the premium acting as a prepayment on the future pay-out);
2. income from investments of technical reserves, which is attributed as policy holder income that is paid back in the form of premium supplements;
3. claims due in the accounting period, which is equal to claims payable in the current accounting period plus changes in reserves against outstanding claims; and
4. changes in actuarial reserves and reserves with "for-profits" insurance, which are reserves set aside to build up capital amounts promised by the policy.

The value of output of insurance services is calculated as the sum of items 1 to 4.

1.4.2.3. The private sector

The taxonomy that divided the economy into different social or legal units presented in figure 1-1 above, provides a useful way to define the term "private sector" as used in this study. The private (health) sector, refers to the activities of all

institutional units[2] except for *government.* Although this thesis is primarily concerned with the documentation of private sector expenditure, it also acknowledges the existence of interaction between "government", or the public sector, and the private sector. The distinction between the "private" and "public" sectors can be analysed on several levels. In the most common distinction, the use of the concept of ownership is key. A second criterion of increasing importance, as the functions of ownership and management responsibilities have parted ways, is that of the control of resources (Belmartino 1994, Ovretveit 1995). This criterion together with the existence of operating surplus, are used as chief criteria for distinguishing the private sector from the government (and non-profit) sector in national income accounting (Waldo 1996).

1.5. Different social accounting systems

Authors have identified five social accounting systems (Rosen 1972, Commission of European Communities 1993), all of which are encompassed within the System of National Accounts (Commission of European Communities 1993). These include the following:

1. national income and product accounts;
2. input-output tables;
3. social accounting matrices;
4. flow of funds/capital finance accounts; and
5. national wealth and balance sheets.

[2] Note that the international sector is strictly speaking not an "institutional unit" of the domestic economy.

The national income and product account: This account represents a consolidation of all income to households and production by firms in the economy.

The input-output table: It is possible to measure national income by summing the output of sub-sectors contained in the economy. This approach to measuring national income is used in the construction of an input-output table The concept of the input-output table was formalised by Leontief (Edey 1967). It anatomises the economy into many sub-sectors. It shows for each industry or type of product, what products are used in the course of production, which industries supply them and the proportionality between marginal output and input (Ruggles 1987).

Social accounting matrices (SAM): The SAM are defined in the SNA as "the presentation of accounts in a matrix which elaborates the linkages between a supply and use [*input-output*] and institutional sector accounts" with the aim of presenting interrelationships between value added and final expenditures (Commission of the European Union 1993, 20.4). As such, the design of these accounts are not standardised but are sufficiently flexible to enable more detailed breakdowns of the socio-economic environment. As a distinct accounting system, it records all non-monetary and monetary flows (except for "other changes in assets").

Flow of funds or capital finance account: While the national income accounts and the input-output tables only document current output, the flow of funds accounts document *capital* and *current* output. While the other measures of economic activity are concerned with the flow of goods and services, this accounts measures the way households, firms and government finance their activities. This account shows the *sources* and *uses* of funds as represented by changes in the transactions of *institutional* sectors and not *productive* sectors (Rosen 1972).

National wealth statements and balance sheets: A national balance sheet complements the flow of funds account. It shows the stock of tangible and intangible financial assets and liabilities held by the different institutional sectors at a specific point in time (Ruggles 1967). The greatest problem facing the measurement of the national balance sheet is the valuation of assets. This is more

complex than the measurement of national income which is generally valued at transaction prices.

1.6. The development of national health accounts (NHAs)

Over time there has been a growing interest in the systematic documentation of health care activities. This interest has grown in tandem with changes in national accounting system guidelines. There has also been increasing emphasis placed upon the use of aggregate national accounting information for planning public health care expenditure which has drawn attention to the structure of the reporting of health related activities in the SNA (Hansen and King 1996).

Changes in the most recently published SNA, requiring government expenditure to be reported as "individual" or "collective" expenditure, have opened the way for more accurate reporting on public sector health care consumption by households. In addition, the requirement that expenditure on health care be reported as a standard breakdown in private consumption expenditure, increases the need to ensure its accuracy.

The Organisation for Economic Co-operation and Development (OECD 1993) has led the way in documenting information on health care expenditure and health indicators for its 24 member countries . These publications have acted as an inspiration to researchers in other countries wanting to develop more detailed accounts for their own health sectors (Schieber 1995, OECD 1993).

As indicated previously, the 1993 System of National Accounts also encouraged the development of satellite accounts. Within the context of the health sector, satellite

accounts are termed *national health accounts*. The precise definition of *national health accounts* has not yet been developed. It is generally thought of as a set of accounts showing the source and use of funds relating to the health sector (Waldo 1996). Over time it is likely that they will adopt another type of social accounting practice: the use of indicators which will enable the measurement of the 'volume' and 'quality' of care (Newbrander, Carrin & Le Touze 1994). Recent discussions on national health accounts have centred around the *standardisation* of the definitions and the documentation framework for health care information (Mexico Foundation for Health 1996).

It is envisaged that NHAs could be used to answer numerous questions on health policy and planning (Waldo 1996, Green 1995). Figure 1-3 indicates some of the questions that these accounts should be able to address:

Figure 1-3: Questions that National Health Accounts should be Designed to Address

1. How has the economy's resources devoted to the provision of health care changed over time?
2. How has the financing structure of health care changed over time?
3. How has the demand for health care changed with changing opportunity cost of care?

Source: Waldo (1996); Baumol (1995)

1.6.1. Structure of the national health accounts

The national health accounts should be designed in such a way as to make them compatible with national income accounts. As indicated previously, this is one of the underlying principles of satellite accounting. The matrix formulation is key to

the development of national income accounts as well as national health accounts (Edey et al. 1967, Waldo 1996). However, the presentation of national health accounts differs from that of income accounts. National income accounts are usually presented as T-accounts, whereas national health accounts are presented in their matrix format. The reason for this form of presentation is that it implicitly reveals more about the structure of the health system than the T-account presentation. It also compels the use of an important technique which ensures greater data accuracy: the duplicate measurement of all records.

The matrix may be conceptualised as an *n*-dimensional model. A two dimensional plane may be created using any number of combinations of all *n*-dimensions. Examples of dimensions that might be of interest to policy makers and researchers are: types of services or goods; providers of health care; factor inputs; patient demographic characteristics; payers/intermediaries; sources of payer income; and geographic regions (Waldo 1996). Examples of a hypothetical T-account presentation and a matrix presentation are presented in figure 1-4 and 1-5. Complete matrices are referred to as *estimating frames*. Incomplete matrices are referred to as *subsidiary* accounts.

1.6.2. Definition of health care goods and services included in the accounts

It is important to distinguish between the concepts of health and health care. Two features used to distinguish between these concepts are "tradability" and "causality".

Tradability. It is presently not possible to trade health or heath status (except perhaps in the case of organ transplants); however this fact may change with the advent of genetic engineering. However, health care can be exchanged. It can be provided in the form of a service; an operation to remove a gall stone or dental work, or in the form of a good; pills or injections.

Figure 1-4: Hypothetical T-account

Income		Expenditure	
Institutions	300	Government	200
		- individual	*50*
		- collective	*150*
Physicians	200	Insurers	200
Pharmacies	50	Patients out-of- pocket	150
TOTAL	550	TOTAL	550

Source: Waldo (1996)

Figure 1-5: Hypothetical Matrix Presentation

Expenditure	Government		Insurers	Patients: out-of-pocket	Total
Income	Individual	Collective			
Institutions	30	70	150	50	300
Physicians	20	80	50	50	200
Pharmacies	0	0	0	50	50
Total	50	150	200	150	550

Source: Waldo (1996)

Causality. Health care is only one small determinant of health. Other more important determinants of health are socio-economic variables like good housing,

education and access to clean water and sanitation (World Bank 1994, Ferguson & Ryder 1991).

The identification of goods and services to be included in a national health account depends upon our understanding of health and the criteria used to define it may differ from the SNA guidelines. It is fortunate therefore that the SNA grant greater flexibility for the generation of satellite accounts. Criteria used to determine the inclusion or exclusion of goods and services may wholly or in part rely on the SNA criteria. If the accounts only rely on the SNA criteria in part, it is important that the criteria for divergence are clearly stated so it is possible to integrate satellite health accounting estimates back into the central framework.

In summary, there are three broad categories of health-related activities that generate goods and services to be included in the national health accounts.

1. *Consumption of goods and services intended to extend life, improve its quality or slow its decline*. These are activities undertaken by individuals. Examples include inoculations, liver transplants and operations to reset broken bones.

2. *Actions taken to improve health status*. These are activities undertaken to improve the health of groups of people, like pre-natal care classes or public health awareness programmes.

3. *Infrastructure development and administrative services* supporting 1 and 2 above. Administration expenses take the form of:

a) Administration expenses for providers of care;

b) Administration expenses for payers or intermediaries; and

c) Administration activities by consumers (Waldo 1996).

It has been recommended that administration expenses in a and b should be included in the accounts. This agrees with SNA guidelines. Those in group c refer to administration activities undertaken by the patient. These are clearly important but their measurement is extremely difficult and as "own account" production, the SNA guidelines would recommend that they be excluded.

The inclusion of certain goods and services in the national health accounts remain contentious even amongst national health accountants. National health accountants in the United States (US) have made certain recommendations on whether to exclude or include certain goods and services from national health accounts. Some of these recommendations conflict with general SNA guidelines. These goods and services are listed in figure 1-6 but the way their treatment should be standardised is still under debate as the much of the field of national health accounting is still in early stages of development. Current SNA practice is not to include non-emergency transportation, water and sewage treatment and education activities in the health sector. However current SNA practice includes prescription lenses and hearing aid under "durable goods" (in private consumption expenditure).

The concept of investment in national *health* accounts deserves special mention. Although much debate persists about the treatment of investment in the health accounts, national health accounts economists have recommended that three categories of investment be included (Waldo 1996). These are:

1. Investment in plant and equipment;
2. Investment in labour through education and training; and
3. Investment in knowledge through research and development.

Figure 1-6: A List of Contentious Goods and Services Debated for Inclusion in the NHAs

Type of Good/Services	Recommendations for Inclusion in NHA, made by US National Accounts Economists
Holistic medicine	Exclude treatments of unlicensed practitioners.
Eyeglasses, hearing aids, durable medical equipment	Exclude eyeglasses and hearing aids. Include prostheses and durable medical equipment.
Non-prescription drugs	Include.
Spa therapy	Include if prescribed by health professional.
Transportation services	Include but show as separate type of activity.
Non-care hospital costs	Include if directly related to treatment e.g. per diems.
Custodial care.	Only include care that involves clinical intervention by health professionals.
Water and sewerage treatment, pollution controls	Include.
Investment	Include.

Source: Waldo (1996)

1.7. Conceptual and estimation issues

Several conceptual and estimation issues relating to health require more detailed consideration. They are: non-market activities; the valuation of production; exports and imports; and data collection and data sources.

1.7.1. Non-market economic activities

The System of National Accounts describes how the importance of non-market activities varies between countries but is generally more prevalent in less-developed countries (Commission of the European Communities 1993). As was discussed with reference to household own production of services, the SNA notes that the computation of non-market activities involving goods and services exchanged within the same household, or between households, are fraught with difficulties. The SNA therefore generally chooses to exclude them from the accounts.

NHAs have also recommended that non-market health activities be excluded from the NHA framework because as countries develop, they become part of the formal economy. For example, if households of a country who previously took care of the old and sick decide to institutionalise these people, an increase reflected in the national income accounts would be represented by a rise in GDP by virtue of a classification changes and not because there had been an increase in health production (Waldo 1996).

Another contentious non-market "cost" recommended for exclusion from the national health accounts is the cost of "lost productivity". The inclusion of these costs together with the costs of treatment would result in an inaccurate measurement of expenditure incurred in preventing and curing illness and disease, which is the focus of national health accounts expenditure measurements.

1.7.2. Valuation of production

The general rule for the valuation of output by the private sector is valuation at market prices. The SNA recommends that goods and services that are sold at prices which are not economically significant are not valued at these prices in the SNAs.

Instead they should be valued by their costs of production (Waldo 1996, Commission of European Communities 1993).

"Economically significant" prices refer to output prices which are either *basic prices* or *producer prices*. A basic price refers to the amount receivable by the producer from the purchaser for a unit of output less any tax payable on the output plus any subsidy received. The producer's price is the amount receivable by the producer from the purchaser for a unit of output, less only one type of tax payable by the producer, i.e. value-added taxation (VAT), and with no subsidy added.

Services (and goods) provided by government units and non-profit institutions (NPIs), and supplied free of charge, or at economically insignificant prices, are valued at their costs of production which includes remuneration of employees and consumption of fixed assets (and taxation less subsides). This way of evaluating output is used in the public health sector, as well as for NGOs, where services are frequently provided free of charge to the user, or where they may only require a small payment in the form of a "user fee" which is not a market price.

Insurance plans should be valued in the same way as recommended in the SNA. It has been recommended by national health accountants that investment in the form of research and education be valued at cost while the purchase of capital equipment should be valued at market prices (Waldo 1996).

1.7.3. Exports and Imports

The export of health care occurs when people, who are not living and working in the country, receive treatment from health care services within the country. The import of health care occurs when nationals receive treatment from health care facilities

outside of the country in which they are living and working. These transactions should be accounted for as are other exports and imports.

1.7.4. Data collection and data sources

Data sources can be categorised into two groups; namely, *primary* and *secondary* data sources. Primary data is data that is collected expressly for solving the problem at hand. Secondary data is existing data that is useful for solving the problem, but has been "collected and processed for purposes other than the one at hand" (Nel, Radel & Loubser 1988).

There are also different *types of data sources* in the health sector. The data from these different sources may record different *levels* of health expenditure activity (Waldo 1996). Types of data sources on health care expenditure are: insurer files, provider records and individual or household records. These data records may be recorded at the event-level, person-level, or provider-level (Waldo 1996). These data types may act as primary or secondary sources for the purposes of national health accounts.

One of the main obstacles to the presentation of national health accounts is the unreliability and irregular availability of data (Edey 1967). The availability of different sources of data will depend on the existing health system and will thus vary from country to country.

1.8. National income accounting and national health accounts in South Africa

National accounting practice in South Africa aims to conform to international standards and the accounts are estimated from the income and expenditure sides by two different institutions: the Central Statistical Services (CSS) and the South African Reserve Bank (SARB). The CSS is responsible for estimation of GDP by factor income, while the SARB is responsible for GDP estimation by expenditure.

International developments are clearly encouraging the development of satellite accounts (Mexico Foundation for Health 1996). This is especially so in the case of satellite accounts for health, with the inclusion of health care expenditure as a standard breakdown in private consumption expenditure in the SNA. In South Africa there is a growing commitment to the development of satellite accounts but at this time, none exist in South Africa. There are severe resource constraints preventing the dedication of staff to this work. In key informant interviews at the Reserve Bank and the Central Statistical Services, informants indicated that they were occupied with implementing changes required by the 1993 System of National Accounts for the overall national income accounting process and therefore did not have the capacity to develop satellite accounts (Personal Communication - Smith, national accounts economist, SARB; Personal Communication - Mills, Director, CSS). As will be discussed in more detail in Chapter 3 and again in Chapter 6, it may be possible, without significant extra work, to estimate private health care expenditure more accurately and in this way make a contribution to the incremental development of more complete national health accounts.

