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## Introduction

In Australia, there is a wide range of economic data available to analyse the performance of various components of the economy over time. For example, data are regularly published on the number of houses being built, the number of cars produced, whether employment is rising or falling, the composition of exports and imports and so on. While these and other statistical series are important in their own right, none of them in isolation can provide an overall picture of the state of the economy.

National accounts are designed to provide a systematic summary of national economic activity and have been developed to assist in the practical application of economic theory. At their summary level, the national income, expenditure and product accounts reflect the key economic flows of the Keynesian economic system: production, the distribution of incomes, consumption, saving and investment. At their more detailed level, they are designed to present a statistical picture of the structure of the economy and the detailed processes that make up domestic production and its distribution. The national accounts include many detailed classifications (e.g. by industry, by purpose, by commodity, by State and Territory, and by asset type) relating to major economic aggregates.

The performance of the economy, as represented in national accounting measures such as growth in the national income or gross domestic product, is not an end in itself. Movements in gross domestic product at constant prices are an important measure of economic growth, but there is no single indicator which can describe all aspects of the well-being of a country's citizens.

There are significant aspects of the quality of life which cannot be comprehended in a system of economic accounts, just as there are significant aspects of an individual's well-being which are not measured in the conventional concept (or any other concept) of that individual's income.

Notwithstanding their limitations, especially in relation to uses for which they were never designed, the national accounts provide vital information for a range of important purposes. The system of national accounts also provides a framework or structure which can be, and has been, adapted and extended to facilitate the

examination of other economic and social policy issues.

A detailed presentation of the concepts underlying the national accounts is provided in the ABS publication *Australian National Accounts: Concepts, Sources and Methods* (5216.0). This publication, updated in 1996, forms part of the *Statistical Concepts Reference Library on CD-ROM* (1361.1.30.001).

The main output from the national accounts is a measure of the overall value of economic production in Australia in a given period, but without any double counting of the goods and services being produced. Many goods and services are bought by businesses for use in their own productive activities (e.g. steel is bought by car manufacturers). If the value of all goods and services produced were simply added together there would be serious duplication because some goods and services would be added in several times at various stages of production. The overall measure of production, excluding double counting, is called gross domestic product, which is commonly referred to as GDP. It is formally defined as:

the total market value of goods and services produced in Australia after deducting the cost of goods and services used up (intermediate consumption) in the process of production, but before deducting allowances for the consumption of fixed capital (depreciation).

## Measurement of GDP

There are three ways of measuring GDP:

- The *income approach*, which measures GDP by summing the incomes accruing from production (wages, salaries and supplements; gross operating surplus (profits); and indirect taxes less subsidies).
- The *expenditure approach*, which involves summing all final expenditures on goods and services (i.e. those goods and services which are not processed any further), adding on the contribution of exports and deducting the value of imports. Final expenditures consist of final consumption expenditure, gross fixed capital expenditure and increase in stocks. Exports are included in GDP because they are part of Australian production even though they are sold to overseas purchasers. Imports

are deducted because, although they are included in final expenditures (e.g. when someone buys an imported video recorder its value is included as part of private final consumption expenditure) they are not part of Australian production.

- The *production approach* calculates GDP by taking the market value of goods and services produced by an industry (its gross output) and deducting the cost of goods and services used up by the industry in the productive process (intermediate consumption) which

leaves the value added by the industry (also called its gross product). GDP is then obtained by summing the gross product of all industries.

In theory, the three approaches result in identical estimates of GDP. In practice, because of the need to use different data sources for each method, the value of GDP obtained from each approach differs. The ABS refers to the above three alternative estimates of GDP as GDP(I), GDP(E) and GDP(P), respectively.

### 28.1 GROSS DOMESTIC PRODUCT(a)

Year	GDP(I) \$m	GDP(E) \$m	GDP(P) \$m	GDP(A) \$m
1962-63	127 162	127 297	127 327	127 261
1963-64	136 164	136 200	135 916	136 093
1964-65	145 787	144 831	145 585	145 400
1965-66	148 957	148 175	147 500	148 211
1966-67	158 753	158 398	156 716	157 956
1967-68	164 674	164 937	163 677	164 429
1968-69	179 162	178 982	178 852	178 999
1969-70	189 206	188 338	188 191	188 578
1970-71	198 279	198 467	196 323	197 689
1971-72	207 872	207 196	202 400	205 822
1972-73	215 868	214 453	208 820	213 047
1973-74	225 894	221 371	224 470	223 911
1974-75	230 163	226 723	228 104	228 330
1975-76	236 931	236 684	231 955	235 190
1976-77	243 792	243 963	240 585	242 780
1977-78	246 302	245 444	243 299	245 015
1978-79	260 023	261 276	255 221	258 840
1979-80	265 427	267 540	261 359	264 775
1980-81	274 782	275 156	270 070	273 336
1981-82	281 042	284 110	280 653	281 935
1982-83	276 235	277 904	270 535	274 892
1983-84	293 003	293 065	284 026	290 031
1984-85	307 845	306 562	300 820	305 076
1985-86	319 349	320 312	311 708	317 123
1986-87	327 084	328 048	317 220	324 117
1987-88	343 936	344 574	335 951	341 487
1988-89	359 082	354 725	356 250	356 685
1989-90	370 070	366 305	370 070	368 816
1990-91	367 448	365 054	365 598	366 033
1991-92	368 721	372 488	364 205	368 472
1992-93	381 684	384 978	373 676	380 112
1993-94	400 431	400 197	388 504	396 377
1994-95	415 710	414 178	408 099	412 662
1995-96	431 654	432 038	425 196	429 629

(a) Average 1989-90 prices.

Source: Australian National Accounts: National Income, Expenditure and Product (5204.0).

A fourth measure, the simple average of these three, referred to as GDP(A), is the preferred estimate of economic growth for Australia when expressed in constant price terms. Using movements in GDP(A) has been shown to

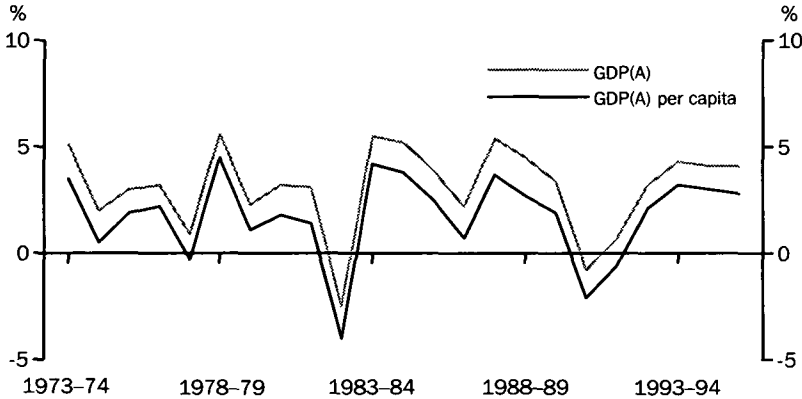
provide a smoother and more reliable indicator of turning points in the economy than do changes in any of the individual measures of GDP. Quarterly changes in the constant price trend of GDP(A) are considered by the ABS to

be the best indicator of short-term growth. Constant price data are published for all four estimates in original, seasonally adjusted and trend terms (see *Constant price or 'real' GDP* below).

GDP(A) at average 1989–90 prices increased by 4.1% in both 1994–95 and 1995–96. For some

analytical purposes it is important to allow for the impact of population growth on movements in GDP. Annual growth in GDP(A) per capita has been about 1.0% to 1.8% lower than that for GDP(A) since 1973–74 and was negative in 1977–78, 1982–83, 1990–91 and 1991–92.

