Voorburg Group on Service Statistics

14th Meeting

Christchurch, October 1999

Non-market Services – New Zealand experience in measurement.

Mike McGrath
Statistics New Zealand

Contents

Summary

Non-market services are an important part of the statistics required of a national statistical office. This is not only because of the size of these activities but, perhaps more importantly, because of their influence on the stock of (and development of) human capital.

Comparatively, Statistics NZ compiles a good breadth and depth of financial and economic data about the provision of non-market services. The major exception to this is data relating to Religious organisations.

The usefulness of this data is vastly increased if it is coupled with information on the degree of voluntary labour input and on the social benefits arising from their provision. These different aspects should not be viewed as separate, stand-alone areas, but rather as pieces of an overall picture required to understand the impact on, and role of, non-market services to the well-being of people.

To this end, data from the Annual Enterprise, Quarterly Employment and Time Use surveys (conducted by Statistics NZ), could be combined with that from other agencies. This will enable the construction of reports of immense value in the development, implementation and evaluation of policies regarding the well-being of the residents of NZ.

The results of the 1998 Time Use survey will be released and available in December 1999.

What are non-market services and what units provide them

Under the system of national accounts 1993 (SNA93):

This consists of goods and individual or collective services, supplied free, or at prices that are not economically significant, to other institutional units or the community as a whole. Such output may be provided for two reasons:

- It may be technically impossible to make individuals pay for collective services because their consumption cannot be monitored or controlled. The pricing mechanism cannot be used when transaction costs are too high and there is market failure. The production of such services has to be organised collectively, by government units and financed out of funds other than receipts from sales, namely taxation or government income.

- Government units and Non-profit Institutions Serving Households may also produce and supply goods or services to individual households for which they could charge but choose not to do so as a matter of social or economic policy. The most common examples are health and education services.

The areas they are involved in mean that these units are crucially important to the stock of (and the development of) a country or region's human capital. While already a significant area for public policy concern, the recent increased level of interest in human capital raises the importance of producing relevant information about the provision of non-market services.

How does Statistics NZ know of the existence of these units

The business frame maintained by Statistics NZ forms the basis for all surveys of businesses. While there are always concerns about the adequacy of frames, these are generally heightened in the case of non-market service providers. We are fortunate in NZ to have a good working relationship with the NZ Inland Revenue Department. Registrations for tax purposes form an integral part of the processes followed to update and maintain the frame.

As part of a recent redevelopment project, the adequacy of the frame with regard to coverage of all non-profit institutions serving households was assessed. This showed that in all areas other than Religious Organisations, the frame was of sufficient quality to allow robust sample surveys to be undertaken.

Surveys we include them in

Annual Enterprise Survey:

This is designed to capture financial information about the resident enterprises operating in NZ. It's design centres on providing robust financial performance data by industry and financial position data by institutional sector. There are over 110 industries defined and designed for – Appendix 1 contains a description of those with significant levels of non-market services for the 1998-99 survey.

Following recent expansion, the Annual Enterprise Survey now covers all of the economy except for Residential Property Operators, Foreign Government representation, Religious Organisations, and Private Households Employing Staff.

From 1999, Statistics NZ will be capturing the financial data required to construct the appropriate accounts within the system of national accounts. After balancing the theoretical SNA93 requirements, with practical considerations such as respondent load (especially given the nature of the majority on non-market service providers), a questionnaire specific to non-profit institutions serving households was designed. Refer to Appendix 2 for a copy of this. This questionnaire is used in preference to the industry standard form in all cases except for the Education and Hospitals industries.

Quarterly Employment Survey:

This is designed to capture employment-related data, with the principal aim of measuring average wage inflation and the cost of employing labour. It does this by collecting information on the average ordinary time and overtime payments to employees, the average hours worked by employees, and the number of filled jobs. Recent developments mean the survey now covers many previously excluded units, a significant number of these are providers of non-market services.

