

Appendices

A.1. Craftsmen and labourers' wages and price indices in Japan, India, and Indonesia, 1870-2000¹⁷⁹

In this appendix we construct series of the skilled and unskilled wages and the CPI for Japan, India, and Indonesia over the period of circa 1870-2000 which are important for estimating the human capital stock in chapter 5 and deflating some of the expenditure on education data. We have used largely published data. Furthermore, we focused on cash earnings, ignoring payments in kind. As far as possible the skilled wages are represented by carpenters, in some cases added with bricklayers. The unskilled workers are generally represented by 'unskilled labour' or 'agricultural labour'. The table at the end of this appendix gives the nominal wages in 1913 prices and the consumer price indices. This makes it possible to construct the real wages. Below sections present for each country how the data are constructed.

Japan

The Japanese wage series starts in 1870. The *skilled wage* for Japan for the period 1870-1880, the daily carpenter wages, came from the Bank of Japan (1966, table 16) and for the period 1882-1887; 1892; 1893-1939 from *Long-Term Economic Statistics (LTES)* (1967). The LTES series are identical to the series from the Bank of Japan. They only go further forward in time. There were two periods with missing data. First, the skilled wages for the year 1881 were linearly interpolated. Second, the wages for the period 1888-1891 were constructed by calculating the ratio from the wage in 1887 and 1892 with the Edo Index from Saito (2005). The resulting two ratios were linearly interpolated. Multiplying this interpolated ratio with the Edo index resulted in an estimate of the wages for the period 1888-1891. For the period 1940-1949 we used the *ILO Year Book of Labour Statistics*, wages in manufacturing. For 1950-1985 we used the carpenter wages from the *Historical Statistics of Japan* (1987). Finally for the period 1986-2000 we used the wages of carpenters from the Statistical Yearbooks of Japan.

The data for *unskilled workers* were constructed in the same way. For 1865-1880 we took the ratio of unskilled wages in Chosi (Saito (2005)) for 1865 and 1880 and interpolated these. The results were multiplied with the Chosi series for the years 1866-1879. For 1880;

¹⁷⁹ Pierre van der Eng kindly supplied wage data for coolies on plantations for 1949-1994.

1882-1887; 1892; 1894-1939 we used the figures of the *Bank of Japan* (1966). Just as for the skilled wage series, 1881 was linearly interpolated. The period 1888-1891 was obtained by taking the relation between the skilled and unskilled wages in 1887 and 1892 and then taking a linearly interpolation and multiplying it with the skilled wages. The year 1893 was obtained from the *Historical Statistics* (1987). Finally, 1940-2000 was obtained from the *ILO Year Book of Labour Statistics*, the male agricultural day worker.

To arrive at a *CPI* for Japan we took the Edo index for 1870-1878 (Saito, 2005). For 1879-1938; 1946-1947 and 1939-1944 (only Tokyo) the LTES (1967) was used. Only 1945 was linearly interpolated. From 1948 to 1969 we took the Historical Statistics of Japan (1987). From 1970 to 2000 we used data from the *ILO Year Book of Labour Statistics*.

India

The *skilled* and *unskilled wages* for India for 1951-1954; 1957-1958; 1967-2000 were taken from the *ILO Year Book of Labour Statistics* (1951-1958), the *International Labour Review* (1959-1961), and the *Bulletin of Labour Statistics* (1962-2001). Skilled wages were, where possible, constructed as an average of bricklayers and carpenters in construction and unskilled wages were taken from unskilled labour. For 1955-1956, and 1959-1966 we took for unskilled and skilled wages the relation with agricultural wages and manufacturing wages of the ILO respectively for 1954, 1957, 1958, and 1968. The relations were calculated with the wages in agriculture and manufacturing respectively. Next, these relations were interpolated, and finally multiplied with the agricultural and manufacturing wages. For the period 1913; 1919-1946 we took the data of Sivasubramonian (1977). For both the skilled and unskilled wages we averaged urban and rural areas. Again for the unskilled wage, we interpolated the relation with ILO agricultural wages for 1947-1950 and multiplied this interpolated relation with the agricultural wages. For the skilled wage we used the manufacturing wage in 1950, and the relation between the skilled wage from Sivasubramonian (1977) and ILO wages in manufacturing in 1946 multiplied with the ILO manufacturing wage in 1947 for the year 1947. For 1947 and 1950 we interpolated the relation between the wages in the jute textile industry (Mukerjee 1960) and the 1947 and 1950 skilled wage. Multiplying this interpolation with the jute textile industry wages gave the skilled wage for 1948 and 1949. For 1873-1912 the unskilled and skilled wages were obtained from the *Statistical Abstract of British India*, which draws from the *Prices and Wages in India* series. We only used the series mentioned in the *Statistical Abstract* that belong to present day India. The wages were for selected stations

(i.e. cities) and were per State weighted by the inverse population of the city because in general there are higher wages in more populous cities while the countryside is far larger. Then the States were weighted by their population as in general central India was somewhat more populous with higher wages.

The Indian *CPI* for 1949-2000 was obtained from the *ILO Year Book of Labour Statistics*. For 1961-1968 the cities of Jamshedpur, Bombay and Delhi were averaged to obtain one series. For 1969-2000 the average of the agricultural workers, industrial workers, and urban non-manual employees' series was used. For 1900-1946 and 1948 we used the index of Sivasubramonian (2000, p. 437). We obtained the 1947 number by calculating the relation of the Sivasubramonian index with the series of Roy (1996, p. 352) for 1946 and 1948. This relation was linearly interpolated and multiplied with the 1947 figure of Roy. For 1861-1899 we used the revised series from Brahmananda (2001, p. 119, 123). This series strongly resembles the Government of India's series, but here some more consumer goods are included. To link the Sivasubramonian and the Brahmananda indices we used the index from Williamson (1998).

Indonesia

The *wages* for Indonesia for 1870- 1875 are based on the yearly wages of Indonesian writers and 'oppassers' (guards) in the Dutch colonial service. These series were available from 1870 to 1917 in the *Budgets of the Netherlands Indies* (various issues). Both nominal wage series remained constant except for two increases in 1874 and 1900 of the wage of Indonesian writers. In 1870 the yearly wage of the Indonesian writer was about fl 244 while that of the 'oppasser' remained constant over the entire period at fl 120.

From 1875-1915 we took the data for craftsmen and coolies on Java (CEI 13, table 5.4). These data are given per residency per year. For each year for both craftsmen and coolies we took the logarithmic average of all residencies as in general wages have a logarithmic distribution. For both skilled and unskilled labour, the figure for 1896 was interpolated per residency and afterwards averaged just as indicated before. From 1921 to 1940 the data were obtained for unskilled labour from the logarithmic average of workers at a sugar plantation (CEI 13, table 9.1, regular workers). For skilled labour the data were obtained from the logarithmic average of a factory foreman, canefield overseer, and fieldguard (seasonal, CEI 13, table 9.1). The years 1916-1920 were obtained by using the logarithmic average of the

wages of male and female labourers in the sugar industry (CEI 13, table 9.2) to interpolate these years.

For wage data for the period 1942-1948 we entirely have to rely on sporadic accounts. An interesting source is available on the increase in prices and expenditure for Europeans outside the Japanese camps (*Rijksinstituut voor Oorlogsdocumentatie* (014614-014637)). This is a note from the Centraal Kantoor voor de Statistiek in which fifteen households were asked in August/September 1946 to give an overview (based on memory) of the costs of living during 1942-1945. Some results are given in table A.1.1. It seems that the nominal wages remained relatively constant during the War. Only after 1943 the Japanese decided to make the wages higher for the romusha (forced Indonesian labour (Sato 1994, p. 1670)). Nevertheless it is clear that as the normal wages remained more or less constant and there was

Table A.1.1: Expenditure and wages of Europeans and Indonesians in Indonesia, 1942-1945

	European*		Indonesian			
	Expenditure		Expenditure (per household)		Day Wages	
	Total per month	% on food	Total per month	% on food	Unskilled	Skilled
1942	fl 25.88	62.54%	fl 5.71	53.07%	fl 0.20**	fl 0.45
1943	fl 24.21	74.83%				
1944	fl 36.17	83.01%			fl 0.44	
1945	fl 50.71	86.18%			fl 0.45	fl 0.65

* Of those whose 1942 income was fl50-fl200.

** minimum wage

Rijksinstituut voor Oorlogsdocumentatie (Nr. 014619-014623)

Sato (1994), p. 96, 167, 169

an increasing inflation as from 1943, these wages became less important in providing for total expenditure. Agricultural labour and trade became more important as was the selling of possessions (clothes, jewellery etc.) for Europeans (*Rijksinstituut voor Oorlogsdocumentatie* (014628)). All in all the nominal unskilled wages seem to have doubled during the occupation (Sato 2000, p. 18 note 41).

The unskilled wage was taken from plantation wages supplied by Van der Eng for 1949-1994, added with Estate wages for 1995 (Wage trend of Estate Workers 1993-1995). The data for 1943 and 1944 came from Sato (1994) while the nominal unskilled wages were assumed to be constant during 1941-1943. The skilled wage for 1945 also came from Sato (1994) while the years 1941-1944 were assumed to be constant. The data on skilled wages directly after the occupation are scanty. From 1952-1957 and 1959 it are wages in mining and in 1958 we took

wages in the metallurgical industry (Bank Indonesia 1954-1960). For 1960 and 1961 the wages came from metal manufacturing (Statistical pocketbook). For 1963 the skilled wage was that of bricklayers (International Labour Review 1964). For 1969, 1970, 1972, 1981-1984 the data came from the ILO Bulletin. The years 1985-1989 were farm supervisors and 1991-1992 gas supervisors (ILO bulletin). As from 1995-2000 the data were manufacturing wages from the ILO (LABORSTA). The remaining years were interpolated where 1964-1968, 1970-1971, and 1973-1978 were obtained by calculating the ratio with unskilled labour for the year before and after the gap, interpolating the ratio, and finally multiplying this ratio with the unskilled wage.

To arrive at the CPI we took the CPI from Van der Eng (2002) for 1900-1941; 1949-1983. The data for 1942-1945 were filled with Rijksinstituut voor Oorlogsdocumentatie (014623), while 1945-1948 was interpolated. As from 1984-2000 the data were obtained from LABORSTA. For the period 1870-1873 there were data on rice and some other products as coconut oil, beef, and firewood (CEI 15, table 3A). Assuming a ratio with 10% firewood, 10% beef, 10% cooking oil, and 70% rice we calculated the index number for this period. For the years 1874-1899 we used rice prices. This constitutes no problem as rice was by far the largest consumer good. Furthermore it had a low price elasticity and therefore there is not much difference between rice index and general index.

Table A.1.2: Current daily wages for craftsmen and labourers and CPI for Japan, India, and Indonesia, 1870-2000

	Japan			India			Indonesia		
	Labourer	Craftsman	CPI Index	Labourer	Craftsman	CPI Index	Labourer	Craftsman	CPI Index
	Yen	Yen	1913=100	Rupee	Rupee	1913=100	Guilder/rupiah	Guilder/rupiah	1913=100
1870	0.22	0.50	47.86	0.19	0.49	70.65	0.34	0.83	85.58
1871	0.20	0.50	40.14	0.19	0.49	57.91	0.34	0.83	88.33
1872	0.19	0.50	29.34	0.19	0.49	62.46	0.35	0.83	119.84
1873	0.36	0.42	29.78	0.21	0.49	64.88	0.34	0.83	118.30
1874	0.34	0.39	34.61	0.20	0.50	71.63	0.34	0.83	117.20
1875	0.31	0.42	38.20	0.21	0.50	63.06	0.34	0.83	104.30
1876	0.29	0.43	31.97	0.23	0.52	62.68	0.35	0.83	101.50
1877	0.27	0.43	32.99	0.23	0.52	80.99	0.33	0.88	105.80
1878	0.25	0.41	36.93	0.21	0.50	87.04	0.33	0.89	128.60
1879	0.22	0.41	49.23	0.21	0.49	79.69	0.35	0.87	112.90
1880	0.21	0.31	56.40	0.21	0.50	69.37	0.34	0.89	114.30
1881	0.22	0.32	62.13	0.21	0.51	62.78	0.34	0.88	112.90
1882	0.22	0.33	57.82	0.23	0.50	61.41	0.39	0.96	107.20
1883	0.19	0.28	49.68	0.22	0.51	61.96	0.38	1.01	97.20
1884	0.18	0.23	48.06	0.24	0.52	65.88	0.37	0.92	75.80
1885	0.16	0.23	48.08	0.24	0.55	65.14	0.35	0.92	70.10
1886	0.15	0.23	42.40	0.25	0.57	63.12	0.32	0.90	70.10