## 28.2 GDP(A) AND GDP(A) PER CAPITA



Source: Australian National Accounts: National Income, Expenditure and Product (5204.0).

## Constant price or 'real' GDP

The expenditure approach to calculating GDP measures Australian production by summing the amounts spent by the final users on the goods and services produced. However, by itself this is not always a good measure of production, since the value of a particular good or service is affected by inflation.

For example, the national accounts may show that the amount spent on motor cars is 5% higher this year than it was last year. If the price of cars has increased by 5% over the last year, then the number of cars bought will not have changed — expenditure has risen only because the price of cars has risen.

For a lot of uses, it is necessary to know how much physical production (e.g. the number of cars made) has changed, rather than just the current (or dollar) value of production. Constant price estimates are the way in which this is achieved. They provide a measure, in

dollar values, which indicates changes in the actual quantity of items produced or purchased. Because of this, constant price estimates of GDP are often referred to as estimates of real GDP.

In essence, estimates of GDP at constant prices involve finding indicators of price changes in the items included in the national accounts, and using these to remove the effects of inflation from the estimates of GDP. Constant price estimates are expressed in terms of the average prices prevailing in a selected base year (currently 1989–90). Some of the main indicators used in this process are the component series from the consumer price index, which measures changes over time in the price of a basket of goods and services bought by households. Other price indexes produced by the ABS (such as the import price index) are also used extensively in compiling the constant price estimates.

## Implicit price deflators

A by-product of the calculation of constant price estimates is the implicit price deflator (or IPD). An IPD is the price index obtained when a current price estimate is divided by the corresponding constant price estimate. The ABS publishes a time series of IPDs for each of the expenditure side aggregates (excluding increase in stocks) in the domestic production account.

IPDs calculated from the major national accounting aggregates such as gross national expenditure are widely used as a broader measure of inflation in the economy than that available from any of the individual price indexes published by the ABS. However, care has to be taken in the interpretation of IPDs as they do not compare the price of a constant basket of goods between any two periods except when comparing the base period with another period. Therefore, they reflect a combination of the effects of actual price changes and changes in the composition of the aggregate from which the deflator is derived. An alternative set of price indexes, based on the expenditure side of the domestic production account, is fixed-weighted price indexes for the major expenditure aggregates. They measure the change in price of the basket of goods and services included in GDP in the proportions measured in 1989–90.

## National income, expenditure and product accounts

The Australian national income, expenditure and product accounts are compiled and published in some detail every quarter, in *Australian National Accounts: National Income, Expenditure and Product* (5206.0),

and in greater detail once a year, in *Australian National Accounts: National Income, Expenditure and Product* (5204.0).

### Domestic production account

The domestic production account indicates changes in Australian production over time. Table 28.6 shows that, in real terms (i.e. after the effects of inflation are removed from the dollar value of Australia's production), there was a fall in production during the 1990–91 financial year. However, the five years since the recession in 1990–91 have all shown growth in GDP. Although growth in 1991–92, as measured by GDP(I), was relatively low (0.3%), by 1993–94 it had accelerated to 4.9% and in 1995–96 it was 3.8%.

The domestic production account can also be used to show changes in the share of income accruing to labour (i.e. wages, salaries and supplements) compared with the share accruing to capital (i.e. profits). Graphs 28.7 and 28.8 show how the shares of each of wages and profits (defined as the gross operating surplus of private corporate trading enterprises) to GDP(I) at factor cost have changed since 1963–64.

The highest recorded value of the wages share of GDP(I) at factor cost is 63.5% in 1974–75. The wages share has recovered slightly from its recent low value of 55.0% in 1988–89, but remains at a relatively low level compared with most of the 1970s and early 1980s.

The profits share of GDP(I) at factor cost fell to 13.6% during the 1982–83 recession but recovered to around 17% by 1984–85, a level it broadly maintained until the 1990–91 recession, during which it fell to just over 16%. In 1995–96, this ratio was 17.2%.

**28.3 DOMESTIC PRODUCTION ACCOUNT, Five Yearly**

	1962-63 \$m	1967-68 \$m	1972-73 \$m	1977-78 \$m	1982-83 \$m
Final consumption expenditure					
Private	10 658	15 677	26 001	56 933	105 965
Government	1 995	3 711	6 357	17 272	32 474
Private gross fixed capital expenditure	2 800	4 496	7 726	15 455	27 985
Public gross fixed capital expenditure	1 331	2 178	3 270	7 194	13 120
Increase in stocks	253	113	-270	-430	-2 437
Gross national expenditure	17 037	26 175	43 084	96 424	177 107
Exports of goods and services	2 483	3 559	7 017	14 236	25 540
Imports of goods and services	2 596	4 115	5 392	15 179	29 062
<b>Gross domestic product (GDP(E))</b>	<b>16 924</b>	<b>25 619</b>	<b>44 709</b>	<b>95 481</b>	<b>173 585</b>
Statistical discrepancy	-83	-136	84	-173	-1 109
Wages, salaries and supplements	8 361	13 212	23 562	53 066	94 949
Gross operating surplus					
Trading enterprises	6 687	9 527	16 586	31 773	56 886
Total	6 850	9 812	17 125	32 686	58 021
Indirect taxes less subsidies	1 630	2 459	4 106	9 556	19 506
<b>Gross domestic product (GDP(I))</b>	<b>16 841</b>	<b>25 483</b>	<b>44 793</b>	<b>95 308</b>	<b>172 476</b>

Source: Australian National Accounts: National Income, Expenditure and Product (5204.0).

**28.4 DOMESTIC PRODUCTION ACCOUNT, Annual**

	1988-89 \$m	1989-90 \$m	1990-91 \$m	1991-92 \$m	1992-93 \$m	1993-94 \$m	1994-95 \$m	1995-96 \$m
Final consumption expenditure								
Private	195 283	216 804	229 880	242 328	254 277	266 478	283 983	303 766
Government	56 787	61 658	66 793	71 555	74 693	77 444	80 220	83 708
Private gross fixed capital expenditure	67 202	67 821	60 548	56 762	62 374	69 071	76 511	76 848
Public gross fixed capital expenditure	17 944	21 658	20 797	20 596	19 570	18 134	20 394	20 754
Increase in stocks	3 571	4 937	-1 874	-2 032	-65	575	2 525	3 450
Gross national expenditure	340 787	372 878	376 144	389 209	410 849	431 702	463 633	488 526
Exports of goods and services	55 449	60 981	66 257	69 959	76 396	82 361	86 381	97 600
Imports of goods and services	61 245	67 552	65 901	68 061	77 993	83 910	96 084	99 653
<b>Gross domestic product (GDP(E))</b>	<b>334 991</b>	<b>366 307</b>	<b>376 500</b>	<b>391 107</b>	<b>409 252</b>	<b>430 153</b>	<b>453 930</b>	<b>486 473</b>
Statistical discrepancy	4 076	3 763	2 464	-3 943	-3 488	271	1 686	-419
Wages, salaries and supplements	163 780	182 417	190 002	193 832	200 766	210 955	223 960	239 954
Gross operating surplus								
Trading enterprises	133 200	143 501	143 406	148 017	155 991	164 411	171 961	182 485
Total	134 082	143 196	144 314	149 026	159 262	168 465	175 261	185 764
Indirect taxes less subsidies	41 205	44 457	44 648	44 306	45 736	51 004	56 395	60 336
<b>Gross domestic product (GDP(I))</b>	<b>339 067</b>	<b>370 070</b>	<b>378 964</b>	<b>387 164</b>	<b>405 764</b>	<b>430 424</b>	<b>455 616</b>	<b>486 054</b>

Source: Australian National Accounts: National Income, Expenditure and Product (5204.0).

