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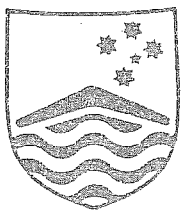

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Introduction

With this paper, Australia now has continuous estimates of gross domestic product (for white activity) from the beginnings of white settlement to the present, 1984. We know of no other country for which such a complete statistical documentation exists. There are, of course, breaks and inconsistencies in the series though it remains that, for the long period 1788-1939, the same concepts and methods have so far as possible been adopted.

The attached statistics were produced in preparation for the Bicentennial volume of Australian historical statistics. The present publication has been made to give the estimates some exposure before they are committed to this more public volume. In what follows, we have presented the sets of estimates at the beginning, followed by summary notes on methods and sources. These notes can be and are made very condensed because the procedures follow those of N.G. Butlin, Australian Domestic Product, Investment and Foreign Borrowing 1861-1938/39. It is assumed that any interested reader will take the text of that book into account in interpreting the explanatory notes here.

Estimates of social accounts, with industrial subdivisions, must be recognised as having, in almost any circumstances, a significant margin of error. In the present case, the probable error is considerably enlarged for a variety of reasons (particularly in services and rents). The normal Census foundations are lacking to 1828; there are breaks and omissions in important series; some components of the estimates are explicitly guesses where no meaningful data exist; for the years 1788-1795, the figures given are notional only. These strictly numerical problems are not as dismaying as may appear. From a very early stage, the colonial authorities were preoccupied with 'the need to know'. Indeed after 1796 and perhaps for the next 30 years, the information is, relatively speaking, remarkably extensive. The biggest numerical difficulties arise during about 1825-40 as authorities partly lost control of the expanding settlements.

There is, however, a more intransigent conceptual problem. This is the fact that the original convict settlement implied a limitation on open market activity and hence on the presence of price measures as the outcome of free choice. In due course, perhaps, others may try to make different approaches to the handling of this problem from those adopted here. We have been preoccupied with putting together one complete set of estimates rather than pursuing measures on a variety of conceptual hypotheses. Hence our approach has been to use such administered or 'free' market prices or values as exist for valuation purposes. Fortunately, the problem of the provision of (nominally) fixed rations for convicts is limited (after 1796) by the relatively modest direct employment of convicts by government and the presence (subject to reservations about their accuracy) of a great deal of information about the output of primary activities. This, however, is not a complete answer to the underlying problem since, until the 1820s, the Commissariat bought in a large fraction of this output at fixed prices. An alternative approach to the present one would be to impute primary product prices from British export prices. But this, too, has obvious objections.

The statistical and conceptual problems indicate that the attached estimates cannot be regarded as having a very high order of accuracy. Plainly, one cannot use them for short-term purposes. But trend levels and components must also be regarded as subject to significant question. Having said this, we nevertheless believe that the set of statistics as a whole may be helpful in bringing into view an integrated picture of the various colonial economies which, if not perfectly focussed, nevertheless is more readily grasped in this statistical and systematic form. It is with this intent that the attached estimates are offered.

The estimates for South Australia are by W.A. Sinclair, the remainder by N.G. Butlin. Some of the broad implications of the estimates are discussed in N.G. Butlin's 'Contours of the Australian Economy 1788-1860' in Working Papers in Economic History, No.21, 1984.

Australian GDP 1788-1860

	Non-Pastoral Primary	Pastoral	Services: Manuf. and Constr.	Services: Personal: Distrib.	Services: Personal: Rents	Public Service and Constr.	Mining	Total
1788	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20.0
1789	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.0
1790	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20.0
1791	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.0
1792	0.0	0.0	0.0	0.0	0.0	0.0	0.0	40.0
1793	0.0	0.0	0.0	0.0	0.0	0.0	0.0	50.0
1794	0.0	0.0	0.0	0.0	0.0	0.0	0.0	70.0
1795	27.4	0.4	0.8	4.6	20.0	2.3	31.0	0.0	86.5
1796	30.6	0.8	0.8	7.4	22.0	2.3	33.0	0.0	96.9
1797	35.7	1.6	0.0	11.0	23.0	2.3	34.0	0.0	107.6
1798	27.4	4.0	9.6	13.8	25.0	2.3	38.0	0.0	120.1
1799	41.5	4.8	8.8	16.6	27.0	2.3	38.0	0.0	139.0
1800	47.0	7.4	4.0	23.0	30.0	2.3	38.0	0.0	151.7
1801	71.1	11.2	4.8	23.5	29.0	2.8	38.0	0.0	180.4
1802	68.7	15.2	1.6	22.5	28.0	2.8	40.0	0.0	178.8
1803	67.9	13.7	12.8	23.0	30.0	3.2	41.0	0.0	191.6
1804	92.9	18.2	4.8	23.7	30.0	3.4	38.0	0.0	221.0
1805	94.3	26.7	4.0	23.9	33.0	5.1	36.0	0.0	238.0
1806	100.6	35.4	0.8	24.1	34.0	7.3	39.0	0.0	261.2
1807	90.5	45.6	7.2	24.4	35.0	10.1	40.0	0.0	277.8
1808	68.1	55.4	5.6	22.5	35.0	13.5	44.0	0.0	274.1
1809	78.3	61.8	6.4	23.5	36.0	14.6	41.0	0.0	296.6
1810	188.9	68.6	19.2	30.8	39.0	21.4	50.0	0.0	417.9
1811	151.3	75.4	8.0	36.0	40.4	27.0	53.0	0.0	391.0
1812	148.5	75.4	9.6	34.0	42.2	32.1	59.5	0.0	401.3
1813	143.2	86.7	6.4	36.3	43.8	38.7	63.0	0.0	418.0
1814	135.6	90.1	16.0	36.5	44.8	46.4	66.5	0.0	435.9
1815	188.6	108.4	21.6	42.2	46.4	55.4	68.5	0.0	531.1
1816	140.3	97.5	28.4	45.2	46.4	61.2	76.5	0.0	495.5
1817	172.1	99.9	19.6	50.3	53.6	75.8	83.0	0.0	554.3
1818	199.2	124.2	34.4	52.8	57.0	77.9	89.5	0.0	634.9
1819	233.9	140.4	19.2	59.1	64.0	85.2	95.5	0.0	697.2
1820	245.5	161.0	21.6	61.7	68.6	96.0	99.0	0.0	753.3
1821	384.6	144.8	40.0	63.8	97.8	106.9	106.0	0.0	943.8
1822	425.6	153.8	50.4	81.0	127.6	115.9	106.0	0.0	1060.2
1823	409.9	169.6	52.8	92.0	149.0	123.8	117.0	0.0	1114.0
1824	442.0	181.5	58.4	107.6	183.8	137.3	132.0	0.0	1242.6
1825	470.4	192.0	67.2	116.8	217.0	147.4	135.0	0.0	1345.8
1826	490.4	197.3	71.2	124.2	232.2	156.4	140.0	0.0	1411.6
1827	553.6	147.0	75.2	138.9	291.2	164.3	161.0	0.0	1541.2
1828	584.4	220.6	74.4	162.8	352.8	169.9	140.0	0.0	1713.8
1829	547.1	288.8	100.8	202.4	387.4	199.2	162.0	0.0	1895.6
1830	603.2	325.5	149.6	259.4	424.8	227.2	172.0	0.0	2166.7
1831	604.1	343.5	146.0	262.2	462.8	253.1	172.0	0.0	2255.7
1832	580.8	370.5	177.2	254.8	528.0	292.5	177.0	0.0	2398.8
1833	711.8	462.0	223.2	296.2	595.4	318.4	192.0	0.0	2819.1
1834	1101.2	819.0	251.2	367.1	670.8	371.3	218.0	0.0	3820.6
1835	2161.8	1119.8	310.4	395.6	741.8	462.4	246.4	0.0	5466.1
1836	1595.0	1286.3	272.0	480.2	774.2	559.1	283.0	0.0	5284.9
1837	1349.8	1344.8	336.0	595.7	836.3	788.4	316.0	0.0	5607.0
1838	1105.7	1125.3	468.7	696.2	888.1	904.1	361.5	0.0	5591.6
1839	2011.9	955.1	616.0	834.0	1006.2	1085.2	436.9	0.0	6989.3
1840	2465.1	1261.0	1051.2	876.6	1153.9	1233.3	510.1	0.0	8597.2
1841	1690.1	1313.0	573.0	812.9	1045.1	1134.0	431.8	0.0	7044.9
1842	1115.0	1291.3	524.4	750.3	1022.1	1105.7	407.7	0.0	6259.5
1843	1026.1	1126.9	381.9	777.9	996.2	1188.2	373.8	0.1	5936.1
1844	859.9	1242.2	422.5	876.7	997.1	1337.8	379.3	5.8	6213.3
1845	1159.3	1369.2	469.5	1016.2	1071.6	1552.2	379.9	17.1	7165.0
1846	1713.7	1162.6	587.8	1158.0	1231.5	1617.1	350.1	128.9	8084.7
1847	1437.7	1379.3	744.6	1263.8	1400.2	1683.0	386.7	156.6	8596.9
1848	2412.5	1494.9	1004.6	1445.2	1466.5	1833.6	405.0	288.5	10510.8
1849	1751.3	1562.1	1007.7	1562.5	1530.1	1904.8	412.8	197.8	10099.1
1850	2271.1	1774.9	1192.7	1778.1	1640.4	2098.3	438.8	329.0	11703.2
1851	2322.4	2062.2	1470.9	1979.0	2892.4	2109.4	517.1	689.8	14303.2
1852	2349.3	2343.9	2265.7	3429.9	4507.6	3113.7	827.6	10998.2	30215.9
1853	3013.4	3925.9	3800.3	6281.2	5407.8	6759.5	2022.7	12273.6	43964.3
1854	3892.9	4819.4	5239.7	7130.9	6787.2	10328.3	3046.9	9683.7	51359.1
1855	6786.9	4238.1	4029.0	6612.0	7798.0	6743.9	3052.0	11028.2	50938.0
1856	6979.9	4732.9	4254.9	7242.8	7637.7	5119.7	3198.5	12062.2	51828.6
1857	6478.4	5009.1	6656.5	7849.2	7497.0	5315.9	3482.1	11913.8	54831.9
1858	7493.9	5520.0	7022.8	7720.0	7701.5	5851.8	3423.6	11012.6	56426.1
1859	8131.3	6218.6	7034.5	8456.2	7902.6	6995.1	4639.8	10974.8	61052.9
1860	8585.0	6504.5	8113.1	8714.6	7968.9	7336.0	5025.2	10608.4	63605.7