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	Yen	Yen	1913=100	Rupee	Rupee	1913=100	Guilder/rupiah	Guilder/rupiah	1913=100
1887	0.16	0.22	45.09	0.26	0.58	64.61	0.30	0.84	67.10
1888	0.16	0.23	44.32	0.26	0.54	69.32	0.29	0.86	67.10
1889	0.17	0.24	46.93	0.26	0.56	73.53	0.32	0.78	67.10
1890	0.18	0.25	50.04	0.26	0.53	73.23	0.29	0.77	75.90
1891	0.19	0.26	47.94	0.26	0.57	74.47	0.29	0.76	77.40
1892	0.18	0.27	44.70	0.27	0.56	81.69	0.31	0.76	89.00
1893	0.21	0.31	45.24	0.27	0.55	80.85	0.30	0.76	77.40
1894	0.21	0.30	46.68	0.28	0.56	77.16	0.30	0.82	71.50
1895	0.22	0.32	51.09	0.27	0.55	75.94	0.29	0.80	64.20
1896	0.26	0.38	56.22	0.26	0.54	82.22	0.29	0.80	65.70
1897	0.29	0.44	62.64	0.28	0.56	98.37	0.29	0.80	92.00
1898	0.33	0.47	67.94	0.26	0.55	79.38	0.28	0.82	74.40
1899	0.34	0.51	64.11	0.27	0.54	70.49	0.27	0.82	70.10
1900	0.37	0.54	72.03	0.26	0.54	84.81	0.26	0.81	70.03
1901	0.39	0.59	70.46	0.25	0.56	84.45	0.28	0.83	86.87
1902	0.39	0.58	73.19	0.28	0.60	83.04	0.27	0.83	80.47
1903	0.40	0.59	76.85	0.29	0.59	79.51	0.25	0.66	84.18
1904	0.40	0.59	78.63	0.29	0.59	77.39	0.26	0.69	75.42
1905	0.41	0.60	81.66	0.28	0.66	86.22	0.26	0.71	72.73
1906	0.42	0.65	83.27	0.30	0.68	87.99	0.25	0.70	77.10
1907	0.49	0.75	91.98	0.31	0.70	92.23	0.27	0.67	87.21
1908	0.53	0.81	88.81	0.31	0.74	103.89	0.27	0.69	91.92
1909	0.52	0.80	85.36	0.31	0.74	95.41	0.27	0.69	86.20
1910	0.53	0.80	85.58	0.31	0.77	91.87	0.28	0.72	86.20
1911	0.56	0.83	91.96	0.32	0.74	88.34	0.28	0.72	94.95
1912	0.58	0.87	97.06	0.28	0.75	93.99	0.28	0.73	109.43
1913	0.59	0.88	100.00	0.33	0.73	100.00	0.30	0.74	100.00
1914	0.56	0.86	92.12	0.31	0.72	100.35	0.31	0.82	96.97
1915	0.55	0.84	86.22	0.31	0.73	106.36	0.32	0.82	94.95
1916	0.57	0.85	93.15	0.35	0.78	102.47	0.34	0.74	102.36
1917	0.70	0.96	114.27	0.37	0.79	104.59	0.33	0.72	109.43
1918	0.95	1.85	153.81	0.39	0.82	119.43	0.35	0.77	140.07
1919	1.43	1.84	204.64	0.45	1.01	165.72	0.38	0.81	140.40
1920	2.01	2.61	214.06	0.49	1.13	170.67	0.48	0.98	228.28
1921	1.98	2.65	196.17	0.52	1.24	168.20	0.52	1.05	191.58
1922	2.18	2.92	193.19	0.58	1.37	157.24	0.45	1.00	166.67
1923	2.16	2.99	191.45	0.60	1.41	142.76	0.42	0.89	149.16
1924	2.16	3.09	193.16	0.62	1.45	140.99	0.41	0.88	137.37
1925	2.13	2.97	195.50	0.65	1.57	147.70	0.41	0.88	130.98
1926	2.05	2.91	186.63	0.63	1.55	150.53	0.40	0.88	130.64
1927	1.98	2.90	183.77	0.67	1.66	145.58	0.40	0.88	126.26
1928	1.98	2.85	176.79	0.66	1.67	143.11	0.41	0.89	123.91
1929	1.93	2.78	172.74	0.68	1.67	137.81	0.42	0.89	123.23
1930	1.92	2.48	155.19	0.64	1.61	113.43	0.41	0.88	120.20
1931	1.40	2.14	137.30	0.54	1.43	98.59	0.40	0.89	107.41
1932	1.31	1.99	138.83	0.52	1.38	92.58	0.33	0.82	89.90
1933	1.27	1.87	143.07	0.48	1.35	86.57	0.28	0.79	79.46
1934	1.31	1.92	145.09	0.46	1.34	88.69	0.24	0.74	73.06

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	Yen	Yen	1913=100	Rupee	Rupee	1913=100	Guilder/rupiah	Guilder/rupiah	1913=100
1935	1.32	1.93	148.68	0.41	1.67	93.64	0.23	0.63	70.03
1936	1.32	1.99	152.12	0.39	1.14	91.52	0.22	0.59	67.68
1937	1.43	2.20	163.99	0.36	1.14	93.29	0.22	0.56	72.39
1938	1.58	2.35	179.73	0.37	1.14	91.17	0.25	0.58	74.07
1939	1.97	2.67	200.97	0.37	1.12	96.47	0.25	0.58	96.30
1940	2.08	2.76	233.65	0.34	1.10	98.23	0.26	0.56	77.44
1941	2.32	3.03	236.92	0.39	1.10	111.31	0.25	0.56	85.52
1942	2.78	3.29	243.45	0.41	1.13	150.88	0.24	0.56	122.22
1943	3.72	3.74	258.16	0.61	1.36	265.72	0.25	0.56	114.35
1944	5.90	4.68	349.27	0.93	1.71	259.72	0.44	0.56	170.82
1945	17.66	6.01	3,756.89	1.12	2.01	260.42	0.45	0.65	239.45
1946	33.67	23.64	7,164.51	1.21	2.22	280.57	0.66	1.12	413.76
1947	74.26	74.26	16,143.56	1.55	1.45	330.44	0.88	1.59	588.08
1948	184.61	207.33	28,400.95	1.87	1.94	353.36	1.07	2.06	762.39
1949	235.98	374.57	37,457.27	1.71	2.55	363.96	1.31	2.53	936.70
1950	202.33	324.43	34,885.19	2.33	2.69	363.96	3.62	6.37	1,097.64
1951	209.88	349.80	41,153.28	2.53	2.72	378.09	5.12	7.50	1,830.30
1952	229.00	393.18	43,206.62	2.52	5.34	371.02	4.83	5.99	1,931.31
1953	257.81	455.78	46,038.07	2.79	3.55	381.63	5.54	5.54	2,052.19
1954	284.20	553.69	48,999.21	2.79	3.56	367.49	6.11	6.11	2,180.81
1955	300.18	561.62	48,415.62	2.40	3.90	348.15	6.64	6.06	2,887.88
1956	306.38	588.44	48,631.77	1.84	4.17	382.96	6.61	6.28	3,307.07
1957	325.94	641.85	50,144.75	1.65	4.43	402.31	6.90	6.53	3,629.97
1958	339.51	659.06	49,928.61	1.64	2.78	421.65	8.46	12.68	5,285.19
1959	347.49	689.94	50,360.90	1.50	2.82	440.99	7.67	26.84	6,389.90
1960	371.37	753.21	52,306.17	1.62	2.92	448.73	8.66	28.33	7,870.71
1961	440.93	959.02	55,116.00	1.62	3.25	477.68	9.70	42.02	10,774.41
1962	552.63	1,169.93	58,790.40	1.72	3.34	505.94	29.97	170.81	29,966.33
1963	652.29	1,329.92	63,329.37	1.74	3.37	526.47	53.60	301.52	67,003.37
1964	749.06	1,511.26	65,706.92	1.75	3.51	548.40	127.88	696.23	142,087.54
1965	840.36	1,631.69	70,029.74	1.93	3.86	584.73	805.12	3,968.08	575,084.18
1966	913.93	1,776.27	73,704.14	2.12	4.12	643.06	8.08	39.06	6,734.01
1967	1,009.98	1,966.41	76,513.98	2.27	4.47	688.14	23.20	107.07	17,845.12
1968	1,201.25	2,249.32	80,620.66	2.28	4.42	735.86	48.08	204.34	40,067.34
1969	1,333.61	2,616.26	84,943.48	2.55	4.95	772.83	65.52	257.41	46,801.35
1970	1,609.13	2,834.26	91,427.72	2.51	4.94	810.17	84.58	364.75	52,861.95
1971	1,803.77	3,219.63	96,976.80	2.55	4.44	823.09	87.81	406.13	54,882.15
1972	2,029.38	3,581.85	101,468.91	2.56	5.82	882.06	117.17	568.28	58,585.86
1973	2,408.94	4,263.70	113,095.56	3.16	7.86	1,020.21	161.21	698.59	76,767.68
1974	3,211.17	5,309.70	140,840.97	3.16	7.90	1,316.70	216.16	864.65	108,080.81
1975	3,637.98	6,142.04	157,488.21	3.25	7.91	1,412.34	257.24	926.06	128,619.53
1976	3,859.20	6,891.43	172,285.76	3.15	7.81	1,259.82	246.73	771.04	154,208.75
1977	4,446.03	7,403.85	186,026.34	2.33	7.80	1,368.08	290.77	769.70	171,043.77
1978	4,616.55	7,938.91	193,160.88	3.35	7.96	1,395.69	314.24	720.91	184,848.48
1979	4,780.74	8,661.35	200,031.17	4.41	9.27	1,470.93	400.61	756.70	222,558.92
1980	5,057.91	9,186.37	216,149.93	5.31	9.46	1,659.55	642.26	847.78	256,902.36
1981	5,327.91	9,522.22	226,719.60	5.63	11.07	1,876.71	809.46	949.02	279,124.58
1982	5,540.57	9,800.76	232,797.17	5.82	11.05	2,008.43	972.93	1,003.33	304,040.40

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	Yen	Yen	1913=100	Rupee	Rupee	1913=100	Guilder/rupiah	Guilder/rupiah	1913=100
1983	5,688.60	9,860.24	237,025.04	7.36	14.73	2,231.18	1,077.44	1,043.77	336,700.34
1984	5,839.67	9,958.94	242,309.88	7.34	14.68	2,367.04	1,190.01	1,264.39	371,877.98
1985	5,979.00	10,203.84	247,066.24	10.71	16.45	2,491.68	1,323.24	1,517.83	389,187.62
1986	6,116.83	10,542.83	248,651.69	16.05	20.59	2,674.46	1,442.28	2,019.20	412,081.01
1987	6,247.79	10,802.95	248,915.93	15.94	21.73	2,897.44	1,530.17	1,980.22	450,050.53
1988	6,369.45	10,983.53	250,765.62	17.25	25.87	3,194.17	1,604.94	1,994.01	486,344.93
1989	6,536.02	11,611.06	256,314.70	21.65	30.24	3,436.01	1,759.89	2,018.69	517,613.95
1990	6,711.75	12,128.71	264,241.96	21.73	30.20	3,682.75	1,954.31	4,299.49	558,375.35
1991	6,987.83	12,692.73	272,961.95	22.90	30.11	4,241.30	2,319.16	6,530.26	610,304.26
1992	7,408.02	12,846.12	277,454.06	23.17	31.86	4,826.86	2,624.36	6,560.91	656,091.04
1993	7,675.49	12,792.48	281,153.45	23.25	32.85	5,053.97	2,953.25	6,986.95	720,304.20
1994	7,839.19	9,537.21	283,003.14	39.62	42.41	5,580.60	3,437.14	7,421.09	781,167.12
1995	7,973.24	9,613.12	282,738.90	45.54	53.54	6,153.88	4,961.50	7,869.97	855,431.04
1996	8,207.09	9,791.91	283,003.14	51.61	56.97	6,702.61		9,039.87	922,436.08
1997	8,640.71	9,908.02	288,023.74	53.61	60.76	7,148.22		10,527.27	983,857.37
1998	8,696.20	10,000.63	289,873.43	58.03	65.98	7,949.84		12,888.59	1,552,841.85
1999	8,730.24	10,031.10	289,080.71	67.85	76.23	8,377.04		14,968.93	1,871,115.80
2000	8,637.70	10,101.23	286,966.77	70.13	78.79	8,658.15		19,597.58	1,940,354.34

A.2. Basic Statistics of India, Indonesia, and Japan, 1890-2000: GDP and Gross Fixed Non-Residential Capital Stock (1990 International USD); the Gross Fixed Non-Residential Capital Stock for Indonesia in current Rupiah, population, and persons employed.

Table A.2.1: Basic Statistics of India, Indonesia, and Japan, 1890-2000: GDP and Gross Fixed Non-Residential Capital Stock (1990 International USD); the Gross Fixed Non-Residential Capital Stock for Indonesia also in current Rupiah, population, and persons employed.

	India				Indonesia				Japan				
	GDP mil. 1990 Int. USD	Physical capital stock Bill. 1990 Int. USD	population mil.	Employment mil.	GDP mil. 1990 Int. USD	Physical capital stock Bill. 1990 Int. USD Bill. Current Rupiah		Population mil.	Employment mil.	GDP mil. 1990 Int. USD	Physical capital stock Bill. 1990 Int. USD	population mil.	Employment mil.
1890	78,624.0	59.6	224.0	78.0	24,802.1	6.5	2.51E+08	37.6	13.5	40,555.6	15.6	40.1	23.3
1891	81,209.4	65.7	226.8	78.0	25,358.4	6.7	2.58E+08	37.8	13.6	38,621.0	15.8	40.4	23.4
1892	83,941.2	66.6	228.7	78.0	26,418.7	6.9	3.09E+08	38.3	13.7	41,200.5	16.2	40.7	23.5
1893	86,846.8	68.0	231.6	79.0	27,205.0	7.1	2.75E+08	38.3	13.9	41,343.8	16.4	41.0	23.7
1894	87,655.1	69.9	232.5	79.0	27,651.6	7.4	2.85E+08	38.8	14.0	46,287.8	17.0	41.4	23.8
1895	87,533.4	72.7	233.4	80.0	28,264.8	7.6	2.43E+08	39.5	14.3	46,932.7	17.6	41.8	23.9
1896	88,345.4	74.6	234.3	80.0	28,114.9	7.7	2.47E+08	39.9	14.5	44,353.2	18.5	42.2	24.0
1897	90,572.6	75.9	235.3	81.0	28,515.2	7.8	3.50E+08	40.6	14.7	45,284.7	19.5	42.6	24.2
1898	92,814.4	77.5	236.2	81.0	28,879.9	7.9	3.03E+08	41.3	14.9	53,883.1	20.2	43.1	24.4
1899	94,359.6	79.1	237.1	82.0	30,594.2	8.0	2.57E+08	42.0	15.0	49,870.5	20.9	43.6	24.5
1900	95,676.0	79.2	238.0	82.0	31,760.3	8.3	2.67E+08	42.7	15.4	52,020.1	21.6	44.1	24.6
1901	98,752.2	80.0	239.1	82.0	31,331.1	8.8	3.94E+08	43.3	15.5	53,883.1	22.1	44.7	24.7
1902	102,039.6	79.7	241.2	82.0	30,886.1	8.9	3.42E+08	43.8	15.7	51,088.6	22.6	45.3	24.8
1903	100,016.9	80.1	242.2	82.0	32,643.1	8.7	3.93E+08	44.4	15.7	54,671.2	23.0	45.8	25.0
1904	104,313.3	81.1	244.3	83.0	33,316.5	8.9	3.44E+08	44.9	15.9	55,101.2	23.4	46.4	25.1
1905	105,770.4	82.6	245.4	83.0	33,820.0	9.6	3.69E+08	45.5	16.2	54,169.7	24.2	46.8	25.2
1906	108,962.5	76.2	246.5	84.0	34,862.7	10.4	4.02E+08	46.0	16.4	61,263.3	25.3	47.2	25.3
1907	113,134.7	78.3	248.6	84.0	35,692.3	10.8	4.87E+08	46.5	16.8	63,197.9	26.6	47.7	25.4
1908	118,887.8	77.7	249.8	84.0	35,784.6	11.4	5.12E+08	47.1	17.1	63,627.9	27.7	48.3	25.5
1909	131,236.4	79.4	251.9	85.0	37,637.2	11.4	5.11E+08	47.6	17.4	63,556.2	29.0	48.9	25.5
1910	127,260.0	80.0	252.0	85.0	40,203.8	11.6	5.24E+08	48.2	17.8	64,559.4	30.2	49.5	25.6