**28.5 DOMESTIC PRODUCTION ACCOUNT, At Constant Prices(a), Five Yearly**

	1962-63 \$m	1967-68 \$m	1972-73 \$m	1977-78 \$m	1982-83 \$m
Final consumption expenditure					
Private	77 384	98 259	125 420	147 548	172 117
Government	17 814	26 621	31 283	41 399	47 430
Private gross fixed capital expenditure	21 303	30 474	40 338	40 570	46 294
Public gross fixed capital expenditure	10 300	14 205	16 206	18 057	19 185
Increase in stocks	1 406	1 288	-1 146	-1 023	-3 659
Gross national expenditure	129 845	170 821	211 985	246 547	281 807
Exports of goods and services	13 704	18 751	28 047	32 921	36 841
Imports of goods and services	15 456	23 431	25 482	34 070	40 865
<b>Gross domestic product (GDP(E))</b>	<b>127 297</b>	<b>164 937</b>	<b>214 453</b>	<b>245 444</b>	<b>277 904</b>
Statistical discrepancy	-135	-263	1 415	858	-1 669
<b>Gross domestic product (GDP(I))</b>	<b>127 162</b>	<b>164 674</b>	<b>215 868</b>	<b>246 302</b>	<b>276 235</b>

(a) Average 1989-90 prices. Estimates prior to 1984-85 have been derived by linking estimates for earlier base years to estimates at average 1989-90 prices.

Source: Australian National Accounts: National Income, Expenditure and Product (5204.0).

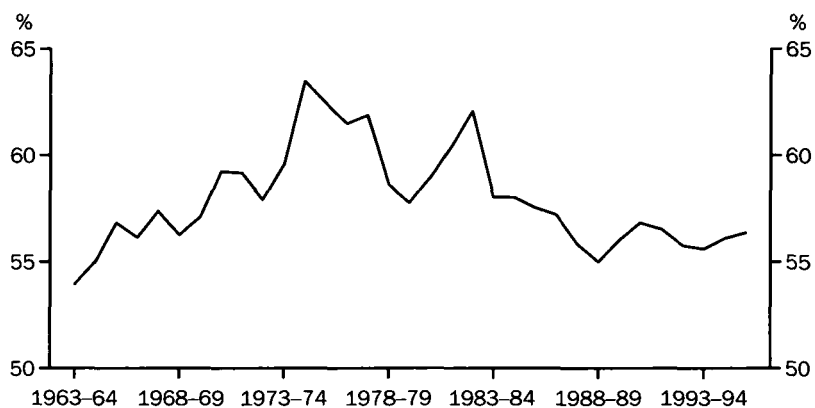
**28.6 DOMESTIC PRODUCTION ACCOUNT, At Constant Prices(a), Annual**

	1988-89 \$m	1989-90 \$m	1990-91 \$m	1991-92 \$m	1992-93 \$m	1993-94 \$m	1994-95 \$m	1995-96 \$m
Final consumption expenditure								
Private	207 901	216 804	218 741	224 983	231 869	238 900	250 193	260 897
Government	59 548	61 658	63 477	65 313	66 365	67 982	70 520	72 288
Private gross fixed capital expenditure	70 931	67 821	60 048	56 673	60 624	65 834	72 869	73 133
Public gross fixed capital expenditure	18 931	21 658	20 346	20 180	18 986	17 724	20 010	20 251
Increase in stocks	3 810	4 938	-1 379	-2 189	258	601	2 242	2 966
Gross national expenditure	361 121	372 879	361 233	364 960	378 102	391 041	415 834	429 535
Exports of goods and services	57 813	60 981	67 869	73 947	78 186	85 905	88 683	97 859
Imports of goods and services	64 210	67 552	64 048	66 419	71 310	76 749	90 339	95 356
<b>Gross domestic product (GDP(E))</b>	<b>354 724</b>	<b>366 308</b>	<b>365 054</b>	<b>372 488</b>	<b>384 978</b>	<b>400 197</b>	<b>414 178</b>	<b>432 038</b>
Statistical discrepancy	4 358	3 763	2 394	-3 767	-3 294	234	1 532	-384
<b>Gross domestic product (GDP(I))</b>	<b>359 082</b>	<b>370 071</b>	<b>367 448</b>	<b>368 721</b>	<b>381 684</b>	<b>400 431</b>	<b>415 710</b>	<b>431 654</b>

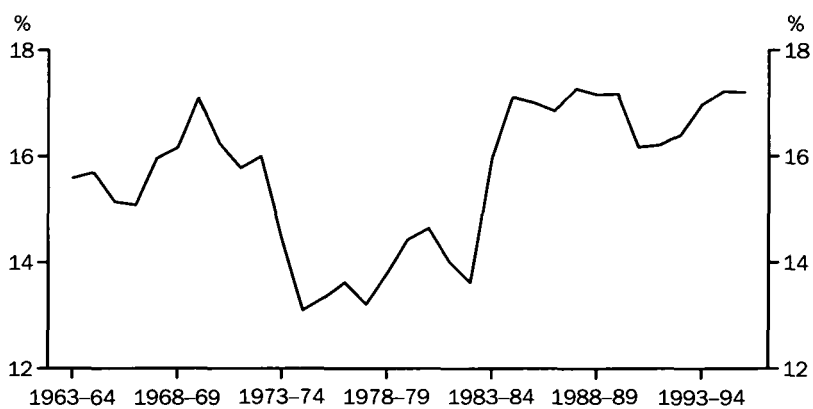
(a) Average 1989-90 prices.

Source: Australian National Accounts: National Income, Expenditure and Product (5204.0).



**28.7 WAGES SHARE OF GDP(I) — At Factor Cost**

Source: Australian National Accounts: National Income, Expenditure and Product (5204.0).

**28.8 PROFITS SHARE OF GDP(I) — At Factor Cost**

Source: Australian National Accounts: National Income, Expenditure and Product (5204.0).

## National income and outlay account

The national income and outlay account shows how much of the national income is spent on

final consumption. That part of income which is not spent in this way is saving.

### 28.9 NATIONAL INCOME AND OUTLAY ACCOUNT, Five Yearly

	1962-63 \$m	1967-68 \$m	1972-73 \$m	1977-78 \$m	1982-83 \$m
Wages, salaries and supplements	8 361	13 212	23 562	53 066	94 949
Net operating surplus	4 709	6 493	11 276	18 345	30 220
Domestic factor incomes	13 070	19 705	34 838	71 411	125 169
Less net income paid overseas	233	343	550	1 210	3 579
Indirect taxes	1 738	2 680	4 572	10 848	22 686
Less subsidies	108	221	466	1 292	3 180
National income	14 467	21 821	38 394	79 757	141 096
Less net unrequited transfers to overseas	22	24	88	257	195
<b>National disposable income</b>	<b>14 445</b>	<b>21 797</b>	<b>38 306</b>	<b>79 500</b>	<b>140 901</b>
Final consumption expenditure					
Private	10 658	15 677	26 001	56 933	105 965
Government	1 995	3 711	6 357	17 272	32 474
Saving	1 792	2 409	5 948	5 295	2 462
<b>Disposal of income</b>	<b>14 445</b>	<b>21 797</b>	<b>38 306</b>	<b>79 500</b>	<b>140 901</b>
Gross national product	16 608	25 140	44 243	94 098	168 897

Source: Australian National Accounts: National Income, Expenditure and Product (5204.0).