Output valuation issues

Not provided in market

The Annual Enterprise Survey provides the required information to measure the nominal values of the financial flows and stocks associated with non-market service providers within the SNA framework. The very fact, however, that the services are not provided within a market environment means we have difficulties in establishing a value for their outputs, which are usually provided free or below cost.

Valuing output as the sum of costs

Because of the problems in using the prices exhibited by market producers of similar services to represent those that non-market providers operate under, the SNA convention is to value these outputs using their costs of production. While this puts a financial value on the outputs that allows the concepts of the SNA, and methodologies such as Input-Output analysis, to be employed, it does not necessarily lend itself to the production of information of use outside of the strict confines of the concept of value added. The implicit price is not necessarily representative of the benefit of the services provided. This poses all sorts of difficulties if we restrict ourselves to financial valuations to reflect the importance of these activities to our economic (let alone our social) well-being. This is not a new observation about the applicability of value added as a well-being indicator.

Problems in measuring productivity

With the problem of assignation of a value comes the virtual impossibility of creating a relevant volume series based on price deflation of a value time series. That is, if something better than a "volume of inputs" = "volume of outputs" series is to be achieved.

For example, assume that in reality there is an increase in productivity, that isn't reflected in increased wage rates, but which meant fewer paid employees were now required. Assume further that all other things are equal (real volume of service and the cost and value of non-wage inputs are constant). In this case, deflation of the input costs will produce a declining output value series.

Other methods must be employed, then, if such a volume series is to be derived and used in the calculation of productivity statistics.

Developing appropriate volume measures

Non-market services suffer from the same 'condition' as their market-based counterparts when our thoughts turn to the measurement of volumes. Because they are not physical in nature, the concept of a volume can be difficult to come to grips with. This difficulty in conceptualisation, however, is exacerbated in the case of non-market services if only because in some cases the consumption of them (e.g. health information dissemination) is collective rather than by separate individuals or households.

Further complicating the issue is the difficulty in some cases of establishing quality adjustments. In the case of marketed goods and services, at least, subjectivity in quality adjustment can be limited by measuring the market price of the quality

differences, be they optional extras, larger capacity or superior longevity. By their very nature, non-marketed services do not lend themselves to such an approach.

Given, however, that we are charged with providing relevant information about these services, and their importance to the well-being of society, we cannot simply throw our hands up in surrender to these difficulties.

In Statistics NZ we adopt a rather pragmatic approach, preferring to provide 'next-best' information if the conceptually pure approach is beyond us.

SNA compilation

- Change measurement options

SNA93 states that valuing the output on the basis of the value of the inputs does not imply that *changes* in such output over time cannot be distinguished from changes in inputs.

The preferred method of change measurement is through the use of output volume indices based on the quantities of services actually delivered to households.

When it is not possible to avoid using an input measure as a proxy for the output measure, the input measure should be a comprehensive one and not confined to labour inputs.

As a final option, volume measures for labour alone combined with an explicit assumption about changes in labour productivity can be used. The attention of users should always be drawn to any built-in assumption about the rate of growth of labour productivity.

- Statistics NZ practice

In the compilation of constant-price gross domestic product, Statistics NZ follows two of the three methods outlined in the system of national accounts (SNA93); choosing at this stage not to follow the income approach. Appendix 3 outlines the information collected and used under the production and expenditure approaches.

From this it can be seen that the measurement methods range from:

the very good (health)

to

the good (education – lacking quality specifications)

to

the poor (anything relying solely on employment numbers)

to

the very poor (religious organisations – relying on employment numbers from a sample survey based on a non-representative frame population).

Other data to provide

Social benefit perspective

The SNA is explicit that the measures within its framework are not intended to be, and so should not be taken to be, measures of the benefits or utility derived from the provision of non-market services. Note that this is also true of marketed goods and services.

Separate but related data are required if we are to provide information on the effects of the provision of non-market (and market) services and goods. In this area distinction between, for example, the health of the community (the value-to-the-community of health service provision) and the value of health service provided (as measured in the SNA) must be made.