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Appendices

Table A.2.1: Basic Statistics of India, Indonesia, and Japan, 1890-2000: GDP and Gross Fixed Non-Residential Capital Stock (1990 International USD); the Gross Fixed Non-Residential Capital Stock for Indonesia also in current Rupiah, population, and persons employed.													
	India				Indonesia				Japan				
	GDP mil. 1990 Int. USD	Physical capital stock Bill. 1990 Int. USD	population mil.	Employment mil.	GDP mil. 1990 Int. USD	Physical capital stock Bill. 1990 Int. USD	Bill. Current Rupiah	Population mil.	Employment mil.	GDP mil. 1990 Int. USD	Physical capital stock Bill. 1990 Int. USD	population mil.	Employment mil.
1911	128,720.9	81.7	251.9	85.0	42,436.9	14.0	6.32E+08	48.8	18.0	68,070.4	31.6	50.2	25.7
1912	129,425.2	84.4	251.8	86.0	42,793.4	16.0	9.23E+08	49.4	18.3	70,506.6	33.3	50.9	25.9
1913	132,142.5	84.5	251.7	86.0	45,140.3	17.3	8.88E+08	49.9	18.5	71,653.0	35.0	51.7	26.1
1914	135,360.8	86.7	251.6	86.0	45,061.2	23.3	1.20E+09	50.5	18.8	69,503.4	36.8	52.4	26.3
1915	140,588.5	88.4	251.5	86.0	45,639.4	27.6	1.24E+09	51.1	19.1	75,952.2	38.3	53.1	26.5
1916	143,298.0	89.2	251.4	87.0	46,327.7	26.5	1.36E+09	51.7	19.3	87,703.3	40.0	53.8	26.7
1917	139,974.1	94.0	251.3	87.0	46,510.1	27.7	1.60E+09	52.1	19.6	90,641.0	42.5	54.4	26.9
1918	141,676.8	90.5	251.2	87.0	47,571.6	31.0	2.19E+09	52.3	19.8	91,572.5	45.9	54.9	27.1
1919	138,105.0	89.2	251.1	87.0	51,383.2	32.9	2.32E+09	53.0	20.1	100,959.1	49.9	55.3	27.1
1920	145,078.0	85.3	251.0	88.0	50,768.2	35.8	4.14E+09	53.7	20.4	94,653.6	54.4	55.8	27.3
1921	147,052.6	89.2	253.1	88.0	51,213.7	41.0	3.95E+09	54.4	20.6	105,043.3	58.2	56.5	27.4
1922	151,423.3	92.8	256.2	88.0	52,048.9	48.5	4.05E+09	55.0	20.9	104,756.7	61.5	57.2	27.6
1923	151,967.4	96.1	259.3	89.0	52,843.2	55.2	4.97E+09	55.7	21.2	104,828.3	64.0	57.9	27.8
1924	150,644.6	97.9	262.4	89.0	55,677.8	57.6	5.18E+09	56.4	21.5	107,766.1	66.4	58.7	28.1
1925	152,603.6	98.1	265.4	89.0	57,606.4	57.4	4.79E+09	57.0	21.8	112,208.6	69.0	59.5	28.3
1926	152,787.0	102.2	268.5	90.0	60,786.5	56.8	4.38E+09	57.7	22.2	113,211.7	72.5	60.5	28.6
1927	155,071.6	101.5	270.6	90.0	64,973.0	63.1	4.87E+09	58.4	22.5	114,859.8	76.2	61.4	28.8
1928	157,101.1	104.6	272.7	90.0	68,070.1	74.0	5.71E+09	59.1	22.5	124,246.3	80.0	62.4	29.1
1929	160,281.3	105.8	275.9	91.0	70,039.7	85.3	6.58E+09	59.9	23.0	128,115.6	84.0	63.2	29.3
1930	162,099.0	107.5	279.0	92.0	70,533.7	99.1	6.37E+09	60.6	23.3	118,800.7	87.9	64.2	29.6
1931	164,419.8	108.7	282.0	94.0	65,247.3	106.8	5.49E+09	61.5	23.7	119,803.8	90.8	65.2	30.0
1932	165,244.4	110.2	285.9	98.0	64,459.2	104.7	4.71E+09	62.4	24.0	129,835.2	92.1	66.2	30.2
1933	166,416.6	116.6	289.9	101.0	64,010.5	101.0	3.89E+09	63.3	24.3	142,589.5	93.0	67.2	30.7
1934	165,478.2	122.9	295.0	104.0	64,374.5	100.4	3.23E+09	64.2	24.6	142,876.1	94.6	68.1	31.1
1935	165,648.1	131.8	299.0	107.0	66,691.4	103.6	3.33E+09	65.2	25.0	146,817.0	97.8	69.2	31.6
1936	164,246.3	136.9	303.0	111.0	71,512.5	104.2	3.35E+09	66.2	25.3	157,493.3	102.5	70.2	32.1

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Table A.2.1: Basic Statistics of India, Indonesia, and Japan, 1890-2000: GDP and Gross Fixed Non-Residential Capital Stock (1990 International USD); the Gross Fixed Non-Residential Capital Stock for Indonesia also in current Rupiah, population, and persons employed.

	India				Indonesia				Japan				
	GDP mil. 1990 Int. USD	Physical capital stock Bill. 1990 Int. USD	population mil.	Employment mil.	GDP mil. 1990 Int. USD	Physical capital stock Bill. 1990 Int. USD	Bill. Current Rupiah	Population mil.	Employment mil.	GDP mil. 1990 Int. USD	Physical capital stock Bill. 1990 Int. USD	population mil.	Employment mil.
1937	161,430.5	138.3	306.9	114.0	78,482.0	102.2	4.60E+09	67.1	25.7	165,016.9	108.0	71.3	32.2
1938	161,160.4	140.8	309.9	117.0	80,053.9	110.6	4.97E+09	68.1	26.0	176,051.4	114.3	71.9	32.3
1939	162,208.4	141.7	315.0	120.0	80,830.5	124.4	5.59E+09	69.1	26.4	203,781.1	123.0	72.4	32.7
1940	163,966.0	147.9	319.0	123.0	86,666.1	130.8	6.73E+09	70.2	26.7	209,728.3	133.4	73.0	32.9
1941	166,237.1	145.0	320.9	125.0	89,287.6	130.2	7.53E+09	71.3	27.2	212,594.5	143.8	74.0	32.7
1942	168,584.6	150.5	326.7	127.0	71,633.8	122.9	1.03E+10	72.5	27.6	211,448.0	153.5	75.0	32.5
1943	172,931.0	156.9	330.7	129.0	57,817.0	111.8	8.62E+09	73.3	28.1	214,457.4	163.6	76.0	32.3
1944	174,654.5	165.8	334.6	131.0	45,543.0	95.0	1.16E+10	73.6	28.5	205,214.2	174.9	77.2	32.1
1945	177,045.8	178.7	338.5	133.0	40,150.8	76.3	1.27E+10	73.3	29.0	102,607.1	136.0	76.2	32.7
1946	180,659.4	190.9	343.5	135.0	41,735.4	69.1	2.00E+10	74.1	29.5	111,492.1	140.1	77.2	33.2
1947	185,067.1	203.0	347.2	137.0	48,320.8	71.8	2.95E+10	75.1	29.9	120,377.0	145.8	78.1	33.8
1948	191,723.8	218.7	351.1	139.0	56,608.6	76.3	4.07E+10	76.3	30.4	138,290.3	152.2	80.2	34.5
1949	199,756.9	234.4	356.1	141.0	61,890.2	77.7	5.09E+10	77.7	30.9	147,533.5	157.8	82.0	35.2
1950	212,990.0	247.7	361.0	143.0	66,396.1	71.2	5.44E+10	79.0	31.4	160,966.0	161.5	83.8	35.9
1951	227,395.0	257.4	365.0	144.6	71,264.6	66.6	8.47E+10	80.5	32.0	181,025.0	164.9	85.2	36.2
1952	233,988.0	268.6	372.0	146.6	74,667.3	70.4	9.45E+10	82.1	32.6	202,005.0	169.2	86.5	37.3
1953	249,003.0	282.0	379.0	148.6	78,427.1	64.2	9.16E+10	83.6	33.0	216,889.0	173.7	87.7	39.1
1954	259,392.0	300.5	386.0	150.5	83,321.7	51.1	7.76E+10	85.2	33.2	229,151.0	178.2	88.8	39.6
1955	265,668.0	325.5	393.0	152.4	85,591.7	47.5	9.55E+10	86.8	33.1	248,855.0	182.6	89.8	40.9
1956	281,101.0	360.2	401.0	154.6	86,686.9	49.7	1.15E+11	88.5	33.5	267,567.0	188.6	90.8	41.7
1957	278,120.0	390.1	409.0	156.8	92,647.5	52.3	1.33E+11	90.1	34.0	287,130.0	197.5	91.6	42.8
1958	299,288.0	416.8	418.0	159.4	89,250.0	54.8	2.02E+11	91.8	34.6	303,857.0	207.5	92.4	43.0
1959	305,442.0	443.4	426.0	161.6	93,097.2	57.3	2.55E+11	93.6	35.3	331,570.0	221.1	93.3	43.4
1960	326,802.0	471.2	434.0	163.7	97,063.8	58.8	3.23E+11	95.3	36.0	375,090.0	242.5	94.1	44.4
1961	336,552.0	504.2	444.0	164.9	103,492.6	59.3	4.45E+11	97.1	36.7	420,246.0	272.6	94.9	45.0
1962	344,132.0	537.6	454.0	166.2	103,286.2	58.8	1.23E+12	99.0	37.2	457,742.0	309.0	95.8	45.6

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Table A.2.1: Basic Statistics of India, Indonesia, and Japan, 1890-2000: GDP and Gross Fixed Non-Residential Capital Stock (1990 International USD); the Gross Fixed Non-Residential Capital Stock for Indonesia also in current Rupiah, population, and persons employed.													
	India				Indonesia				Japan				
	GDP mil. 1990 Int. USD	Physical capital stock Bill. 1990 Int. USD	population mil.	Employment mil.	GDP mil. 1990 Int. USD	Physical capital stock Bill. 1990 Int. USD	Bill. Current Rupiah	Population mil.	Employment mil.	GDP mil. 1990 Int. USD	Physical capital stock Bill. 1990 Int. USD	population mil.	Employment mil.
1963	361,456.0	581.0	464.0	167.6	99,392.9	55.6	2.60E+12	101.0	37.6	496,514.0	349.1	96.8	45.9
1964	389,154.0	618.4	474.0	169.1	103,031.0	53.4	5.28E+12	103.0	38.0	554,449.0	395.1	97.8	46.5
1965	373,935.0	664.5	485.0	170.6	104,042.1	53.7	2.15E+13	105.1	38.5	586,744.0	444.4	98.9	47.3
1966	377,190.0	712.3	495.0	172.1	104,088.3	52.9	2.48E+11	107.2	38.9	649,189.0	492.6	99.8	48.3
1967	408,342.0	756.2	506.0	173.7	101,689.0	44.0	5.47E+11	109.3	39.4	721,132.0	551.8	100.8	49.2
1968	419,062.0	803.6	518.0	175.2	111,643.5	35.6	9.93E+11	111.5	39.9	813,984.0	628.7	102.0	50.0
1969	447,005.0	851.6	529.0	176.7	125,369.0	34.9	1.14E+12	113.8	40.3	915,556.0	718.9	103.2	50.4
1970	469,588.0	889.8	541.0	178.3	138,556.5	36.1	1.33E+12	116.0	40.8	1,013,602.0	835.8	104.3	50.9
1971	474,224.0	927.9	554.0	183.8	146,184.5	39.7	1.52E+12	118.4	41.3	1,061,230.0	946.9	105.7	51.2
1972	472,878.0	970.4	567.0	189.5	162,760.4	44.7	1.94E+12	121.3	42.3	1,150,516.0	1,064.2	107.2	51.2
1973	494,740.0	1,012.5	580.0	195.3	186,903.6	50.9	3.05E+12	124.3	43.3	1,242,932.0	1,173.0	108.7	52.5
1974	499,899.0	1,049.6	593.0	201.3	196,355.2	58.5	5.20E+12	127.3	44.4	1,227,706.0	1,282.9	110.2	52.3
1975	544,479.0	1,090.7	607.0	207.5	196,379.9	68.8	6.50E+12	130.5	45.5	1,265,661.0	1,392.4	111.6	52.1
1976	551,180.0	1,138.5	620.0	213.9	213,673.4	82.1	8.89E+12	133.7	46.6	1,315,966.0	1,495.8	112.8	52.6
1977	594,058.0	1,191.0	634.0	220.6	230,340.7	97.4	1.20E+13	137.0	47.8	1,373,741.0	1,597.4	113.9	53.3
1978	625,968.0	1,236.6	648.0	227.4	240,828.9	115.6	1.56E+13	140.4	49.0	1,446,165.0	1,690.7	114.9	54.0
1979	594,280.0	1,275.6	664.0	234.4	254,004.7	137.2	2.78E+13	143.9	50.2	1,525,477.0	1,805.1	115.9	54.7
1980	636,902.0	1,323.1	679.0	241.5	275,806.3	159.9	4.10E+13	147.5	51.6	1,568,457.0	1,925.1	116.8	55.2
1981	676,084.0	1,379.0	692.0	248.3	294,835.7	184.9	5.27E+13	150.7	53.0	1,618,185.0	2,050.3	117.6	55.7
1982	697,380.0	1,442.9	708.0	255.2	283,934.4	214.8	6.58E+13	153.9	54.5	1,667,653.0	2,170.3	118.5	56.2
1983	754,089.0	1,503.9	723.0	262.2	295,229.1	250.3	9.04E+13	157.2	56.4	1,706,380.0	2,293.8	119.3	57.3
1984	783,340.0	1,564.8	739.0	269.3	315,716.0	288.8	1.16E+14	160.6	58.3	1,773,223.0	2,435.0	120.0	57.7
1985	814,645.0	1,634.4	755.0	276.3	323,500.7	323.0	1.36E+14	164.0	60.2	1,851,315.0	2,729.6	120.8	58.1
1986	848,871.0	1,712.5	771.0	283.9	342,467.8	351.2	1.51E+14	167.0	62.3	1,904,918.0	2,901.5	121.5	58.5
1987	886,500.0	1,803.6	788.0	291.5	359,293.3	378.4	1.94E+14	170.0	64.4	1,984,142.0	3,130.6	122.1	59.1

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Table A.2.1: Basic Statistics of India, Indonesia, and Japan, 1890-2000: GDP and Gross Fixed Non-Residential Capital Stock (1990 International USD); the Gross Fixed Non-Residential Capital Stock for Indonesia also in current Rupiah, population, and persons employed.