### 28.10 NATIONAL INCOME AND OUTLAY ACCOUNT, Annual

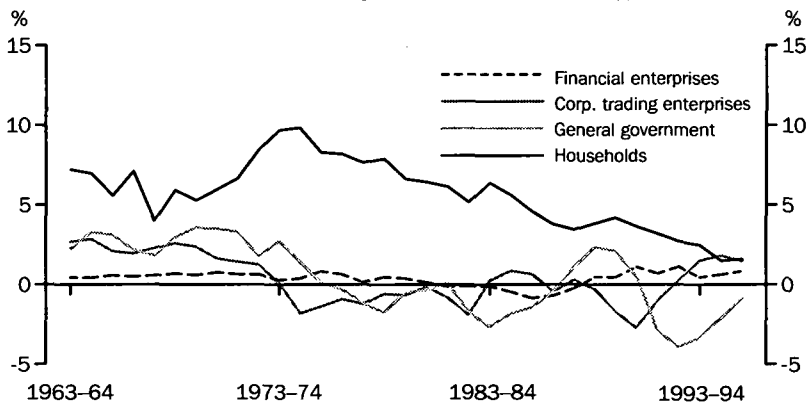
	1988-89 \$m	1989-90 \$m	1990-91 \$m	1991-92 \$m	1992-93 \$m	1993-94 \$m	1994-95 \$m	1995-96 \$m
Wages, salaries and supplements	163 780	182 417	190 002	193 832	200 766	210 955	223 960	239 954
Net operating surplus	82 711	87 200	86 011	89 190	96 473	103 344	108 603	117 149
Domestic factor incomes	246 491	269 617	276 013	283 022	297 239	314 299	332 563	357 103
Less net income paid overseas	13 595	17 399	17 621	15 490	13 627	14 147	15 964	17 641
Indirect taxes	45 817	49 056	50 418	50 306	52 064	57 396	62 539	66 493
Less subsidies	4 612	4 599	5 770	6 000	6 328	6 392	6 144	6 157
National income	274 100	296 675	303 039	311 838	329 348	351 155	372 994	399 798
Less net unrequited transfers to overseas	-2 173	-2 290	-2 373	-2 185	-662	-178	-487	-1 224
<b>National disposable income</b>	<b>276 273</b>	<b>298 965</b>	<b>305 413</b>	<b>314 023</b>	<b>330 010</b>	<b>351 333</b>	<b>373 481</b>	<b>401 022</b>
Final consumption expenditure								
Private	195 283	216 804	229 880	242 328	254 277	266 478	283 983	303 766
Government	56 789	61 658	66 793	71 555	74 693	77 444	80 220	83 708
Saving	24 201	20 503	8 740	140	1 040	7 411	9 278	13 548
<b>Disposal of income</b>	<b>276 273</b>	<b>298 965</b>	<b>305 413</b>	<b>314 023</b>	<b>330 010</b>	<b>351 333</b>	<b>373 481</b>	<b>401 022</b>
Gross national product	325 472	352 671	361 343	371 674	392 137	416 276	439 652	468 413

Source: Australian National Accounts: National Income, Expenditure and Product (5204.0).

As shown in graph 28.11, household saving as a percentage of GDP(I) rose moderately between 1963–64 and 1974–75, but has fallen subsequently from its high of 9.8% in 1974–75 to 1.6% in 1995–96. General government saving has been negative since 1991–92, although the level of dissaving as a percentage of GDP(I) has decreased in each year since 1992–93. In 1995–96 it was –0.9% of GDP(I) (–\$4,161m in current value terms). Saving of corporate

trading enterprises has been negative for 13 of the past 20 years. In 1995–96 it was 1.5% of GDP(I) (\$7,134m in current value terms), with 1994–95 (at 1.8%) being the highest percentage level since 1969–70. Saving of financial enterprises was negative from 1981–82 to 1987–88, the only period for which this sector has recorded negative saving. In 1995–96, saving of financial enterprises was 0.8% of GDP(I) (\$4,026m in current value terms).

**28.11 SAVING, By Sector — Share of GDP(I)**



Source: Australian National Accounts: National Income, Expenditure and Product (5204.0).

### National capital account

The national capital account shows how the saving from the national income and outlay account is used to finance gross fixed capital expenditure. If, as is currently the case in Australia, the nation's saving is not sufficient to pay for all the capital equipment needed for

Australian production, the shortfall must be borrowed from overseas. The amount borrowed from overseas is shown in the national capital account as a negative entry for net lending to overseas.

**28.12 NATIONAL CAPITAL ACCOUNT, Five Yearly**

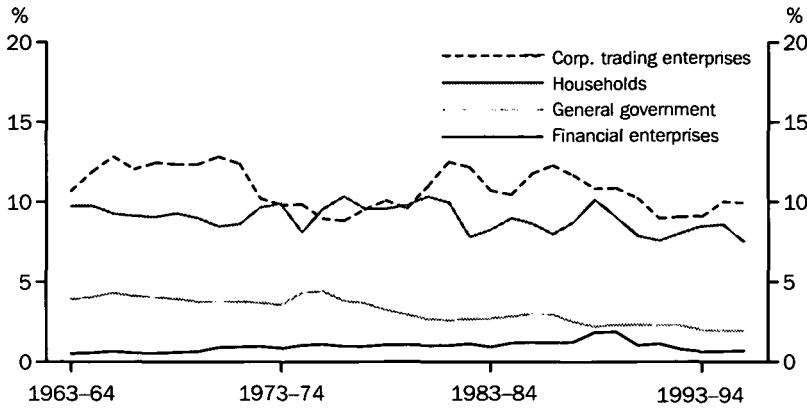
	1962-63 \$m	1967-68 \$m	1972-73 \$m	1977-78 \$m	1982-83 \$m
Consumption of fixed capital	2 141	3 319	5 849	14 341	27 801
Saving					
Household	925	1 020	3 771	7 294	8 912
General government surplus on current transactions	325	465	802	-1 116	-2 933
Extraordinary insurance claims paid	—	—	—	—	200
Other	542	924	1 375	-883	-3 717
<b>Finance of gross accumulation</b>	<b>3 933</b>	<b>5 728</b>	<b>11 797</b>	<b>19 636</b>	<b>30 263</b>
Gross fixed capital expenditure					
Private	2 800	4 496	7 726	15 455	27 985
Public enterprises	666	1 143	1 615	3 695	8 495
General government	665	1 035	1 655	3 499	4 625
Increase in stocks					
Private non-farm	221	292	-108	-42	-2 218
Farm and public authorities	32	-179	-162	-388	-219
Statistical discrepancy	-83	-136	84	-173	-1 109
Net lending to overseas	-368	-923	987	-2 410	-7 296
<b>Gross accumulation</b>	<b>3 933</b>	<b>5 728</b>	<b>11 797</b>	<b>19 636</b>	<b>30 263</b>

Source: Australian National Accounts: National Income, Expenditure and Product (5204.0).