N.B. Components from 1827 do not sum to total because WA is not disaggregated but included in total. A similar problem arises with Tasmania during 1805-09.

NSW GDP 1788-1860

	Non-Pastoral Primary	Pastoral	Manuf. and Constr.	Services: Personal: Distrib.	Services: Personal:	Services: Personal: Rents	Public Service and Constr.	Mining	Total
1788	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20.0
1789	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.0
1790	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20.0
1791	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.0
1792	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	40.0
1793	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	50.0
1794	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	70.0
1795	27.4	0.4	0.8	4.6	20.0	2.3	31.0	0.0	86.5
1796	30.6	0.8	0.8	7.4	22.0	2.3	33.0	0.0	96.9
1797	35.7	1.6	0.0	11.0	23.0	2.3	34.0	0.0	107.6
1798	27.4	4.0	9.6	13.8	25.0	2.3	38.0	0.0	120.1
1799	41.5	4.8	8.8	16.6	27.0	2.3	38.0	0.0	139.0
1800	47.0	7.4	4.0	23.0	30.0	2.3	38.0	0.0	151.7
1801	71.1	11.2	4.8	23.5	29.0	2.8	38.0	0.0	180.4
1802	68.7	15.2	1.6	22.5	28.0	2.8	40.0	0.0	178.8
1803	67.9	13.7	12.8	23.0	30.0	3.2	41.0	0.0	191.6
1804	92.9	18.2	4.8	23.7	30.0	3.4	38.0	0.0	211.0
1805	94.3	26.7	4.0	23.9	33.0	5.1	36.0	0.0	223.0
1806	100.6	35.4	0.8	24.1	34.0	7.3	39.0	0.0	241.2
1807	90.5	45.6	7.2	24.4	35.0	10.1	40.0	0.0	252.8
1808	68.1	55.4	5.6	22.5	35.0	13.5	44.0	0.0	244.1
1809	78.3	61.8	6.4	23.5	36.0	14.6	41.0	0.0	261.6
1810	183.1	61.1	17.6	26.7	36.0	16.9	40.0	0.0	381.4
1811	143.8	65.6	6.4	31.7	37.0	20.8	43.0	0.0	348.3
1812	140.2	64.9	8.0	29.4	38.0	24.8	47.5	0.0	352.8
1813	132.8	75.4	4.8	31.3	39.0	30.4	51.0	0.0	364.7
1814	120.5	78.1	10.4	31.3	39.0	37.1	53.5	0.0	369.9
1815	169.9	95.6	16.0	36.8	40.0	45.0	55.5	0.0	458.8
1816	118.7	93.6	22.4	39.6	42.0	49.5	60.5	0.0	426.3
1817	144.3	76.6	13.6	41.4	43.0	55.1	67.0	0.0	441.0
1818	164.8	98.9	28.0	42.9	45.0	58.5	73.5	0.0	511.6
1819	183.3	109.6	8.0	44.2	46.0	61.9	78.5	0.0	531.5
1820	193.4	121.2	8.8	46.5	48.0	67.5	81.0	0.0	566.4
1821	299.0	99.0	22.4	47.8	70.0	73.1	87.0	0.0	698.3
1822	312.8	105.0	32.0	59.8	96.0	76.5	85.0	0.0	767.1
1823	327.8	116.3	41.6	64.4	120.0	79.9	95.0	0.0	845.0
1824	350.8	120.0	46.4	73.6	144.0	83.3	110.0	0.0	928.1
1825	366.8	126.0	51.2	78.2	170.0	85.5	112.0	0.0	989.7
1826	374.9	129.0	55.2	82.8	180.0	88.9	116.0	0.0	1026.8
1827	388.7	72.0	56.0	92.0	220.0	92.3	137.0	0.0	1058.0