Both sets of data are required if adequate information is to be supplied to inform the development of government policy and to monitor its effectiveness. Deeper understanding is enabled if the data are brought together in a single report rather than being released in a stand-alone fashion. Given this need, both sets of data should be produced on at least an annual basis so that adequate time series analysis can be conducted.

Voluntary labour inputs

While the SNA is concerned with production functions, it's valuations are always monetary based and rarely involve valuations of 'notional' transactions (the most obvious exception being the accounts constructed for the Ownership of Owner Occupied Dwellings).

The private sector provision of non-marketed services, however, makes significant use of volunteered labour and an understanding of this is crucial from both an actual (rather than a monetary) production function and from a social well-being viewpoint.

For example, if a proposed government policy is to change the level or nature of the services it provides, and the effect would be to push more onto the private sector provision of this service, knowledge of the voluntary labour input is crucial. It may be that the assumed private sector provision (with no additional funding) of the service is not viable because the necessary quantity of labour is simply not available. It may only become available if the previously volunteered labour was paid for. This would then have implications on funding decisions and, ultimately, on the decision to withdraw or not from government provision.

To this end, the data from the 1998 Time Use Survey conducted by Statistics NZ will be immensely useful. This data should become available in December 1999.

The periodicity with which we need to collect information on voluntary labour (solely within an 'updated production function' view) really depends on speed of change. While this is a somewhat obvious statement, the intent is to show that, for this particular need, data on an annual basis is not really necessary.

It may be, however, that things such as technological change mean that, for a period, more frequent collections would be required.

The main constraint on all of this is our ability to capture the required data without imposing an impossible load on respondents.

Where to from here

Data from the Annual Enterprise, Quarterly Employment and Time Use surveys (conducted by Statistics NZ), and that from other agencies needs to be combined. The aim is to provide a full picture of the significance, and state, of the services provided predominantly within a non-market environment. In other words, avoiding the separate presentation of only parts of the whole with the expectation that other agencies will bring them together.

It is appropriate that national statistical offices undertake such work, especially if they are widely seen as politically independent, because of their expertise in data assessment and analysis.

Done well, presented in apolitical fashion and disseminated effectively, the reports will be of immense value in the development, implementation and monitoring of government policies regarding resident individuals' well-being.

Appendix 1 - Annual Enterprise Industries with significant "Non-market services" components:

- Scientific research and technical services

- Central government administration

- Defence

- Public order and safety services

- Local government administration

- Pre-school education

- Primary education and special schools

- Secondary education

- Post school education

- Other education

- Hospitals and nursing homes

- Health and dental services

- Community services

- Motion picture, radio & tv services

- Libraries, museums, and the arts

- Sport and recreation

- Personal and household services

- Interest groups

- Waste disposal services

- Sewerage and drainage services

Appendix 2

AES questionnaire for Non-profit Institutions Serving Households

Excluding those in Education and Health

Np01.pdf

Note, this file is designed to print out on A3 size paper that is folded together to form an A4 size booklet.