CHAPTER TWO

2. OVERVIEW OF THE SOUTH AFRICAN PRIVATE HEALTH SECTOR

The South African private health sector is extremely complicated and consists of many different institutional units. Over 70 different acts regulate the entire private health sector. The first chapter reviewed national income accounting theory. This chapter presents a description of the financing and delivery of private health care in South Africa, using several theoretical concepts developed in Chapter 1.

The chapter's framework draws on SAM concepts, in an attempt to structure the presentation of information in a way that is comparable with the subsequent presentations of research findings. In doing so, a distinction is drawn between "sources" of finance and providers ("uses" of funds). Under the heading "sources of finance", a distinction is drawn between institutional units of the domestic economy and the foreign sector, who are the sources of funds (e.g. household, firm, government), and the "financing agents" who act as middlemen facilitating the flow of expenditure to providers of services. For further information on terminology used, Appendix B contains a short glossary of terms used in describing the South African health sector.

2.1. Sources of finance

Sources of finance for the private sector can be grouped into institutional categories; namely: *households, firms, government* and *international aid. Government* interfaces with the private health sector as an employer whose contributions on behalf of civil servants to private medical schemes pay for services

of private providers. General government in the form of the social security funds; namely, the Multilateral Motor Vehicle Accident Fund (MMF) and Workmen's Compensation, is also a source of finance from whose transfers households may "purchase" the services of private sector providers.

2.1.1. Medical schemes and their administrators

Employees and employers make contributions to medical schemes who act as financing agents, reimbursing health care providers for costs incurred by their members and beneficiaries. Firms contribute between one half and two thirds of the medical scheme contributions which are tax deductible in the hands of firms and hence form a tax efficient part of the overall compensation of employees[3].

Medical schemes are governed by a specific act known as the Medical Schemes Act (1967). The various forms of medical schemes in South Africa include the following groups: medical aid schemes, medical benefits schemes, schemes created by industrial legislation ("exempted" schemes) and schemes created by various other legislation (Hollis 1990). Although recent legislation (the Medical Schemes Amendment Act of 1993) has removed some of the legal distinctions between the schemes, they still exhibit slightly different characteristics as will be explained below.

A distinctive characteristic of all of these schemes is that they are non-profit schemes, whose members' premiums are differentiated in terms of income and

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[3] During times of illness or as a result of disability, people suffer loss of income. "Benefit funds" (different from "medical benefit schemes") largely provide income maintenance during periods of illness or disability. However, their expenditure is not included in this survey of private sector expenditure as their expenditures are not included in health care expenditures as defined in this thesis. These benefit funds are from private sources of funds unlike Workmen;s Compensation and the Multilateral Motor Vehicle Accidents Fund which are types of social security funds that also pay income maintenance.

number of dependants. Poorer and older members within a scheme therefore usually contribute less than they draw for medical expenses from the pool of funds. However, across different schemes, poorer members are usually concentrated in schemes that offer fewer benefits for lower premiums. Another characteristic which they all share is that the operate on a "cash-flow basis", in contrast to an accrual basis, which means that most of the income earned within any year is paid out for medical expenses incurred within the same year, and very little of the contributions received are invested for future medical expenses (Fourie & Marx 1993).

Of all the schemes, medical aid schemes offer the most extensive range of benefits to their members, who are traditionally white collar workers. Members of medical benefit schemes are usually drawn from lower income groups and their scheme offers them a more limited choice of service providers. "Exempted" schemes are largely industrial schemes which fall under the jurisdiction of the Department of Manpower and their exempt status traditionally allowed them to provide a narrower range of benefits than was stipulated in the Medical Schemes Act of 1967. As a result, only Section 25A of the Medical Schemes Act (1993), which relates to reporting requirements to the Registrar of Medical Schemes, applies to them. Many of these schemes are run by trade unions or industrial councils. The Registrar for Financial Institutions in the Department of Manpower functions to inform the schemes of the rules pertaining to their investment portfolios, stipulated in Section 21(3) of the Labour Relations Act. The trade unions, or industrial councils themselves, administer the funds. Looking at the size of schemes, measured by contributions received, it is revealed that about 20 % of medical aid and benefit schemes have contributions less than R3 million, while 70% of "exempted" schemes fall into this revenue bracket (Registrar of Medical Schemes 1994). "Exempted schemes" account for a relatively small proportion of expenditure by schemes. In 1991 and 1992, they accounted for 4.12 percent and 3.97 percent of total reported expenditure by medical schemes respectively (Registrar of Medical Schemes 1993).

Medical schemes are generally managed by "for-profit" medical scheme administrators, whose income may not exceed 10 per cent of total contributions (Medical Schemes Amendment Act 1993). The five largest administrators manage over 50 % of the total premium value of the medical scheme market (Financial Mail 1994).

Data on about 170 different schemes is annually reported to a government appointed official whose designation is the Registrar of Medical Schemes (Registrar of Medical Schemes 1992). Schemes report the following statistics to the Registrar: contributions received, number of beneficiaries and principal members, benefits paid out and reserves retained. "Principal members" refers to employed or previously employed persons who first join the scheme. The term "beneficiaries" refers to the member and the member's dependants who have access to a scheme's benefits by virtue of their association with the principal member. All categories of schemes report to the Registrar except for schemes for large government departments which include Transmed, Polmed, Medcor and medical schemes for employees of the armed forces and national intelligence.

Medical schemes have been experiencing increasing financial difficulty over the last decade due to escalating health care costs and an inadequate regulatory framework (Fourie & Marx 1993, Van den Heever 1994). They nevertheless remain the largest form of "insurance" in the market for health care. In 1992/93 they had approximately 6 million beneficiaries, with a principal membership of 2.2 million people and dependants totalling 3.8 million (This estimate excludes about 852,661 beneficiaries of schemes *not* reporting to the Registrar). Principal membership rates have decreased since 1992 (Registrar of Medical Schemes 1994, 1995, 1996). By 1994, principal medical scheme membership of medical schemes had decreased to 1.9 million (Registrar of Medical Schemes 1994,1996).

2.1.2. Private health insurance

Private insurance companies have recently developed as financing agents in the health care market. Two types of insurance companies sell health care products: short-term insurers and life insurers. The reimbursement mechanism for private insurance differs from medical schemes. Medical schemes pay for the services of health care providers on the basis of actual costs billed. Private insurers reimburse households on the basis of indemnified costs. This means that the policy holder is insured for a pre-specified sum. Frequently different sums are specified for different medical events (e.g. heart failure, loss of limb etc..). If an event occurs, the insured person is paid the pre-specified or indemnified cost, regardless of what the actual medical expenses are. There has been a high rate of growth in private medical insurance over the past five years, largely because they are able to insure households against specific contingencies rather than assure them a broad range of medical services. Examples of specific "products" they offer are "hospitalisation" or "major medical" policies. Hospitalisation policies typically insure policy holders for a certain number of days in different wards of hospitals (e.g. intensive care, high care) for pre-specified rates. "Major medical" policies insure patients for doctor and drug costs for major operations (e.g. heart by-pass). In addition, because insurance policies are able to charge premiums related to an individual household's health risks, their premiums are often lower for households with low health risk, who, in a cross-subsidised medical scheme, tend to bear some of the risk of less healthy households, in the form of higher premiums (Gore 1994).

2.1.3. Household out-of-pocket health expenditure

Households make direct payments to health care providers in the form of *out-of-pocket* payments. These may take the form of *co-payments* to supplement medical scheme contributions or direct payments to providers. Insured persons frequently pay providers directly, and are later reimbursed by medical schemes. This is similar, in the case of statutory funds. However, for classification purposes in the analysis here, reimbursed funds are recorded in our matrices as coming from the

schemes, rather than the household budget. The flow diagrams in Chapter 4, however, illustrate this flow of funds. In addition, it should be noted that households make out-of-pocket contributions to the public sector in the form of "user fees" at public sector hospitals. Although the total amount of user fees was not estimated for purposes of this expenditure survey, they appear in the conceptual framework outlined in chapter four, figure 4-1.

2.1.4. Multilateral Motor Vehicle Fund and Workmen's Compensation

Households and firms also contribute towards a statutory fund in the form of the Multilateral Motor Vehicle Accidents Fund through the petrol tax. This fund in turn pays for medical expenses incurred in road accidents. The fund has been subject to scrutiny by the auditor-general due to allegations of fraud on the part of the short-term insurers managing the claims (South Africa, Republic of 1992). In addition to contributions to medical schemes on behalf of their employees, firms are required by law to make contributions to the Workmen's Compensation Fund. The amount of the contributions is based on the number of employees and the type of risk they are exposed to in their particular occupation. Employers who provide their own medical assistance may receive a contributions waiver. For this reason, amongst others (such as time saving and cost control), several large company conglomerates have invested in extensive clinic and hospital services for their employees.

2.1.5. Employer provided health care

Within industry, there are many ways in which health care is provided and/or financed. Certain companies may set up their own clinics or they may contribute towards medical scheme membership fees on behalf of their employees. Industry

also makes a mandatory contribution for compensation for occupational injuries and diseases.

2.1.5.1. The Mining Sector

There are several ways in which the mining industry provides health care for its workers. Skilled workers are covered by medical aid schemes, medical benefit schemes and possibly, benefit funds, while unskilled workers rely mainly on the mine hospitals and medical stations. In this section, the emphasis is placed on the services which are funded and provided by the mines themselves. Details of their medical aid and benefit funds are contained in the report of the Registrar, and the operation of these funds has already been described in the generic description of "medical aid" and "medical benefit" funds above. The medical aid and benefit schemes associated with the mining industry are listed in figure 2-1.

Figure 2-1: List of Medical Aid and Benefit Schemes in the Mining Industry

Medical Aid Societies (Schemes)	Medical Benefit Societies (Schemes)
Anglo American	Klerksdorp Mines Benefit Society
Chamber of Mines	Mines Benefit Society
Collieries	
Genmed	
Gold Fields	
Witbank	

Source: Personal Communication - Fourie, Medical Advisor, Chamber of Mines

The mine hospitals and satellite medical stations, which are located at the hostels, provide access to primary care services. Most pre-employment and routine physical examinations are conducted at medical stations. Of the 559,564 workers in the

mining industry, approximately 450,000 make use of the services offered by the mine hospitals and medical stations. Although these health services are available to the workforce while they are at their place of work, they do not have access to health care when they return home, which, given the historical migrant labour system, is frequently very far from the respective mines. Table 2-1 summarises the number of people with different types of health care cover for the mining sector.

Table 2-1: Breakdown of the Number of Employees Covered by Health Services in the Mining Sector

Source of Finance	No. Employees Covered
Medical Aid Schemes	50,222
Medical Benefit Schemes	59,342
Mine Hospital System	450,000
TOTAL No. of Employees	**559,564**

Source: Personal Communication - Fourie, Medical Advisor, Chamber of Mines; Personal Communication - Registrar of Medical Schemes

Under a Section 81 agreement of the old Workmen's Compensation Act (Section 78 agreement in the new Compensation of Occupational Injuries and Diseases Act), the mine hospitals and medical stations are responsible for the first two years of treatment for all occupational injuries or accidents. The mines are insured with the Rand Mutual Assurance Company for the treatment of occupational injuries which persist for more than two years.

2.1.5.2. Other Industry

Apart from making contributions to the Compensation Fund, other non-mining companies also run occupational health clinics. All private clinics are required to register with the Department of Health (Department of Health 1994). Their

number was 1,264 in 1993 and an estimated 1 million people had access to their clinic services (South Africa, Republic of 1994). The services at these clinics range significantly, from a service offered once a week by a single occupational health nurse, perhaps with a dispensary, to a large clinic equipped with an X-ray machine and full-time staff. Companies running these services allocate a proportion of their budgets for the provision of such "clinics". As such, the treatment of this health activity in the SNAs is typically to consider "medical expenses" as part of company operating costs and therefore as a part of intermediate production/ consumption that is not part of the health sector.

2.2. Charities, state-aided and contractor institutions

Other types of contributions by firms, households and the international sector consist of donations to charities and non-governmental organisations (NGOs). These organisation may channel funds to health services or participate directly in the running of health care services (Crisp 1994).

One of the largest non-governmental organisations in South Africa is The St. Luke's Hospice Association. As a charity, the organisation is completely funded from private sources; most of their funding is raised by the Association through charity functions. There are 32 member clinics of St. Luke's in South Africa.

State-aided (or "province-aided) hospitals are privately run institutions who frequently occupy state-owned facilities but may manage the institution on behalf of the state. They may be for-profit or not-for-profit. Generally they receive funding for paying private patients from medical schemes and out-of-pocket, but for non-private patients they receive funding from the provincial government. Transfers to non-profit state-aided facilities are treated as transfers to households in the South

African national accounts (Personal Communication- Botha, national accounts economist, CSS).

Contractor hospitals that provide care for long term psychiatric and tuberculosis patients do so primarily in terms of a per diem contract with the state, on a for-profit basis. The South African National Tuberculosis Association (SANTA) for example runs a network of 22 tuberculosis rehabilitation centres, containing 5,037 beds, throughout the country. The centres are financed by a transfer of funds from the relevant provincial administration. A portion (7%) of their budget is transferred to the National South African National Tuberculosis Association (SANTA) which owns the buildings and land on which the clinics are located. The levy is used for the maintenance of the buildings and for other administrative expenses of the national corpus.

Although transfers to non-profit state-aided institutions forms part of household expenditure on health services, this breakdown was not calculated for purposes of this research as the amount was too small to warrant the effort required to make the estimate. Similarly, the amount of the transfers from government to for-profit contractor hospitals was not estimated.

2.3. Health care providers

There has been a substantial growth in the private hospital sector in the last decade, as can be observed from the increase in the number of beds in private fee-for-service hospitals in table 2-2 (Broomberg, Chetty & Masobe 1992).

Within the overall growth of the number of private beds, there has also been a trend towards small-scale facilities (day clinics and unattached operating theatres with small numbers of beds) which provide ambulatory surgical services, i.e. whereby the patient is discharged on the same day as surgery, thus avoiding expensive "ward" costs.

Table 2-2: Changes In The Number Of Private "For-Profit" Hospitals

Item	1983	1989	1994
No. of Hospital Beds	8,220	11,117	16,415
Percentage Change in Beds		+ 35.24	+ 47.66

Source: Broomberg, Chetty & Masobe (1992)

The increase in the volume of beds in the private fee-for-service sector has been mirrored by an increase in the benefit payouts by medical schemes to private hospitals. Table 2-3 summarises the distribution of private "for-profit" hospital and day clinic facilities between provinces in 1994. The greatest concentration of private hospital beds and the highest population to bed ratio, are found in provinces within the larger metropolitan areas; especially in Gauteng, the Western Cape, Kwazulu-Natal, and the Free State. A main reason for the location of private for-profit hospitals in metropolitan areas is the concentration of sources of finance in urban areas, where most employed people in the formal sector who belong to medical schemes or have medical insurance cover would live.

The mining sector has developed the most extensive private health care infrastructure of all industries. Clinics and hospitals are registered with the Department of Health (formerly the Department of National Health and Population Development) but are entirely financed and managed by companies in the mining

industry. The clinics in other industries largely provide basic primary care with some of them also providing occupational health services. The mining hospital system employs approximately 300 full-time doctors and has a total health care staff of 3,500 (McMurchy 1994). Their bed and facility numbers are presented in table 2-4.