	Non-Pastoral Primary	Pastoral	Manuf. and Constr.	Services: Personal: Distrib.	Services: Personal:	Services: Personal: Rents	Public Service and Constr.	Mining	Total
1828	403.7	128.3	57.6	110.4	260.0	95.6	113.0	0.0	1168.6
1829	391.0	192.0	68.0	147.2	290.0	115.9	134.0	0.0	1338.1
1830	379.5	225.0	96.0	193.2	330.0	136.1	140.0	0.0	1499.8
1831	379.5	228.0	116.0	188.6	360.0	144.0	140.0	0.0	1556.1
1832	347.3	222.0	136.0	174.8	396.0	157.5	139.0	0.0	1572.6
1833	457.7	312.0	156.0	202.4	480.0	168.8	150.0	0.0	1926.9
1834	846.4	642.0	176.0	262.2	520.0	202.5	170.0	0.0	2819.1
1835	1780.2	900.0	196.0	285.2	550.0	281.3	195.0	0.0	4187.7
1836	1253.5	1032.0	216.0	358.8	600.0	360.0	220.0	0.0	4040.3
1837	857.9	996.0	236.0	441.6	610.0	562.5	248.0	0.0	3952.0
1838	572.7	819.8	260.0	506.0	630.0	652.5	269.0	0.0	3710.0
1839	1237.4	664.5	300.0	561.2	650.0	731.3	266.0	0.0	4410.4
1840	1421.4	849.0	296.0	588.8	630.0	776.3	265.0	0.0	4826.5
1841	864.8	867.0	280.0	561.2	620.0	787.5	265.0	0.0	4245.5
1842	634.8	885.0	256.0	552.0	660.0	810.0	266.0	0.0	4063.8
1843	632.5	810.8	256.0	598.0	730.0	900.0	268.0	0.0	4195.3
1844	462.3	967.5	304.0	671.6	810.0	1035.0	275.0	0.0	4525.4
1845	678.5	1050.0	344.0	754.4	860.0	1215.0	275.0	0.0	5176.9
1846	874.0	750.0	400.0	805.0	980.0	1260.0	260.0	0.0	5329.0
1847	655.5	937.5	496.0	901.6	1060.0	1316.3	270.0	0.0	5636.9
1848	1481.2	1050.0	560.0	1039.6	1140.0	1406.3	275.0	0.0	6952.1
1849	940.7	1050.0	648.0	1150.0	1200.0	1462.5	280.0	0.0	6731.2
1850	1134.2	540.0	510.0	875.2	950.0	1175.0	202.0	0.0	5386.4
1851	717.4	829.3	580.0	860.0	1870.0	1065.0	153.0	0.0	6074.7
1852	979.8	801.8	809.6	1284.3	1796.0	1293.8	215.0	2236.5	9416.8
1853	983.3	1500.0	833.6	1840.0	1932.0	2542.5	318.0	1539.2	11488.6
1854	1092.5	1643.3	1982.4	2015.7	2632.0	3375.0	430.0	738.8	13909.7
1855	2501.3	1508.3	1268.0	1850.1	2710.0	2475.0	724.0	246.6	13283.3
1856	2087.2	1709.3	1248.0	2096.7	2534.0	2334.4	830.0	211.6	13051.2
1857	1447.9	1994.3	2612.0	2446.3	2496.0	2328.8	668.0	937.5	14930.8
1858	2429.0	2077.5	2630.8	2548.4	2764.0	2205.0	771.0	957.7	16383.4
1859	2226.2	2586.8	2457.8	3174.0	2664.0	2340.0	890.0	1833.6	18172.4
1860	1954.2	2722.5	3568.0	3339.6	2764.0	2475.0	1309.0	1914.5	20046.8

Victoria GDP 1850-1860

	Non-Pastoral Primary	Pastoral	Manuf. and Constr.	Services: Personal Distrib.	Services: Personal	Services: Personal Rents	Public Service and Constr.	Mining	Total
1850	301.0	660.0	250.0	330.0	310.0	400.0	75.0	0.0	2326.0
1851	578.0	703.0	380.0	520.0	490.0	510.0	140.0	410.0	3731.0
1852	280.6	1002.8	945.6	1772.8	2130.0	1216.1	411.0	8424.4	16183.3
1853	338.1	1661.3	2234.4	3716.8	2740.0	3400.9	1414.0	10575.4	26080.9
1854	783.2	2301.8	1812.0	3827.2	3132.0	5700.4	2125.0	8859.6	28541.2
1855	1429.4	1801.5	1447.2	3358.0	3854.0	2844.0	1707.0	10641.6	27082.7
1856	2149.8	2115.0	1915.2	3937.6	4176.0	1706.6	1660.0	11483.4	29143.6
1857	2784.5	2064.8	3172.8	4351.6	4068.0	1937.3	2036.0	10563.4	30978.4
1858	2901.6	2406.0	3342.0	4066.4	3970.0	2532.4	1946.0	9718.9	30883.3
1859	3722.5	2629.5	3302.0	4195.2	3952.0	3188.3	2911.0	8771.3	32671.8
1860	4128.3	2838.0	3482.8	4186.0	3992.0	3601.1	3004.0	8292.0	33524.2