Appendix 3 - Quarterly Gross Domestic Product, Sources and Methods

Selected extracts

1. Production measure:

Industry	Annual Method	Quarterly Method
Community, social and personal services		
Education services (Private sector only)	To March 1986 Sum of the quarters. From June 1986 Extrapolation by a volume indicator. The indicator is based on the number of pupils taught in private schools, provided by the Ministry of Education.	To March 1986 Extrapolation by a volume indicator. The indicator is based on the number of pupils taught in private schools. From June 1986 Interpolation and extrapolation of the annual value with no indicator.
Health services (Private sector only)	To March 1986 Extrapolation by a volume index. The index is a composite using deflated general medical services benefits, the number of specialists practising in the various professions, the average number of occupied beds and hours worked. From June 1986 Extrapolation by a volume index The index is a composite using the number of hospital discharges, the average length of stay in private hospitals, and the number of general practitioners, medical specialists, dentists, and physiotherapists, provided by the Ministry of Health.	All years Extrapolation by a quarterly volume indicator. The indicator is based on hours worked.
Sanitary, cultural, amusement, recreation, repairs and personal services	To March 1986 **Repairs and personal services** Sum of the quarters. **Horse and greyhound racing, lotteries** Extrapolation by a volume index The index is based on the number of betting tickets issued, provided by the TAB, and the number of lotteries run, provided by the Lotteries Commission. **Remainder** Extrapolation by a volume index. The index is a composite using the number of children in day-care (from the Childrens and Young Persons Service), the number of beds in old people's homes (from the Ministry of Health), and the number of licensed television receivers and hours of local television content broadcast (from New Zealand on Air). The index also uses the number of members of employer organisations and unions.	To March 1986 **Repairs and personal services** Extrapolation by an output volume index. The index is based on sales deflated by a subindex of the Producers Price Index. Output is estimated quarterly using indicators from the Quarterly Distribution Survey up to the March 1989 quarter, and then the Retail Trade Survey. **Horse and greyhound racing, lotteries and the remainder combined** Extrapolation of the annual value using a quarterly volume indicator. The indicator is based on hours worked and the number of working proprietors, from the Quarterly Employment Survey.

Industry	Annual Method	Quarterly Method
Community, social and personal services continued		
Sanitary, cultural, amusement, recreation, repairs and personal services	<u>From June 1986</u> **Personal and household services** Sum of the quarters. **Amusement and recreation** Extrapolation by an employment volume index. The index uses numbers employed from the Annual Business Update Survey. **Welfare** Extrapolation by an output volume indicator. The indicator is based on the numbers of children enrolled in day-care centres (from the Children and Young Persons Service) and the number of beds in rest homes (from the Ministry of Health). **Sanitary services** Extrapolation by an output volume index. The index is based on output deflated by a subindex of the Producers Price Index. **Business, professional and labour associations, and research** Sum of the quarters. **Domestic services** Extrapolation by a volume index. The index is based on changes in general population numbers.	<u>From June 1986</u> **Personal and household services** Extrapolation by an output volume index. The index uses sales of personal and household services from the Retail Trade Survey deflated by a subindex of the Producers Price Index. **Amusement and recreation** Extrapolation by a quarterly volume indicator. The indicator is based on hours worked from the Quarterly Employment Survey. **Welfare** Extrapolation by a quarterly volume indicator. The indicator is based on hours worked from the Quarterly Employment Survey . **Sanitary Services** Extrapolation by a quarterly volume indicator. The indicator is based on hours worked from the Quarterly Employment Survey. **Business, professional and labour associations, and research** Extrapolation by a quarterly volume indicator. The indicator is based on hours worked from the Quarterly Employment Survey. **Domestic services** Interpolation and extrapolation of the annual value with no indicator.

Industry	Annual Method	Quarterly Method
General government services		
Central government		
Public administration and defence	Sum of the quarters.	Extrapolation by an employment volume indicator. Up to March 1986 the indicator uses numbers of employees in each government department weighted using base year compensation of employees. From June 1986 the indicator is based on salaries and wages paid by department (from the Central Government Enterprise Survey) deflated using a subindex of the Labour Cost Index.
Education	<u>To March 1986</u> Sum of the quarters. <u>From June 1986</u> Extrapolation by an index of pupils taught in the different types of educational institutions, provided by the Ministry of Education.	<u>To March 1986</u> Extrapolation by a volume indicator. The indicator is based on the number of pupil weeks taught in the different types of educational institutions, provided by the Ministry of Education. <u>From June 1986</u> Interpolation and extrapolation of the annual value with no indicator.
Health	Extrapolation by a volume index. Up to March 1986 the index uses the number of occupied beds and number of outpatient treatments, provided by the Ministry of Health. From June 1986 the index is a composite based on the number of case-mix-adjusted inpatient discharges, day patient discharges and the average length of stay.	Extrapolation by a quarterly volume indicator. The indicator is based on hours worked, from the Quarterly Employment Survey, up to March 1986. From June 1986 the indicator is based on salaries and wages (from the Central Government Enterprise Survey) deflated by a subindex of the Labour Cost Index (or previous equivalent).
Other central government services *(Non-public account)*	Deflation of compensation of employees by a subindex of the Labour Cost Index (or previous equivalent) except for the ACC and the Fire Service Commission. The ACC uses extrapolation by a volume index based on the number of claims. The Fire Service Commission uses extrapolation by an employment volume index based on the number of employees.	Interpolation and extrapolation of the annual value with no indicator.