	India				Indonesia				Japan				
	GDP mil. 1990 Int. USD	Physical capital stock Bill. 1990 Int. USD	population mil.	Employment mil.	GDP mil. 1990 Int. USD	Physical capital stock Bill. 1990 Int. USD	Bill. Current Rupiah	Population mil.	Employment mil.	GDP mil. 1990 Int. USD	Physical capital stock Bill. 1990 Int. USD	population mil.	Employment mil.
1988	978,880.0	1,907.8	805.0	299.3	379,905.8	408.5	2.20E+14	173.0	66.6	2,107,060.0	3,313.5	122.6	60.1
1989	1,043,940.0	2,030.6	822.0	307.2	414,173.1	444.5	2.60E+14	176.1	68.9	2,208,858.0	3,547.7	123.1	61.3
1990	1,098,251.0	2,165.5	839.0	315.2	450,988.0	488.6	3.14E+14	179.2	71.6	2,321,153.0	3,805.8	123.5	62.5
1991	1,111,944.0	2,279.9	856.0	315.4	473,597.6	539.8	3.65E+14	182.2	74.0	2,393,300.0	4,086.1	123.9	63.7
1992	1,169,352.0	2,399.4	872.0	320.2	524,468.2	593.8	4.22E+14	185.3	76.3	2,415,691.0	4,290.4	124.3	64.4
1993	1,236,102.0	2,530.0	889.3	325.1	560,556.4	649.0	4.78E+14	188.4	78.6	2,425,642.0	4,458.1	124.7	64.5
1994	1,324,948.4	2,691.9	905.6	329.7	602,534.5	709.9	5.51E+14	191.5	82.0	2,450,521.0	4,610.3	125.0	64.5
1995	1,418,154.4	2,893.4	922.1	334.4	652,039.7	783.2	6.78E+14	194.8	80.1	2,487,838.0	4,768.6	125.3	64.6
1996	1,529,548.0	3,091.2	938.4	342.0	704,176.9	870.8	8.13E+14	198.0	85.7	2,574,912.0	4,943.9	125.6	64.9
1997	1,602,783.5	3,289.9	954.6	349.8	735,934.3	968.8	9.85E+14	201.4	87.1	2,619,694.0	5,112.7	126.0	65.6
1998	1,708,520.0	3,515.2	970.8	357.8	639,536.3	1,034.7	2.12E+15	204.4	87.7	2,592,327.0		126.2	65.1
1999	1,816,678.5	3,768.0	986.8	366.1	644,481.9	1,053.6	2.39E+15	207.4	88.8	2,609,742.0		126.5	64.2
2000	1,915,172.3	4,026.5	1,002.7	374.8	675,432.6			210.9	89.8	2,669,450.0		126.7	64.5

Sources:

GDP was obtained from Maddison (2003) for Japan, Indonesia, and India. However, for Indonesia, we interpolated the years 1942-1948 with data from Van der Eng (1992). For India, we linked the constant GDP estimates for the pre-1951 years from Roy (1996) with the estimates of Sivsubramonian (2002) for the period after 1950. The latter were also used by Madison (2003) to create a GDP series for India in 1990 Intl. USD which allowed us to convert the Roy (1996) data into constant 1990 Intl USD.

Stock of gross non-residential fixed capital was obtained from Pilat (2002) for Japan. For India, we used the gross fixed capital formation figures from Roy (1996) and the UN National Accounts Statistics, corrected it for residential structures, and assumed average asset life of 15 years. For Indonesia, we used data as estimated in appendix A.4, where we subtracted the residential structure by assuming a share in residential buildings in gross fixed capital formation of 20% and assuming that this percentage remained the same over time. Further, we used an average asset life of 15 years.

Population was obtained from Maddison (2003). For India prior to 1946 we took, however, data from Roy (1996).

Persons employed was obtained from Pilat (2002) for Japan, Roy (1996) for India, and Van der Eng (2002) for Indonesia. The 1942-1948 years in Indonesia were again interpolated using Van der Eng (1996). All figures were updated with ILO (LABORSTA).

A.3. Purchasing Power Parities 1913-1990¹⁸⁰

Comparing expenditure over time and across borders is complicated. Using simple exchange rates creates biases because they are based on the prices of tradable items. Non-exportables however, which make up an important part of expenditure, are much cheaper in developing countries. As a consequence, the exchange rate generally underestimates the purchasing power of developing countries. Using expenditure expressed in kilogrammes of grain or rice, on the other hand, could overstate the purchasing power in land-abundant countries (Van der Eng and Bassino 2002) and is, due to the changing consumption basket, in any case hardly suited for a comparison between 1880 and 2000. That is the reason that several authors prefer to use purchasing power parities (PPPs) (Maddison 1995; Van der Eng and Bassino 2002).

The estimation of PPPs is based on matching the products in the two countries concerned, weighting for their share in the total consumption basket. This is done using the data supplied by Van der Eng and Bassino (2002) for Indonesia and Japan (1913, 1922, 1930, 1952, 1958, 1969), added with the data for 1990 from the ILO Bulletin of Labour Statistics. Further we added price data for India. For 1913 -1938 the data came from the *Labour Gazette* (Bombay). For 1913 we used the data of July 1914. The Data for 1952, 1958, 1969, and 1990 came from the ILO Statistical Yearbook, the ILO International labour Review, and the ILO Bulletin of Labour Statistics. The quantities consumed are taken from *Report on an Enquiry into the Family Budgets of Middle Class Employees of the Central Government* (1949, table XXII).

It is clear from table A.3.1 below that the number of product matches is relatively low (between 6 and 18). However, because they are largely food and fuel items they do comprise a large share in total expenditure. Yet, the matches are not always entirely uniform. Furthermore, because the data for India from 1952 onwards are obtained from the ILO they are October prices instead of year averages. Nevertheless the PPPs seem to behave conform expectations. There was a convergence between PPP and exchange rate after the 1930s and a divergence after 1952. Nevertheless both the guilder/rupee as the rupees were undervalued compared to the yen, except the rupee for a short period around 1952.

¹⁸⁰ Data on Japan and Indonesia was kindly supplied by Pierre van der Eng and Jean-Pascal Bassino.

Table A.3.1: Exchange rates and PPPs of India and Indonesia per 100 Japanese Yen, 1913-1990								
	1913	1922	1930	1938	1952	1958	1969	1990
Indonesia (guilder/rupiah)								
Exchange rate	124,13	129,75	123,25	51,19	3,16	10,00	91,25	1270,90
PPP PPP	69,65	73,14	52,71	31,73	3,49	7,02	28,54	167,30
Matches	11	16	13	18	13	14	13	6
India (rupee)								
Exchange rate	151,75	165,50	136,32	77,74	1,32	1,32	2,11	12,06
PPP PPP	74,78	59,39	75,58	45,57	1,07	0,88	1,09	2,07
Matches	9	10	10	9	9	10	14	8

Source: Indonesia (Van der Eng and Bassino), India and Indonesia 1990 (calculated in this appendix)

A.4. A method of estimating the national income of Indonesia using the expenditure approach, 1890-2002.¹⁸¹

A.4.1 Introduction

It is important to make some estimates of the Indonesia GDP using the expenditure approach, even though these estimates are rough compared to some alternative estimates. Indeed, the GDP estimates of Van der Eng using the production approach (2002) are fairly consistent. In this appendix we thus do not aim at making significantly different GDP estimates but turn to the expenditure approach of estimating GDP for two reasons. First, it is difficult inserting human capital in the national accounts when they are created using the production approach. As human capital is generally calculated using the income or expenditure approach, it is far easier to include human capital in the national accounts using either of these two methods of calculating national income. Second, estimates of household consumption are important as they are the basis of our later estimates of private expenditure on education. As our estimates are only intended to offer a background for the estimates of human capital formation, we will only present GDP in current prices. In the next section we will start with a brief overview of the estimates of the GDP for Indonesia already available. Next, we estimate the GDP for Indonesia using the expenditure approach. This is done by treating in each of the following sections a part of GDP, i.e. household consumption expenditure, government consumption expenditure, capital investment, exports, and imports.

A.4.2 Estimates of the GDP for Indonesia using the expenditure approach: an overview

Some GDP estimations are already performed for Indonesia. Since the 1950s the Indonesian Bureau of Statistics (BPS) provides data on GDP using the production approach and since 1960 also on the basis of the expenditure approach. Also before independence some estimates have been produced of which the most important are those of Polak (1943) and the Statistical Office (published in 1948). Recently, Van der Eng (1992; 2002) has made a series of the Indonesian GDP using the production approach which is standardized for the period 1880-2000.

The results from our exercise in the next sections are presented in figure A.4.1. Although, as mentioned, these are crude estimates, the figure does give an indication of the

¹⁸¹ From 1960 onwards we used the data of the BPS and the input-output tables. We are aware that much criticisms can be levied against these data. However, currently a large project is underway for revising these data and this appendix is not the place nor the time to undertake a large revision of the estimates of the BPS after 1960.

division of the several expenditure shares in GDP. Not surprisingly, the percentage household consumption expenditure declines over time. We do see a strong increase in the percentage

Figure A.4.1

Percentage division of GDP in Indonesia 1890-2000 in current prices in expenditure shares



Note: We included exports minus imports. In years when the value of the imports were larger than the value of the exports the other parts of GDP first have to make up this negative difference. Hence, for some years there is a negative value.

household consumption in times of economic turmoil and crisis, i.e. the 1930s and 1960s. The main reason is a decline in exports, government consumption and gross capital formation. Also we see a strong peak in exports during and just after World War I. A final finding is that the share of gross capital formation increases strongly since the 1970s. This can be attributed the booming economy and the oil crises which made it possible to increase investments significantly.

The results thus do seem to give an indication of Indonesian economic development. In the next section, we very briefly outline the estimation of each of the components of the GDP.

A.4.3 Household consumption expenditure

We start with the by far largest component of GDP, namely household expenditure. The best data available are for the period after independence. Some important sources are available. First, the input-output tables provide data on private expenditure for 1969, 1971, 1975, 1980, 1985, 1990, 1995, and 2000. These data are relatively reliable as they provide information on

all streams of income, production and expenditure in the Indonesian society. As such, we will use these figures to provide benchmarks. Further, we have data on private expenditure from the Indonesian household surveys (SUSENAS) which are available since the 1960s. Finally, we have the national accounts statistics which provide data on household consumption expenditure since 1960.¹⁸²

The period prior to 1960 is more difficult to estimate. In this instance, a commodity flow method might underestimate household consumption expenditure as it might ignore in

Table A.4.1: Overview of the main household expenditure surveys in Java/Indonesia, 1885-1960

Source	Sample size	Region	Year
Arminius (1889)	3 farm households	Kutoarjo (Bagelen)	1886-8
Boeke (1927)	29 rural households	Java (various parts)	1924-25
CKS (1928)	314 urban households	Indonesia	1925
Rohrman (1932)	18 rural households	Kraksään (Probolinggo)	1932
CKS (1939)	95 labourers' households	Jakarta	1937
Huizenga (1958)	1,945 rural labourers' hh	Java	1939-40
Sato (1994: 96)	421 farm households	Tasikmadu (Malang, E.Java)	1942
Sato (1994: 102-3)	345 farm households	Tumut (Bantul, C.Java)	1942
ILO (1967) = Ministry of Labour	2,639 urban households	Jakarta	1957
ILO (1967) = Ministry of Labour	2,180 urban households	Surabaya	1958
Sukanto (1962)	503 households	DI Yogyakarta	1958-9

Source: Van der Eng (2001) and this appendix.

some cases home consumption of certain crops of which rice is of main importance. Therefore we opted to use household expenditure data from several surveys in the period 1880-1960. An overview of these surveys is given in table A.4.1 of this appendix. In an interesting paper in which he estimated the GDP by the expenditure approach, Van der Eng (2001) constructed private consumption using a part of these data. He, however, only used the expenditure on the 6 most important food crops combining it with the expenditure data from Japan to calibrate the results. We do not, however, follow this approach as 1) it does not make use of all available data, 2) home consumption is probably underreported, and 3) it is doubtful whether Japan knew the same developments in this long period as did Indonesia. Therefore, we opted instead on focusing on the difference between households. Following the Social Accounting Matrices, we divided the households in 10 classes (see table A.4.2). For each household class we estimated their share in total consumption. In addition, as we also had the

¹⁸² The total private consumption expenditure statistics were obtained from Badan Pusat Statistik, *Statistik Indonesia (Statistical Yearbook of Indonesia)*, Jakarta: BPS 1976-2003. Further they were obtained from Pusat Penelitian dan Perkembangan Statistik, Biro Pusat Statistik, *Pendapatan Nasional Indonesia 1960-1968 (National Income of Indonesia 1960-1968)*, Djakarta: Pusat Penelitian dan Perkembangan Statistik, Biro Pusat Statistik 1970. Finally, of course, the input-output tables were used.

household category		1975	1980	1985	1990	1993	1999
Agriculture	Agricultural employee household Operator, land owner 0,0-0,5 ha agriculture household	5%	5%	4%	4%	4%	6%
	Operator, land owner 0,5-1 ha agriculture household	11%	13%	13%	18%	17%	9%
	Operator, land owner >1 ha agriculture household	8%	7%	6%	5%	5%	5%
non-agriculture	Non agricultural lower level rural household	13%	14%	13%	8%	7%	5%
	Non labour force rural household	10%	14%	9%	7%	6%	12%
	Non agricultural higher level rural household	2%	3%	4%	2%	2%	5%
	Non agricultural lower level urban household	5%	6%	10%	16%	19%	13%
	Non labour force urban household	12%	16%	16%	12%	10%	19%
	Non agricultural higher level urban household	2%	3%	5%	3%	3%	5%
Total		100%	100%	100%	100%	100%	100%
Total consumption (accounts) (billion)		8.744,5	27.502,9	56.857,9	106.312,3	158.342,7	838.097,2

Source: National accounts statistics; Social Accounting Matrix.

number of persons in each class, we used the shares of each household class in the population and extrapolated them backwards to 1960 (see table A.4.3). We found only a minor shift from the share of the population in agricultural occupations versus the share of the households in the towns.¹⁸³ On average, however, the shares remained fairly constant, especially for the period before 1980, allowing the assumption that the changes would not have been very large in the period prior to 1960. This looks like a big assumption but there are three reasons to follow it. First, looking at table A.4.3, we do not see a strong change of rural to urban from 1960 to 1975. As these processes are generally initially slowly changing and later rapidly changing, we expect that the change from rural to urban was even less strong in the period prior to 1960. Second, in 1960 about 67% of the households resided in rural areas. Yet in 1920 circa 76% of the labour force was employed in agriculture. These figures correspond rather good, especially considering the situation that some urban households also were employed in agriculture and given the situation that the average household size is likely to be larger in rural areas. Third, even if this assumption would not entirely be warranted, still this would not considerably bias our estimates as it is likely that household consumption expenditure was more equal between urban and rural areas in the 1920s than in the 1960s.