Tasmania GDP 1804-1860

	Non-Pastoral Primary	Pastoral	Manuf. and Constr.	Services: Personal Distrib.	Services: Personal Rents	Public Service and Constr.	Mining	Total
1804	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.0
1805	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.0
1806	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20.0
1807	0.0	0.0	0.0	0.0	0.0	0.0	0.0	25.0
1808	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.0
1809	0.0	0.0	0.0	0.0	0.0	0.0	0.0	35.0
1810	5.8	7.5	1.6	4.1	3.0	4.5	10.0	0.0	36.5
1811	7.5	9.8	1.6	4.3	3.4	6.2	10.0	0.0	42.7
1812	8.3	10.5	1.6	4.6	4.2	7.3	12.0	0.0	48.5
1813	10.4	11.3	1.6	5.0	4.8	8.3	12.0	0.0	53.3
1814	15.1	12.0	5.6	5.2	5.8	9.3	13.0	0.0	66.0
1815	18.7	12.8	5.6	5.4	6.4	10.4	13.0	0.0	72.3
1816	21.6	3.9	6.0	5.6	4.4	11.7	16.0	0.0	69.2
1817	27.8	23.3	6.0	8.9	10.6	20.7	16.0	0.0	113.3
1818	34.4	25.3	6.4	9.9	12.0	19.4	16.0	0.0	123.3
1819	50.6	30.8	11.2	14.9	18.0	23.3	17.0	0.0	165.7
1820	52.1	39.8	12.8	15.2	20.6	28.5	18.0	0.0	186.9
1821	85.6	45.8	17.6	16.0	27.8	33.8	19.0	0.0	245.5
1822	112.8	48.8	18.4	21.2	31.6	39.4	21.0	0.0	293.1
1823	82.1	53.3	11.2	27.6	29.0	43.9	22.0	0.0	269.0
1824	91.2	61.5	12.0	34.0	39.8	54.0	22.0	0.0	314.5
1825	103.6	66.0	16.0	38.6	47.0	61.9	23.0	0.0	356.1
1826	115.9	68.3	16.0	41.4	52.2	67.5	24.0	0.0	384.8
1827	164.9	75.0	19.2	46.9	71.2	72.0	24.0	0.0	473.2
1828	180.7	92.3	16.8	52.4	92.8	74.3	27.0	0.0	536.2
1829	156.1	96.8	32.8	55.2	97.4	83.3	28.0	0.0	549.5
1830	223.7	100.5	53.6	66.2	94.8	91.1	32.0	0.0	661.9
1831	224.6	115.5	30.0	73.6	102.8	109.1	32.0	0.0	687.6
1832	233.5	148.5	41.2	80.0	132.0	135.0	38.0	0.0	808.2
1833	254.1	150.0	67.2	93.8	115.4	149.6	42.0	0.0	872.2
1834	254.8	177.0	75.2	104.9	150.8	168.8	48.0	0.0	979.5
1835	381.6	219.8	114.4	110.4	191.8	181.1	51.4	0.0	1250.4
1836	341.5	254.3	56.0	121.4	174.2	199.1	63.0	0.0	1209.6
1837	472.0	348.8	47.2	121.4	212.2	212.6	64.0	0.0	1478.2
1838	491.7	295.5	129.6	127.9	230.0	225.0	80.0	0.0	1579.7
1839	664.7	258.8	60.8	121.4	264.2	247.5	77.0	0.0	1694.4
1840	796.9	346.5	132.8	127.0	344.6	236.3	78.0	0.0	2062.1
1841	665.4	363.0	92.0	128.8	348.4	230.6	79.0	0.0	1907.2
1842	333.7	334.5	149.6	124.2	317.6	225.0	75.0	0.0	1559.6
1843	291.2	252.0	62.4	124.2	218.4	243.0	80.0	0.0	1271.2
1844	287.7	215.3	52.0	142.6	157.6	253.1	95.0	0.0	1203.3
1845	351.8	234.0	50.4	174.8	180.6	253.1	84.0	0.0	1328.7
1846	594.0	288.0	49.6	180.3	219.0	262.1	75.0	0.0	1668.0
1847	551.4	309.0	48.8	182.2	255.0	264.4	85.0	0.0	1695.8
1848	578.9	268.5	96.8	183.1	210.6	264.4	80.0	0.0	1682.3
1849	500.4	286.5	50.4	184.0	212.2	275.6	90.0	0.0	1599.1
1850	511.8	288.8	48.0	184.0	229.8	309.4	80.0	0.0	1651.7
1851	519.8	279.0	60.0	225.4	242.0	316.1	110.0	0.0	1752.3
1852	558.9	291.8	70.4	266.8	256.0	310.5	133.0	0.0	1887.4
1853	1037.3	348.8	76.8	569.5	290.0	309.4	166.0	0.0	2797.7
1854	1082.1	327.0	148.0	634.8	316.0	307.1	191.0	0.0	3006.1
1855	916.6	362.3	150.4	447.1	376.0	309.4	229.0	0.0	2790.7
1856	837.2	314.3	154.4	406.6	340.0	313.9	247.0	0.0	2613.4
1857	845.3	366.0	88.0	391.9	340.0	318.4	227.0	0.0	2576.5
1858	664.7	365.3	104.0	376.3	336.0	321.8	219.0	0.0	2387.0
1859	773.9	422.3	128.0	378.1	328.0	324.0	200.0	0.0	2554.3
1860	746.3	345.0	152.0	343.2	370.0	326.3	206.0	0.0	2488.8

South Australia GDP 1837-1860

	Non-Pastoral Primary	Pastoral	Manuf. and Constr.	Services: Personal: Distrib.	Services: Personal:	Services: Personal: Rents	Public Service and Constr.	Mining	Total
1837	19.9	0.0	52.8	32.7	14.1	13.3	4.0	0.0	136.8
1838	41.3	10.0	79.1	62.3	28.1	26.6	12.5	0.0	259.9
1839	109.8	31.8	255.2	151.4	92.0	106.4	93.9	0.0	840.5
1840	246.8	65.5	622.4	160.8	179.3	220.7	167.1	0.0	1662.6
1841	159.9	83.0	201.0	122.9	76.7	115.9	87.8	0.0	847.2
1842	146.5	71.8	118.8	74.1	44.5	70.7	66.7	0.0	593.1
1843	102.4	64.1	63.5	55.7	47.8	45.2	25.8	0.1	404.6
1844	109.9	59.4	66.5	62.5	29.5	49.7	9.3	5.8	392.6
1845	129.0	85.2	75.1	87.0	31.0	84.1	20.9	17.1	529.4
1846	245.7	124.6	138.2	172.7	32.5	95.0	15.1	128.9	952.7
1847	230.8	132.8	199.8	180.0	85.2	102.3	31.7	156.6	1119.2
1848	352.4	176.4	347.8	222.5	115.9	162.9	50.0	288.5	1716.4
1849	310.2	225.6	309.3	228.5	117.9	166.7	42.8	197.8	1598.8
1850	324.1	286.1	384.7	388.9	150.6	213.9	81.8	329.0	2159.1
1851	507.2	250.9	450.9	373.6	290.4	218.3	114.1	279.8	2485.2
1852	530.0	247.5	440.1	106.0	325.6	293.3	68.6	337.3	2348.4
1853	654.7	415.8	655.5	154.9	445.8	506.7	124.7	159.0	3117.1
1854	935.1	547.3	1297.3	653.2	707.2	945.8	300.9	85.3	5472.1
1855	1939.6	566.0	1163.4	956.8	858.0	1115.5	392.0	140.0	7131.3
1856	1905.7	594.3	937.3	801.9	587.7	764.8	461.5	367.2	6420.4
1857	1400.7	584.0	783.7	659.4	593.0	731.4	551.1	412.9	5716.2
1858	1498.6	671.2	946.0	728.9	631.5	792.6	487.6	336.0	6092.4
1859	1408.7	580.0	1146.7	708.9	958.6	1142.8	638.8	369.9	6954.4
1860	1756.2	599.0	910.3	845.8	842.9	933.6	506.2	401.9	6795.9

Western Australia GDP 1827-1860

	Total		Total
1827	10.0	1847	145.0
1828	9.0	1848	160.0
1829	8.0	1849	170.0
1830	5.0	1850	180.0
1831	12.0	1851	260.0
1832	18.0	1852	380.0
1833	20.0	1853	480.0
1834	22.0	1854	630.0
1835	28.0	1855	650.0
1836	35.0	1856	600.0
1837	40.0	1857	630.0
1838	42.0	1858	680.0
1839	44.0	1859	700.0
1840	46.0	1860	750.0
1841	45.0		
1842	43.0		
1843	65.0		
1844	92.0		
1845	130.0		
1846	135.0		

Australian Gross Domestic Product 1788-1860

Notes

(1) The estimation procedure basically follows that of ADP omitting the imputed value of livestock increase

(2) The aggregate includes all settlements and colonies

(3) In the separate component columns, Western Australia is omitted, appearing only as part of the aggregate column

(4) For methods of estimation and sources of each component, see individual colony tabulations

(5) Coverage of component columns:

Col A: Includes all farming other than pastoral together with forestry, fisheries, quarrying and coal mining netted for intermediate purchases other than transport which is treated as farmer operated

Col B: Includes wool exports and carcase products of sheep, cattle and pigs; omits wildlife capture and imputed value of livestock increase. Gross output netted for selling commissions and ocean transport but not internal transport

Col C: Includes manufacturing other than those so-described as predominantly selling outlets (retail and wholesale), ship building and private construction, netted for intermediate purchases other than land transport. Private construction is derived from estimating private capital formation converted from an expenditure to a product concept and including farm formation which was inextricably mixed with much materials production

Col D: Commercial services estimated as in ADP treating output flows for final consumption plus all imports as price inputs into commercial operations. Export disposal is assumed to attract foreign commercial services off-shore. A changing mark-up is used according to colony and time, with the purchase of government transactions influencing the level of mark-up

Col E: Personal and Other Services omits all transport services not netted from other columns and excludes all government services. The primary component is domestic service but others - professional, financial, lodging etc - are substantial for most years after 1800

Col F: Imputed House Rents are as in ADP subject to the non-deduction for rates for most of the period

Col G: Public Services and Construction include the wages and salaries and allowances of those persons to whom a formal wage or salary was accorded. This includes some unfree persons (e.g. paid ticket-of-leave guards) but does not include the mass of convicts. Most convicts were assigned to private service. Where convicts were employed by government in primary industry, mining etc, their product is incorporated in those columns. For the rest, convict product is estimated in public capital formation as stated by public accounts and the expenditure concept converted to a product concept

Col H: Mining includes only gold mining and other South Australian mining. Gold is estimated from exports not escort values and netted for escort charges, merchants' and other commissions supplemented by estimated amounts carried away by individuals.