Local government services		
Local government services	Extrapolation by an employment volume index. The index uses salaries and wages deflated by a subindex of the Labour Cost Index (or previous equivalent).	Extrapolation by an employment volume indicator. The quarterly indicator is based on numbers employed, from the Quarterly Employment Survey.

2. Expenditure measure:

Component	Current Price Series		Constant Price Series	
	Annual Method	**Quarterly Method**	**Annual Method**	**Quarterly Method**
Private Final Consumption Expenditure				
Households				
Services continued				
Medical and welfare services ($2,205M)	Revenue data from the annual current price industry accounts. Includes cash sales by government and private non-profit organisations.	Reflation of the volume indicator used for the constant price quarterly series. The reflation uses the medical and health services subindex of the Consumers Price Index.	Extrapolation using a volume indicator. The indicator used is the annual health output volume indicator from the QGDP series.	Extrapolation by an employment volume indicator. The indicator uses hours worked in the medical sector, from the Quarterly Employment Survey.
Education ($389M)	Both government and private spending on education are estimated using the revenue of educational institutions, obtained from financial reports.	Interpolation and extrapolation of the annual value with no indicator.	Both government and private expenditure is deflated using the education subindex of the Consumers Price Index.	Interpolation and extrapolation of the annual value with no indicator.
Recreation, admission and entertainment services ($385M)	Estimated from the Household Economic Survey.	Reflation of the volume indicator used for the quarterly constant price series. The reflation uses the leisure and recreational services subindex of the Consumers Price Index.	Current expenditure is deflated using the leisure and recreational services subindex of the Consumers Price Index.	Extrapolation by a volume indicator. The indicator uses hours worked, as used for the quarterly constant price series for the community and social services industry.
Other services ($323M)	Estimated from the Household Economic Survey.	Interpolation and extrapolation of the annual value with no indicator.	Current expenditure is deflated using subindexes of the Producers Price Index.	Interpolation and extrapolation of the annual value with no indicator.

Private Final Consumption Expenditure				
Private non profit organisations serving households ($886M)				
Final consumption expenditure equals intermediate consumption, compensation of employees and consumption of fixed capital by the organisations, less sales	Estimated from the Annual Enterprise Survey and samples of annual accounts.	Interpolation and extrapolation of the annual value with no indicator.	Inputs are extrapolated by an indicator. The indicator combines intermediate consumption, deflated by a subindex of the Producers Price Index, and compensation of employees, deflated by a subindex of the Labour Cost Index (or previous equivalent). Sales are estimated partly by deflation and partly by volume extrapolation.	Extrapolation by a volume indicator. The indicator is based on value added, as estimated in the production-based constant price series, for these organisations.