¹⁸³ However, be aware, a decrease of 8% in the urban households from 1975 back to 1960 means a decrease of 19% in the total urban households.

We therefore assume that from 1960 backwards, the shares of each household class in agriculture and non-agriculture remained constant. Now we have to estimate on the basis of

(non-)agriculture	household category	1960	1975	1980	1985	1990	1993	1999
Agriculture	Agricultural employee household Operator, land owner 0,0-0,5 ha	14%	12%	11%	7%	9%	10%	14%
	agriculture household Operator, land owner 0,5-1 ha	25%	22%	21%	24%	28%	26%	18%
	agriculture household Operator, land owner >1 ha	14%	12%	11%	8%	6%	6%	6%
	agriculture household Non agricultural lower level rural household	14%	14%	15%	10%	7%	6%	5%
Non-agricultural	Non labour force rural household	17%	17%	15%	14%	9%	9%	14%
	Non agricultural higher level rural household	2%	3%	4%	5%	2%	2%	5%
	Non agricultural lower level urban household	2%	3%	4%	8%	13%	12%	6%
	Non labour force urban household	8%	11%	12%	13%	13%	12%	14%
	Non agricultural higher level urban household	1%	2%	3%	4%	3%	3%	5%
	household	3%	5%	6%	9%	12%	11%	8%
Total		100%	100%	100%	100%	100%	100%	100%
Total population ('000s)		95,254	130,485	147,490	164,047	179,248	188,359	207,429

Source: National accounts statistics; Sistem neraca social ekonomi Indonesia (Social Accounting Matrix), various issues.

the household surveys (table A.4.1) the per capita expenditure for the available years and household classes between 1890 and 1960. Before doing this, we first, as far as possible, corrected for the consumption of goods produced by the household itself.¹⁸⁴ Using these corrected expenditure data from the surveys mentioned in table A.4.1 we estimate the total per capita expenditure per household category. This can then be multiplied with the total population in that category to obtain the total household expenditure for that household class. In this way we obtained for several years and household categories the total expenditure.

Obviously, we have these data only for a limited number of years and household categories. Therefore, our next step was to estimate the relation between the expenditure in the several household categories. For example, if we had in 1930 the total expenditure of non labour force rural households and non labour force urban households while we had in 1931 the total expenditure of non labour force urban households and agricultural employee households, we calculated the relationship between the latter two (for example the total expenditure of the non labour force urban households was 50% of that of the agricultural

¹⁸⁴ This was only possible for the largest crop, rice. First we estimated on the basis of more complete data the average rice consumption of a person (both adult and child). Next, we calculated for each survey the 'average' consumption of adults and children of rice. Then, we added the money value of the amount of rice between what a certain household consumed according to the survey and what was their expected average consumption to the household expenditure.

employee households) and used that figure to heighten the total expenditure in 1930 up. In this way we constructed total household expenditure for each year for which we had at least 1 observation for a household category.

However, not for all years prior to 1960 data were available. Therefore, the next step was to impute the missing years. We used data on craftsmen and labourers' wages, government expenditure and population to impute the missing years. However, it is clear that the results from the surveys are of doubtful quality. This caused unlikely fluctuations in the series (imputation does not smooth a series). Therefore, we ran a regression with total household expenditure as a dependent variable and population, craftsmen and labourers' wages, and government expenditure as the independent variables. The resulting coefficients were used to smooth the household expenditure series.

A.4.4 Government Consumption

A second part in GDP is government consumption. Government consumption is defined as all government spending minus spending on transfers, subsidies, government enterprises and capital investments. Again, for the period after 1960, these data can be obtained from the Indonesian national accounts and the input-output tables. For 1950-1959 we filled in government consumption by taking the ratio between government consumption and total central government expenditure in 1960 (74%). This figure was multiplied by central government spending for 1950-1959.

For the period prior to independence no really reliable data exist on government consumption. Only for 1938 there is an estimate that government consumption is about 12% of the GDP, however this is probably an overestimation due to an underestimation of the GDP. We therefore took the total central government expenditure for the ordinary service and deducted utilities (CEI 2).¹⁸⁵ This was done because the extraordinary service mainly existed of capital investments. However, especially in the 1920s, the share of 'other service' in the extraordinary expenditure increased. Therefore, we included the post 'other services;' from the extraordinary services with the central government spending on the ordinary service. Furthermore we deducted interest and transfers (pensions). The transfers to state enterprises were already deducted from these figures.

¹⁸⁵ For data on central and regional government expenditure in Indonesia one may, besides the *Indische Verslagen and Jaarcijfers Koloniën*, look at P. Creutzberg, *Changing Economy in Indonesia*, Vol. 2: Public Finance 1816-1939, The Hague: Martinus Nijhoff 1976.

However, these figures excluded native states and municipalities whose finances became increasingly important during the twentieth century. We therefore estimated the total expenditure from these lower governments based on CEI 2. Next we estimated the percentage central government consumption on total central government expenditure. This percentage was also applied to the expenditure of the lower governments.

A.4.5 Gross Capital Formation

The Gross Capital Formation is available since 1953 by Keuning and Van der Eng (Van der Eng 2002, 174-175). However, their estimates were somewhat high. Therefore, we preferred to use the capital formation figures from the national accounts. We arrived at the stock around 1950 by using the data of Keuning and Van der Eng (2002) and of Nehru and Dhareshwar (1993).

The period 1890-1950 is far more difficult. Fortunately there is a figure available for the stock of capital for 1940 from Sitsen (1943, 12). This figure is divided into Buildings, communications, commercial capital, government enterprise and others not included, totalling 10,150 million guilders. Of a total of 5,400 million, 900 million was Indonesian capital. Furthermore 4,889 million was the capital value of all non-Indonesian private enterprises (CEI vol. 3, 1977, 25). This thus includes government enterprises, Western commercial capital and communications.

Starting with the Indonesian commercial capital, the Indonesian stock was calculated from the ratio with the Indonesian part of GDP from Polak (1943). The differences between those years were calculated as the net capital formation. Equally the fixed capital formation (1910-1939) from CEI 3 was used to calculate the ratio with the government and non-government capital stock. Because these series knew strong fluctuations, we used a moving average to smooth some of the more unlikely fluctuations. The period before 1910 was calculated by using the ratio from the stock of government and non-government capital with GDP of Van der Eng (2002) and calculating it back to 1890. Here also, the difference between year t and year $t-1$ was assumed to be the net capital formation. Finally, the other, not yet included, part of the physical capital stock was calculated by estimating the ratio between this post in the Sitsen figure and the total GDP and calculating it back to 1890. Also here, we used the difference from year t to year $t-1$ to calculate the net capital formation.

The sum of the three series of net capital formation gave the total capital formation. As we had the stock around 1940 from Sitsen, we could bring the stock of physical capital back to 1890. To obtain constant 1990 rupiah the time series were divided by the national

income and multiplied by the constant series. This gave the physical capital stock in 1990 rupiah. However, to arrive at the gross capital formation, we took the difference of this stock to arrive at the net capital formation in 1990 rupiah. Adding subtracting 5% depreciation of the GDP of Van der Eng (2002) gave the gross capital formation.

A.4.6 Export and Import

A final step in calculating the Indonesian GDP is to estimate the total value of import and export. This is relatively straightforward. Between 1950 and 2002 we used the data as supplied in the Indonesian national accounts. For 1948-1949 we used the IMF *International Financial Statistics* data. However, partly they were in USD. These we converted into rupiah using the black market rate in order to avoid the over- and undervaluing of the currency. The period 1890-1941 was obtained from the CEI 12a (table 1A and 2B) and the *Indische Verslag*. Although the latter only include exports and imports of goods, we do not think this to be a problem because the exports and imports of services was relatively small.

Table A.4.4: Indonesian GDP (expenditure approach) in billion current rupiah, 1890-2002						
	Household consumption	Government consumption	Gross capital formation	Exports	Imports	GDP
1890	2.67	0.09	0.02	0.18	0.16	2.79
1891	2.69	0.09	0.02	0.22	0.18	2.85
1892	2.83	0.08	0.02	0.21	0.17	2.98
1893	2.52	0.09	0.02	0.19	0.18	2.65
1894	2.81	0.09	0.02	0.20	0.18	2.94
1895	2.95	0.09	0.02	0.23	0.16	3.12
1896	3.20	0.09	0.02	0.20	0.17	3.35
1897	3.53	0.10	0.01	0.21	0.18	3.66
1898	2.55	0.10	0.01	0.22	0.18	2.70
1899	2.94	0.10	0.03	0.25	0.19	3.12
1900	2.93	0.10	0.04	0.26	0.20	3.13
1901	3.03	0.10	0.04	0.26	0.23	3.20
1902	2.61	0.11	0.04	0.27	0.20	2.82
1903	2.62	0.11	0.04	0.27	0.19	2.85
1904	2.34	0.11	0.03	0.30	0.21	2.57
1905	2.64	0.11	0.03	0.31	0.22	2.87
1906	2.80	0.11	0.04	0.33	0.24	3.04
1907	2.85	0.11	0.05	0.36	0.25	3.13
1908	2.77	0.12	0.05	0.47	0.28	3.13
1909	2.74	0.13	0.06	0.46	0.28	3.11
1910	3.07	0.15	0.08	0.45	0.35	3.40
1911	3.38	0.16	0.09	0.52	0.40	3.75
1912	3.45	0.17	0.14	0.60	0.43	3.92
1913	3.23	0.21	0.18	0.68	0.49	3.82
1914	3.79	0.22	0.16	0.68	0.43	4.43

Continued on the next page

Table A.4.4: Indonesian GDP (expenditure approach) in billion current rupiah, 1890-2002						
	Household consumption	Government consumption	Gross capital formation	Exports	Imports	GDP
1915	4.23	0.23	0.18	0.77	0.40	5.01
1916	4.53	0.26	0.22	0.87	0.45	5.42
1917	4.37	0.27	0.22	0.79	0.50	5.15
1918	4.71	0.33	0.20	0.68	0.57	5.34
1919	4.64	0.50	0.46	2.17	0.79	6.98
1920	7.04	0.73	0.50	2.24	1.31	9.20
1921	5.84	0.62	0.52	1.20	1.24	6.93
1922	6.27	0.53	0.55	1.15	0.78	7.72
1923	5.91	0.44	0.49	1.39	0.65	7.57
1924	5.88	0.41	0.39	1.56	0.70	7.53
1925	6.23	0.42	0.37	1.81	0.86	7.98
1926	6.64	0.44	0.43	1.60	0.92	8.19
1927	6.79	0.50	0.65	1.66	0.93	8.66
1928	7.09	0.55	0.93	1.59	1.03	9.13
1929	7.44	0.59	0.93	1.49	1.11	9.34
1930	7.71	0.59	0.64	1.19	0.92	9.22
1931	7.34	0.53	0.40	0.82	0.61	8.48
1932	6.42	0.41	0.23	0.61	0.41	7.26
1933	5.80	0.35	0.13	0.52	0.33	6.47
1934	5.30	0.33	0.11	0.55	0.29	6.00
1935	4.87	0.35	0.16	0.48	0.28	5.58
1936	4.31	0.37	0.37	0.58	0.29	5.34
1937	4.42	0.31	0.48	0.97	0.52	5.68
1938	4.29	0.38	0.50	0.69	0.50	5.36
1939	5.00	0.41	0.52	0.76	0.53	6.15
1940	4.00	0.45	0.45	0.88	0.44	5.34
1941	4.79	0.44	0.11	1.09	0.48	5.96
1942	5.23					6.45
1943	3.91					4.79
1944	5.60					6.81
1945	6.22					7.50
1946	8.30					9.94
1947	11.48					13.63
1948	16.89			4.51	5.31	20.25
1949	24.37			6.03	6.63	29.93
1950	32.80	6.50	2.64	9.18	5.05	46.06
1951	61.39	7.91	4.59	14.83	10.02	78.70
1952	72.40	11.19	6.63	10.72	10.88	90.07
1953	72.68	11.66	8.81	9.64	8.77	94.02
1954	69.99	11.46	12.27	9.95	7.22	96.45
1955	83.78	12.15	14.25	10.86	7.23	113.81
1956	84.20	14.91	16.42	10.81	8.77	117.56
1957	83.06	19.08	24.56	10.22	8.45	128.48
1958	127.07	26.31	28.36	20.73	12.44	190.02
1959	174.29	33.04	34.91	29.77	18.03	253.98
1960	230.63	45.10	30.70	35.73	24.14	318.01
1961	385.60	55.40	48.10	27.66	24.56	492.20
1962	1,180.00	83.30	74.80	39.36	26.22	1,351.24
1963	2,726.50	228.30	263.00	132.10	118.67	3,231.23
1964	5,821.30	508.20	862.00	543.22	378.12	7,356.60