Table 2-3: Distribution of Private Hospital beds by Province (1994)

Province	No. of Hospitals and Day Clinics	No. of Beds	Percentage of Total Beds (%)	Distribution of Population (%)	Beds per 1,000 Population
Gauteng	108	9,250	52.6	16.82	1.35
Kwazulu-Natal	26	2,964	16.8	21.00	0.35
Western Cape	27	2,828	16.1	8.89	0.78
Eastern Cape	14	1,002	5.7	16.37	0.15
Free State	11	520	3.0	6.89	0.19
Mpumalanga	8	481	2.7	6.97	0.17
North West	7	302	1.7	8.61	0.09
Northern Cape	2	144	0.8	1.88	0.19
Northern Province	2	106	0.6	12.57	0.02
TOTAL	**205**	**17,597**	**100**	**100**	**0.43**

Source: Hospital data: Department of Health (1994), Engelhardt (1993) , Development Bank of Southern Africa (1994)

Table 2-4: Number of Facilities and Beds in Mining and Other Industries

	MINING INDUSTRY		OTHER
Providers	**No. of beds**	**No. of facilities**	**No. of Facilities**
Clinics	163	19	1264
Hospitals	6898	53	n/a

Source: Engelhardt (1993); Department of Health records-1994

2.3.1. Independent practitioners

In addition to the facilities described above, health personnel are an important component of resources available for health care provision in the private sector. The South African Medical and Dental Council maintains a register of health personnel in South Africa (see table 2-5). However, this information is not presented in terms of the public/private sector mix of employment, nor by whether personnel are currently practising in South Africa. The large increase in nurses between 1991 and 1992 occurred as a result of the inclusion of nurses from the former homelands. The effect on the category of nurses was higher than for the other groups of professionals as the ratio between nurses and other health care professionals tended to be higher in the former homelands than in the rest of South Africa.

A few of the larger groups of practitioners are included here under "other". Some of these would operate from private practices and would also have cash practices, which are not calculated in this report. It is also important to point out that medical schemes may exclude benefits covering treatment by certain practitioners, e.g. chiropractors, homeopaths and naturopaths.

Table 2-5: Number of Medical Practitioners by Type, registered with the South African Medical and Dental Council (SAMDC)

Type of Practitioner	1990	1991	1992
Interns	1,252	1,459	1,318
Specialists	6,337	6,585	6,632
Dentists - including specialists	3,775	3,944	3,918
Total Medical Doctors (SAMDC Register)	23,139	24,614	25,375
Nurses	102,132	104,829	155,079
Other	26,225	27,912	29,727
- medical technologists	3,717	3,778	3,913
- radiologists	3,304	3,428	3,595
- physiotherapists	2,900	3,017	3,150
- occupational therapists	1,383	1,520	n/a
- psychologists	2,638	2,904	n/a

Source: Central Statistical Services (1993)

A recent study by the Centre for Health Policy at the University of the Witwatersrand (Rispel and Behr 1992) estimated the number of health care professionals working in the private sector. Table 2-6 summarises this information, and indicates the relatively high proportion of certain categories of health personnel based in the private sector.

Table 2-6: Practising Health Care Personnel in the Private Sector (1989/90)

Category of Personnel	No. of Personnel	Private Sector as Percentage of All Personnel in the Health Sector (%)
General practitioners	7 947	62
Specialists	3 703	66
All doctors[4]	11 651	59
Supplementary health professions		
Pharmacists	7 350	89
Dentists	2 883	93
Nurses	22 940	21

Source: Rispel and Behr (1992)

In conclusion, one of the main aims of this chapter was to give readers unacquainted with the health sector a brief introduction to certain of its features. This would assist them in understanding and identifying the various expenditure flows discussed in subsequent chapters. The above description of the private health sector reveals the importance of the private health care resources in the financial and physical structure of the health care sector. The following chapter changes the focus from an overview of the South African health sector to a description of the documentation of health care expenditure in the national accounts.

[4] The difference between the percentage of "all doctors" and the average of generalists and specialists working in the private sector can be explained by the large number of doctors classified as interns and superintendents in the public health sector.

CHAPTER THREE

3. THE REPORTING OF PRIVATE HEALTH CARE EXPENDITURE IN SOUTH AFRICA

Two government institutions currently document private health care activity for the national accounts. They are the Central Statistical Services (CSS) and the Reserve Bank (SARB). The CSS is responsible for the collation of data for GDP *by factor income* for the national accounts and are therefore responsible for the estimation of health care by factor income. The Reserve Bank is responsible for the estimation of health care expenditure in GDP by final demand. On the factor income side, health care estimates are part of a larger category for "community, social and personal services" and are not calculable separately.

As the primary focus of this thesis was to estimate expenditure on health care in an independent manner, this chapter focuses on the SARB expenditure estimate in final demand. However, in order to fully evaluate the SARB estimate, it was also necessary to review the quality of the household surveys and censuses administered by the CSS, which are used to estimate the health expenditure benchmark years.

3.1. Reserve Bank estimation of health care expenditure in the national accounts

The Reserve Bank publishes private health care expenditure estimates as part of the estimation of Gross Domestic Expenditure (GDE). The Reserve Bank estimates are included under private consumption expenditure (PCE) in the national accounts.

Private consumption expenditure is divided into four classes of expenditure. These classes are *durable goods*, *semi-durable goods*, *non-durable goods* and *services*. Health care expenditure is found in three of the four classes: *durable goods (therapeutic appliances)*, *non-durable goods(medicines)* and *services*. The estimates are reported under two headings: "medicinal and pharmaceutical products" in *non-durable goods* and "medical services" in *services*.

Although therapeutic appliances are included under the heading "durable goods", they are not reported under a separate heading in the accounts. It was however possible to obtain the relevant data directly from economists at the Reserve Bank. Therefore, comparisons of the thesis estimate with the Reserve Bank estimate are made inclusive of expenditure on therapeutic appliances.

Examples of expenditure on therapeutic appliances include expenditure on crutches, prosthetic limbs, prescription contact lenses etc. Expenditure by households on drugs and "consumables" refers to drugs and items like bandages, gauze, swabs and similar disposable materials. Expenditure by households on medical services is classified as expenditure on *services*. This includes expenditure on the services of "physicians, dentists and other medical professional services"(SARB Supplement to Quarterly Bulletin, June 1991). In accordance with ISIC and SIC classification guidelines, goods and services in the above classes are only used for human consumption.

The SARB publishes initial and revised consumption expenditure estimates. The initial as well as the revised estimates of health care expenditure for the years 1992 and 1993 are presented in table 3-1. Annual estimates of private consumption expenditure on health are based on data sets assembled by four principal institutions: the Central Statistical Services, the Bureau for Market Research (BMR), the Human Science Research Council (HSRC) and the offices of the

Registrar of Medical Schemes. Annual estimates are based on benchmark year data, with extrapolations from the benchmark data for other years (Appendix C).

Table 3-1: Reserve Bank Estimate Of Health Care Expenditure In Private Consumption Expenditure (millions of Rands)

	First estimate		Revised estimate	
	Mar'93	**Mar'94**	**Dec'95**	**Dec'95**
Type of Expenditure	**1992**	**1993**	**1992**	**1993**
Medical and pharmaceutical products	3,509	3,855	2,776	2,974
Medical services	6,777	7,922	9,045	10,430
Therapeutic appliances[5]	300	322	366	415
Total	**10,586**	**12,099**	**12,187**	**13,819**

Source: Reserve Bank Quarterly Bulletin 1994; Personal Communication - Smith, national accounts economist, SARB

In order to prepare the Reserve Bank private sector expenditure estimates for comparison with the 1992/93 government financial year in the analysis, the 1992/93 year is calculated and presented in table 3-2. Three quarters of the 1992 estimate and one quarter of the 1993 estimate are summed for both the first and revised estimates.

These private consumption health expenditure estimates refer to outlays on health care by households, paid for by themselves directly or indirectly, through medical schemes, as well as health expenditure by employers consisting of contributions to medical schemes, or other health expenditures considered as remuneration in-kind (Personal Communication - Smith, national accounts economist, SARB)[6].

[5] Although "therapeutic appliances" data were obtained by the researcher, this breakdown was not presented in the published national accounts.

[6] Expenditure on fixed capital by hospitals and doctors is included in "gross domestic fixed investment" under the sub-heading "community, social and personal services".

Table 3-2: Reserve Bank Estimate Of Health Care Expenditure In Private Consumption Expenditure (1992/93) (millions of Rands)

	First estimate 1992/93	Revised estimate 1992/93
Total Private Health Consumption Expenditure	10,965	12,595

Source: Personal Communication - Smith, national accounts economist, SARB

The procedure for calculating private consumption expenditure on health involves the steps outlined in figure 3-1 (Personal Communication - Smith, national accounts economist, SARB).

Figure 3-1: Steps for Calculating Private Consumption Expenditure on Health and Investment and Changes in Inventory

Private consumption expenditure steps:

1. Firstly, benchmark estimates (quinquennial) for the categories of health care expenditure are obtained from the income and expenditure surveys conducted by the CSS.
2. Annual estimates are obtained by extrapolation of the benchmark estimates using growth rates from data obtained from the Registrar of Medical Schemes.
3. Quarterly estimates are obtained by extrapolating the annual estimates with data from retail sales figures for medical and pharmaceutical products (also published by the CSS) (Appendix C).

Source: Personal Communication - Smith, national accounts economist, SARB

3.1.1. The calculation of benchmark years for private consumption expenditure

Benchmark years are calculated from quinquennial household surveys conducted by the Central Statistical Services (CSS), the Human Sciences Research Council

(HSRC) and the Bureau of Market Research (BMR) and from the population census. The surveys provide details of household expenditure by race, and divide households into medical scheme members and non-members. The census data shows the number of people per household and the number of households by race (CSS has recently ceased to conduct the population surveys by race.).

Using the household expenditure data, expenditure for medical scheme members is divided into contributions paid to medical schemes (by the employee and by the employer) and out-of-pocket expenditure. Out-of-pocket expenditure for members and non-members is broken down further into the following categories:

1. fees paid to doctors, dentists, specialists, homeopaths etc.;
2. fees paid to hospitals and nursing homes;
3. medicines and consumables bought on prescription;
4. medicines and consumables bought without prescription; and
5. therapeutic appliances.

Categories 1 and 2 multiplied by the number of households per race group, obtained from the population census, constitutes the benchmark for medical services expenditure. Categories 3 and 4 form part of *non-durable* health care expenditure. Category 5 is included under the sub-category, "*other*", under the category, "*durable goods*".

Figure 3-2 shows the results for the CSS Survey of Household Expenditure (SHE), conducted in 1990. The results are presented for expenditure *per person* and not *per household*. When the number of medical scheme members is multiplied by average expenditure per member, and the number of non-members is multiplied by expenditure by non-members, and these two products are summed, one obtains

total (i.e. unadjusted by the Registrar's report) health expenditure by all households. If this sum is divided by the number of households in South Africa, the final estimate of R1,322 shown in the table, is obtained i.e. *total health care expenditure per household*[7].

Figure 3-2: The CSS 1990 Household Survey Results Showing Health Care (1990)

Item	Break down	Total (Rands)
Members of Medical Schemes (R/person)		1179.95
Contributions to medical schemes		879.51
Self paid	536.23	
Paid by employer	343.28	
Expenditure (Fees and medicines)		300.44
Fees		
- doctors, dentists, specialists and others	129.76	
- hospitals, nursing homes and other institutions	40.72	
Medicines and consumables		
- bought on prescription	93.55	
- bought without prescription	21.90	
Therapeutic appliances	14.50	
Non-members of Medical Schemes (R/person)		141.54
Fees		
- doctors, dentists, specialists and others	74.08	
- hospitals, nursing homes and other institutions	23.17	
Medicines and consumables		
- bought on prescription	24.49	
- bought without prescription	14.70	
Therapeutic appliances	5.09	
Total per household weighted by those with and without medical scheme cover		1,321.49

Source: CSS (1990)

[7] In 1992 if the rough estimate of 8 million households in South Africa is multiplied by household expenditure of R1,321.49, we obtain an approximation of the initial Reserve Bank estimate of R10,573 billion.

3.2. An evaluation of current national income practices with a view to developing NHAs

The health care expenditure breakdown provided by the Reserve Bank in private consumption expenditure is a good start for the development of NHAs. It distinguishes between household expenditure on medical services, versus "goods" (in the form of medicines). Also, the estimation techniques used are sound as survey data is cross-checked with data from financing agents (in the form of the Registrar's report). However, certain aspects of both the categorisation and the estimation techniques could be improved. Examples include the documentation of medicines expenditure at different providers (hospitals, pharmacies, dispensing doctors); and expenditure on different types of services (doctors, hospitals, dentists). Another matter is that of directly provided industry health services. It raises several conceptual problems that have been touched on briefly in section 2.1.5.4: specifically, the difficulty is distinguishing between what health services are part of a firm's production costs, and what can be included as income in- kind to employees. The solution to this dilemma is not a simple one and there do not seem to be any answers readily available in the literature. It would require a distinction to be made between health services that act as intermediate inputs (or value added) in the firm's production, and health services which are services in kind to employees, and therefore an addition to health services in the GDP. However, the advantage of the NHA framework is that as long as sources and uses are meticulously documented, this expenditure could be shown in an NHA sources and uses matrix but consolidated in the full accounts appropriately. The issue nevertheless raises a conceptual difficulty for NHAs themselves and begins to touch on the broader issue of the definition of health and health care. Many countries have evolved health care funding systems which distinguish between "occupational" health care and other health care and it is frequently left to the law courts to decide into which category the medical need falls.

As the SHE and October Household Survey (OHS) both play an important role in the Reserve Bank estimation of expenditure, sections 3.2.1 and 3.2.2 focus on the structure and content of the two surveys, and in particular, on the survey questionnaires.

3.2.1. The CSS household expenditure surveys

The SHE survey has been criticised for its lack of representivity and the quality of its data (Dorrington 1989, Personal Communication - Woolard, SALDRU). The survey was last conducted in 1990. It only reported expenditure information for metropolitan areas in the "old" South Africa (Personal Communication - Woolard, SALDRU). For this reason it was necessary for the Reserve Bank to use the BMR household expenditure surveys, which covered non-metropolitan areas, and the HSRC household expenditure survey, covering the former "independent territories" in addition to the SHE.

The survey data are important elements in the documentation of health expenditure in GDE as the Reserve Bank uses the survey to calculate private consumption health expenditure for benchmark years.

An analysis of the survey questionnaire reveals some of its positive attributes (see figure 3-2):

1. It shows a breakdown of both the sources and uses of funds;
2. The sources of funds are separated into medical schemes, as well as out-of-pocket by medical scheme members and non-members; and
3. The uses of funds distinguish between fees paid to health personnel and institutions. They also distinguish between medicines bought on prescription and medicines bought over-the-counter (OTC).

One problem with the data resulting from this questionnaire is that the sources of funds cannot be specifically linked to the uses of funds. For example, funds originating from medical scheme contributions cannot be traced to their uses. In addition, there seems to be a problem with the accuracy of the data as the proportion of contributions paid by employers is far too low; employers usually pay between 50 and 66.7 % of scheme contributions.

3.2.2. The October Household Survey

An October Household Survey that was inclusive of the TBVC areas, was introduced to South Africa for the first time in 1994. The survey, which is also conducted by the CSS, consists of two parts, and health expenditure questions are contained in the second part of the survey. The health expenditure part of the survey is conducted every two years across the whole of South Africa.