	Current Price Series		Constant Price Series	
Component	Annual Method	Quarterly Method	Annual Method	Quarterly Method
Government Final Consumption Expenditure				
Central government ($10,670M)				
Public administration ($2,096M)				
Intermediate consumption *plus* indirect taxes ($1,017M). *Estimates for Treasury are calculated separately because of high variable expenses associated with departmental and SOE restructuring/sales.*	Estimated from the Central Government Enterprise Survey reconciled with annual departmental accounts.	Direct measurement using the Central Government Enterprise Survey.	Expenditure, reconciled with annual accounts, is deflated by public administration subindexes of the Producers Price Index.	Quarterly expenditure, recorded in the Central Government Enterprise Survey, is deflated by public administration subindexes of the Producers Price Index. (Deflation is done separately for Treasury).
Compensation of employees ($1,262M)	Estimated from the Central Government Enterprise Survey reconciled with annual departmental accounts.	Direct measurement using the Central Government Enterprise Survey.	Sum of the quarters.	Extrapolation by an employment volume indicator. The indicator is salaries and wages from the Central Government Enterprise Survey deflated by a subindex of the Labour Cost Index.
Sales ($182M)	Estimated from the Central Government Enterprise Survey reconciled with annual departmental accounts.	Direct measurement using the Central Government Enterprise Survey.	Sales, reconciled with annual accounts, are deflated by public administration subindexes of the Producers Price Index. Deflation is done separately for the Audit Department, State Services Commission, Valuation New Zealand, Ministry of Justice, Department of Corrections, Department of Courts.	Quarterly sales, recorded in the Central Government Enterprise Survey, are deflated by public administration subindexes of the Producers Price Index.
Final consumption expenditure	Sum of intermediate consumption, indirect taxes and compensation of employees, less sales.	Sum of intermediate consumption, indirect taxes and compensation of employees, less sales.	Sum of intermediate consumption, indirect taxes and compensation of employees, less sales.	Sum of intermediate consumption, indirect taxes and compensation of employees, less sales.

Component	Current Price Series		Constant Price Series	
	Annual Method	**Quarterly Method**	**Annual Method**	**Quarterly Method**
Defence ($1,115M)				
Intermediate consumption *plus* indirect taxes ($504M)	**Ships and aircraft** Sum of the quarters. **Remainder** Estimated from the Central Government Enterprise Survey reconciled with annual departmental accounts.	**Ships and Aircraft** Direct measurement from imports data or Ministry of Defence, where separately available, otherwise estimated from the Central Government Enterprise Survey. **Remainder** Direct measurement using the Central Government Enterprise Survey.	**Ships and aircraft** Expenditure, reconciled with annual accounts, is deflated by overseas price indexes. The indexes are those applying in the country of origin of the imports. **Remainder** Expenditure, reconciled with annual accounts, is deflated by public administration subindexes of the Producers Price Index.	**Ships and aircraft** Quarterly expenditure, recorded in the Central Government Enterprise Survey, is deflated by overseas price indexes. The indexes are those applying in the country of origin of the imports. **Remainder** Quarterly expenditure, recorded in the Central Government Enterprise Survey, is deflated by public administration subindexes of the Producers Price Index.
Compensation of employees ($646M)	Estimated from the Central Government Enterprise Survey reconciled with annual departmental accounts.	Direct measurement using the Central Government Enterprise Survey.	Sum of the quarters.	Extrapolation by an employment volume indicator. The indicator uses salaries and wages from the Central Government Enterprise Survey deflated by a subindex of the Labour Cost Index.
Sales ($36M)	**Ammunition and Rent** Sum of the quarters. **Remainder** Estimated from the Central Government Enterprise Survey reconciled with annual departmental accounts.	**Ammunition and Rent** Direct measurement from the Ministry of Defence. **Remainder** Direct measurement using the Central Government Enterprise Survey.	**Ammunition and Rent** Sales, reconciled with annual accounts, are deflated by rent and ammunition subindexes of the Producers Price Index. **Remainder** Sales, reconciled with annual accounts, are deflated by public administration subindexes of the Producers Price Index.	**Ammunition and Rent** Quarterly sales, recorded in the Central Government Enterprise Survey, are deflated by rent and ammunition subindexes of the Producers Price Index. **Remainder** Quarterly sales, recorded in the Central Government Enterprise Survey, are deflated by public administration subindexes of the Producers Price Index.
Final consumption expenditure	Sum of intermediate consumption, indirect taxes and compensation of employees, less sales.	Sum of intermediate consumption, indirect taxes and compensation of employees, less sales.	Sum of intermediate consumption, indirect taxes and compensation of employees, less sales.	Sum of intermediate consumption, indirect taxes and compensation of employees, less sales.