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Table A.4.4: Indonesian GDP (expenditure approach) in billion current rupiah, 1890-2002						
	Household consumption	Government consumption	Gross capital formation	Exports	Imports	GDP
1965	20,902.50	1,329.80	1,586.70	1,297.07	845.84	24,270.22
1966	303.30	27.80	14.30	65.11	66.05	344.46
1967	786.00	62.50	67.90	145.82	131.18	931.04
1968	1,771.20	143.50	177.90	387.12	285.83	2,193.88
1969	2,359.90	198.50	129.11	278.40	254.51	2,711.41
1970	2,692.80	293.00	313.13	402.02	363.37	3,337.57
1971	2,832.60	341.00	580.00	494.83	442.22	3,806.21
1972	3,401.60	414.00	857.00	763.22	670.75	4,765.07
1973	4,790.70	716.00	1,208.00	1,361.46	1,157.14	6,919.03
1974	7,258.60	841.00	1,797.00	3,182.04	1,646.25	11,432.39
1975	8,744.50	1,253.70	2,571.70	3,060.96	2,055.78	13,575.08
1976	10,463.80	1,590.50	3,204.90	3,429.60	3,222.10	15,466.70
1977	12,458.40	2,077.30	3,826.40	4,465.80	3,817.20	19,010.70
1978	15,184.50	2,658.90	4,670.70	4,973.90	4,742.00	22,746.00
1979	19,513.70	3,733.40	6,704.30	9,628.70	7,554.70	32,025.40
1980	27,502.90	4,688.20	9,485.20	13,849.20	10,079.80	45,445.70
1981	35,560.00	5,787.90	11,553.40	14,927.90	13,802.20	54,027.00
1982	41,670.30	6,831.70	13,467.10	13,345.20	15,681.70	59,632.60
1983	44,739.30	8,077.30	21,668.40	20,447.70	21,235.10	73,697.60
1984	51,398.90	9,121.50	22,176.70	22,984.90	18,627.20	87,054.80
1985	56,857.90	10,893.10	25,136.20	21,671.10	19,837.50	94,720.80
1986	63,355.30	11,328.70	28,888.20	20,009.90	21,036.20	102,545.90
1987	71,988.90	11,765.50	37,491.02	29,874.30	27,955.80	123,163.92
1988	81,045.30	12,755.80	37,453.52	34,665.60	31,171.40	134,748.82
1989	88,752.30	15,687.60	46,318.96	42,505.00	38,601.00	154,662.86
1990	106,312.30	17,572.60	61,255.39	51,953.10	50,945.70	186,147.69
1991	125,035.80	20,784.60	65,880.06	62,263.80	61,375.70	212,588.56
1992	135,880.30	24,731.30	73,129.89	76,384.40	70,336.60	239,789.29
1993	158,342.70	29,756.70	82,003.36	85,454.30	78,064.70	277,492.36
1994	219,565.00	31,014.00	120,034.84	99,437.50	91,873.80	378,177.54
1995	279,876.40	35,584.20	145,056.33	119,592.90	125,656.90	454,452.93
1996	332,094.40	40,299.20	164,181.80	137,533.30	140,812.00	533,296.70
1997	387,170.70	42,952.00	190,189.36	174,871.30	176,599.80	618,583.56
1998	647,823.60	54,415.90	233,981.93	506,244.80	413,058.10	1,029,408.13
1999	838,097.20	72,631.30	219,788.69	390,560.10	313,720.20	1,207,357.09
2000	850,818.70	90,779.70	251,980.00	542,992.40	423,317.90	1,313,252.90
2001	975,730.80	113,416.10	305,674.46	612,482.20	505,127.70	1,502,175.86
2002	1,137,762.50	132,218.70	275,027.22	569,941.90	459,631.10	1,655,319.22

Note: the GDP estimates for the period 1942-1949 were interpolated by calculating ratios with household consumption data.

A.5. Estimates of the Gross Enrolment Ratio per Ethnicity in Indonesia, 1890-1940.

A.5.1 Population

To obtain estimates of the gross enrolment ratio, we need data on enrolments per level of education and estimates on the size of the population in the relevant age classes. In this section we start with population, more specific with the indigenous, Indonesian, population which was the least educated, the least registered, and the least enumerated. It was necessary to obtain the population figures for the ages 5-10, 5-12, 12-17, and 17-21, to estimate the enrolment ratio before independence. Contrary to the European and Chinese population, it was necessary to include the age class 5-10 for the Indonesian population prior to independence, as the Village School, the most important form of education for the Indonesian population, was of a rather short duration. We took the numbers of Chinese, Europeans, and Indonesians from *Changing Economy in Indonesia* Vol. 11. These figures were corrected to match the total population as estimated by Van der Eng (1996; 2002). Next, we took population surveys which contained data on the ages of the population to calculate the ratio with the total Indonesian population. The different ratios were then linearly interpolated and the result multiplied with the total Indonesian population to obtain the figures for each age class for all years. The same method was applied for Chinese and Europeans.

Three points have to be noticed. First, the figure for males in the 1930 survey has been obtained by dividing the number “other children” by 13.5 (assuming that between age 1.5 and age 15 boys fell under ‘other children’) and multiplying it by 10 as we wanted to estimate 10 years (between age 5 and age 15). The others (until age 1.5) were assumed to be “children not yet able to walk”. For women this is obtained by dividing the number of ‘other children’ by 12.5 and multiplying it with 10, as girls were supposed to reach adulthood sooner. Second, only for Indonesians, for Java we used instead of interpolation the number of births on Java (CEI 11, table 9a.2) added with the net births from the census of 1920 and the difference of net deaths (CEI 11) and population growth (Van der Eng (2002) figures) and linear interpolation for 1895-1905. The births in year $t-15$ till year $t-5$ were added to obtain the number of children for age 5-15 for Java. For 1880-1894 the ratio between the cohort 5-15 of Java and the Indigenous population on Java has been used of 1895. The figures for Java have been corrected for the downward bias with the linear interpolation of the coefficients mentioned in CEI 11 and Van der Eng (1996). For the Outer Provinces the years 1890-1940 were calculated as the interpolated ratio of the total population to the number of Indonesians in the Outer Provinces. Third, to obtain the figures for the post-1930 period, we took the age

classes from the 1961 census. These figures were corrected for the absence of Irian Jaya by adding the population of Irian which was at that time ca. 700,000. We assumed that the age classes in Irian had the same share in total population as in Indonesia.

A.5.2 Enrolments

Now we have the necessary population figures for Chinese (and other Asians), Indonesians, and Europeans. By dividing the number of Indonesians, Chinese, and Europeans enrolled by the relevant age classes in the population, we arrive at their respective gross enrolment ratios as reported in table A.5.1. Unfortunately, the enrolment of Indonesians poses a problem because in primary education there are two enrolment figures for the same level. This is because we have two forms of primary education which have a different duration and thus a different relevant age group as we have seen in section A.5.1. As the (short) indigenous primary education was unknown for Chinese and Europeans, we cannot add the enrolments of the three ethnicities together. This problem is solved by adding the cohort 5-10 to that of 5-12 together by weighing it with the number of Indonesian pupils in respectively the Indonesian and European schools. For Chinese and Europeans we simply divided the enrolment rates by the relevant population from section A.5.1.

There are two points of warning. First, for the colonial period and the first years thereafter no fixed entrance age is available and the cohorts are therefore necessarily crude. Second, as a consequence of the marginal supply of higher education, the gross enrolment ratio in higher education is in all cases very low. In the case of Indonesians, it is so small, that it cannot be reported. This does not mean, however, that in Indonesia no-one had followed higher education. It were especially Europeans and a few Indonesians who came to the Netherlands to follow higher education.

Table A.5.1: Gross Enrolment Ratio per Ethnicity and Level of Education in Indonesia, 1890-1940

	Europeans			Chinese		Indonesians	
	Primary	Secondary	Tertiary	Primary	Secondary	Primary	Secondary
1890	146.29	11.98	0.00	1.91	0.01	1.41	0.02
1891	147.30	13.57	0.00	1.96	0.01	1.47	0.02
1892	148.93	13.56	0.00	2.06	0.01	1.56	0.02
1893	151.13	15.15	0.00	2.15	0.01	1.65	0.03
1894	151.46	13.61	0.00	2.24	0.05	1.72	0.02
1895	148.02	13.49	0.00	2.34	0.07	1.79	0.02
1896	141.59	12.52	0.00	2.48	0.07	1.90	0.02
1897	140.94	12.44	0.00	2.38	0.07	1.84	0.02
1898	140.48	11.91	0.00	2.50	0.07	1.90	0.02

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Table A.5.1: Gross Enrolment Ratio per Ethnicity and Level of Education in Indonesia, 1890-1940

	Europeans			Chinese		Indonesians	
	Primary	Secondary	Tertiary	Primary	Secondary	Primary	Secondary
1899	138.68	12.19	0.00	2.70	0.07	2.31	0.02
1900	137.14	12.90	0.00	2.65	0.07	2.13	0.02
1901	138.18	13.88	0.00	2.80	0.09	2.31	0.03
1902	140.35	13.76	0.00	2.93	0.09	2.49	0.03
1903	142.50	14.89	0.00	3.13	0.10	2.66	0.04
1904	148.87	17.23	0.00	3.46	0.16	2.98	0.06
1905	145.32	16.91	0.00	3.67	0.17	3.14	0.06
1906	142.62	16.60	0.00	3.87	0.17	3.35	0.05
1907	133.12	17.16	0.00	3.52	0.21	3.47	0.06
1908	130.53	18.17	0.00	4.62	0.25	3.84	0.07
1909	125.83	18.81	0.00	5.83	0.28	4.69	0.08
1910	120.52	19.60	0.00	7.20	0.34	5.91	0.10
1911	114.66	18.60	0.00	8.32	0.36	7.15	0.09
1912	108.93	16.90	0.00	9.14	0.37	8.10	0.10
1913	107.60	16.18	0.00	9.56	0.38	8.71	0.10
1914	108.68	16.41	0.00	10.08	0.41	8.30	0.11
1915	112.44	18.47	0.00	10.85	0.43	9.09	0.12
1916	115.59	19.27	0.00	11.65	0.45	9.96	0.13
1917	117.73	23.05	0.00	12.41	0.56	10.42	0.17
1918	117.45	26.14	0.00	13.17	0.65	10.53	0.19
1919	114.52	27.68	0.00	13.12	0.73	9.04	0.22
1920	111.59	28.98	0.17	14.12	0.80	9.67	0.24
1921	111.05	28.06	0.32	14.63	0.74	10.91	0.26
1922	112.00	28.56	0.49	13.96	0.76	11.00	0.29
1923	109.79	30.47	0.43	13.51	0.78	11.25	0.34
1924	111.69	30.34	0.54	13.50	0.79	11.56	0.38
1925	110.12	31.10	0.56	14.30	0.78	11.31	0.43
1926	109.76	31.09	0.50	14.80	0.78	12.07	0.46
1927	110.34	32.28	0.49	16.03	0.82	13.25	0.48
1928	112.06	34.36	0.60	17.69	0.91	14.66	0.48
1929	106.81	36.68	0.64	15.27	1.06	13.89	0.53
1930	109.17	37.71	0.85	16.64	1.24	14.55	0.54
1931	111.47	38.96	1.04	17.86	1.42	15.33	0.52
1932	110.42	39.81	1.09	18.32	1.57	15.37	0.48
1933	106.40	39.86	1.17	18.13	1.60	15.00	0.44
1934	103.72	37.20	1.25	17.74	1.66	14.74	0.42
1935	101.49	37.80	1.22	17.47	1.81	14.83	0.38
1936	101.42	35.61	1.21	17.87	1.83	15.45	0.56
1937	99.80	41.05	1.02	17.81	1.94	15.91	0.57
1938	100.61	42.24	1.02	18.12	2.16	16.61	0.64
1939	103.58	51.19	1.18	18.46	2.30	17.02	0.78
1940	94.54	42.24	0.99	16.71	2.19	16.73	0.75

A.6. Enrolments per level of education and sex in Indonesia, India, and Japan 1880-2000

The construction and sources of the following data on enrolment and the gross enrolment ratio is given in chapter 3.