**28.13 NATIONAL CAPITAL ACCOUNT, Annual**

	1988-89 \$m	1989-90 \$m	1990-91 \$m	1991-92 \$m	1992-93 \$m	1993-94 \$m	1994-95 \$m	1995-96 \$m
Consumption of fixed capital	51 372	55 996	58 303	59 836	62 789	65 121	66 658	68 615
Saving								
Household	13 000	15 534	13 848	12 354	11 016	10 670	6 844	7 795
General government surplus on current transactions	7 998	7 808	1 727	-11 245	-15 820	-14 398	-9 603	-4 161
Extraordinary insurance claims paid	—	654	—	—	—	—	—	—
Other	3 203	-3 493	-6 835	-969	5 844	11 139	12 037	9 914
<b>Finance of gross accumulation</b>	<b>75 573</b>	<b>76 499</b>	<b>67 043</b>	<b>59 976</b>	<b>63 829</b>	<b>72 532</b>	<b>75 936</b>	<b>82 163</b>
Gross fixed capital expenditure								
Private	67 202	67 821	60 548	56 762	62 374	69 071	76 511	76 848
Public enterprises	10 380	13 027	12 016	11 781	10 336	9 509	11 384	11 431
General government	7 565	8 629	8 781	8 815	9 234	8 625	9 010	9 323
Increase in stocks								
Private non-farm	3 228	1 766	-3 034	-1 729	-167	826	3 366	2 923
Farm and public authorities	343	3 171	1 160	-303	102	-251	-841	527
Statistical discrepancy	4 074	3 765	2 464	-3 943	-3 488	271	1 686	-419
Net lending to overseas	-17 219	-21 680	-14 892	-11 407	-14 562	-15 519	-25 180	-18 470
<b>Gross accumulation</b>	<b>75 573</b>	<b>76 499</b>	<b>67 043</b>	<b>59 976</b>	<b>63 829</b>	<b>72 532</b>	<b>75 936</b>	<b>82 163</b>

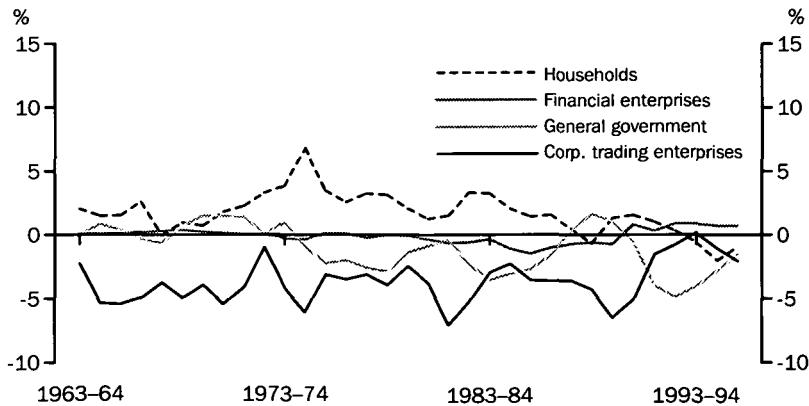
Source: Australian National Accounts: National Income, Expenditure and Product (5204.0).

**28.14 CAPITAL EXPENDITURE, By Sector — Share of GDP(I)**

Source: Australian National Accounts: National Income, Expenditure and Product (5204.0).

Graph 28.14 shows gross fixed capital expenditure by institutional sector as a proportion of GDP(I). This proportion for corporate trading enterprises fell to low levels during the 1970s and then rose to a peak of 12.5% in 1981-82. It has subsequently fallen fairly steadily to 10.0% in 1995-96. Household

investment as a proportion of GDP(I) has fallen from 10.2% in 1988-89 to 7.5% in 1995-96. While general government investment as a proportion of GDP(I) peaked at 4.4% in 1975-76, it has fallen steadily since then and in 1995-96 was 1.9% of GDP(I).

**28.15 NET LENDING, By Sector — Share of GDP(I)**

Source: Australian National Accounts: National Income, Expenditure and Product (5204.0).

As shown in graph 28.15 the household sector has been a net lender to the other sectors in the economy for all years except 1967-68, 1988-89 and 1993-94 to 1995-96 when it was a net borrower. As a proportion of GDP(I), net lending by households was -0.9% in 1995-96, this negative percentage reflecting the sector's

net borrower status in that year. Except for 1993-94, corporate trading enterprises have been net borrowers over the whole period from 1963-64 to 1995-96 and the amounts borrowed have fluctuated significantly from year to year. As a proportion of GDP(I), net lending by corporate trading enterprises was -2.1% in

1995–96. After being a net lender for the period 1987–88 to 1989–90, general government has returned to being a significant net borrower over the past six years. Expressed as a proportion of GDP(I), general government net lending has declined from a peak of –4.9% in 1992–93 to –1.6% in 1995–96.

### Overseas transactions account

The overseas transactions account is derived from the detailed balance of payments current

account (see *Chapter 29, International accounts and trade*). It includes all transactions in the balance of payments current account except reinvested earnings. It shows Australia's exports and imports, incomes and unrequited transfers received by Australian residents from overseas, and incomes and unrequited transfers paid to overseas by Australian residents. The balance is net lending to overseas.

#### 28.16 OVERSEAS TRANSACTIONS ACCOUNT, Five Yearly

	1962–63 \$m	1967–68 \$m	1972–73 \$m	1977–78 \$m	1982–83 \$m
Imports of goods and services	2 596	4 115	5 392	15 179	29 062
Interest, dividends, etc. to overseas	290	428	827	1 531	4 619
Labour income to overseas	5	9	25	57	135
Unrequited transfers to overseas	128	240	471	863	1 515
Net lending to overseas	–368	–923	987	–2 410	–7 296
<b>Use of current receipts</b>	<b>2 651</b>	<b>3 869</b>	<b>7 702</b>	<b>15 220</b>	<b>28 035</b>
Exports of goods and services	2 483	3 559	7 017	14 236	25 540
Interest, dividends, etc. from overseas	58	85	278	301	937
Labour income from overseas	4	9	24	77	158
Extraordinary insurance claims from overseas	—	—	—	—	80
Unrequited transfers from overseas	106	216	383	606	1 320
<b>Current receipts from overseas</b>	<b>2 651</b>	<b>3 869</b>	<b>7 702</b>	<b>15 220</b>	<b>28 035</b>

Source: Australian National Accounts: National Income, Expenditure and Product (5204.0).

#### 28.17 OVERSEAS TRANSACTIONS ACCOUNT, Annual

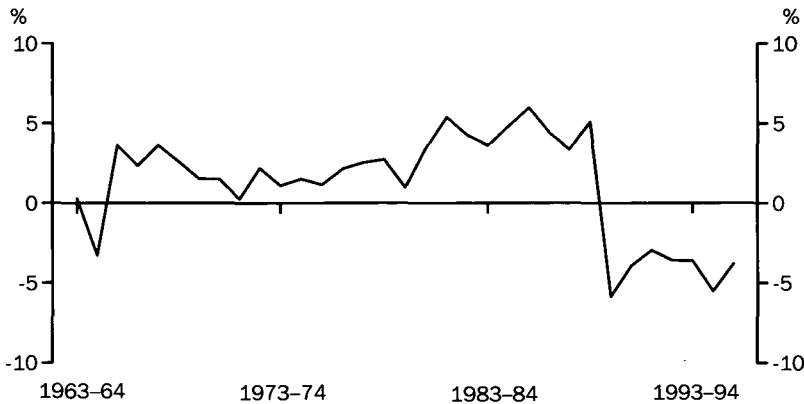
	1988–89 \$m	1989–90 \$m	1990–91 \$m	1991–92 \$m	1992–93 \$m	1993–94 \$m	1994–95 \$m	1995–96 \$m
Imports of goods and services	61 245	67 552	65 901	68 061	77 993	83 910	96 084	99 653
Interest, dividends, etc. to overseas	15 496	20 328	20 996	19 007	17 192	17 219	19 214	21 563
Labour income to overseas	279	406	429	326	311	283	389	441
Unrequited transfers to overseas	2 037	2 228	2 316	2 388	2 434	2 624	2 722	2 764
Net lending to overseas	–17 219	–21 680	–14 892	–11 407	–14 562	–15 519	–25 180	–18 470
<b>Use of current receipts</b>	<b>61 838</b>	<b>68 834</b>	<b>74 750</b>	<b>78 375</b>	<b>83 368</b>	<b>88 517</b>	<b>93 229</b>	<b>105 951</b>
Exports of goods and services	55 449	60 981	66 257	69 959	76 396	82 361	86 381	97 600
Interest, dividends, etc. from overseas	1 954	2 815	3 222	3 387	3 379	2 843	3 088	3 754
Labour income from overseas	225	370	432	455	497	511	551	609
Extraordinary insurance claims from overseas	—	150	150	—	—	—	—	—
Unrequited transfers from overseas	4 210	4 518	4 689	4 574	3 096	2 802	3 209	3 988
<b>Current receipts from overseas</b>	<b>61 838</b>	<b>68 834</b>	<b>74 750</b>	<b>78 375</b>	<b>83 368</b>	<b>88 517</b>	<b>93 229</b>	<b>105 951</b>

Source: Australian National Accounts: National Income, Expenditure and Product (5204.0).