As the OHS covers the whole of South Africa, it should be easier for the Reserve Bank to use than using the multiple surveys as was done in 1992 and 1993. Key informants at the Reserve Bank indeed indicated that the OHS survey would replace the SHE in the future. In addition, survey experts report greater satisfaction with the methodology used in the new October Household Survey whose questionnaire is shown in the figure 3-3 (Personal Communication - Woolard, SALDRU).

The structure of the questionnaire is similar to that of the former Survey of Household Expenditure and provides valuable information regarding uses of expenditure, and to some extent sources of expenditure broken down between

Figure 3-3: October Household Survey Questions (1995)

Item	Cost for the past 12 months Non-member (R)
Services	
- doctors, dentists, opticians, nurses, homeopaths, sangomas etc..	
- hospitals, nursing homes, etc. including ambulance services	
Medicines, ointments, disinfectants, bandages etc.	
- purchased on prescription	
- purchased without prescription	
Therapeutic appliances and equipment like contact lenses, dentures, spectacles, crutches etc.	
TOTAL	
	Members of medical aid/insurance schemes, medical provident schemes
Subscriptions and premiums in connection with medical aid schemes and medical provident schemes	
- paid by yourself	
- contribution from employer	
Actual cost paid by yourself	
Medicines purchased without prescription	
TOTAL	

Source: Personal Communication - Woolard, SALDRU

members of medical schemes, insurance policy holders and "non-members". "Non-members" are requested to provide the same breakdown in uses of funds as they

were in the SHE questionnaire, but specific reference seems to have been made to "sangomas", to improve the cultural relevance of the questionnaire to the population.

The section on expenditure by medical scheme members is different to the relative section in the SHE questionnaire. Contributions to schemes remains the same, but out-of-pocket expenditure by medical scheme members is aggregated from five lines to two. These two lines are *actual cost paid by yourself* and *medicines purchased without a prescription.* The first line refers to what is commonly called "schemes-gap" expenditure i.e. the difference between the cost of services and the amount paid by the schemes. The second line refers to the purchase of OTC medicines which do not usually require a script. Patients are not usually reimbursed for medicines purchased without a script and this expenditure would not appear in the registrar's report. This would therefore be a good place to gather this data.

Therefore, the improvements made by the OHS questionnaire on the documentation of health care expenditure are two-fold. Firstly, it is reported to be more reliable and representative as it covers households in both metropolitan and non-metropolitan areas as well as areas previously referred to as "homelands". Secondly, it includes a question on private health insurance and the schemes-gap.

The disadvantage of the OHS over the SHE questionnaire is that it no longer shows a *breakdown* of schemes-gap expenditure. This aspect of health expenditure data is important for health policy analysis because it shows which type benefits are being limited, in particular in the light of the Medical Schemes Amendment Act which gives new freedoms to schemes to reduce benefits.

3.3. Expenditure gaps

There are still expenditure gaps in the SARB estimation methodology, regardless of whether the Reserve Bank uses the Survey of Household Expenditure (supplemented by the surveys of the BMR and the HSRC for the former "independent" territories) or the new October Household Survey. Even though the change to the OHS survey has the potential to improve the accuracy of the SARB estimates, it could still be complemented by information provided by the Registrar of Medical Schemes, which is how the Reserve Bank currently uses the two data sources. The Registrar of medical schemes gives a detailed breakdown of uses of funds. Six health care expenditure categories are listed. These are expenditure on general practitioners, dentists, specialists, hospitals, medicines and 'other'. However, a problem with the way that the Reserve Bank uses the Registrar's data is that they wait for its publication, which occurs up to 18 months after the year for which it reports.

There is also *incompatibility* between the breakdown of expenditure uses in the Registrar's report and in both household surveys, and that required for national health accounts. Some of these incompatibilities are:

1. Hospitals are grouped together with other institutions of long-term care and nursing homes. These are expressly excluded in national health accounting practice recommendations.

2. Hospital and ambulance services are reported together in the surveys and separately in the Registrar's report but it would be desirable to keep them separate in the NHA.

3. Hospital expenditure only includes ward and theatre costs in the Registrar's report but this distinction may not be made clear to the survey interviewee and bias the results.

In summary, a combination of the new October Household Survey with the Registrar's information still leaves various gaps in the reporting of private sector expenditure. These include the fact that no distinction is made between public and private providers. Other examples of problems include the absence of information on: a detailed breakdown of the schemes-gap; workplace health care; expenditure on medicines by place dispensed; flows between the public and private sectors (in terms of sources and uses, finance and provision); actual expenditure by private insurance; and the breakdown of administration costs and retained income by health care financing agents and private providers. These distinctions are useful for health policy analysis but their exposition requires accessing additional data sources as was done by the researcher using the methodology documented in Chapter 4.

CHAPTER FOUR

4. DESCRIPTION OF METHODOLOGY

The method of estimation of national health accounts for the private health care sector in South Africa entailed several processes: a review of the international SNA framework pertaining to health; the identification of the relevant flow of funds framework for the South African health sector; the collection of data from primary and secondary sources; and the manipulation of data to derive an estimate of total expenditure. The comparison with the Reserve Bank estimate also required the documentation of how the Reserve Bank estimates private health care expenditure.

This chapter describes the various sources of data that were consulted and details the methods used to derive the expenditure estimates presented in Chapter 5. An attempt was made to collect as much of the data as possible from primary sources, i.e. from private sector financing agents and providers of health care (Appendix D). Where this information was not accessible a variety of secondary sources in the form of studies, surveys or research results published or recorded by other organisations was relied upon. In fact, many of the estimation techniques were similar to those used in calculating the United States national health accounts (Lazenby *et al* 1992).

Most of the data sources used were health care financing agents, but attempts were made to obtain certain information directly from private sector health care providers in order to cross-check and/or supplement financiers' information, as recommended in the national health accounting approach. Unfortunately, very little detailed information was forthcoming from health care providers except in the case of services provided directly by industry.

Figure 4-1: FLOW OF FUNDS: HOUSEHOLDS TO HEALTH CARE INSTITUTIONS

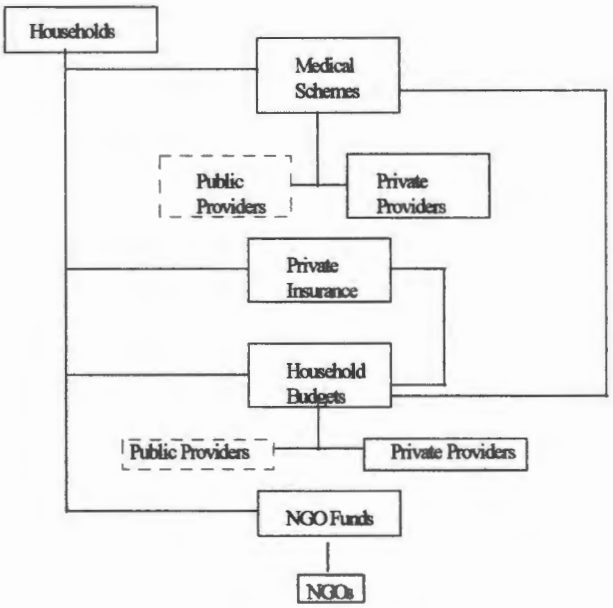


Figure 4-2: FLOW OF FUNDS: FIRMS TO HEALTH CARE INSTITUTIONS

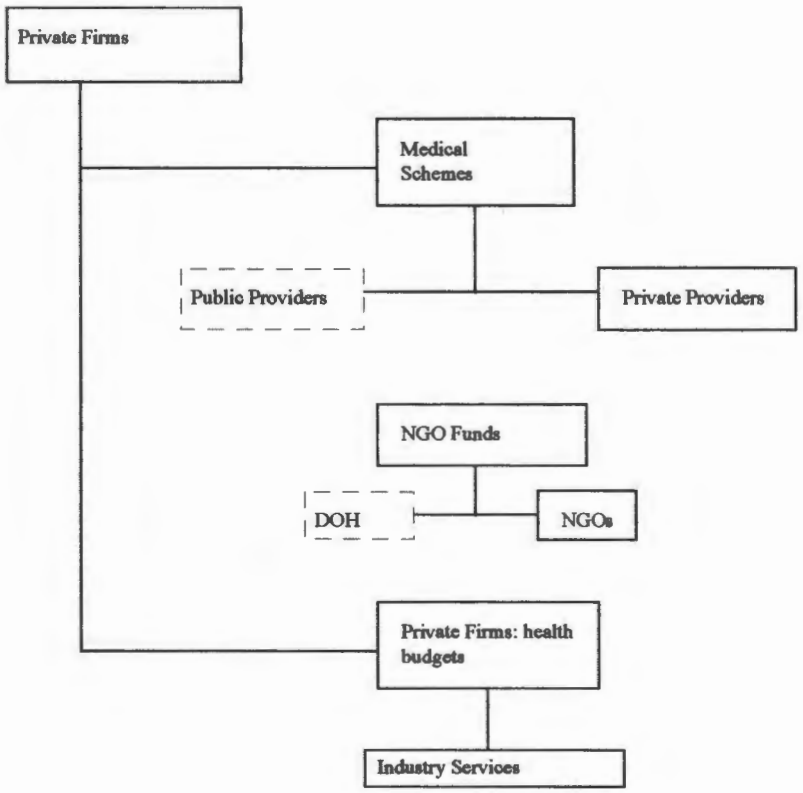


Figure 4-3: FLOW OF FUNDS: GOVERNMENT TO HEALTH CARE INSTITUTIONS

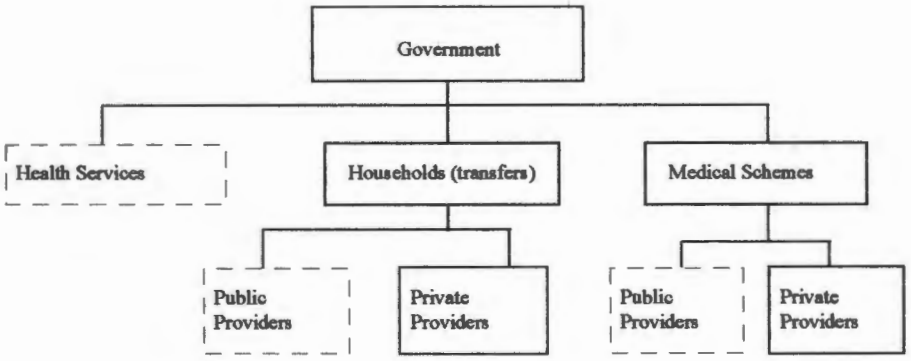
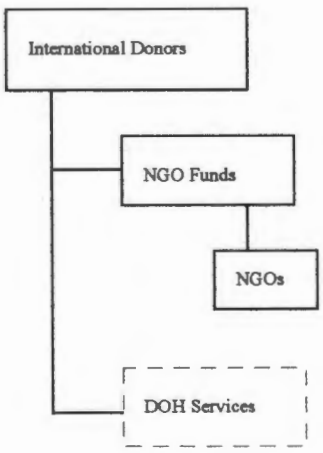


Figure 4-4: FLOW OF FUNDS: INTERNATIONAL AID TO HEALTH CARE INSTITUTIONS



4.1. National health accounting framework

The framework for the national accounting matrices was developed with the aid of the flow of funds figures (see figures 4-1 to 4-4). These figures show the flow of funds from sources through financing agents to health care providers and line items. Sources of finance were divided into: households, government and international donors, thus representing the different sectors of the economy as defined in the Keynesian model presented in Chapter 1. Funding cross-overs occur between the public and private sectors and between different institutional sectors of the economy. Where these public-private cross-overs occur, the flow of funds is shown by a broken line instead of solid line. In figure 4-1, the flow of funds go from households to providers. The major public-private cross-overs that occur from medical schemes are to public hospitals in the form of *user fees*. In figure 4-2 funds flow from firms to providers. Cross-overs occur from medical schemes to public hospitals; and between firms and non-governmental organisations and public health services. Government transfers funds to medical schemes and statutory funds which in turn pay both public hospitals and private providers for their services. International donors make transfers to non-governmental organisations as well as to public health services.

4.2. Financing agents: medical schemes

As indicated previously, benefits paid out are grouped according to the following categories: general practitioners, specialists, dentists, private hospitals, public hospitals, ex gratia, other benefits. Schemes report this information to the Registrar on an annual basis. The Registrar then publishes these statistics in a report approximately 18 months after the year to which they refer. The delay in reporting is problematic when needing to use the data to complement survey data.

Data on 170 medical schemes reporting to the Registrar were obtained from the Registrar's report (Appendix E). In some cases it was necessary to obtain unpublished information directly from the Registrar's office. It was also necessary to approach certain of the medical scheme administrators directly. This was done to supplement information already received from the Registrar and to obtain information on those not reporting to the Registrar (schemes NRR).

The data obtained from the Registrar for 1992 and 1993 was combined with data obtained from schemes not reporting to him. Data for 1993 was obtained prior to publication. The lists of schemes reporting to the Registrar and schemes *not* reporting to the Registrar were cross-checked to ensure that no double-counting occurred. Data for 1992 and 1993 were apportioned for the year April 1992 to March 1993 by summing three quarters of expenditure in 1992 and one quarter of expenditure in 1993.

It was possible to calculate the amount of funds flowing from medical schemes to public hospitals, as public hospital payments were itemised in the Registrar's report. In addition, a separate calculation was completed to estimate the value of income received by medical schemes to which only government employees and their dependants belonged.

4.3. Financing agents: private medical insurance

Medical insurance policies are sold by life and short-term insurance companies. Each company was contacted by phone and was asked whether they marketed medical insurance policies. If they did, they were requested to provide information

on the benefits included in the policy, the number of policy holders and beneficiaries, total premiums received and the value of claims paid (Appendix F).

Many of these companies used information systems which did not separately record medical policy transactions. This was partly explained by the newness of the product to the insurance market. Eventually, data on total claims were the only information received from all participants in the life insurance sector. Key informants in the life insurance sector were: Metropolitan Life, Momentum Life, Norwich Life, Sanlam, Southern Life and SA Mutual Life Assurance Society. Key informants in the life industry indicated that the claims data collected was for 80% of all health care policy claims. The amount (R78.431 million) was obtained for the year October 1992 to September 1993 and converted to an amount (R69.078 million) for the year April 1992/March 1993 by deflating the months of April to September 1993, using an average annual inflation rate of 13.5 %. Once this estimate of 80 % of the life insurance market's claims was obtained for 1992/93 (R69.078 million), it was extrapolated to 100 % (R86.348 million) by dividing by 0.8. The breakdown that emerged from the life insurance claims data for hospital, surgery and other benefits respectively were: 73 %, 20 % and 7 %.

The value of premiums for health care policies in the life insurance sector was calculated by using an actuarial estimate of the proportionate distribution of premium income between *risk premium*, *investment* and *expenses*. Actuaries consulted at Cologne Re and Munich Re suggested that a risk ratio of 65 % be used (i.e. that proportion of "risk premiums" that is anticipated will be paid out in claims within that year is 65 %, in this case R86.348 million). They also suggested a breakdown of total premium income into 30 % for risk premium, 60 % for investment and 10 % for expenses respectively. Using these ratios, total premium income was calculated to be (R442.810 million) as is shown in Appendix F.