General Note: The problem of measuring convict labour inputs will attract attention. From certain points of view, this matter is limited insofar as one can measure product by market value or product volume and price. This applies to farming and manufacturing after 1805. The difficulty arises most acutely with GDP components measured through expenditures - e.g. public and private capital formation. It cannot be thought that the matter can be dealt with adequately prior to about 1805 after which time sufficient private market indicators provide increasingly meaningful alternatives to valuation of convict labour in construction and services. By then, measures of e.g. farm formation, house building are available (per farm area, per dwelling) in terms of private purchase of freed labour. No such option is available for public construction which does rely on convict rations and other benefits to convicts. There seems little attention to this procedure. It should be appreciated, however, that as early as 1805, the great majority of convicts were and, Macquarie notwithstanding, remained assigned. Progressively, as the proportion of the convict workforce assigned increased and as government came, from the mid-twenties, to bring in construction

services from the private sector, the problem becomes progressively less significant.

New South Wales Gross Domestic Product

Notes

(1) For meaning of subdivisions see Table on Australian Gross Domestic Product

(2) For general procedures of estimations, see ADP

(3) Figures for 1788-1794 inclusive are notional only

(4) None of the series can be regarded as having a high order of accuracy; the probable error is very high until 1825; thereafter it improves to 1850 and degenerates during 1851-55

(5) All columns include Port Phillip (Victoria) up to and including 1851 and Moreton Bay (Queensland) up to and including 1860

Sources and Methods

Col A: Output and prices of major farm products to 1821: From B.R. Fletcher; where prices are not available for minor crops the average return per acre is calculated for priced crops and other farm produce assumed to yield the same average return per acre. To 1805 it is assumed that Commissariat prices are to be used; thereafter to 1821, private market and Commissariat prices are weighted on the assumption that the Commissariat purchased 60 per cent of total supplies (S.J. Butlin, Foundations) and delivered them at a 15 per cent mark-up on purchase prices. Netting to a 'farm-gate' price equivalent is done on the assumption of deducting distribution costs other than transport. Throughout, a standard 10 per cent of grain production is taken as withheld for seed. All in-take of produce from Government farms is valued at Commissariat proces.

The problem of rations and wages to assigned convict servants is avoided by this mode of estimation; implicitly masters are assumed to transfer rations at mean market prices and the combined servants' wages and allowances plus surpluses make up gross product. Value of fisheries output are as given in HRA (series). Forestry and quarry output is estimated at one-third public and private building activity throughout (see construction Cols C and G).

Output and prices 1822-60 are successively from NSW Returns of the Colony (ms) 1822-49, Statistics of NSW 1850-57 and Statistical Register of NSW 1858-60. Prices are taken to be private market prices reduced to 'wholesale' price

equivalent - largely equal to farm-gate prices. A 10 per cent deduction for seed grains in maintained.

Col B: Wool exports are from Returns of the Colony (ms), Statistics of NSW and Statistical Register of NSW from 1822 to 1860. Prior to 1822 wool exports are taken from W.C. Wentworth Statistical Account. Hence up to 1812 there is some undercount for wool which appears, nevertheless, to have been little valued locally.

Carcase products depend on numbers of livestock. Fletcher op cit gives numbers of cattle sheep and pigs to 1821. Therafter there are Census figures for cattle and sheep in 1828 and again some information in 1838. Continuous series do not resume till 1843 and then come from Statistics of NSW and Statistical Register to 1860.

The numbers for 1828 and 1838 are clearly too low. It is also reasonably certain that Fletcher's figures are biassed downward from 1813 when trans-montane settlement made statistical collection difficult. The numbers for 1828 are reconstructed from the Census by assuming that for those not reporting livestock the average number of livestock per acre was the same as for those reporting herds. This is checked by taking the livestock in 1812 and assuming typical calving and lambing rates and culling to project forward to 1828. A further partial check is made by use of the export figures from 1822-28 as a means of interpolating from an estimated 1821 figure to 1828. The adopted estimate for 1828 is a single average of the three estimated numbers for both sheep and cattle.

Similar procedures were adopted for the steps 1828 to 1838 to 1843. During 1840-43, there is the special problem of boiling down livestock. The variant in this case was to alter the reproduction-culling estimate by doubling the 'normal' culling rate as a rough approximation. Subject to this, the same averaging procedures were adopted except that an additional estimate was added by projecting back from 1843-50 to return to 1838.

These give the re-estimated livestock numbers 1813-42. The standard meat rations (male, female, child average) (HRA, Returns of the Colony) were adopted to estimate meat consumption, converted to a live animal basis. The resulting live animals consumed fall below the limits of expected culling rates after 1825. Prices of store cattle and sheep were taken from Sydney Gazette, SMH, HRA and the resulting estimate of value of animals consumed treated as farm-gate values. No

deduction was made for droving, treated as intra-industry product. The actual production of carcase products is treated as part of manufacturing.

Col C: Manufacturing, ships and private construction provide a series with a relatively low order of accuracy. So far as manufacturing is concerned, the primary statistics are in the form of numbers of 'manufacturies' from 1843-60. However, some guide to the value of output is given in the form of selected types of industry (including tallow, glue, textiles, spirits, salt, tobacco, soap and sugar) for which either value or volume of output with unit prices is available. These account for approximately one-quarter to one-third of the total number of reported 'factories'. The average value of output per factory as estimated for these businesses, smoothed with a three-year average, is assumed to be the average factory output for all enterprises. Output is reduced to product on the assumption that the proportion of intermediate products in the eighteen-sixties can be extrapolated to 1840-60. This provides a very rough approximation for these 20 years.

For the estimates before 1840, the 'guesstimates' are even more tenuous. Censuses throughout 1840-61 give the number of 'mechanics'. Available wage rates (SMH) with these numbers give an approximate aggregate wages bill. It is assumed that the ratio for 1840-51 (not during the 'fifties) of wages to gross product can be used unchanged before 1840. This is obviously very precarious before 1820. From wage rates (Gazette, SMH, HRA, and Immigration Reports) and numbers of mechanics in Censuses and Musters 1806-41 rough estimates for nine separate years can be derived directly for a 'wages bill'. In this case, some reliance must be placed on assigned convicts' rations plus the fees paid to government for the employment of convicts with skills (the fees therefore treated as part of industry product). The rough product figures are derived from the assumed ratios above for 1806, 1810, 1818, 1821, 1825, 1828, 1835, 1838, 1841. The intervals are filled by interpolation on the basis simply of population. Before 1806, the figures are notional.