Australia has generally been a net borrower of capital from overseas. In the national accounts, this situation is reflected by a negative value for net lending to overseas. Following a small number of years where Australia was actually a net lender to overseas in the early 1960s and

1970s, net borrowing from overseas, expressed as a proportion of GDP(I), increased significantly during the early 1980s and has remained at relatively high levels since then. Graph 28.18 shows this proportion since 1963–64.

**28.18 NET LENDING TO OVERSEAS, Share of GDP(I)**

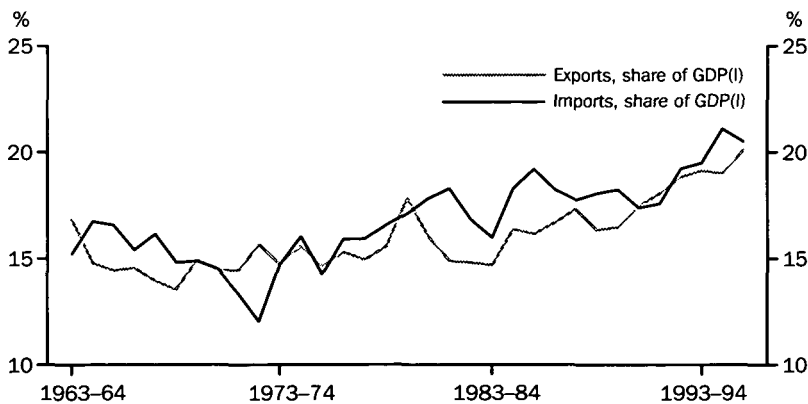


Source: Australian National Accounts: National Income, Expenditure and Product (5204.0).

The importance of foreign trade to the Australian economy is illustrated by graph 28.19, which shows the ratios of exports and imports of goods and services to GDP(I) for the financial

years 1963–64 to 1995–96. In 1995–96 the import ratio was 20.5% and the export ratio was 20.1%.

**28.19 EXPORTS AND IMPORTS, Share of GDP(I)**



Source: Australian National Accounts: National Income, Expenditure and Product (5204.0).

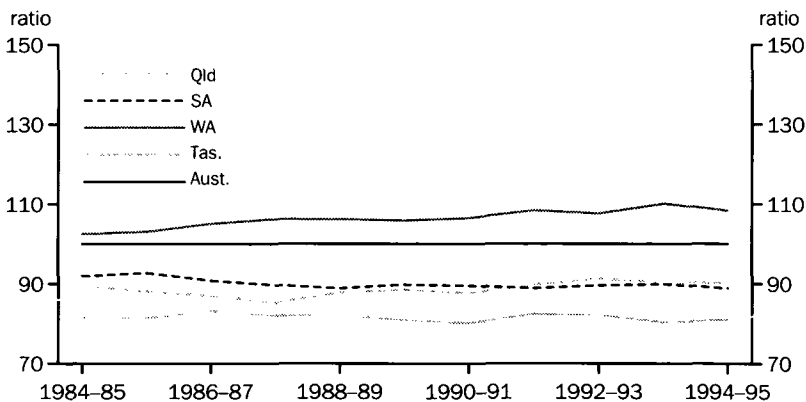
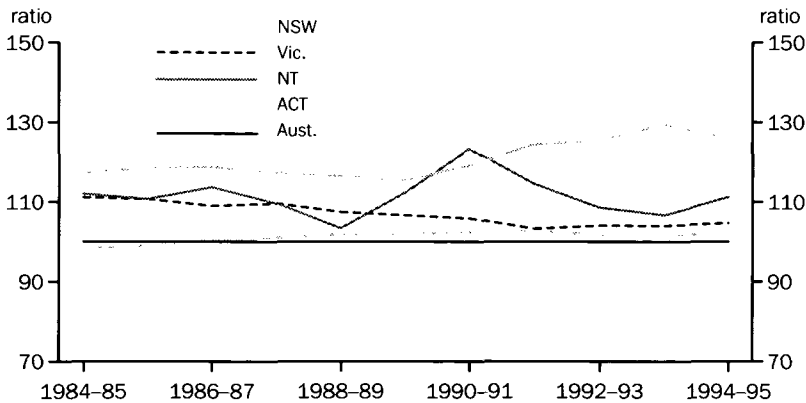
# State accounts

As well as Australia's national accounts, the ABS produces State accounts each quarter. These provide quarterly estimates of gross State product and State final demand. Gross State product is produced by summing the incomes generated in the production process (the income approach to measuring total production). State final demand is equal to the sum of private and government final consumption expenditure and gross fixed capital expenditure. Estimates of State final demand and gross State product are available in both current and constant prices. The constant price gross State product estimates are experimental.

An important use of State accounts is to compare the performance of each State and Territory. The following graphs show gross State product, in current prices, per head of mean population for each State and Territory divided by the Australian value (GDP(I) per head of mean population) since 1984-85.

Gross State product (GSP) per head of mean population in 1994-95 was above the national average in New South Wales, Victoria, Western Australia, the Northern Territory and the Australian Capital Territory. GSP per head of mean population has been below the national average for the whole length of the time series (i.e. since 1984-85) in each of Queensland, South Australia and Tasmania.

**28.20 GROSS STATE PRODUCT PER CAPITA (Aust. = 100.0)**



Source: Australian National Accounts: State Accounts (5220.0).



## Input–output tables

### Basic structure

Input–output tables show the structure of a country's entire production system for a particular period, usually one year. They show which goods and services are produced by each industry and how they are used (e.g. some goods, such as cars, are sold to final consumers while others, such as steel, are used as inputs by other industries in producing more goods and services). The tables are based on the principle that the value of the output of each industry can be expressed as the sum of the values of all the inputs to that industry plus any profits made. All the goods and services produced in a period are identified as being used as inputs by industries in their production process, being sold to final users of the goods and services (either in Australia, or overseas as exports), or contributing to the change in stocks (an increase in stocks if more goods are produced than purchased or a run-down in stocks if purchases exceed production). For the production system as a whole, the sum of all outputs must equal the sum of all inputs and, for the economy as a whole, total supply must equal total demand (stocks provide the mechanism which balances supply and demand).

### Relationship to the national income and expenditure accounts

Input-output tables can be directly related to the domestic production account. The income side of the domestic production account shows the amount of income generated in the economy accruing to labour (in the form of wages, salaries and supplements) and to capital (as profits or, in national accounting terms, gross operating surplus). The expenditure side of the account shows the value of goods and services entering into the various categories of final demand.

The input-output tables provide a much more detailed disaggregation of the domestic production account than is available in the national income, expenditure and product accounts. The latter only supply details of the end results of economic activity, whereas the input-output tables provide a means of tracing flows of goods and services step by step through the production process. The extra detail provided by the input-output tables is essential for many analyses.