	Current Price Series		Constant Price Series	
Component	**Annual Method**	**Quarterly Method**	**Annual Method**	**Quarterly Method**
Administration of education, health, ACC, Fire Service Commission, social welfare, industrial and labour, research, social and related services ($1,829M)				
Intermediate consumption *plus* indirect taxes ($860M)	Estimated from the Central Government Enterprise Survey reconciled with annual departmental accounts.	**Accident Compensation Corporation** Direct measurement by way of direct enquiries. **Fire Service Commission** Interpolation and extrapolation of the annual value with no indicator. **Remainder** Direct measurement using the Central Government Enterprise Survey.	Expenditure by subgroup, reconciled with annual accounts, is deflated by public administration subindexes of the Producers Price Index.	Quarterly expenditure by subgroup, recorded in the Central Government Enterprise Survey, is deflated by public administration subindexes of the Producers Price Index.
Compensation of employees ($1,185M)	Estimated from the Central Government Enterprise Survey reconciled with annual departmental accounts.	**Accident Compensation Corporation** Direct measurement by way of direct enquiries. **Fire Service Commission** Interpolation and extrapolation of the annual value with no indicator. **Remainder** Direct measurement using the Central Government Enterprise Survey.	Sum of the quarters.	Extrapolation by an employment volume indicator. The indicator is salaries and wages from the Central Government Enterprise Survey deflated by a subindex of the Labour Cost Index.
Sales ($215M)	Estimated from the Central Government Enterprise Survey reconciled with annual departmental accounts.	**Accident Compensation Corporation** Interpolation and extrapolation of the annual value with no indicator. **Fire Service Commission** Interpolation and extrapolation of the annual value with no indicator. **Remainder** Direct measurement using the Central Government Enterprise Survey.	Sales by subgroup, reconciled with annual accounts, are deflated by public administration subindexes of the Producers Price Index.	Quarterly sales by subgroup, recorded in the Central Government Enterprise Survey, are deflated by public administration subindexes of the Producers Price Index.
Final consumption expenditure	Sum of intermediate consumption, indirect taxes and compensation of employees, less sales.	Sum of intermediate consumption, indirect taxes and compensation of employees less, sales.	Sum of intermediate consumption, indirect taxes and compensation of employees, less sales.	Sum of intermediate consumption, indirect taxes and compensation of employees, less sales.

	Current Price Series		Constant Price Series	
Component	**Annual Method**	**Quarterly Method**	**Annual Method**	**Quarterly Method**
Roading (National Roads Board/Transit NZ purchases of road maintenance) ($227M)				
Intermediate consumption *plus* indirect taxes	Estimated from the accounts of Transit NZ (formerly National Roads Board).	No estimate made (refer Final consumption expenditure).	No estimate made (refer Final consumption expenditure).	No estimate made (refer Final consumption expenditure).
Compensation of employees	Nil	Nil.	Nil.	Nil.
Sales	Nil	Nil.	Nil.	Nil.
Final consumption expenditure.	Sum of intermediate consumption, indirect taxes and compensation of employees, less sales.	Direct measurement using quarterly roading maintenance expenditure, by way of direct enquiry from Transit NZ (formerly National Roads Board).	Expenditure is deflated by roading maintenance subindexes of the Producers Price Index.	Expenditure is deflated by roading maintenance subindexes of the Producers Price Index.
Education ($2,968M)				
Intermediate consumption *plus* indirect taxes ($781M)	Until 1988/89 based on the System of Integrated Government Management Accounts. Subsequently based on bulk funding movements, with estimated cost breakdowns based on historical data, university accounts, etc. (Note: schools etc are not covered by the Central Government Enterprise Survey.)	Direct measurement from the System of Integrated Government Management Accounts until March 1989, then quarterly movements in bulk funding payments.	Expenditure, reconciled with annual accounts, is deflated by education subindexes of the Producers Price Index.	Quarterly expenditure, recorded in the Central Government Enterprise Survey is deflated by education subindexes of the Producers Price Index.
Compensation of employees ($2,551M)	As for intermediate consumption.	Interpolation and extrapolation of the annual value with no indicator.	Extrapolation by an output volume indicator. The indicator is based on roll numbers of early childhood, primary, secondary and tertiary education institutions.	Interpolation and extrapolation of the annual value with no indicator.
Sales ($364M)	Estimated from the Central Government Enterprise Survey and departmental accounts.	Interpolation and extrapolation of the annual value with no indicator.	Sales are deflated by education subindexes of the Producers Price Index.	Interpolation and extrapolation of the annual value with no indicator.
Final consumption expenditure	Sum of intermediate consumption, indirect taxes and compensation of employees, less sales.	Sum of intermediate consumption, indirect taxes and compensation of employees, less sales.	Sum of intermediate consumption, indirect taxes and compensation of employees, less sales.	Sum of intermediate consumption, indirect taxes and compensation of employees, less sales.