Shipbuilding is regularly reported in tonnage terms (HRA, Reports of the Colony, Statistics of NSW and Statistical Register). The cost per ton in ADP is extrapolated back on the basis of carpenters' wages and allowances to 1820 (Gazette, SMH, HRA, Report of the Colony, Immigration Reports, Statistics of NSW, Statistical Register). Before 1820, wages are assumed unchanged.

Private construction includes farm formation and house construction only. Costs of farm formation are given frequently in HRA and Reports of the Colony. These are projected to 1860 (from 1838) on the basis of farm labourers' wages and allowances (Statistics of NSW and Statistical Register). Farm formation is estimated, using these costs, from the annual change in lands cultivated only, omitting any decline in reported acreage and averaging increases over the (few) years in which a decline in acreage occurs.

Information on housing is available in 1821 (Wentworth, op cit), partially in the subsequent Census prior to 1841 and in the Censuses 1841-61. General housing costs are available in 1821 (Wentworth, op cit), the costs of small huts are given in many years 1800-20 in HRA. Subsequently very little information is available to 1861. The costs per dwelling for brick/stone and weatherboard houses in ADP are averaged with weights varied according to Censuses back to 1841 and extrapolated back according to carpenters' and bricklayers' wages and allowances. The ADP figure for huts is extrapolated back on the basis of farm labourers' wages and allowances.

Housing stock 1841-61 is estimated on the assumption of a constant annual change in persons per dwelling between Censuses and a constant annual change in the proportion of brick/stone, weatherboard houses and huts at rates determined by Census proportions. All 'weatherboard' houses outside Sydney, Port Phillip and Moreton Bay settlements are assumed to be huts, most probably understating the value of stock and changes in the stock. For this purpose tents are omitted, treating the erection of a tent as cost-less. A constant change in persons per dwelling 1821 to 1841 is assumed as determined by comparison of Wentworth op cit and the Census. The ratio of persons to dwellings at 1821 is assumed to prevail during 1795-1821.

All houses are assumed to have a 20-year life (probably too high before 1810). Annual changes in housing stock by type give the volume of new house construction and it is assumed that the rate of depreciation is matched with replacement.

Although it is highly artificial and affects the distribution between the columns rather than the aggregate, the proportion of materials inputs in ADP are assumed to prevail throughout in order to convert from an expenditure to a product concept.

Col D: Commercial services are calculated on the same principle as in ADP using a mark-up on goods flows plus any indirect taxes. The mark-up increases significantly during the 1820s because of (a) the declining role of the Commissariat, (b) the growing substitution of money wages for payments in kind, and (c) the development of formally organised distribution systems. In certain respects, the size of the mark-up until 1821 is more firmly established than it is later because of the relatively rigid mark-up adopted by the Commissariat (S.J. Butlin, Foundations). For the private sector 1806 to 1821, we accept the assumption that the Commissariat handled 60 per cent of the distribution, and estimate mark-up on the basis of a range of imported goods prices plus duty (spirits, wines, beer) and their retail price and the wharf or wholesale prices of farm produce and their retail prices (HRA, Returns of the Colony, Statistics of NSW and Statistical Register, Immigration Reports, Sydney Gazette, Sydney Morning Herald, Wealth and Progress). As a crude adjustment, we assume throughout that until 1850 all persons outside the Sydney and Port Phillip settlements supply one-half of all their farm and meat produce, attracting no mark-up. During the 'fifties, we assume that all goods are commercially distributed, artificially raising the distribution charges from 1851.

No deduction is made for transport as an intermediate product except in the case of gold where the escort fees are deducted on the grounds that these are caught in public services. Merchant fees on gold handling are taken at 5 per cent. Apart from this, the transport services are allocated to the distribution sector. Other deductions are as in ADP.

Col E: Personal and other services cover domestic, professional and personal services such as lodging house keepers (but not hotels) and omit transport, teachers and clergy. Transport services are distributed to other columns. Teachers and clergy are caught in public services since the dominant funding was from government; in both cases a very small unsubdivided sector is missed.

Numbers of persons are estimated from musters and censuses 1806, 1810, 1818, 1821, 1828, 1835, 1838, 1841, 1845, 1851, 1854, 1857 and 1861. Interpolation is by simple proportion to changes in total populations. Until 1825, the numbers of domestic servants are almost certainly significantly understated because of the obscurity of the word 'servant' and its comparison with 'assigned servant' and because of the reluctance of females to disclose their status. It is assumed, as a rough approximation, that half the 'servants' so-described in the Sydney

settlement to 1810 are domestic servants (there is no real substance in this assumption) and that from 1825 all servants so-described are domestics. This provides a long interpolation interval filled by assuming a constant annual change in the servants/population ratio and the changes in the total population.

Other services are specifically designated in the musters/censuses and have been accepted as they stand.

Wage rates including allowances for domestic service are available from 1825 (HRA, Sydney Gazette, Immigration Reports, Sydney Morning Herald, Returns of the Colony, Statistics of NSW and Statistical Register). Standard food allowances have been adopted (HRA, Returns of The Colony, Statistics of NSW) priced at retail prices. No allowance is made for lodging. Before 1825, most payments were in kind. It is assumed that the equivalent money wage rate does not alter in projecting back before 1825 except in proportion to the valuation of ration allowances.

The ratio of wages and salaries of domestic to other services in ADP 1861-65 was adopted as a bench-mark for estimating other services. The bench-mark ratio was varied according to the ratio of domestic wages and allowances to government medical salaries (there is no other information of significance) in HRA, Returns of the Colony and the Public Accounts - variously titled - of NSW.

Col F: Imputed House Rents are little more than notional. We have no information on home ownership and hence no guidance on the relevance of such rent information as exists as a means of imputation. Rent information is available in 1821 (Wentworth op cit), sporadically in Sydney Morning Herald for 1831, in Coghlan Labour and Industry in Australia and in Immigration Reports. With the flimsy information available, the rent data were used to estimate an average return on the housing stock per person to 1850 and this average used for the whole period to 1835. During 1851-60, the annual data in Coghlan op cit, Immigration Reports and SMH were used; for the years 1835-50 Immigration Reports and SMH provided information on rents.

No deductions for rates were made; a depreciation rate was charged as in Col C.

Col G: Public Services and Construction are derived from official statements and subject to the peculiar accounting conventions adopted. Public services are valued simply at the wages and salaries plus allowances for those persons to whom a commitment for payment was officially acknowledged - thereby including a small

number of convicts. These are available in the Civil Lists plus the military pay and allowances, typically recorded in the Commissariat. The figures are incomplete before 1810 chiefly because of problems with the military. After 1851, the Civil Lists become inadequate and the basic sources - inadequate ones - are the public accounts.

Public works expenditure is typically recorded as a special statement during 1822-1851 (Returns of the Colony and Statistics of NSW). It is not clear whether these statements include convicts' rations throughout and it is likely that the figures are understated particularly before 1830. Until 1821, we rely primarily on expenditure plans rather than actual expenditure (HRA) and it is unlikely that these figures are at all accurate on a year-to-year basis. After 1851, the public accounts are a limited source of information though it is possible to extract reasonable information on roads and bridges, public buildings, defence works and major survey operations.