	Primary education (*000s)				Secondary Education				Higher Education			
	Boys	Girls	Total	% of relevant	Boys	Girls	Total	% of relevant	Boys	Girls	Total	% of relevant
1880	64.6	12.2	76.8	1.26	473	20	493	0.06	0	0	0	0.00
1881	65.1	11.9	76.9	1.24	448	32	480	0.05	0	0	0	0.00
1882	72.3	14.4	86.7	1.39	467	44	511	0.06	0	0	0	0.00
1883	75.1	16.0	91.1	1.47	441	56	497	0.05	0	0	0	0.00
1884	78.9	17.3	96.3	1.50	467	50	517	0.05	0	0	0	0.00
1885	81.0	18.2	99.2	1.60	442	46	488	0.06	0	0	0	0.00
1886	82.8	19.0	101.8	1.50	448	51	499	0.06	0	0	0	0.00
1887	84.9	20.2	105.1	1.65	392	58	450	0.06	0	0	0	0.00
1888	90.3	22.0	112.3	1.58	364	58	422	0.05	0	0	0	0.00
1889	92.6	22.6	115.3	1.79	392	63	455	0.06	0	0	0	0.00
1890	93.6	22.4	115.9	1.61	389	77	466	0.04	0	0	0	0.00
1891	96.4	23.6	120.0	1.67	460	86	546	0.05	0	0	0	0.00
1892	104.3	23.6	127.9	1.77	471	85	556	0.04	0	0	0	0.00
1893	110.7	24.5	135.2	1.86	527	70	597	0.06	0	0	0	0.00
1894	108.4	33.6	142.0	1.94	515	68	583	0.05	0	0	0	0.00
1895	115.0	34.5	149.5	2.00	515	71	586	0.05	0	0	0	0.00
1896	118.3	34.9	153.2	2.13	514	74	588	0.05	0	0	0	0.00
1897	119.3	34.4	153.7	2.07	514	91	605	0.05	0	0	0	0.00
1898	124.4	35.7	160.1	2.14	488	109	597	0.05	0	0	0	0.00
1899	146.3	44.3	190.6	2.54	494	137	631	0.05	0	0	0	0.00
1900	140.1	40.5	180.6	2.36	533	153	686	0.05	0	0	0	0.00
1901	150.9	44.1	195.1	2.55	576	151	727	0.06	0	0	0	0.00
1902	159.7	47.2	206.8	2.73	582	132	714	0.06	0	0	0	0.00
1903	171.4	51.5	222.9	2.90	627	155	782	0.07	0	0	0	0.00
1904	195.1	56.3	251.4	3.23	636	203	839	0.09	0	0	0	0.00
1905	211.1	59.4	270.5	3.38	624	209	833	0.09	0	0	0	0.00
1906	219.9	63.3	283.2	3.60	663	230	893	0.09	0	0	0	0.00
1907	229.1	66.0	295.0	3.72	742	262	1,004	0.10	0	0	0	0.00
1908	255.2	71.7	326.9	4.11	815	295	1,110	0.12	0	0	0	0.00
1909	318.2	76.1	394.3	4.96	861	393	1,254	0.13	0	0	0	0.00
1910	402.4	85.4	487.7	6.19	899	425	1,324	0.16	0	0	0	0.00
1911	486.1	94.1	580.2	7.43	802	549	1,351	0.15	0	0	0	0.00
1912	557.5	106.2	663.8	8.37	774	491	1,265	0.16	0	0	0	0.00
1913	610.5	111.4	721.9	8.99	779	482	1,261	0.16	0	0	0	0.00
1914	594.8	108.7	703.5	8.59	813	495	1,308	0.17	0	0	0	0.00
1915	662.8	118.3	781.2	9.40	850	546	1,396	0.19	0	0	0	0.00
1916	737.9	128.7	866.6	10.29	977	633	1,610	0.21	0	0	0	0.00
1917	783.9	134.2	918.0	10.76	1,087	743	1,830	0.26	0	0	0	0.00
1918	819.6	146.8	966.4	10.87	1,309	896	2,205	0.30	0	0	0	0.00
1919	724.9	146.6	871.5	9.40	1,745	982	2,727	0.33	0	0	0	0.00
1920	823.1	160.0	983.1	10.01	1,841	1,054	2,895	0.37	26	2	28	0.00

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Table A.6.1: Enrolments per level of education and sex in Indonesia, 1880-2000												
	Primary education ('000s)				Secondary Education				Higher Education			
	Boys	Girls	Total	% of relevant	Boys	Girls	Total	% of relevant	Boys	Girls	Total	% of relevant
1921	939.5	176.4	1,115.9	11.25	1,770	1,067	2,837	0.39	54	1	55	0.00
1922	903.6	238.4	1,141.9	11.35	1,865	1,030	2,895	0.42	93	0	93	0.00
1923	980.1	209.7	1,189.8	11.59	1,890	1,177	3,067	0.48	92	0	92	0.00
1924	990.0	213.5	1,203.5	11.91	1,767	1,161	2,928	0.52	133	4	137	0.00
1925	1,067.6	235.4	1,303.0	11.65	1,691	1,182	2,873	0.58	153	9	163	0.01
1926	1,137.8	252.0	1,389.8	12.42	1,726	1,168	2,894	0.61	168	8	176	0.01
1927	1,244.9	297.1	1,542.0	13.61	2,147	1,428	3,575	0.64	204	11	215	0.01
1928	1,347.6	343.9	1,691.5	15.04	2,474	1,458	3,932	0.65	203	13	259	0.01
1929	1,297.7	347.7	1,645.4	14.22	2,718	1,653	4,371	0.71	341	13	354	0.01
1930	1,423.6	414.1	1,837.7	14.88	3,116	1,870	4,986	0.73	462	24	486	0.01
1931	1,488.8	473.4	1,962.2	15.67	3,702	2,080	5,782	0.72	582	36	618	0.02
1932	1,485.0	506.5	1,991.6	15.72	3,921	2,296	6,217	0.69	694	46	740	0.02
1933	1,441.0	526.0	1,967.0	15.34	3,984	2,401	6,385	0.65	807	55	862	0.02
1934	1,429.8	527.3	1,957.1	15.08	3,758	2,500	6,258	0.63	919	65	984	0.03
1935	1,441.1	548.0	1,989.0	15.15	3,816	2,581	6,397	0.59	951	69	1,020	0.03
1936	1,510.9	590.9	2,101.8	15.77	4,054	2,424	6,478	0.76	968	70	1,038	0.03
1937	1,561.7	621.3	2,183.0	16.21	4,167	3,027	7,194	0.80	1,002	85	1,087	0.03
1938	1,652.0	671.1	2,323.2	16.90	4,662	3,133	7,795	0.87	1,010	91	1,092	0.03
1939	1,706.1	706.6	2,412.6	17.33	5,228	3,456	8,684	1.06	1,140	106	1,096	0.03
1940	1,659.4	693.2	2,352.6	16.98			7,795	0.98			1,101	0.03
1941	1,644.2	686.8	2,331.0	17.08			8,684	1.13			1,246	0.04
1942	837.8	409.0	1,246.8	9.01				0.60				0.01
1943	947.6	486.2	1,433.8	10.26				0.71				0.00
1944	975.3	500.3	1,475.6	10.54				0.77				0.01
1945	1,667.8	855.6	2,523.4	21.89				1.67				0.02
1946	1,911.8	980.8	2,892.6	25.08			111,746	2.00			1,600	0.03
1947	2,155.7	1,106.0	3,261.7	28.19				2.35				0.04
1948	2,399.7	1,231.1	3,630.9	31.24				2.71				0.06
1949	2,643.7	1,356.3	4,000.0	34.17	132,344	29,341	161,685	3.10				0.08
1950	3,259.6	1,717.7	4,977.3	42.22	136,780	30,325	167,105	3.15	5,096	903	5,999	0.11
1951	3,450.5	1,867.5	5,318.0	44.76	144,236	32,340	176,576	3.27	20,218	3,582	23,799	0.42
1952	3,505.1	1,947.8	5,452.9	45.53	153,660	34,787	188,447	3.43	35,339	6,261	41,600	0.70
1953	4,189.1	2,434.9	6,624.0	54.88	186,617	42,400	229,017	4.10	50,460	8,939	59,400	0.97
1954	4,375.2	2,658.8	7,034.0	57.84	291,811	65,869	357,680	6.28	65,582	11,618	77,200	1.22
1955	4,350.4	2,762.6	7,113.0	58.06	320,427	72,529	392,956	6.78	74,841	13,259	88,100	1.35
1956	4,223.6	2,801.4	7,025.0	56.91	574,827	128,563	703,390	11.93	92,681	16,419	109,100	1.62
1957	4,322.5	2,993.5	7,316.0	58.85	474,059	106,873	580,932	9.68	91,662	16,238	107,900	1.56
1958	4,284.0	3,096.7	7,380.7	58.96	271,494	62,216	333,710	5.46	101,516	17,984	119,500	1.67
1959	4,685.7	3,534.8	8,221.1	65.21	387,798	89,158	476,957	7.67	112,050	19,850	131,900	1.79
1960	5,104.4	3,850.7	9,062.1	70.62	404,273	29,289	597,803	6.85	111,907	46,193	158,100	2.08
1961	5,400.0	4,242.9	9,642.9	75.52	577,565	38,807	820,069	9.56	95,678	73,322	169,000	2.17
1962	5,898.2	4,677.8	10,576.0	80.15	798,420	67,480	865,900	12.40	106,103	75,097	181,200	2.27
1963	6,143.3	4,917.7	11,061.0	81.12	947,407	119,693	1,067,100	14.15	112,767	73,633	186,400	2.29
1964	6,350.7	5,131.3	11,482.0	81.51	932,905	166,895	1,099,800	13.55	132,370	79,630	212,000	2.55
1965	6,437.4	5,250.0	11,687.4	80.33	923,697	215,788	1,139,485	13.08	292,512	161,837	454,349	5.34
1966	6,966.1	5,505.9	12,472.0	83.00	991,048	282,793	1,273,841	13.65	207,918	105,580	313,498	3.61
1967	7,121.0	5,454.0	12,575.0	81.04	936,807	322,870	1,259,677	12.63	260,767	121,233	382,000	4.30

Continued on the next page

	Primary education ('000s)				Secondary Education				Higher Education			
	Boys	Girls	Total	% of relevant	Boys	Girls	Total	% of relevant	Boys	Girls	Total	% of relevant
1967	7,121.0	5,454.0	12,575.0	81.04	936,807	322,870	1,259,677	12.63	260,767	121,233	382,000	4.30
1968	7,022.7	5,211.3	12,234.0	76.37	907,490	369,510	1,277,000	12.01	319,434	135,566	455,000	5.01
1969	7,487.2	5,382.4	12,869.6	77.82	1,093,242	520,270	1,613,512	14.26	396,530	153,085	549,615	5.93
1970	8,766.2	6,104.0	14,870.2	81.26	979,420	529,700	1,509,120	12.55	477,300	166,930	644,230	6.80
1971	7,401.3	6,073.4	13,474.7	78.92	1,040,464	605,999	1,646,463	13.68	561,041	149,100	710,141	8.02
1972	8,753.6	7,279.2	16,032.8	94.82	1,076,374	619,927	1,696,301	13.78	473,584	207,596	681,180	7.42
1973	9,334.9	7,279.2	16,614.1	95.72	1,101,452	655,869	1,757,321	13.97	495,685	219,588	715,273	7.52
1974	9,388.7	7,806.7	17,195.3	96.50	783,080	1,014,573	1,797,653	13.98	555,267	234,491	789,758	8.02
1975	9,688.4	8,088.3	17,776.6	97.17	1,756,566	1,081,614	2,838,180	21.58	582,841	277,313	860,154	8.43
1976	10,100.7	8,679.2	18,779.9	99.98	2,027,792	1,184,902	3,212,694	23.90	643,139	308,491	951,630	9.01
1977	10,643.4	9,139.9	19,783.3	102.58	1,823,021	1,081,514	2,904,535	21.13	596,084	298,906	894,991	8.18
1978	10,350.2	8,882.7	19,232.9	97.13	2,059,542	1,252,203	3,311,745	23.56	550,141	288,211	838,351	7.39
1979	11,370.8	9,752.6	21,123.5	103.89	2,465,820	1,541,679	4,007,499	27.89	505,308	276,404	781,712	6.66
1980	13,750.6	11,786.5	25,537.1	122.31	3,294,092	2,128,444	5,422,536	36.90	536,311	306,143	842,454	6.93
1981	14,374.2	12,652.3	27,026.5	128.18	3,630,279	2,410,321	6,040,600	39.65	520,129	324,785	844,914	6.63
1982	14,558.8	13,431.5	27,990.3	131.47	4,075,190	2,869,435	6,944,625	43.99	539,453	354,252	893,705	6.69
1983	15,110.7	13,997.9	29,108.6	135.42	4,352,617	2,990,398	7,343,015	44.88	547,272	387,255	934,527	6.69
1984	15,503.5	14,405.7	29,909.2	137.84	5,060,391	3,593,049	8,653,440	51.06	568,788	435,135	1,003,923	6.87
1985	15,576.2	14,320.9	29,897.1	136.51	5,572,664	4,016,614	9,589,278	54.62	631,445	490,298	1,121,743	7.34
1986	15,511.3	14,371.2	29,882.6	135.69	6,145,495	4,572,739	10,718,234	59.16	740,826	583,823	1,324,649	8.32
1987	15,599.9	14,400.1	30,000.0	135.49	6,514,082	4,938,516	11,452,598	61.28	853,042	643,151	1,496,193	9.03
1988	15,578.5	14,552.1	30,130.6	135.37	6,432,944	5,131,615	11,564,559	59.98	846,557	623,681	1,470,238	8.53
1989	15,475.5	14,458.3	29,933.8	133.80	6,456,346	5,074,287	11,530,633	57.99	837,336	648,813	1,486,149	8.29
1990	15,274.3	14,479.3	29,753.6	132.34	6,280,951	5,025,268	11,306,219	55.14	827,875	566,092	1,393,967	7.48
1991	15,115.9	14,461.8	29,577.7	131.53	6,434,680	5,115,582	11,550,262	54.89	787,456	561,528	1,348,984	7.15
1992	15,244.7	14,354.1	29,598.8	131.93	6,644,480	5,124,094	11,768,574	54.90	782,980	582,094	1,365,074	7.10
1993	15,411.6	14,464.6	29,876.2	133.64	6,862,065	5,360,884	12,222,949	56.04	792,006	613,701	1,405,707	7.17
1994	15,357.9	14,364.0	29,721.9	133.50	7,126,249	5,735,547	12,861,796	58.12	893,098	677,760	1,570,858	7.87
1995	15,215.7	14,232.3	29,448.0	132.80	7,609,228	6,230,500	13,839,728	61.91	917,042	724,809	1,641,851	8.05
1996	15,106.3	14,129.9	29,236.3	132.16	8,717,204	6,314,007	15,031,211	66.93	996,026	770,541	1,766,567	8.44
1997	14,482.8	13,546.3	28,029.1	126.87	8,160,751	6,401,143	14,561,894	64.80	1,203,178	791,041	1,994,219	9.35
1998	13,859.3	12,962.6	26,822.0	121.44	7,598,611	6,493,969	14,092,580	62.86	1,410,329	811,542	2,221,871	10.24
1999	13,235.8	12,379.0	25,614.8	115.81	7,030,781	6,592,483	13,623,264	61.03	1,617,481	832,042	2,449,523	11.12
2000				110.18				59.20	1,724,798	1,293,089	3,017,887	

Sources: see chapter 3.