Short-term insurance companies were contacted directly for information but they were unable to produce any of the required statistics. An effort was therefore made to estimate their claims by talking to industry informants. Short-term insurance premiums were divided into two categories for purposes of the calculation: major medical policies; and other, which included hospital cash plans. Premiums collected for major medical policies were estimated by multiplying the number of policy holders (300,000) by the average premium per major medical policy (R800). The estimates on the number of policy holders and average premium income were obtained from consultation with short-term insurance companies; namely: Aegis, Commercial Union, Mutual and Federal and Hollard. Key informants in the industry were of the opinion that the premium from major medical policies constituted about half of their premium income for health products.

A sensitivity analysis was conducted using a range of average annual premiums after which, total premium income for short-term and life insurance companies combined was estimated to be R922.810 million and total claims were estimated to be R179.948 million[8].

4.4. Financing agents and providers: private firms/industry

Private firms make three types of contributions to health care "activities". These include contributions to medical schemes, expenditure on workplace health care sites and contributions to the Workmen's Compensation fund. The methodology used to estimate contributions to medical schemes has already been discussed and the contributions to Workmen's Compensation will be discussed under "statutory funds", so the following two sections will focus on workplace health care expenditure.

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[8] A review of the SNA guidelines for estimating the value of insurance services in section 1.4.2.2 shows that this calculation of the value of insurance only included item 3 of the 4 listed components. The paucity of data in the industry prevented further estimations.

Workplace health care "sites" range from regular visits by a nurse to fully equipped hospitals. Although direct expenditure on workplace health care sites is construed by SNA as being a normal business expense, it would be useful to estimate just how much industry directly spends on health expenditure. One could see this allocation of resources as "saving" money for the remainder of the health system in that if these services were not provided directly by industry, other parts of the health system may have been used in their place.

It was estimated that about 10 % of total direct industry expenditure represented income in-kind to employees (Personal Communication - Smith, national health accountant, SARB). Before allocating a portion of direct industry expenditure to final consumption expenditure, it was necessary to estimate total direct industry health care expenditure. The way that payments for health services provided directly by industry were estimated was to estimate separately payments by the mining and non-mining industries.

The largest portion of health care expenditure occurs in the mining sector. Health care expenditure estimates of R350 million in 1992 and R400 million in 1993 were provided by Dr I Fourie, medical advisor for the Chamber of Mines. This included expenditure on mining hospitals and medical stations (clinics). Total workplace mining sector expenditure on health care was therefore estimated to be R362.5 million in 1992/93 (by adding three quarters from 1992 and one quarter from 1993). The list of mining hospitals and medical stations included in this estimate was cross-checked with a list of clinics registered with the Department of Health as well as with a list of mining health care facilities recorded in The Hospital and Nursing Year Book (Engelhardt 1993).

With regard to the non-mining industrial and manufacturing sectors in general, the Department of Manpower and the Department of Health (formerly the Department of National Health and Population Development) were approached to provide a list of companies which provide health services for their employees. Some of the largest companies, such as Barlows and Haggie Rand, provided information on average annual costs of running "in-house" occupational and general primary care clinics. In addition, certain medical officers at individual mining hospitals and clinics were contacted to provide additional and/or more detailed information. The number of non-mining clinics were multiplied by the average cost per clinic to derive an estimate of R109.7 million for total workplace expenditure by non-mining industry.

As it was not feasible to undertake extensive primary data collection on occupational health expenditure for the research, average expenditure costs were cross-checked with estimates from workplace health care expenditure surveys (Kocks 1992, Murphy 1993) and estimates obtained from mining medical officers. These estimates compared favourably with the research estimates.

4.5. Statutory funds

While the SNA consolidates social security funds like Workmen's Compensation and the Multilateral Motor Vehicle Fund with the household sector, the South African Reserve Bank treats them as an extra-budgetary account which is consolidated with general government expenditure (Personal Correspondence - Botha, national accounts economist, CSS).

4.5.1. Workmen's Compensation

Information on the levies paid by companies to the Workmen's Compensation (WC) fund was obtained directly from the WC Commissioner's office. The Workmen's

Compensation fund is a government fund providing reimbursement to workers who suffer an injury while at work. The fund provides for medical expenses as well as retirement and disability benefits. Separate figures for medical costs were obtained directly from the Commissioner's Office (R231 million). Medical costs include expenditure on services such as GP consultations, ambulance transport, private hospital fees etc. (see Appendix G). Most of the services are provided by the private sector. Public hospitals account for a very small proportion of medical costs, although the Commissioner's office could not say exactly what the proportion was.

4.5.2. Multilateral Motor Vehicle Accidents Fund

An estimate of expenditure by the Multilateral Motor Vehicle Accidents Fund (MMF) was obtained from various auditors' reports. The estimate was only obtained for total claims (R660 million) and no breakdown was available for the part of claims that would constitute medical expenditure. The Auditor-General's report (South Africa 1992) indicated that the administration of the Fund was in substantial disarray and hence the estimates should be viewed in this light.

4.6. Households: out-of-pocket

Out-of-pocket expenditure was divided into three categories: schemes-gap; GP cash practice; and over-the-counter (OTC) medicines expenditure.

4.6.1. Schemes-gap

Information was obtained directly from medical scheme administrators on the schemes-gap, i.e. the difference between scheme reimbursement and the amount billed. Data on the schemes-gap was received from 22 % of all medical schemes (measured by total income). These data were then extrapolated to all medical schemes (R1,692 million). Schemes-gap expenditure was allocated between the

different provider categories in Chapter 5 using the breakdown of scheme expenditure estimated for 1992/93 from the Registrar's report. The breakdown is shown in Appendix E.

4.6.2. GP cash practices

GP "cash practices" were defined as consisting of income from consultation fees (R602.5 million) from non-medical-scheme members, as well as medicines sales to (R85.7 million) to both medical and non-medical-scheme patients. It was necessary to perform a sensitivity analysis using combinations of different numbers of GPs in private practice (estimates ranged between 6,000 and 10,000) and the number of patients seen per day (estimates ranged between 25 and 40). Estimates of the number of GPs were obtained from six sources. These sources were: the Department of Family Medicine at the University of the Witwatersrand (Wits); the Centre for Health Policy (Wits); the National General Practitioner's Group; the Representative Association of Medical Schemes; the Medical Association of South Africa (MASA); and the Receiver of Revenue. Eventually, the estimates of 8,000 practising GPs[9] and a mid-point of 32.5 patients seen a day were used. The revenue from consultation fees was calculated with the following pieces of data: the number of GPs in private practice in South Africa (8,000), the number of patients seen per day (33); the proportion who were non-medical-scheme patients (27 %); and the average consultation charge for cash paying patients (R31.85). By multiplying these numbers we arrive at an estimate of R2.235 million for all cash practices per day. GPs were assumed to work 269.5 days on average per year[10] and

[9] This was the MASA estimate and was closest to the one given by the Receiver of Revenue.

[10] This figure was based on the assumption of a five and a half day working week, with three weeks of holiday a year. Although most GPs obtain a locum for the holiday period, most doctors who undertake locums would already be in the estimated total number of GPs in South Africa. While there may be some "moonlighting" by public sector health personnel in this regard, it should not significantly affect the estimates presented here.

therefore, the total annual GP cash practice estimate was about R602.567 million. (see Appendix H for details on the consultation fee and number of patients).

Revenue from the sale of medicines was estimated by using these four steps: firstly, the retail value of medicines dispensed by general practitioners to medical scheme beneficiaries was calculated; this sum was then deflated by 33.33 %, in order to obtain the wholesale value of these medicines; the estimated wholesale value of medicines dispensed to scheme members was then deducted from the total of medicines sold by wholesalers to dispensing practitioners; and finally a mark-up of 50 % was added to this difference to estimate the retail value of medicines dispensed to *non*-medical scheme patients or members who had exceeded their benefit limits.

4.6.3. Over-the-counter medicines (OTCs)

Amounts for "over-the-counter" (OTC), (non-prescription) medicines sales were obtained from a large market research group collecting information on product sales. Key informants indicated that these data covered 80% of the market in the formal sector (pharmacies and supermarkets). These data were then extrapolated to derive an estimate for the total market (R1.514 billion) (see Appendix I).

So-called OTC medicines may be purchased at both pharmacies and supermarket outlets. This categorisation loosely refers to Schedule 1 and 2 drugs. These medicines will also be purchased by beneficiaries of medical schemes but it was not possible to estimate what proportion of OTC purchases were made by scheme members versus non-scheme members. However, this does not present a major

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undertake locums would already be in the estimated total number of GPs in South Africa. While there may be some "moonlighting" by public sector health personnel in this regard, it should not significantly affect the estimates presented here.

problem for double counting in the final expenditure estimate as medical schemes do not generally reimburse members for OTC purchases.

4.7. Non-profit, welfare and non-governmental Institutions

Some information was obtained from the report by Crisp (1994), and from direct communication with the two largest health NGOs, The St. Luke's Hospice Association and SANTA. The data in this section were relatively incomplete as only two large charities were approached directly. Given time constraints, primary research into expenditure by these organisations was not undertaken but the magnitude of this omission should not, in my opinion, significantly affect the results of the study.

4.8. The pharmaceutical industry

Much of the data on the pharmaceutical industry were obtained from Decision Surveys International (DSI). DSI monitors almost all transactions occurring between wholesalers and pharmacies. They are thereby able to obtain good estimates of sales by wholesalers and manufacturers, to private hospitals and dispensing doctors.

DSI also publishes estimates of the amount of COMED tenders and of direct sales to provincial hospitals. COMED acts as a collective drug purchasing agent for the state health sector, awarding contracts on a yearly to two yearly basis to private pharmaceutical manufacturing companies. Using these data, they publish a pharmaceutical and a hospital digest. DSI was thus able to provide information on the turnover of medicines distributed by wholesalers. As these data were provided at wholesale prices, adjustments had to be made to estimate the retail price value.

Information on the latter category was obtained from a large research group, Integrated Business Information Systems (IBIS), who maintains similar monitoring operations for the sales of OTC medicines in the chain store market as DSI does for monitoring the sale of prescription medicines. Information, to supplement and validate data obtained from the above sources, was sought from a number of the larger pharmaceutical manufacturers, central medical supplies (CMS) and script processing organisations, such as Medicredit, Mediscor and Bromed. It was thought that this information would be used to obtain a breakdown of the sale of medicines by provider or dispensing agent. However, with the collected data, it was not possible to estimate this breakdown.

4.9. Evaluation of methodology

The data collection phase of the research took approximately one year to complete. Some of the reason for the length of time it took had to do with the researcher's relative inexperience at the outset. However, it was also a very complicated sector to research as the subject matter of health expenditure touched upon numerous different sectors of the economy. A major constraint of the methodology concerned the availability of information on gross income to providers of health care. Difficulties associated with collecting data from providers included the fragmented nature of the provider market, as well as certain confidentiality concerns, in particular those of private hospitals. These data would have been very useful for avoiding double-counting. In summary, it was not possible to conduct as complete an expenditure review as the researcher would have liked, and therefore a number of omissions are discussed in the following chapter, after the presentation of the research results.

CHAPTER FIVE

5. RESULTS AND DISCUSSION OF THE PRIVATE SECTOR HEALTH CARE EXPENDITURE REVIEW

The main results of the research are summarised in two matrices showing the flow of funds in the private health sector in current prices. The first matrix presents the flow of funds from health care finance sources to financing agents. The second matrix presents a sources and uses matrix showing the flow of funds from financial agents to providers. Although the first matrix is not directly comparable with the Reserve Bank expenditure estimate due to differences with the SNA guidelines, it is a sample of the type of accounts that could be developed for national health accounts. The second estimate of expenditure at providers was derived to be directly comparable. It was also only possible to develop *parts* of these matrices, given resources available. The data they contain is nevertheless more detailed than has previously been documented. All results are shown for the year 1992/1993, in order for them to be comparable with public sector expenditure data, and the matrices are based on the schema presented in the previous chapter.

5.1. Sources of health care expenditure

Table 5-1 illustrates the flow of funds from institutional sources to financing agents or institutions. Total private health care expenditure amounted to approximately R18.249 billion in 1992/93. Households were the largest source of expenditure. Their contributions was just above 92 % of all sources of funds flowing to financing agents. Funds from international sector were very small and flowed mostly to private NGOs. Medical schemes were the largest financing intermediaries or agents. The flow of funds to medical schemes represented 66 % of total private sector flows to all financing agents. When funds flowing to medical schemes were

broken down by schemes for government employees versus other private sector employees, it was estimated that the flow of funds to schemes for government employees was about R2.572 billion, about 21 % of total funds flowing to all medical schemes in the country (R12.064 billion). "Private employers' " contributions to medical schemes were R5.960 billion, "private employees' contributions" were R4.323 billion and "contributions from government as an employer" were R1.782 billion in 1992/93. However, according to SNA guidelines, contributions to medical schemes is classified as flowing from "households" and the data for medical schemes is presented accordingly in table 5-1 (R12.064 billion). Transfers to "household budgets" in the form of out-of-pocket expenditure for health care was about 21 % of all sources of finance. The ordering of the remaining agents by size of funds were: private insurance (5 %); statutory funds (4.8 %), industry (2.6 %) and unallocated donor funds (0.0003 %). The category of "unallocated donor funds" represent donations from domestic charities and international governments and organisations (Crisp 1994).

5.2. Uses of health care expenditure

Table 5-2 shows the flow of funds from health care financing agents to health care providers. The uses of the funds represent a combined list of provider institutions and specific expenditure line items. It is unfortunate that in many cases it was not possible to calculate the breakdown of uses of funds from each funding agent. Nevertheless, an attempt was made to estimate some sort of breakdown in the matrix shown in table 5-2[11] [12]. From the data surveyed, it was estimated that total expenditure at health care providers amounted to R15.217 billion in 1992/93.

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[11] A ballpark figure of 10 % of total direct industry expenditure is taken as being representative of remuneration in kind to employees. This figure has no precedence but it was felt that a figure should be included as a reminder of this unresolved problem.

[12] In the case of the MMF, it is not known what proportion of income received (R660 million) was spent on medical services in the year under review, however an arbitrary proportion of 10 % of income, was assumed to be spent on medical services. Similarly, although the amount spent on medical services for WC was documented (R231 million), the breakdown by provider was not known; an arbitrary breakdown of 50 % between private and public hospitals was made.

Table 5-1: Flow of Funds: sources to funding agents (1992/93) (millions of Rands)

	SOURCES OF FINANCE					
FINANCING AGENTS		**Households**	**Private Firms**	**Government**	**Inter-national - donations**	**Total**
	Medical Schemes	12,064.479				**12,064.479**
	Private Insurance	922.810				**922.810**
	Private Firms		472.180[13]			**472.180**
	Households - budgets	3,894.180				**3,894.180**
	Statutory Funds - MMF			660.000		**660.000**
	Statutory Funds - WC			231.063		**231.063**
	Unallocated donor funds[14]		2.800		2.200	**5.000**
	Total	**16,881.469**	**474.980**	**891.063**	**2.200**	**18,249.712**

[13] Although it is not known how to resolve the treatment of direct industry expenditure in the national health accounts, the researcher would suggests that from a conceptual viewpoint, at least a portion of it must be classed as consumption expenditure, or, remuneration in-kind.