Col H: Until 1852 all mining is left in Col A in NSW. Thereafter only gold is separated. The problem with early mining is that it is confused with other operations. Thus public construction captured the digging of lime deposits; road building entailed quarrying and even coal mining was confused with road works on the one hand and forestry on the other. The only item on which specific annual information is available is coal (Returns of the Colony, Statistics of NSW and Statistical Register). These have been left with Col A.

So far as gold 1852-60 is concerned, we have several options to determine product - escort receipts, mint receipts and export, in particular. None is particularly satisfactory. A good deal of gold won left the colony in the possession of private individuals; a substantial proportion - one banker estimated 10 per cent - left unrecorded. For present purposes the export record has been adopted (from Statistical Register), supplemented to the extent of 10 per cent for undercounting. It might be noted that this is very probably too small an adjustment.

Deductions are made in a variable way. Escort and merchants' fees are deducted throughout on the recorded exports. For purposes of simplicity, all gold is treated as alluvial to 1856. Thereafter it is assumed that the percentage deductions in ADP apply.

South Australian Gross Domestic Product 1837-1860

Sources:

1. Year Book of the Colony of South Australia 1838
2. Statistics of South Australia 1844-58
3. Statistical Register of South Australia 1859-61
4. Statistical Sketch of South Australia 1859-61
5. Censuses 1845, 1846, 1851, 1855, 1860, 1861
6. N.G. Butlin, Australian Domestic Product, Investment and Foreign Borrowing 1861-1938/39, Cambridge University Press, 1964
7. T. Coghlan, Labour and Industry in Australia, Oxford University Press, 1918

1. Pastoral

(a) Gross Wool Proceeds

The value of exports of wool is available from 1838 in the Blue Book. In the second half of the 1850s, wool produced outside SA becomes important (see N.G. Butlin, Investment in Australian Economic Development 1861-1900, p.306). Statistics of wool carried down the Murray are available from 1856 and have been subtracted.

(b) Slaughtering

For sheep and cattle, the method used in ADB from 1861, to estimate South Australian per capita consumption on the basis of the Victorian figures for 1861-63, has been extended backwards as far as possible. In the early years, a significant proportion of consumption would have been met by imports. An estimate was made on the basis of the proportion of flocks slaughtered in the 1860s (6 per cent for sheep and 20 per cent for cattle) and this was used up to the point, based on the estimates of livestock increase, where it roughly equalled the estimates based on per capita consumption. For sheep the year of the change-over was 1846 and for cattle 1844.

Prices of sheep and cattle are available in BB from 1855. In the case of cattle, these were linked with prices calculated from the export statistics between 1843 and 1852, except 1848 when no figures were available and the price was interpolated, using the 'fresh meat' series in the BB which was found to track fresh

beef and mutton prices well in the period 1855-60. The same procedure was used for sheep except that export figures were not available after 1850. Before 1843, prices of beef and mutton given by Coghlan were used as a link. In the case of mutton, only 1838 were available. Prices in 1839-40 were taken as the same as 1858 and then were progressively reduced in 1841-42 to the 1843 level for which year the Coghlan series of export figures were both available. For beef, only 1839 and 1841 were unavailable; the prices in the former year were taken to be the same as in 1838 and in the latter year were interpolated.

Two per cent was added for pigs following ADB's method from the 1860s.

(c) Livestock Increase

Sheep numbers are available for all years from 1838 except 1841, 1851-52, 1855 and 1859. In early days, some substantial imports of sheep were occurring. A rate of increase of local sheep was calculated as 15 per cent per annum based on New South Wales experience in the 1830s and this was used up to the point in 1842 when it equalled the actual rate of increase. The missing years were interpolated as constant rates of increase. The same method was used for cattle, the figure for 1859 being interpolated as a constant decrease.

The same prices were used as for 1(b).

Two per cent was added for pigs.

(d) Deductions

8 per cent of 1(a) and 1(b).

2. Agriculture

Direct estimates have been made for wheat, oats, hay, potatoes and barley. Because barley was not directly estimated from 1861, the additional allowance for other agricultural products has been reduced from the 20 per cent from 1861 to 15 per cent.

Production statistics are available in the BB for wheat, oats, barley and potatoes from 1840-50 and 1854 and in 1854-60 and for hay from 1854. In 1837, total acreage was put at 6 and no figures have been included for that year. In 1938-39 wheat has been estimated on the basis of acreage and the other items on the basis of their latest share in total acreage which is available from 1837. Up to 1854, hay is estimated on the basis of output per acre in the later 1850s. No

figures are available for 1851-53. In these years, wheat production has been interpolated as equal average increases between 1850 and 1854, oats production as the average of the years 1848-50 and 1854 as has barley, potatoes as mid-way between 1850 and 1854 and the acreage of hay as equal annual increases.

Prices are available in the BB for 1844 except for hay in 1848. Before 1844, wheat prices have been based on Coghlan's bread prices linked on the ratio of bread to wheat prices in 1850-51. Oats prices are taken to be the same as wheat prices from 1838-41 given that their prices were similar in the 1840s, and have been extracted from import figures from 1842. Hay prices have been based on wheat prices from 1838-42, import figures have been used for 1843 and the price in 1848 is taken to be the same as in 1847. Potato prices are from Coghlan from 1840-41 and 1843, with prices for 1838-39 taken to be the same as in 1840 and prices for 1842 interpolated as mid-way between 1841 and 1843. Barley are taken to be the same as wheat prices from 1838-41 and 1843 and are based on imports in 1842.

Deductions were taken to be 20 per cent of gross output.

3. Mining

These consist of export of minerals from BB for other primary.

Deductions were taken to be 10 per cent of gross output.

(a) Dairying

Coghlan's figure of consumption per head of milk and butter for the latter nineteenth century was multiplied by population to get total consumption. This was taken to be the same as total production from 1843. In the preceding years, production was taken to be meeting 15 per cent more of total consumption each year. Five per cent was added for cheese, eggs and poultry.

Butter prices were taken from Coghlan for 1837-38 and 1843 with 1838-39 taken as the same as 1837-38 and 1840-42 interpolated. Thereafter the prices were from the BB with 1853 interpolated. Milk prices were taken from Coghlan for 1838 and 1857-60 and based on the price of butter in other years.

Deductions were taken to be 20 per cent of dairy output.

(b) Forestry

The ADP estimate of output per head in 1861 was multiplied by the number of sawyers and woodsplitters in the census from 1846 onwards with intercensal years interpolated on the basis of total population movement except that after 1855 the number was taken to be constant. Before 1846, sawyers and woodsplitters were taken to be the same percentage of the population as in 1846.

Deductions were taken to be 12 per cent of forestry output.

(c) Fisheries

Gross output was taken to be £11,000 in 1843, the figure given for whaling by Price. Adjustment for other years was made on the basis of figures in the thesis of Hoskings.

Deductions were taken to be 16 per cent of fisheries output.

4. Construction

(a) Residential

Numbers of houses are available from censuses from 1844. These have been reduced on the assumption that 20 per cent of dwellings classified as 'other materials and huts' are tents. There are statistics available of the number of houses in Adelaide in 1837 and 1838. These have been taken to be the total number of houses. From 1839 to 1844 the intervening numbers have been interpolated on the basis of population change and intercensal years interpolated on the same basis.