### Input-output table for seven industry sectors

Table 28.21 and diagram 28.22 show the flows of goods and services in respect of 1992–93.

The links between the table and the diagram are explained by working through the following formulas.

Intermediate usage (\$333,709m) in the diagram is derived by summing from column 8 of the table: Intermediate usage (\$289,647m); Sales by final buyers (\$913m); Competing imports (\$41,230m), and Complementary imports (\$1,919m).

Gross value added (\$404,292m) in the diagram is derived by summing from column 14 of the table: Wages, salaries and supplements (\$190,348m); Gross operating surplus (\$168,169m); and taxes: Commodity taxes (net), (\$25,001m), Indirect taxes n.e.c. (net) (\$17,857m) and Duty on competing imports (\$2,917m).

Domestic production (\$738,001m) in the diagram is derived by summing: Intermediate usage from column 8 of the table (\$289,647m); total final demand at basic values from column 13 (\$428,066m); and the indirect taxes payable on those final demand items (see column 13) Commodity taxes (net) (\$16,404m), Indirect taxes n.e.c. (net) (\$2,166m) and Duty on competing imports (\$1,718m).

Imports (\$78,280m) in the diagram is derived by summing from column 14 of the table: Competing imports c.i.f. (\$78,095m) and Complementary imports c.i.f. (\$185m).

Total supply (\$816,281m), which must be equal to final demand, is the sum of Domestic production (\$738,001m) and Imports (\$78,280m).

Domestic final demand (\$405,682m) in the diagram is derived from the table by subtracting total Exports (\$76,890m), column 12, from total Final demand (\$482,572m), column 13.

Exports (\$76,890m) in the diagram is total exports, column 12, in the table.

Total demand (\$816,281m) is the sum of Domestic final demand (\$405,682m), Intermediate usage (\$333,709m), and Exports (\$76,890m).

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# Natural resources in national balance sheets

This article outlines ABS work on the valuation of natural resources presented within the national balance sheets (Occasional Paper: *National Balance Sheets for Australia, Issues and Experimental Estimates 1989 to 1992*, (5241.0)). 'Natural resources' in this context covers land, forests, and subsoil assets. The value of natural resources had not previously been included in the Australian national accounts, and the experimental estimates represent the first attempt by the ABS to value consistently a diverse range of Australia's assets. The balance sheets indicate that Australia's net worth rose from \$1,580.5b at 30 June 1989 to \$1,687.0b at 30 June 1991 (representing annualised growth of 3.4%), before falling to \$1,669.4b at 30 June 1992 (representing a fall of 1%).

The article provides a brief description of some of the methodological issues and problems encountered, before presenting a selection of results.

## Background

Over the last decade there has been a growing awareness (in Australia as well as overseas) of the importance of the environment and a growing demand for environmental statistics to assist research and decision-making. As part of this development, the new international framework for national accounts *System of National Accounts 1993* (or SNA93)<sup>1</sup> recommends including natural resource assets in the national balance sheet. The work undertaken by the ABS is in response to these changing demands.

In line with the recommendations of SNA93, the ABS has applied the principle that the valuation of an asset<sup>2</sup> must be related to its ability to earn its owner an income, either immediately or at some definable future date. It should be noted that natural assets, especially forests, may have non-economic values in addition to their commercial values. However, it is not feasible to measure these in a national accounts context.

SNA93 recommends that, where possible, asset valuation should be on the basis of current, observable market prices as this is the basis on which decisions by economic agents (producers, consumers and investors) are made. However, for the most part, there are insufficient data on transactions in natural resources to support this approach. SNA93 recognises this problem and suggests that the net present value approach (NPV) to valuing the future stream of income, may be used as an appropriate conceptual substitute. The NPV represents the present day value of the future income discounted for a time preference. For example, \$100 today has a higher value than \$100 in one year's time. To derive the NPV of the latter \$100 requires that it be discounted by an appropriate rate of interest.

## Subsoil assets

Subsoil assets are those resources considered economically exploitable, and include known deposits of coal, oil and natural gas resources, and metallic and non-metallic mineral resources, including deposits under the sea.

In the Australian context economically exploitable deposits are those that the Bureau of Resource Sciences defines as 'economic demonstrated resources' (EDR), which refers to those resources with a very high degree of geological assurance and for which extraction is expected to be profitable over the life of the mine<sup>3</sup>. It approximates both proven and probable resources. It is difficult to value subsoil assets as they have not yet entered the production process. SNA93 recommends that, in the absence of market transactions, the value of resources be determined by the present value of the expected net returns resulting from the commercial exploitation of those assets.

While the total stock of Australia's minerals is unknown, it is important to note that economic demonstrated resources are a small component of the total resource stock.

## The ABS approach

The approach taken by the ABS in calculating the NPV of subsoil assets was to take the value of gross output during a twelve month period and to deduct costs (including a 'normal' return on capital) to derive net income. This was taken to be the equivalent of 'economic rent'.<sup>4</sup> Cost data include labour, on-site costs, mining and milling costs, and depreciation charges. Exploration costs within the mine lease, plus a 'normal' return on capital, were also included. The 'normal' return on capital used was the Commonwealth government 10-year bond rate, which was multiplied by the net capital stock for the mining industry (using the ABS's capital stock estimates). The return on the capital stock was divided into total extraction costs (costs multiplied by production for each commodity) to determine a mark up to be applied to total costs which represented the 'normal' return to capital. The stream of future net income was calculated for each year, taking into account average annual production and the average mine life. This income stream was then discounted to obtain a value in today's dollars.

The discount rate in theory equates to the weighted average cost of capital, and the rate chosen should represent the cost of the risk in waiting for the cash flow from a project. Risks or uncertainties include, for example, the existence of markets, competition and natural disasters. The longer the lead time, the greater is the risk that expected future cash flows will not eventuate. Other factors which must be considered in setting an appropriate discount rate include the expected inflation rate, and the rate of return available from alternative uses of investment funds. Discounting an uncertain future flow of income embodies a number of assumptions regarding a 'steady state', namely that price, production, interest rates, operating costs and returns to capital will remain unchanged from the year for which the estimates are made until the resource is exhausted. These assumptions are unrealistic, contributing to uncertainty surrounding the estimates. Moreover, the resource life is unknown until the subsoil asset is fully extracted.

## Valuation issues

The major drawback of the net present value (NPV) approach for subsoil assets is that the estimates are subject to uncertainty and revision regarding:

- the future price of the commodity;

- the technological developments which will occur during the life of the mine, which may extend its life significantly;
- the true size of the deposit and any nearby deposits, which may be different from the original estimates; and
- the quality of the deposits yet to be found.

Given the way estimates of the value of subsoil assets are derived, only a very small portion of the total resource is accounted for at any one time; and valuation can give a very misleading impression of the extent of the resource. The point is not that valuation should not be attempted, but rather that the monetary estimates should be used in conjunction with the physical stocks of the resources (bearing in mind that the physical estimates are also subject to some uncertainty). Hence, the estimates must be viewed with some caution. Monetary estimates are subject to considerable volatility and accordingly can give a deceptively optimistic or pessimistic picture; while physical estimates may offer only a very limited view of the resource's full extent.

## Land

Land is defined (SNA93, para. 10.121) as the ground itself, including the soil covering and any associated surface water. Excluded are buildings, cultivated flora and fauna, subsoil assets, and non-cultivated biological resources. As land is not created, the only way transactions in land impact on GDP is through the transaction costs associated with purchase and sale, or through improvements (such as clearing).