[14] These expenditures were not allocated to different expenditure line items, as in other cases, and, hence, are referred to as unallocated. They do not explicitly include The St. Luke's Hospice and SANTA expenditures, as it was not possible to cross-check their sources of revenue with the list of donors recorded in the Crisp report. In addition, as pointed out in section 2.2, there was insufficient time to conduct much primary research on transfers to contracted SANTA hospitals from government health departments.

Table 5-2: Flow of Funds - funding agents to providers, health care institutions and expenditure line items (1992/93) (millions of Rand)

	FINANCING AGENTS								
USES OF FUNDS **PROVIDERS**		**Medical Schemes**	**Private Insurance**	**Private Firms**	**Households - budgets**	**Statutory funds** **MMF**	**WC**	**Unallocated Donors**	**Total**
	Private Drs	4,066.458			1,262.512				**5,328.970**
	GPs	*1,200.732*			*797.166*				*1,997.898*
	Specialists	*1,889.983*			*301.206*				*2,191.189*
	Dentists	*975.743*			*164.140*				*1,139.883*
	Hospitals	2,379.623			368.892	66.000	231.063		**3,225.526**
	Private	*1,929.221*	179.948		*296.129*	*33.000*	*115.532*		*2,553.830*
	Public	*450.402*			*72.763*	*33.000*	*115.531*		*671.696*
	Industry Facilities			47.200					**47.200**
	Drug Dispensers	3,429.882			2,137.555				**5,567.437**
	Other health care practitioners; equip.	729.639			118.452				**848.091**
	Unallocated	188.194			6.769			5.000	**199.963**
	Total	**10,793.796**	**179.948**	**47.200**	**3,894.180**	**66.000**	**231.063**	**5.000**	**15,217.187**

Expenditure at "Drug Dispensers" was the largest use of funds. This includes funds received by doctors' practices, pharmacies and supermarkets for the sale of drugs or medicines. This category of expenditure represented 37 % of private sector expenditure by uses of funds. The second largest use of funds were the services of private doctors (35 % of total private sector expenditure by uses of funds). Expenditure on hospital services were the third largest use of funds (21 %). It should be noted that expenditure at private hospitals does not include doctor's fees while expenditure at public hospitals does include doctors' salaries.

5.3. The difference between the sources and uses of funds estimates

The difference between total receipts by health care providers and total sources of finance for health care expenditure is comprised of: retained income for the accumulation of reserves and administration; the difference between industry health care budgets and allocation to employees for remuneration "in kind"; and payments for loss of income in the case of the MMF. The difference was approximately R3,032.525, just under 17% of total sources of funds.

5.4. Comparison of results with Reserve Bank estimates

The difference between the South African Reserve Bank's official estimate of private sector health care expenditure and the research estimate is shown in table 5-3, together with estimates of GDE and GDP [15]. The Reserve Bank estimates for

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[15] The initial and revised estimates, as reported in communications with a Reserve Bank Economist for GDE in 1992 and 1993 were: R327,068 revised to R328,178; and R365,248 revised to R368,837. In addition, for GDP in 1992 and 1993 they were: R314,283 million revised to R340,963 and R349,543 revised to R383,695. Other commentators have pointed out that an "adjustment" of this magnitude has not in fact occurred, except in the instance of a 7 % adjustment to GDP for the informal sector made around 1992 (Personal Communication - Andrew Donaldson, external examiner). The researcher was quite clear in her information requests to the Reserve Bank. It is therefore difficult to offer an explanation for these apparent contradicting pieces of information. However, this concern should not detract from the main reason that information on initial and final, revised estimates were requested. The main reason was to ascertain whether finalised health expenditure estimates continued to

1992/93 were calculated in each case by taking three quarters of the 1992 estimate and one quarter of the 1993 estimate. Estimates for 1992/93 based on both the initial and revised Reserve Bank private consumption estimates were compared with the thesis estimate and both estimates were significantly different from the thesis estimate. The final thesis estimate is about 39 % higher than the initial Reserve Bank estimate available at the time, and about 21 % higher than the most recently revised Reserve Bank estimate. When a preliminary estimate of private sector expenditure (needed for a national expenditure review in July of 1994) was compared with the most recent Reserve Bank estimate, the preliminary estimate was also 40 % higher than the contemporary Reserve Bank estimate. These differences highlight the desirability of both reliable and *timely*, routinely published health expenditure estimates. Regardless of the Reserve Bank estimate used for comparison, table 5-3 clearly indicates that the Reserve Bank estimate understates private sector health care expenditure. This finding confirms previous researchers' observations that the SARB figure understates actual expenditure in the private health sector (Dorrington and Zwarenstein 1988; McIntyre and Dorrington 1990).

Table 5-3: Total Expenditure Compared With Reserve Bank Health Expenditure Estimates, Gross Domestic Expenditure and Gross Domestic Product (1992/93) (millions of Rands)

	Health Expenditure 1992/93	Thesis Estimate less SARB Estimate (% increase on SARB estimate)	Gross Domestic Expenditure 1992/93	Gross Domestic Product 1992/93	% GDE	% GDP
First Estimate	10,965	4,252 (38.78)	336,613	323,098	3.26	3.39
Second Estimate	12,595	2,622 (20.82)	338,343	351,646	3.72	3.58
Thesis Estimate	15,217	-	336,613	323,098	4.52	4.71

Source: Reserve Bank Quarterly Bulletin 1994; Table 5-1; Table 5-2; Personal Communication - Smith, national accounts economist, SARB

diverge significantly when the most up-to-date Registrar's report was taken into consideration. This did, in fact, appear to be the case.

The ratio of the thesis estimate to GDE is more than 1 % point higher than the ratio of the initial SARB estimate to GDE, and just under 1 % higher when the revised estimate is used.

5.4.1. Some explanations of the observed difference

Apart from attributing the difference in expenditure estimates to an underestimation of expenditure, it is also possible to present several valid alternative explanations for the difference.

1. **Bad debt.** The "schemes-gap" possibly overstates amounts received by providers as no allowance was made for "bad debt". This would mean that not all patients would have paid the difference between what they were billed, and what their medical scheme paid; some households would simply have defaulted. On the other hand, the failure for the most part to evaluate the percentage of bills not submitted due to exhaustion of members' benefits possibly balances out this omission.

2. **Medical scheme fraud.** Medical scheme expenditure may be overstated. Some expenditure reported by schemes might not have gone to providers due to leakage as a result of fraud.

3. **Non-medical expenditures**. Insurance products would pay pre-specified amounts. To the extent that these amounts accurately reflected actual costs, the thesis estimate would be accurate, but if insurance companies over-estimated medical costs in their pre-specified amounts, the thesis estimate would include expenditures not paid to health care providers. Secondly, it is possible that some health insurance products included non-medical expenses.

4. **Double-counting of household budgets and statutory fund expenditure.** It is possible that moneys paid from statutory funds either to households for reimbursement of medical expenses, or directly to providers for claims, might be

counted again when out-of-pocket expenditure was estimated (household budgets).

5. **The GDE and GDP residual.** Given the magnitude of the documentation task required in the national accounting process, it is only natural that a residual error occurs. In addition, there is a category for "miscellaneous services". The residual and this category possibly hide some of the margin of error that was uncovered.

Each of the above arguments offered to explain the difference are valid. However, the two that are least likely to explain a significant amount of the estimate difference are the reasons given in 3 and 4. The insurance products included in the expenditure analysis were defined as purely medical expense policies (mainly hospitalisation and major medical) and so it is unlikely that they included non-medical expenditures. Concerning double-counting, over 50 % of household budget expenditure was for ambulatory care, in particular, GP services, or over-the-counter non-prescription medicines. On the other hand, all of statutory expenditure was allocated to hospitals in table 5-2. While the statutory fund allocations do not present a completely accurate record of events, it is more likely that motor vehicle accident cases and, to a lesser extent, WC cases, would use hospital facilities, thereby reducing the possibility for double-counting to occur.

5.5. Omissions and areas for further research

There are numerous omissions in this review of the private health sector expenditure. Some of them were mentioned in the discussion above but the most important ones are listed below.

Research into primary care providers other than GPs. The only cash practices estimated were for GPs. Household surveys have shown extensive use of GPs as

their primary providers, even in poorer households. However, households also use a variety of other private primary health care services that have not been captured (e.g. dentists, traditional healers).

Cross-border flows. The extent to which facilities in the private sector are providing services to non-South African residents has not been taken into account. In the mining sector, for example, it is estimated that approximately 40% of workers come from neighbouring Southern African countries (Personal Communication - Chief Medical Officer, Goldfields).

Data from providers. It was difficult to obtain data from providers (mostly "for-profit" providers) due to their reluctance to disclose financial information. This made validation of data from financing agents more difficult.

Taxes and subsides. All expenditure by financing agents is not retained in the private health sector. The amount retained in the private sector is calculated by deducting expenditure at public facilities and VAT, from total expenditure. Future work on national health accounts should include this financial flow.

Industry expenditure. It would be useful for future NHA research to concentrate on how the matter of health services provided directly by industry should best be treated. This remains a conceptually and practically challenging issue.

User fees. Separating private and public sector expenditures remains a challenge. Fees paid by patients at public sector facilities was a category of out-of-pocket expenditure that was not estimated but could be estimated in the future, as public hospital billing systems improve. Even though it was not estimated in final expenditure, it was included in the theoretical framework outlined in figure 4-1.

Hospital versus doctor expenditure. There remains work to be done on disentangling hospital expenditure from specialist fees as it is possible that there is some overlap in the data reported to the Registrar.

Benefit funds. In Chapter 2, benefit funds were discussed as funds which mostly pay fund members for loss of income resulting from illness. However they may also pay for certain medical expenses and this expenditure was not estimated here.

Charities, contractor hospitals and donor funding: Chapter 2 included a general discussion on the funding of charitable institutions and contractor hospitals. Although some of the primary research was devoted to gaining information on financing in this sector, due to time constraints the thesis health expenditure estimate only includes information obtained from a report on local and foreign donor funding in South Africa.

Education and training: Most health education and training takes place in the government sector. However, small amounts of nurse training occur in the private sector. The extent of training in the private sector has increased as the perceived quality of public sector training has not kept pace with new technology which is mostly used in the private sector.

Capital expenditures. The research did not attempt to distinguish between current and capital expenditure. This is important information for health sector economic analysis and would be covered in national health accounts work.

Changes in volume and prices: The use of a consumer price index gives some indication of real changes in health care expenditure. Although this thesis did not evaluate *trends* in health care expenditure, the development of national health accounts would encourage this evaluation in accordance with social accounting practices (Belkaoui 1983).

5.6. Implications for the production accounts

The problem of underestimation of the health expenditure estimates for the national accounts suggests the existence of a similar problem in the production figures; namely, in Major Division 9, the item estimated by the CSS. Firstly, consideration

needs to be given to the low rate of growth applied to value added in this division, which in 1992 and 1993 was less than 2 % and had increased in 1996 to only 2 % (Personal Communication - Coetzer, CSS). Secondly, as value added (by the private health sector) constitutes nearly 60 % of total value added for the division, special attention should be given to the accuracy of information obtained from health care provider censuses and surveys conducted by the CSS.

5.7. Summary of findings

In summary, the main result presented in this chapter was that the Reserve Bank understates private consumption health care expenditure in the national accounts. When compiling the thesis estimate, the researcher attempted to follow SNA guidelines for estimation of expenditure so that it would be comparable with the Reserve Bank estimate. In addition, several explanations were presented to account for the difference between the thesis estimate and the Reserve Bank estimate, but none seemed to provide a complete explanation. Viewed from all sides, it would appear that the method used by the Reserve Bank to estimate expenditure could be improved. This becomes the function of the recommendations chapter that follows, in addition to making some general recommendations for changes to the Registrar of Medical Schemes report and the census and survey work of the CSS.

CHAPTER SIX

6. RECOMMENDATIONS

The recommendations made in this chapter are both short term and long term in nature. Several practical suggestions are included that can be implemented immediately. In addition, several recommendations are included for the introduction of national health accounts over the long run. Accordingly, three criteria were used for developing these recommendations:

I. Is it material to the total estimate of private health sector expenditure?

II. Can the Reserve Bank access the data fairly easily at minimal expense?

III. Will it provide a basis from which national health accounts can be developed ?

The recommendations can be separated into three groupings, according to whom they are primarily addressed: the Registrar for Medical Schemes (recommendations I to III); the CSS (recommendations IV and V) and the Reserve Bank (recommendations VI to IX).

Recommendation I: Medical scheme administrators

The Registrar's report should include data on schemes-gap expenditure and a breakdown of medicine expenditure, by provider. The Registrar has sufficient authority to request information from scheme administrators and should be advised of the need for this information.

About 45 % of out-of-pocket expenditure occurs in the form of the schemes-gap. Most medical scheme administrators record the *actual* cost of the claim as well as the *society share* or amount reimbursed the patient. As four administrators process

the claims data for over 50 % of schemes (measured by the value of scheme contributions), it would not be necessary to engage all the administrators in this activity. The larger administrators could be asked to provide data and total could then be extrapolated from these data. The largest medical scheme administrators include: Medscheme, AMA, Sanmed and D& E.

A large and under-used database exists in possession of the medical scheme administrators. They could easily be requested to provide information that shows a breakdown for the sale of medicines and the schemes-gap. Both these categories of data are extremely important. Expenditure on medicine (drugs) by schemes accounts for about 20 % of total private sector expenditure by uses of funds. As different financial incentives exist for different dispensers of drugs, information on the breakdown of medicines by dispenser would enable far better analysis of the drugs market.

Recommendation II: Medical schemes not reporting to the Registrar

All medical schemes should be required to report to the Registrar of Medical Schemes.

Contributions by schemes not reporting to the Registrar in 1992/93 were R1,4 billion, or 12 % of total medical scheme contributions. These schemes included Medihelp, Transmed and the army's and national intelligence department's schemes and are managed by Medihelp (for Medihelp and the army's and national intelligence department's schemes) and Transmed. Since the time of data collection for this report, Medihelp has started reporting to the Registrar but the other schemes should also report regularly. Information for Transmed could be obtained directly from Transmed but it would make more sense for the Registrar to insist that *all* medical schemes report to him.

Recommendation III: Private insurance

The Registrar and Medical Schemes Council should require private insurance companies selling health care policies to report to the Registrar.

Private insurance companies selling health care policies should also be required to report to the Registrar. However, until they are governed by the same act as medical schemes, it is unlikely that this will happen in the near future[15]. A major problem with collecting data from private insurance companies is their lack administration systems required to generate the information in the same form as medical scheme data. For these reasons, this recommendation should be considered only in the medium to long term. Many life insurers are purchasing medical scheme administration companies and may soon develop the required information systems. In the interim, information on insurance will start being captured in the new October Household Survey.

Recommendation IV: The OHS

Certain aspects of the health section in the OHS questionnaire should be changed, and a special health expenditure survey should be introduced to supplement the OHS survey, but need not be run as regularly as the OHS survey.

As the Reserve Bank is likely to start using the OHS rather than the SHE, the above recommendation is aimed at improving the ability of the OHS to collect data for health expenditure documentation. It may be possible to make certain minor changes to the OHS survey, in particular in the section pertaining to medical scheme members. Although households are asked about medicines purchased out-of-pocket, they should also be asked about expenditures at health care providers which are not

[15] The Medical Schemes Council is currently negotiating the inclusion of private insurance policies under the Medical Schemes Act (Personal Communication - McIntyre, Council of Medical Schemes).

covered by medical scheme benefits. Another important inclusion, would be to distinguish between members with different types of medical cover (especially medical schemes versus private insurance). Appendix J presents a draft of a questionnaire that could be used to supplement the October Household Survey.