Component	Current Price Series		Constant Price Series	
	Annual Method	**Quarterly Method**	**Annual Method**	**Quarterly Method**
Health ($2,439M)				
Intermediate consumption *plus* indirect taxes ($812M)	Estimated from the surveys of area health boards and hospital boards to June 1993. From September 1993 the Crown Health Enterprise Survey and annual accounts are used.	Direct measurement from the Crown Health Enterprise Survey (formerly Area Health Boards Survey).	Expenditure, reconciled with annual accounts, is deflated by health subindexes of the Producers Price Index.	Quarterly expenditure, recorded in the Crown Health Enterprise Survey, is deflated by health subindexes of the Producers Price Index.
Compensation of employees ($1,761M)	As for intermediate consumption.	As for intermediate consumption.	Extrapolation by an output volume index. The index is based on numbers of case-mix inpatient discharges, day patient discharges and length of stay data.	Extrapolation by an employment volume indicator. The indicator uses salaries and wages of Crown Health Enterprises (formerly Area Health Boards) deflated by a subindex of the Labour Cost Index.
Sales ($133M)	As for intermediate consumption.	As for intermediate consumption.	Sales, reconciled with annual accounts, are deflated by health subindexes of the Producers Price Index.	Quarterly sales, recorded in the Crown Health Enterprise Survey, are deflated by health subindexes of the Producers Price Index.
Final consumption expenditure	Sum of intermediate consumption, indirect taxes and compensation of employees, less sales.	Sum of intermediate consumption, indirect taxes and compensation of employees, less sales.	Sum of intermediate consumption, indirect taxes and compensation of employees, less sales.	Sum of intermediate consumption, indirect taxes and compensation of employees, less sales.
Local government ($1,599M)				
Intermediate consumption *plus* indirect taxes	Current expenditure excluding employment expenses, from the Local Authority Survey.	Interpolation and extrapolation of the annual value with no quarterly indicator.	Sum of the quarters.	Expenditure is deflated by the local government services inputs subindex of the Producers Price Index.
Compensation of employees	Employment expenses from the Local Authority Survey.	Direct measurement. Numbers employed, from the Quarterly Employment Survey, times a subindex of the Labour Cost Index (or previous equivalent).	Expenditure is deflated using a sub index of the Labour Cost Index (or previous equivalent).	Extrapolation by a volume indicator. The indicator uses numbers employed from the Quarterly Employment Survey.
Sales	Current income for all activities, from the Local Authority Survey.	Interpolation and extrapolation of the annual value with no quarterly indicator.	Sum of the quarters.	Sales are deflated by the local government services inputs subindex of the Producers Price Index.
Final consumption expenditure	Sum of intermediate consumption, indirect taxes and compensation of employees, less sales.	Sum of intermediate consumption, indirect taxes and compensation of employees, less sales.	Sum of intermediate consumption, indirect taxes and compensation of employees, less sales.	Sum of intermediate consumption, indirect taxes and compensation of employees, less sales.