Land estimates cover the value of freehold and leasehold land in private hands, plus land owned by Commonwealth government business enterprises. Unalienated Crown land, including land potentially subject to Mabo-like claims, has been excluded from the scope of these estimates because of the difficulty in establishing an appropriate value. Also excluded because of the unavailability of data is land held, but not leased out, by State and local government business enterprises. The significance of these exclusions is not known, but it is thought that they do not materially effect the levels, and most certainly have no significant impact on the changes over time in the estimated values.

The estimates were standardised on a consistent basis for each State and Territory and are based on the concept of 'site value'. Site value includes the value of invisible improvements to the land that cannot be separated from it, such as clearing of trees and drainage work, as well as the unimproved capital value of the land itself. This leads to an element of double counting in the balance sheets: expenditure on invisible improvements are recorded as gross fixed capital expenditure on non-dwelling construction in the capital account, as well as being included in the estimate of land (this double count is not considered significant). Estimates of site values were taken from the Coleman Report<sup>5</sup> (1993) to the Commonwealth Government, which was produced to assist the comparison of the relative capacities of the States and the Northern Territory to raise revenues from owners of land and from transactions in land. Land is valued at its approximate current market price.

Using administrative data has certain shortcomings. The data are compiled for use by governments when assessing the potential for raising revenue from land rates and taxes on transactions in land. Their estimation process uses whatever data are available to isolate the value of the land from any capital improvements to the land. This may introduce an element of subjectivity into the data.

## Forests

SNA93 does not specify the types of forests which should be included in the national balance sheet. The ABS has chosen to value only the timber value of those forests which are available now, or will be available in the future, for production of timber. Further, as there are too few transactions from which to determine a market value, indirect valuation techniques have been used as a proxy for the economic value of forests. Non-timber values (such as the prevention of soil erosion, and maintenance of bio-diversity) lie outside the presently accepted methods of SNA93.

All publicly owned forests outside conservation reserves and all private forests are potentially available for timber production, although a number of constraints reduce the area of forest that is actually available. For publicly owned forests, the constraints include the accessibility of the resource, the economic feasibility of extracting the resource and the setting aside of

specified areas of forests under management codes of practice. National parks, wilderness areas and world heritage listed areas have been excluded from the valuation because logging is prohibited.

## The ABS approach

Forests have been broken down into two broad types: native forests (which account for approximately 95% of the area of all forests including a very small area of broadleaved plantations), and coniferous plantations.

For native forests (including broadleaved plantations) the stream of future income was calculated for each forest age group by State and Territory. The future net income was derived from the size of the forests (number of hectares or thousand trees) multiplied by the yield per hectare (or thousand trees) for sawlogs and pulplogs, with the results being multiplied by the stumpage fees per cubic metre for sawlogs and pulplogs, respectively. Stumpage fees are the payments made to the owner of the resource by the logger for the right to log. They were taken to be the equivalent of economic rent. The values are then discounted over the time to maturity of the forest, assuming current production rates are maintained through the forests' lives. Mature forests were not discounted.

Coniferous plantation forests were valued using an insurance schedule provided by a private insurance company. The schedule shows the value of each hectare of plantation from 1 to 30 years of age as determined by the Australian Forest Growers Association.

## Valuation issues

At present, there are no comprehensive data sources to provide annual estimates of the total area of forest available for timber production. However, the survey by the Resource Assessment Commission found that 22.1 million hectares of native forest were available for logging in 1990<sup>6</sup>. In addition, data from the Australian Bureau of Agricultural and Resource Economics (ABARE) indicate that there were just over one million hectares of plantation forest, comprising broadleaved and coniferous forests.

Stumpage fees are being used as a proxy for economic rent. However, the stumpage fees may include non-rent components, such as

service costs for road maintenance, and the stumpage fee itself is subject to variation according to such factors as straightness, location and log size.

Any income received from thinnings was also ignored, which results in an underestimate of net income.

Finally, the values for forests presented in the balance sheets have been calculated for their timber values only, but it should be noted that forests have other non-economic values, many

of which are in conflict with their usual economic activity (namely logging). Placing a non-timber value on forests is very difficult and highly contentious. Even though there are clear economic benefits from the existence of forests there is no satisfactory method of assigning dollar values to these benefits.

## Data

The table shows the balance sheet estimates of natural resources in their most aggregated form.

### \$5.1 BALANCE SHEET ESTIMATES FOR AUSTRALIA

	30 June 1989 \$b	30 June 1990 \$b	30 June 1991 \$b	30 June 1992 \$b
Land	541.7	533.1	544.8	508.7
Native forests	8.3	8.7	8.8	8.8
Plantation forests	4.8	5.4	6.2	6.4
Subsoil assets	109.1	115.6	135.5	145.2
Total non-financial assets(a)	1 731.0	1 810.7	1 876.2	1 869.5
less liabilities to non-residents (net)	150.5	168.7	189.2	200.1
<b>Net worth</b>	<b>1 580.5</b>	<b>1 642.0</b>	<b>1 687.0</b>	<b>1 669.4</b>

(a) Total assets includes produced assets (fixed assets, inventories) not shown separately in the table.

Source: Occasional Paper: National Balance Sheets for Australia, Issues and Experimental Estimates 1989 to 1992 (5241.0).

At 30 June 1992, the total value of land in Australia was estimated to be \$509b, which represents a fall of almost 7% on the previous year's estimate. In value terms subsoil assets are the next largest, and are estimated to have grown during each year of the period 30 June 1989 to 30 June 1992. Although native forests represent many times the area of plantation forests, they are estimated as having (in absolute terms) little difference in value. The value of native forests has been stable during the period in nominal terms, while that of plantation forests has grown steadily.

Both total non-financial assets and net worth peaked at 30 June 1991, with the fall in the land estimates over the next twelve months causing the consequent drop in both series. 'Natural resources' (defined to include only those presented in the table) account for just under 40% of total non-financial assets throughout the

period, with produced assets representing just over 60%. Liabilities to non-residents make a negative contribution (reducing total assets) and account for approximately 10% of net worth throughout the period.

## Conclusion

This article has briefly outlined the approach taken by the ABS when constructing the national balance sheet, and identified some of the issues related to the valuation of subsoil assets, land and forests. The results should be interpreted with care as there are still many conceptual and data issues to be resolved. Readers are invited to contact: Director, National Accounts Research Section, ABS, PO Box 10, Belconnen, ACT 2616 with any comments or queries.

## Endnotes

1. The SNA is being widely adopted by government statistical agencies throughout the world, including the ABS, as the conceptual basis for compiling their national accounts.

2. For an asset to be included in the national balance sheets, SNA93 states that it must fulfill certain criteria.

'The assets recorded in the balance sheets of the System are economic assets. These are defined as entities:

- over which ownership rights are enforced by institutional (economic) units, individually or collectively;
- from which economic benefits may be derived by their owners by holding them, or using them, over a period of time.' (SNA 93 para. 10.2)

The economic benefits consist of income derived from the use of the asset and the value, including possible holding gains/losses, that could be realised by disposing of the asset or, in the case of a financial asset, by extinguishing it.

3. The BRS has adapted the McKelvey Box to cross-classify Australian subsoil assets by the degree of economic feasibility and geological assurance of the deposit.

4. Economic rent is the return to the owner of the resource for use of that resource, but excludes the costs necessary to replace it. Originally applied to land, it is now generally applied as the return to the owners of any natural resource.

5. Coleman, M.R. 'Report on Land Valuation Data', in *Commonwealth Grants Commission Report on the General Revenue Grant Relativities 1993*, Volume 3, Appendixes, July 1993.

6. Resource Assessment Commission, *Forest and Timber Inquiry Final Report*, Volumes 1, 2A and 2B, March 1992, RAC, Canberra.