Recommendation V: Hospital and health care provider censuses

Both hospital and health care provider surveys should be conducted more frequently than currently, and an interval of 3 to 4 years is recommended.

The 4 censuses currently conducted by the CSS are run every 5 to 7 years. The interval between surveys is too long for keeping the CSS and Reserve Bank estimates up-to-date. Also, the census returns should be audited.

Recommendation VI: The Registrar's report

The Reserve Bank should negotiate earlier access to information from the Registrar's report.

The Registrar's report contains vital information which could be used to cross-check total health care expenditure. The Reserve Bank should negotiate earlier access to the Registrar's Report, as was done by the researcher.

The Reserve Bank should also remain abreast of trends in the private health sector. For example, over the last few years, the benefits paid out by medical schemes have decreased and out-of-pocket expenditure has increased. This trend has implications for the adjustment of CSS household survey results by the medical scheme expenditure growth rates.

Recommendation VII: Over-the-counter medicines/drugs

The Reserve Bank should contact IBIS once a year to obtain an estimate of total retail expenditure on OTC medicines.

Expenditure on over-the-counter drugs is a significant part of total health care expenditure. This information can be readily obtained from a marketing company, Integrated Business Information Systems (IBIS). Inclusion of this information is highly recommended to cross-check the data from household surveys.

Recommendation VIII: Statutory schemes

The Workmen's Compensation Commissioner should be requested to separate health care expenditure from disability compensation in his annual reports

Annual reports of the Commissioner's Office detail expenditure on medical care and disability pensions for Workmen's Compensation but these reports do not separate out medical expenses from disability compensation. The Commissioner's office should be requested to provide a breakdown of funds going to public hospitals, versus private hospitals, if possible.

Recommendation IX: National Health Accounts

The Reserve Bank should investigate the possibility of developing National Health Accounts in accordance with SNA principles, for which a benchmark review would need to be conducted.

The development of a full set of national health accounts right away might be too resource intensive, but it is recommended that the Reserve Bank consider the feasibility of its implementation in due course. Estimate of *coverage* are important data to be included in these satellite accounts (see Appendix K for a rough estimation of coverage).

6.1. The future of national income health expenditure estimation

International interest in the documentation of health care expenditure, especially in the form of national health accounts, is growing. Currently, South Africa's health expenditure estimates in the national accounts are being derived using valid techniques based on SNA guidelines. However, the SARB's current estimate could be improved by the addition of several new data sources, as well as by a more timely review of good data sources at hand.

Applying all the above recommendations could significantly improve the reliability of the Reserve Bank's health expenditure estimate, the only regular estimate of private sector health care expenditure in South Africa. However, for more immediate improvement of the Reserve Bank's health expenditure estimate with minimal extra cost, the most important recommendation is for the Reserve Bank to consider negotiating earlier access to the Registrar of Medical Schemes' information.

Over the long term, South African national income accountants should consider introducing the publication of national accounts matrices on a regular basis. This development would significantly aid the formulation of health policies and health market developments towards a more efficient, effective and equitable health service.

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APPENDICES

APPENDIX A: "VALUE ADDED" IN THE PRIVATE HEALTH SECTOR

National accounts are prepared using standard conceptual institutional and sectoral guidelines but the classification scheme for economic activity is slightly different. The classification system used in South Africa is described in the South African Standard Industrial Classification of Economic Activities (SIC) and is published by the Central Statistical Services (CSS), the major statistical office of the South African government (South Africa 1993).

The SIC classification system in use has been adapted from the International Standard Industrial Classification of all Economic Activities (ISIC). The 1993 edition of SIC attempted to follow ISIC (3rd revised) as closely as possible. The main difference in the coding system was the introduction of an additional digit to enable the classification of ISIC categories into the tabulations required by certain users e.g. specific departments of government or industries.

The system is based on a decimal system. It uses a five digit code to identify the smallest coded unit which are called "sub-groups". The system is divided into the categories of: Major divisions, Divisions, Major groups, Groups and Sub-groups. The major divisions are listed in figure 1.

The purpose of SIC is to classify economic behaviour according to homogenous *types* of economic activity. There were two main deviations of SIC from ISIC. In this respect, the first was the addition of a category for "service activities incidental to mining of minerals". The second was the establishment of Major Division 0. A *type of economic activity* is determined either by the type of *establishment* or by the *kind-of-activity* performed by a unit.

The term 'establishment' is the smallest unit for which an operating surplus or deficit can be calculated. It is similar to, and sometimes the same as, the economic concept of a 'firm'. The entity defined by type of establishment must be a single legal entity in a single physical location. The major difference between the categories of 'establishment' and 'kind-of-activity' are that establishment requires the entity to have a single physical location. In the case of the latter category, a single legal unit may be operating in a variety of places.

Figure 1: Categorisation by Economic Activity

Major Division 1:	Agriculture, hunting, forestry and fishing
Major Division 2:	Mining and quarrying
Major Division 3:	Manufacturing
Major Division 4:	Electricity, gas, water supply
Major Division 5:	Construction
Major Division 6:	Wholesale and retail trade, repair of motor vehicles, motor cycles and personal and household goods, hotels and restaurants
Major Division 7:	Transport, storage and communication
Major Division 8:	Financial intermediation, insurance, real estate and business services
Major Division 9:	Community, social and personal services
Major Division 0:	Private households, exterritorial organisations, representatives o foreign governments and other activities not adequately defined

Source: South Africa, Republic of 1993

If there are multiple activities for which no separate reporting is possible, the following three scenarios exist. If there is a principal activity, the activities of the establishment are recorded under that main activity. If the establishment is vertically integrated but a final product is produced, the different

activities may be reported under the category of the final product. If neither of the above two options are feasible, the value of each of the activities may be estimated and reported separately.

Health activity documented by the CSS

The value added of health care is documented in this classification scheme as part of "Community, social and personal services", referred to as Major Division 9 in the South African SIC nomenclature. In addition to the major category of "health and social work", this division contains 6 other groups as shown in figure 2.

Figure 2: Major Division 9 "Community, Social and Personal Services"

DIVISION AND MAJOR GROUPS, GROUPS AND SUB-GROUPS	TITLE OF CATEGORY
91	PUBLIC ADMINISTRATION
92	EDUCATION
93	HEALTH AND SOCIAL WORK
931	Human Health Activities
9311	Hospital
93111	- general hospital
93112	- maternity homes
93113	- tuberculosis hospitals
93114	- psychiatric hospitals
93115	- detached operating theatres
93116	- other hospitals
9312	Medical and Dental Practice Activities
93121	- medical practitioner and specialist activities
93122	- dentist and specialist dentist activities
9319	Other Human Health Activities
93191	- supplementary health services or paramedical staff (practitioners)
93192	- clinics and related health care services
93193	- nursing services
93194	- chiropractors and other associated health care services
93199	- other health services
93200	Veterinary Activities
93300	Social Work Activities
94	SEWAGE AND REFUSE DISPOSAL, SANITATION AND SIMILAR ACTIVITIES
95	ACTIVITIES OF MEMBERSHIP ORGANISATIONS
96	RECREATIONAL, CULTURAL AND SPORTING ACTIVITIES
99	OTHER SERVICE ACTIVITIES

Source: SIC 1993

Figure 2 shows a detailed list of items included under the heading of "health and social work". In spite of the itemisation presented, the CSS does not in fact report data for each item (Personal Communication - Coetzer, CSS). Instead, they estimate the entire value of "social, community and personal services".

The estimation of this category is a world-wide problem for national accounting offices due to the emphasis in most countries on "goods" above "services". Annual estimates of total "social, community and personal services" are adjusted from the base year estimate by population growth and no volume indicator is calculated for the division.

For calculating the base year estimates for health care activity, there are 4 censuses of health care services conducted by the CSS. These censuses are conducted every five to nine years. These censuses (the latest census date is included in brackets) are:

1. the Medical, Dental and Other Health Services Census (1990);
2. the Doctors Census(1987);
3. the Chiropractors, Homeopaths, Naturopaths, Osteopaths and Herbalists(1987) and Supplementary Health Services and Dental Technicians Census (1987);
4. and the Census of Hospitals, Community Health Care Centres and Other Health Services (1990).

Statisticians have reported problems with the manner in which these censuses are conducted (Personal Communication - Bourne, epidemiologist, University of Cape Town). The main criticism of these censuses is that they rely on "self evaluation", not being subject to a prior pilot or an audit of the returns. The second criticism is that there is no cross-checking. Total income is derived as the sum of all censuses. These problems affect the reliability of the base year and all subsequent estimates for Major Division 9.

Estimates of value added for health care activity

Major Division 9 includes only value added in the private sector as general government activities are estimated separately. In 1990, the CSS estimated that value added for private health sector services was 59 % of "community, social and personal services".

Table 1 shows estimates of community, social and personal services in current and constant prices for 1992, 1993 and estimated for the government financial year 1992/93, as well the division growth rate and estimates of value added for private health services. No value added estimate was made independently during the course of this research, however, but this work is raised as a worth while endeavour for future research.

Table 1: Estimates of Community, Social and Personal Services and Private Health Services Value Added

	1992	1993	1992/93
Community, social and personal services at current prices (millions of Rands)	5,917	6,857	6,152
Community, social and personal services at constant prices (millions of Rands)	4,639	4,698[16]	4,655
Growth factor[17] in constant prices (%)	1.5	1.3	–
Value added for private health sector services (millions of Rands)	3,491	4,046	3,630

Source: Personal Communication - Coetzer, CSS

[16] When multiplying the 1992 estimate, R4.639 billion, by the growth factor of 1.5 %, the product is R4.709 billion, which due to rounding errors is slightly higher than the 1993 estimate of R4.698 billion.

[17] Based on population growth rate.

APPENDIX B: DEFINITIONS OF SELECTED TERMINOLOGY

EXPENDITURE FLOWS	
Cash-flow basis:	this refers to the financial behaviour of organisations who finance all expenditure in a given year by income received in the same year.
Employer and employee (scheme) contributions:	monthly payments of fees or premiums to a medical scheme, by firms or government as employers and by households, as employees.
"Schemes-gap" expenditure:	the difference between the cost of medical expenses claimed from a scheme and the scheme's contribution.
"Out-of-pocket" expenditure:	expenditure flows going directly from private individuals to providers of health care in return for services delivered.
STATISTICAL/ACTUARIAL	
Community risk rating:	describes a process by which the level of premiums is set based on the risks of ill health to which the group are exposed.
Cross-subsidisation:	operates in certain types of schemes when the premiums paid by one group of members are greater than that paid by another group of members, relative to their benefits which they each use. Groups can be identified on other factors such as wealth, size of families, health status etc. .
Individual risk rating:	the individual's premium is set according to his/her particular (health) risk exposure.
PHARMACEUTICALS	
Medicines and drugs:	both the terms "medicines" and "drugs" are used interchangeably to refer to any chemical substance, synthetic or extracted from plants/animal tissue, used as a medicament to prevent or cure disease[18].
Over-the-counter drugs:	mostly drugs in Schedules 1 and 2 and some unscheduled drugs; able to be purchased without prescription, most commonly from a pharmacy or food retail outlet.
Scheduled drugs:	drugs which are categorised on registration with the Medicines Control Council in order to regulate their use; schedule 1 and 2 not requiring prescription; there are 7 schedules in total.
MEDICAL PRACTITIONERS[19]	
Family physician:	generalists with postgraduate qualifications.
Family practitioner:	all generalists, including those in public and private practice.
General practitioner:	family practitioners in private practice.
Medical practitioners:	all doctors registered on the South African Medical and Dental Council Register, and issued with a practice number.
Non-specialists:	includes those still in specialist training, medical officers in specialist units etc. in both the public and private sectors.
Primary care generalists:	family practitioners who work in casualty departments, clinics etc. .

[18] Critchley (1980).

[19] Personal Communication - Sparks, B, Dept. of Family Medicine, WITS.

APPENDIX C: EXTRAPOLATION OF PRIVATE CONSUMPTION EXPENDITURE ON HEALTH

Table 1: The Calculation Of Health Care Expenditure in Private Consumption Expenditure By The Reserve Bank (millions of Rands)

			Nominal Expenditure		Price Indices		Real Expenditure	
			a	b	c	d	a/c* 100	b/d* 100
	Item	% of Total PCE	1990	1991	1990	1991	1990	1991
1	Medical Equipment	0.1	234	275	100.0	121.5	234	226
2	Medical & Pharm Products	1.4	2,164	2,548	100.0	119.7	2,164	2,128
3	Medical Services	3.6	5,693	7,154	100.0		5,693	5,997
4	- hospitals	1.2	1,928	2,320	100.0	111.1	1,928	2,088
5	- doctors	2.4	3,765	4,834	100.0	123.7	3,765	3,909
6	Total medical(1+2+3)	5.1	8,091	9,977	***100.0***	***119.5***	8,091	8,352
7	Total PCE		159,530	183,558	***100.0***	***115.7***	159,530	158,705
8	Total Med Index				100.0	121.5	8,091	8,211
9	Diff between weighted and total deflation				0.0	-2.0	0.0	141

Source: Personal Correspondence - Smith, national accounts economist, SARB

APPENDIX D: ORGANISATIONS CONSULTED FOR THE RESEARCH

Organisations are listed in alphabetical order.

Consumer Associations
Association of Retired Persons and Pensioners

Insurance Associations
Life Officers Association

Medical Scheme Associations
Representative Association of Medical Schemes (RAMS)

Medical Practitioner's Associations
Medical Association of South Africa
National General Practitioner's Group
Pharmaceutical Society of South Africa
Society of Dispensing Family Practitioners
South African Dispensing Practitioners Association
South African Society of Occupational Medicine
Traditional Healers Association

Medical Care Companies' Associations
Day Clinic Association
National Association of Private Hospitals
Regional Association of Private Hospitals

Producer Associations
Chamber of Mines of South Africa
National Association of Manufacturers
Pharmaceutical Manufacturers International

Medical Schemes Administrators
Affiliated Medical Aid Administrators (AMA)
D & E Medical Aid Administrators
Medscheme (and Medicaid)
Old Mutual
Sanmed

Medical Schemes
Cape Clothing Sick Fund
Transmed

Private Insurance Companies
Life:
Crusader Life
Liberty Life Association
Metropolitan Life
Momentum Health
Norwich Life SA
Protea Assurance
Sage Life
Sanlam
The Southern Life Association
SA Mutual Life Assurance Society

Appendix D: Organisations Consulted continued

Reinsurers:
Cologne Re.
Hollandia Life Re.
Mercantile and General Re.
Munich Re.
Swiss-SA Re.