The average cost of a house has been calculated from ADP for 1861 and this has been adjusted in terms of a general price index for earlier years. ADP assumes all houses to be stone or brick. In 1837-38 all houses have been assumed to be wood or concrete and the ADP price halved. Subsequently, 75 per cent of the ADP corrected price has been taken until 1851 after which the percentage has been gradually increased to 100 per cent in 1861.

Replacement has been calculated as the ADP figure for 1861 minus £1,000 a year reaching zero in 1844.

(b) Shops and Offices

The number of shops and offices was calculated as a ratio of 1:8 houses until 1840 and 1:9 thereafter based on ADP figures for Victoria.

The average cost of a shop or office was taken to be three times the price of a house following ADP for Victoria.

The resulting calculation produced a figure about double that of ADP in 1861. The figure for all years was therefore halved.

Replacement has been calculated as the ADP for 1861 minus £1,000 a year reach zero in 1843.

(c) Churches

The number of churches has been taken from the BB and SR from 1850. The number is taken to be 10 in 1839 and the intervening years interpolated on the basis of population change.

The cost of a church is taken to be double of that of a house following ADP. The 1837 figure is taken to be 25 per cent of the 1839 figure and that in 1838 be 50 per cent of the 1839 figure.

(d) Industrial

In 1838 there were reported to be 'one small brewery and a tannery' in South Australia (Yearbook for the Colony of South Australia 1838, p.102). In addition, there were at least two brickworks and there must have been timber mills. The latter have been estimated at four. The first records of numbers of factories are in 1843. Intervening years have been interpolated in terms of population increase. The figure for 1837 has been put at half that of 1838. From 1843, the figures of numbers of factories have been used up to 1854. Subsequently, the figures of mills have been used with an addition of five per year to other factories. Mills and breweries have been taken to be six times the cost of a house and other factories four times.

(e) Agricultural and Pastoral

This has been taken to consist of establishment of farms plus machinery plus pastoral improvement. Cost of a farm has been taken to be £2.4 per acre in 1849 from Duncan p.20, adjusted for price changes. According to Dunsdorfs, p.103, machinery was producing two-thirds of total output in 1861. It has been taken to

reach this percentage of wheat output in annual increases from 1844 at £60 per machine for each 80 acres. Pastoral improvements is based on information in SAPP suggesting an average of £0.8 per animal. This gave a total in 1861 larger by one-half than the ADPP figure. All figures have therefore been reduced by two-thirds. Replacement is added in 1859 and 1860 only. If public for 1860, taken from N.G. Butlin and H. De Neel for that time the Public Works Reports provide figures of public works and buildings, roads and bridges, railways, local, water and sewerage and telegraph. Figures for the latter two are not avialable for 1856-58 and have been estimated on the basis of previous years. Before 1844, there are no separate figures for public construction and the figure is taken to be 50 per cent of total governmental expenditure in 1837-38 and 1843 and 75 per cent in 1839-42.

(f) Mining

Estimated from capital expenditure by SAMA.

(g) Public

From BB.

(h) Deduction

Thirty per cent for all private except agricultural and pastoral, 10 per cent for agricultural and pastoral and public.

5. Manufacturing

Value added in manufacturing has been estimated by taking the figure for 1861 and adjusting it in census years from the 1846 census onwards. In 1856, this has been done on the basis of a number of factories and corrected with the retail price index. In 1851 and 1846 the adjustment is on the basis of numbers employed in manufacturing. Intercensal years have been interpolated as equal real increases. Up to 1845, the proportion of the population in manufacturing is taken to be the same as in 1846.

6. Private Water Transport

The advent of the River Murray trade suggests a considerable acceleration in the second half of the 1850s. Earnings have been assumed to double between 1856 and 1861, this roughly conforming to the change in the numbers employed in the censuses of the two dates. Before that time earnings are assumed to move with population.

7. Government Business Undertakings

These relate to railways and commenced in 1856. They consist of two-thirds of current expenditure plus total revenue minus total expenditure.

8. Government Services

These are taken to be 30 per cent of total expenditure, the ratio in 1861.

9. Property and Finance

Taken to be the same proportion of distribution as in 1861.

10. Distribution

Gross distribution services calculated by applying a mark-up of 50 per cent to the sum of primary product, manufacturing, imports, customs and excise and wholesale manufacturing less imports, goods not retailed and construction goods.

Deductions taken to be 60 per cent of gross estimable services.

11. Professional and Personal Services

The 1861 figure has been adjusted on the basis of census figures of employment from 1846 with interpolated intercensal years on the basis of population increase. Up to 1845, the percentage of the population employed in these categories is assumed to be the same as in 1846.

12. House Rents

The number of houses as estimated in 5(a) was multiplied by the rent per house in 1861 adjusted by a general price index.

Deductions taken to be .5 per cent of housing stock.

13. Unallocated Item

Rail freight from BB.

Victoria

Notes

Procedures are as for NSW which, in any event, captures Port Phillip to 1850. For purposes of indicating the impact of gold a separate estimate is made for Port Phillip in 1850 and deducted from NSW. From 1850 to 1860, there is no significant difference in procedures as between NSW and Victoria.

Sources are:

Col A

A (a) Statistics of Port Phillip District 1850

A (b) Statistics of the Colony of Victoria 1852-60

A (c) Statistical Register of Victoria 1855

A (d) Report of the Registrar General...1851-1858

A (e) Statistical Notes on the Progress of Victoria 1835-1860

Col B

B (a) See A(a) to A(f)

Col C

C (a) Ditto

Col D

D (a) Ditto

D (b) Estimates derived from goods flows from Cols A, B C and H plus imports with estimated make-up

Col E

E (a) Returns of the Census of Victoria 1851, 1854, 1857

E (b) Census of Victoria 1851, 1854, 1857, 1861

E (c) Wages rates from A(b) and A(c), plus Immigration Reports, Coghlan, Labour and Industry in Australia

Col F

F (a) From E(a), E(b) and E(c)

Col G

G (a) From A(a), A(b), A(c)

Col H

H (a) From A(a), A(b), A(c), A(e) and A(f)

Tasmania

Sources: These are limited to

1. Statistical Account of Van Diemen's Land....1804-23
2. Statistical Returns of Van Diemen's Land 1824-39
3. Statistics of Van Diemen's Land 1838-53
4. Statistics of Tasmania 1854-60
5. Censuses for 1842, 1843, 1848, 1851, 1857, 1861

Western Australia

Note

The scale of the Western Australian economy is so slight up to (and beyond) 1860 that the effort to calculate components and the aggregate of GDP does not seem worthwhile. As a rough approximation, the total for the colony has been calculated on the assumption that the per capita income was the same as in South Australia. Population has been taken from the Western Australian Year Book 1902-04 and Statistical Summary from 1829 (1960/61 to 1967/68).

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Copies of the Source Papers can be obtained, free of charge, from SP Distributions, Department of Economic History, RSSS, Australian National University, G.P.O. Box 4, Canberra, ACT 2601.

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No. 1 Rodney Maddock, Nilss Olekalns, Janette Ryan and Margaret Vickers, The distribution of income and wealth in Australia, 1914-1980: An introduction and bibliography, April 1984, 25pp.

No. 2 N.G. Butlin and W.A. Sinclair, Australian gross domestic product 1788-1860: Estimates, sources and methods, May 1984, 75pp.