Short-term Insurers:
Aegis
Commercial Union
Hollard
Mutual and Federal
SA Eagle

Insurance Brokers
MIB

Government Schemes/ Co-operative Purchasing Organisations
COMED
Medihelp
SAMS

Government
Bureau for Occupational Diseases
Cape Provincial Administration
Council for Medical Schemes
Department of National Health and Population Development (now known as Department of Health)
Department of Manpower
National Centre for Occupational Health
Public Service Commissioner
Registrar of Medical Schemes

University Organisations
Centre for Health Policy, Department of Community Health, University of the Witwatersrand
Department of Community Health, MEDUNSA
Department of Community Health, University of Cape Town
Department of Economics, University of Cape Town
Department of Family Medicine, University of the Witwatersrand
Department of Pharmacy, University of Cape Town
School of Pharmacology, University of the Western Cape
Department of Dietetics, University of Cape Town
Disability Unit, University of Cape Town
Industrial Health Research Group, University of Cape Town
Medicines Information Unit, University of Cape Town
South African Labour and Development Research Unit, University of Cape Town

Private Companies - general
Alexander Forbes
Deloitte and Touche
Development Bank of South Africa
Ginsburg, Malan and Carsons Consultants and Actuaries
Quality Health Services
Simpson Mckie

Appendix D: Organisations Consulted continued

Private Companies - pharmaceuticals information
Decision Surveys International (DSI)
Integrated Business Information Services (IBIS)
Medicredit
Mediscor (& Bromed)
TPS

Private Companies - pharmaceutical manufacturers and wholesalers
Adcock Ingram Pharmaceuticals
Bayer
Boehringer Ingelheim
Boots Pharmaceuticals
Glaxo S.A.
Janssen Pharmaceuticals
Knoll Pharmaceuticals
International Health Care Distributors
United Hospital Supplies
Warner-Lambert

Private Companies - hospitals and clinics
Afrox Group

Clinic Holdings
Medimo

Private Companies - industry
Barlow Rand
Freegold
Haggiee Ltd
International Cold Storage

Non-governmental Organisations
SANTA
The St. Luke's Hospice Association

Other
Regional Health Management System (Rehmis)

APPENDIX E: MEDICAL SCHEMES - THE CALCULATION OF THE SCHEMES-GAP AND MEMBERSHIP RATES

Table 1: Breakdown of Benefits Paid as a Proportion of the Total (1992/93)[20]

Benefit Categories	1992/93 (Rand million)	Percentage of Total (%)	Allocation of Schemes-gap
General Practitioners	1,073.387	11.5	194.599
Medical Specialists	1,661.417	17.8	301.206
Dentists	905.378	9.7	164.140
Private Hospitals	1,633.416	17.5	296.129
Provincial Hospitals	401.354	4.3	72.763
Medicine	2,968.159	31.8	538.109
Ex-gratia Payments	28.001	0.3	5.077
Other Benefits	653.366	7.0	118.452
Rounding Error			1.692
TOTAL	**9,324,478**	**100.0**	**1,692.167**

Source: Report of Registrar of Medical Schemes (1993)

[20] Please note that there may be small discrepancies associated with rounding.

Appendix E continued

Table 2A: No. of Schemes

Schemes	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
Aid	206	192	191	192	188	188	189	182	176	165
Benefit	22	20	18	18	18	19	18	20	20	19
"Exempted"	44	44	43	43	43	43	43	42	40	37
NRR	5	5	5	5	5	5	5	5	5	5

Table 2B: No. of People Belonging to Schemes: 1983-1992

	1983	1984	1985	1986[21]	1987	1988	1989	1990	1991	1992
Members	1,935,181	1,990,696	1,982,002	2,020,230	2,078,961	2,201,334	2,319,985	2,375,740	2,378,312	2,287,908
Dependants	3,119,660	3,215,783	3,286,575	3,363,246	3,393,863	3,583,922	3,755,327	3,812,234	3,913,043	3,766,059
Beneficiaries	5,054,841	5,206,479	5,268,577	5,383,476	5,472,824	5,785,256	6,075,312	6,187,974	6,291,355	6,053,967
Aid scheme	3,537,396	3,719,415	3,955,330		4,270,177	4,487,764	4,751,086	4,807,920	4,890,966	4,764,732
Benefit scheme	538,275	558,120	528,169		556,224	577,783	580,764	777,731	812,984	757,655
"Exempted"	979,170	928,944	785,078		646,423	719,708	743,462	602,323	587,405	531,580

Source: Report of the Registrar of Medical Schemes (1992); Personal Communication - Registrar of Medical Schemes

[21] A breakdown by type of scheme was not available for that year.

APPENDIX F: CALCULATION OF PRIVATE HEALTH INSURANCE PREMIUMS AND CLAIMS

Table 1: Total Premium Income for Health Care Products to Life Insurance Companies (1992/93)

	Allocation of Total Premium %	Claims as a Percentage of Risk Premium %	Mid-point Estimate (millions of Rands)
Claims	19.5		86.348
Premium Income			
- risk premium	30	65	132.843
- investment	60		265.686
- expenses	10		44.281
TOTAL Premiums	**100**		**442.810**

Table 2: Total Premium Income Received by Short-term and Life Insurance Companies for Health Products and Estimated Claims Paid Out(1992/93)

	Premiums	Claims	Claims as % of Premiums
Life Insurers	442.810	86.348	19.5
Short-term Insurers	480.000	93.600	19.5
TOTAL	**922,810**	**179.948**	-

APPENDIX G: WORKMEN'S COMPENSATION

Table 1 below details expenditure on medical care for 1990, *excluding* all expenditure on disability grants and pensions. These data were obtained directly from officials in the Commissioner's Office. The 1990 expenditure was then adjusted by an estimated annual growth rate of 27 percent[22] to estimate expenditure for the years 1992 and 1993. Expenditure for the 1992/93 financial year was then calculated. The usual assumption of ceteris paribus applied i.e. that there had been no increase in the rate of injuries per year, or in the distribution of their severity.

Table 1: Expenditure by the Compensation Fund on Medical Costs (millions of Rands)

	1990	1991	1992	1993
Medical costs for those reporting to Commissioner	134,201	170,435	216,452	274,894
Medical costs for those exempt from reporting under Sec 81 (old Act)*	46,329	58,838	74,724	94,899
TOTAL	180,530	229,273	291,176	369,793

Source: Personal Communication - Commissioner's Office
* estimate made by Compensation Commissioner's Office

Medical expenses were R46 million in 1990 for funds which did not report their injuries to the Commissioner. These firms include certain mines, Iscor and certain automobile manufacturers. Approximately 77 firms are "exempted" in this manner. Expenditure estimates by these industrial clinics was included in our calculation of expenditure at industrial clinics, so it was not double-counted here.

[22] This growth rate is based on the increase in private sector expenditure reported for services used by medical scheme members between 1990 and 1991 and between 1991 and 1992, a period over which medical scheme membership changed very little.

APPENDIX H: NOTES ON THE CONSULTATION FEE CHARGED AND THE NUMBER OF NON-MEDICAL SCHEME MEMBERS SEEN IN A GP PRACTICE

The Medical Association of South Africa (MASA) produces a recommended list of fees to be charged for medical services on an annual basis. The Representative Association of Medical Schemes (RAMS) also produces a list of tariffs each year called the Scale of Benefits, which is the basis for determining the level of reimbursement of health service providers by medical schemes. These recommended tariffs for a GP consultation are shown in table 1. As can be seen, there is a substantial difference between the two recommended tariff structures from these two associations.

Table 1: MASA and Scale of Benefits Tariffs[23] for GP Consultations (percentage annual increase in brackets)

	1994 (R/consultation)	1993 (R)	1992 (R)	1991 (R)
MASA Rate	80.40 (+ 1.51%)	79.20 (+ 13.79)	69.60 (+ 26.09)	55.20
Scale of Benefits	39.50 (+ 15.84%)	34.10 (+ 9.65)	31.10 (+ 25.40)	24.80

Source: Personal Communication - MASA

GP consultation fees therefore vary substantially depending on whether the doctor charges MASA or RAMS Scale of Benefits rates. Another differential in the tariff is the difference between tariffs charged by GPs in areas where there is a substantial cash practice component, particularly in the "townships", and those in central metropolitan areas.

The number of patients seen per day by GPs in the "townships", according to several GPs working in these areas, varies between 70 and 90. The average rate charged these patients, approximately 85 percent of whom do not belong to medical schemes was reportedly R50 including medicine for adults, and R40 including medicines for children. As it is not known what percentage of family practitioners work in "township" areas, it was very difficult to adjust expenditure estimates accordingly. Therefore, the MASA and RAMS rates were used with survey findings to estimate the rate for non -medical scheme patients

In the Bletcher *et al* (1994) survey, conducted in Metropolitan Cape Town, 88.2 percent of respondent doctors claimed to charge Scale of Benefits rates, with 9.2 percent charging higher and 2.5 percent charging lower rates. This result conflicts somewhat with the 11 percent "schemes-gap" for GP consultations which emerged from the national sample of medical schemes. Although there is evidence that GPs tend to charge medical scheme members rates which are higher than the Scale of Benefit, it was decided that the Scale of Benefit rate would be an appropriate figure for estimating GP *cash practice* income. After review of all the information, the fee selected for the 1992/93 year (R31.85) was calculated as 75 percent of the 1992 Scale of Benefits tariff (R31.10) and 25 percent of the 1993 Scale of Benefits tariff (R 34.10), an amount of R31.85. The Bletcher survey also reported that the average number of patients seen per day by medical doctors was 25 (Bletcher *et al* 1994). Discussions with family practitioners in South Africa and a review of international norms, indicate that this figure may in fact be nearer to 30 patients per day and it is therefore possible that GPs may have under-estimated the number of patients seen in order to under-state their income. The results of a nation-wide survey of independent practitioners, called the National Disease and Therapeutic Index (NDTI) and conducted by Decision Surveys International (DSI), indicated that 26.9 percent of visits to private sector doctors were attributable to patients who are not covered by medical schemes so a figure of 27 % was used in the final calculation.

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[23] MASA rates are quoted excluding Value Added Tax (VAT), while Scale of Benefits rates are VAT inclusive.

APPENDIX I: EXPENDITURE ON "OVER-THE-COUNTER" MEDICINES

The breakdown of OTCs presented below represents approximately 80 percent of the total market for OTCs. Integrated Business Information Systems (IBIS), the commercial company that routinely collects this information does so on behalf of clients who are specifically interested in the sale of certain products. Hence, certain medicines which have not attracted much interest are not sampled (e.g. gout remedies). The company samples expenditure at food retail outlets and at pharmacies by reviewing the electronically recorded printout of sales, or where this is not available, through a physical stock-take at 60 day intervals.

Table 1: Breakdown of OTC Sales of Medicines (retail prices) (1993/94) (millions of Rands)

Category of medicine[24]	1993/94 Food-stores	1993/94 Chemists	1993/94 Total	% of Total
Analgesics	238	259	497	37.2
Defined Stomach Upset Remedies	65	99	164	12.3
Acne Preparations	40	22	62	4.6
Slimming Aids	41	10	51	3.8
Vitamin Supplements	42	20	62	4.6
Laxatives	53	50	103	7.7
Cough, cold (liquids and tablets), chest rubs and nasal sprays	101	297	398	29.8
TOTAL	580	757	1,337	100

Source: Personal Communication - director, IBIS

As the information presented above was measured from July 1993 to June 1994, it was necessary to convert these figures into an estimate of OTC expenditure for the 1992/93 *financial* year (i.e. from April 1992 to March 1993) to ensure comparability with other health expenditure data. The total value of OTC sales for 1992/93 was then calculated by adding the remaining 20 percent of the market to this amount (table 2).

Table 2: Total OTC Sales - (retail prices)(1992/93) (millions of Rands)

	Retail Food Outlets	Pharmacies	TOTAL
OTCs - sample	525.334	685.650	1,210.984
Add remaining 20 % of market	131.334	171.413	302.746
TOTAL OTCs	656.668	857.063	1,513.730

[24] There may be some dispute as to whether all of these categories are strictly relevant to a *health* expenditure review. In the case of vitamin supplements, it was felt that these are forms of preventative medicine. The case for slimming aids may be less convincing except in cases of obesity which have serious health consequences, but this figure is relatively small and as it was felt that it would not distort the final figures, it was left in the calculation.

APPENDIX J: RECONSTRUCTED OCTOBER HOUSEHOLD SURVEY QUESTIONS

Figure 1: Reconstructed October Household Survey Questions (1995)

Item	Cost for the past 12 months Non-member (R)	
Services		
- Private GP - Dentists - Specialists - Other health care professionals - Doctor or nurse at public sector clinic		
- Hospitals (broken down into public and private)		
Medicines, ointments, disinfectants, bandages etc. - purchased at pharmacies - purchased at the doctor - purchased at the hospital *public* *private* - purchased at other health care practitioners - purchased at supermarket		
Therapeutic appliances and equipment like contact lenses, dentures, spectacles, crutches etc.		
TOTAL		
	Members of medical aid/insurance schemes, medical provident schemes	
Subscriptions and premiums in connection with medical aid schemes, medical insurance and medical provident schemes		
- paid by yourself		
- contribution to employer		
Total		
Services	You paid	Scheme paid
- Private GP - Dentists - Specialists - Other health care professionals - Doctor or nurse at public sector clinic		
- Hospitals *public* *private*		
Medicines, ointments, disinfectants, bandages etc. - purchased at pharmacies - purchased at the doctor - purchased at the hospital (*public and private)* - purchased at other health care practitioners - purchased at supermarket		
Therapeutic appliances and equipment like contact lenses, dentures, spectacles, crutches etc.		
Total		

APPENDIX K: HEALTH CARE COVERAGE

Important data that are connected to health expenditures and that would be useful for NHAs are data on population coverage. Although this was not a main focus of the research, an attempt was made to provide a rough estimate of population coverage in the private health sector.

The exact number of people who have access to the sources of finance described above, is not easily ascertainable. It therefore had to be calculated using assumptions about the number of medical insurance policy holders and the number of people with access to workplace health care. The proportion of the population who have no "institutional" cover for health services, but pay out-of-pocket for private sector health services could not, however, be determined.

Approximately 9 million people (i.e. 23 % of the population) were estimated to have regular access to private sector health services in 1992/93. However, this is likely to be an overestimate as many medical insurance policy holders are also members of medical schemes.

Table 1 shows estimated resources available for medical scheme beneficiaries, medical insurance beneficiaries and formal sector employees at their workplace. As mentioned, a large proportion of private insurance resources are policies held by medical scheme members. Schemes-gap expenditure was added to medical scheme expenditure to derive total expenditure by medical scheme beneficiaries. Those members also contribute to other aspects of out-of-pocket expenditure and many would have private medical insurance. However, it was not possible to measure these proportions.

The minimum average cost of coverage for scheme beneficiaries was about R1,992. However it is important to bear in mind that expenditure by people belonging to medical schemes could be higher if other aspects of out-of-pocket expenditure or medical insurance premiums were included.

Table 1: Health Care Resources Beneficiaries Per Capita (1992/93) (millions of Rands)

Funds	**Resources (annual contributions) Rands[25]**	**Beneficiaries**
Medical Aid Schemes	*10,539.627*	*5 617 393*
Medical Benefit Schemes	*1,130.668*	*757 655*
Exempted Schemes	*394.184*	*531 580*
All Medical Schemes	12,064.479	6 906 628
Schemes Gap	*1,692.167*	
Medical Schemes And Schemes Gap	13,756.646	6 906 628
Private Insurance	922.810	1 100 000
Industry	472.180	1 041 110
Total	**15,151.636**	**9 047 738**

[25] The difference between R15,151,636 ,000 and R18,244,717,00 is accounted for by the following omitted items: GP cash practices of R688,283,000; over-the-counter drug expenditure of R1,513,730,000; statutory funds of R891,063,000; and donor expenditure of R5,000,000.