Table A.6.2: Enrolments per level of education and sex in India, 1880-2000												
	Primary education ('000s)				Secondary Education ('000s)				Higher Education ('000s)			
	Boys	Girls	Total	% of relevant	Boys	Girls	Total	% of relevant	Boys	Girls	Total	% of relevant
1880	1,179.1	90.8	1,270.0	3.16	190.5	2.2	192.7	0.84	6.4	0.0	6.4	0.04
1881	1,346.8	88.5	1,435.3	3.55	198.6	13.5	212.1	0.92	6.7	0.0	6.7	0.04
1882	1,537.6	109.5	1,647.1	4.02	215.7	7.5	223.2	0.96	7.1	0.0	7.1	0.04
1883	1,772.8	131.8	1,904.6	4.60	201.1	7.8	208.9	0.89	7.9	0.0	7.9	0.04
1884	1,949.5	156.4	2,105.9	5.02	295.9	14.9	310.8	1.30	7.9	0.0	7.9	0.04
1885	2,081.5	143.9	2,225.4	5.26	323.3	17.7	341.0	1.41	8.6	0.0	8.7	0.05
1886	1,964.9	158.7	2,123.6	4.97	333.1	19.4	352.6	1.45	9.7	0.0	9.8	0.05
1887	1,984.9	169.9	2,154.8	5.00	349.4	20.2	369.6	1.51	10.7	0.0	10.7	0.06
1888	2,025.8	224.7	2,250.5	5.17	358.0	23.0	381.0	1.54	12.2	0.0	12.2	0.06
1889	2,071.9	226.3	2,298.2	5.21	363.8	24.1	387.9	1.55	13.0	0.0	13.1	0.07
1890	2,128.1	238.8	2,366.9	5.49	365.8	28.9	394.7	1.61	14.4	0.1	14.5	0.08
1891	2,220.1	258.1	2,478.2	5.73	371.4	28.6	399.9	1.63	14.8	0.0	14.9	0.08
1892	2,256.7	276.6	2,533.4	5.79	378.5	21.5	400.0	1.64	15.2	0.1	15.3	0.08
1893	2,304.8	286.9	2,591.7	5.93	389.6	30.7	420.3	1.73	16.7	0.1	16.7	0.09
1894	2,371.7	300.3	2,672.0	6.12	401.5	31.2	432.8	1.81	16.6	0.1	16.7	0.08
1895	2,440.9	302.7	2,743.6	6.29	407.3	32.0	439.3	1.86	17.5	0.1	17.6	0.09
1896	2,479.2	304.9	2,784.2	6.39	411.4	32.6	443.9	1.90	17.1	0.1	17.1	0.09
1897	2,408.6	301.7	2,710.2	6.23	415.5	32.1	447.6	1.94	17.5	0.1	17.6	0.09
1898	2,440.3	302.6	2,742.9	6.31	424.4	33.4	457.8	2.01	19.1	0.1	19.2	0.09
1899	2,474.9	319.1	2,793.9	6.43	441.9	34.7	476.6	2.12	18.2	0.1	18.3	0.09
1900	2,431.5	318.5	2,750.0	6.34	436.4	33.9	470.3	2.12	19.4	0.1	19.6	0.09
1901	2,521.9	334.1	2,856.0	6.58	417.2	31.8	449.0	2.05	20.7	0.2	20.9	0.10
1902	2,616.1	355.4	2,971.5	6.79	421.1	32.0	453.2	2.06	21.3	0.1	21.5	0.10
1903	2,862.9	421.1	3,284.0	7.47	450.0	35.9	485.9	2.21	22.0	0.2	22.2	0.10
1904	2,931.5	457.0	3,388.5	7.70	477.9	39.4	517.3	2.34	23.4	0.2	23.6	0.11
1905	2,825.5	450.4	3,276.0	7.42	502.7	42.1	544.9	2.46	22.4	0.2	22.5	0.10
1906	2,899.9	459.5	3,359.4	7.59	531.1	45.0	576.1	2.59	22.7	0.2	22.9	0.11
1907	3,022.6	524.1	3,546.7	7.98	572.7	54.1	626.8	2.81	23.0	0.2	23.2	0.11
1908	3,371.4	632.2	4,003.6	9.00	626.6	62.7	689.4	3.08	22.5	0.2	22.8	0.10
1909	3,222.8	616.8	3,839.6	8.66	665.4	63.5	728.9	3.24	26.2	0.2	26.4	0.12
1910	3,269.9	640.3	3,910.2	8.84	713.7	74.1	787.8	3.51	27.7	0.2	27.9	0.13
1911	3,507.6	731.6	4,239.2	9.58	744.2	61.7	805.9	3.61	32.3	0.2	32.5	0.15
1912	3,917.2	828.5	4,745.7	10.65	804.4	66.1	870.5	3.90	36.9	0.3	37.2	0.17
1913	3,807.2	835.0	4,642.2	10.35	850.4	73.6	924.0	4.13	42.0	0.3	42.3	0.19
1914	3,964.6	913.5	4,878.1	10.80	870.2	83.0	953.2	4.26	45.4	0.3	45.8	0.21
1915	3,531.3	833.3	4,364.5	9.60	826.9	73.5	900.4	4.02	49.2	0.4	49.6	0.23
1916	3,632.8	868.1	4,500.9	9.83	845.7	70.2	915.9	4.09	51.6	0.7	52.3	0.24
1917	3,694.8	908.4	4,603.2	9.99	834.4	65.4	899.8	4.01	55.4	0.7	56.1	0.26
1918	4,173.6	1,086.1	5,259.7	11.34	866.3	70.5	936.8	4.17	56.8	0.7	57.5	0.27
1919	3,787.9	1,003.5	4,791.3	10.26	887.1	74.3	961.4	4.28	57.9	0.8	58.7	0.28
1920	3,922.5	1,035.3	4,957.8	10.55	868.3	77.1	945.4	4.21	54.0	0.9	54.9	0.26
1921	3,928.0	1,026.0	4,954.0	10.38	849.6	80.6	930.3	4.10	52.2	1.0	53.2	0.25
1922	4,205.6	1,093.0	5,298.6	11.06	926.2	80.4	1,006.6	4.35	59.3	0.8	60.1	0.28
1923	4,321.9	1,117.6	5,439.5	11.30	1,015.1	85.0	1,100.1	4.66	65.4	0.9	66.2	0.30
1924	4,551.0	1,171.0	5,722.0	11.84	1,114.2	90.1	1,204.3	5.01	73.0	0.9	74.0	0.33
1925	4,849.9	1,241.6	6,091.5	12.57	1,252.1	97.2	1,349.4	5.51	76.9	0.9	77.8	0.34
1926	5,178.4	1,319.1	6,497.5	13.36	1,373.8	111.4	1,485.2	5.95	78.1	1.4	79.5	0.33

Continued on the next page

Table A.6.2: Enrolments per level of education and sex in India, 1880-2000												
	Primary education ('000s)				Secondary Education ('000s)				Higher Education ('000s)			
	Boys	Girls	Total	% of relevant	Boys	Girls	Total	% of relevant	Boys	Girls	Total	% of relevant
1927	5,424.0	1,429.7	6,853.7	14.09	1,484.2	121.6	1,605.7	6.34	78.7	2.2	80.9	0.33
1928	5,561.1	1,529.7	7,090.8	14.59	1,520.6	130.8	1,651.4	6.42	81.8	1.7	83.5	0.34
1929	5,895.7	1,272.5	7,168.2	14.70	1,595.9	148.1	1,744.0	6.66	83.8	2.0	85.7	0.34
1930	6,263.9	1,013.8	7,277.7	14.88	1,590.5	161.4	1,752.0	6.57	79.1	2.0	81.1	0.31
1931	6,301.6	1,063.0	7,364.6	15.03	1,551.4	173.6	1,725.0	6.35	85.6	2.2	87.7	0.33
1932	6,320.4	1,108.1	7,428.6	15.08	1,530.0	187.6	1,717.6	6.21	88.8	2.5	91.2	0.34
1933	6,488.1	1,162.9	7,651.0	15.45	1,530.5	204.6	1,735.1	6.15	92.4	3.0	95.4	0.35
1934	6,660.9	1,190.1	7,851.0	15.73	1,647.9	275.9	1,923.8	6.67	96.2	3.7	99.9	0.37
1935	6,833.7	1,217.4	8,051.1	16.05	1,592.0	233.9	1,825.9	6.21	97.2	3.9	101.1	0.37
1936	6,991.7	1,232.8	8,224.5	16.33	1,634.8	247.4	1,882.2	6.29	99.6	4.4	104.0	0.37
1937	7,186.6	1,378.4	8,565.0	16.95	1,771.8	261.1	2,032.9	6.67	107.2	5.0	112.3	0.40
1938	7,375.1	1,531.4	8,906.5	17.61	1,899.1	285.5	2,184.6	7.06	114.8	5.8	120.6	0.43
1939	7,557.2	1,691.8	9,249.1	18.17	2,024.3	312.0	2,336.3	7.40	122.3	6.5	128.8	0.46
1940	7,697.4	1,851.1	9,548.5	18.69	2,091.6	331.2	2,422.8	7.54	128.5	7.3	135.8	0.48
1941	7,747.2	1,994.9	9,742.0	19.14	2,106.0	342.4	2,448.4	7.53	133.3	8.0	141.3	0.50
1942	7,382.6	2,029.8	9,412.4	18.34	2,030.0	337.0	2,367.0	7.12	123.9	7.9	131.8	0.46
1943	6,997.1	2,048.8	9,045.9	17.58	2,123.6	357.3	2,480.9	7.34	136.3	9.1	145.4	0.50
1944	7,084.8	2,204.3	9,289.2	18.02	2,317.0	393.9	2,710.9	7.88	157.8	11.1	168.8	0.58
1945	7,418.2	2,447.5	9,865.6	19.11	2,541.8	439.6	2,981.3	8.53	176.4	13.0	189.3	0.65
1946	7,928.3	2,768.6	10,696.9	20.62	2,608.9	446.3	3,055.3	8.57	163.5	12.6	176.1	0.60
1947	8,422.6	3,107.9	11,530.5	22.21	2,509.0	416.3	3,387.3	9.35	161.5	22.7	229.6	0.77
1948	9,451.3	3,543.3	12,994.6	25.01	3,031.2	492.8	3,917.2	10.65	191.6	24.0	272.0	0.91
1949	12,607.1	5,008.0	17,615.1	33.78	5,153.3	963.7	6,117.0	16.32	268.5	32.5	300.9	1.00
1950	13,442.1	5,264.2	18,706.3	35.75	5,290.3	1,053.8	6,344.1	16.61	286.0	40.2	326.2	1.08
1951	13,791.5	5,507.1	19,298.6	36.87	5,600.9	1,133.4	6,734.3	17.36	324.2	45.3	369.5	1.22
1952	14,069.8	5,731.7	19,801.5	34.83	5,928.8	1,210.6	7,139.4	18.11	361.4	53.7	415.1	1.34
1953	15,006.3	6,199.9	21,206.2	36.60	6,013.5	1,263.4	7,276.9	18.18	411.6	61.4	473.0	1.50
1954	15,881.5	6,740.4	22,621.9	38.31	6,510.6	1,399.3	7,909.9	19.46	457.5	72.1	529.6	1.65
1955	17,024.6	7,486.7	24,511.3	40.75	6,997.0	1,621.4	8,618.4	20.89	491.2	84.1	575.2	1.75
1956	17,884.1	8,080.7	25,964.8	42.29	7,435.7	1,807.1	9,242.8	22.02	688.7	110.0	798.7	2.38
1957	18,844.3	8,559.4	27,403.6	43.74	7,735.0	1,983.3	9,718.2	22.77	724.7	124.9	849.6	2.48
1958	17,920.1	8,309.5	26,229.5	40.94	8,304.2	2,104.2	10,408.3	23.94	688.9	134.7	823.5	2.35
1959	21,895.5	10,363.1	32,258.7	49.39	8,799.8	2,421.1	11,220.9	25.41	647.8	137.7	785.5	2.20
1960	22,687.3	10,944.1	33,631.4	50.52	10,182.6	2,958.2	13,140.8	29.30	657.8	149.9	807.6	2.22
1961	24,967.2	12,610.9	37,578.1	52.59	11,275.9	4,007.8	15,283.7	33.41	704.7	160.6	865.3	2.32
1962	26,727.0	13,754.3	40,481.3	57.55	11,949.5	4,366.5	16,316.0	34.63	755.2	171.3	926.5	2.03
1963	27,957.8	14,826.9	42,784.7	58.96	12,714.2	4,831.4	17,545.5	36.18	805.7	225.4	1,031.1	2.68
1964	30,654.1	16,903.2	47,557.3	63.56	12,747.4	5,204.6	17,952.0	35.98	875.9	259.8	1,135.7	2.91
1965	30,608.8	17,085.7	47,694.5	64.94	13,991.3	5,355.3	19,346.6	31.62	946.3	296.0	1,242.3	3.14
1966	31,726.9	18,179.9	49,906.8	66.33	14,938.7	5,926.4	20,865.1	33.09	895.3	328.0	1,223.3	3.05
1967	35,344.0	18,982.0	54,326.0	70.36	14,713.4	6,180.9	20,894.3	32.11	1,091.1	311.3	1,402.5	3.45
1968	34,156.9	20,211.8	54,368.7	68.53	15,120.2	6,343.7	21,463.9	31.91	1,235.8	361.8	1,597.6	3.87
1969	34,769.1	20,715.9	55,485.0	68.22	15,544.8	6,710.9	22,255.7	32.09	1,380.4	412.3	1,792.7	4.28
1970	35,739.2	21,306.2	57,045.4	71.35	15,263.7	6,195.5	21,459.1	25.28	1,814.0	614.0	2,428.0	6.86
1971	37,017.7	22,268.0	59,285.7	72.23	15,934.5	5,538.0	21,472.5	24.47	2,166.9	684.1	2,850.9	7.87
1972	38,296.2	23,229.8	61,526.0	73.82	16,585.2	6,559.6	23,144.8	25.96	2,519.8	754.1	3,273.9	8.77
1973	37,816.4	22,825.6	60,642.0	71.86	16,665.8	7,020.1	23,685.9	25.91	2,374.4	802.5	3,176.9	8.26

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	Primary education ('000s)				Secondary Education ('000s)				Higher Education ('000s)			
	Boys	Girls	Total	% of relevant	Boys	Girls	Total	% of relevant	Boys	Girls	Total	% of relevant
1974	40,266.5	24,589.1	64,855.6	75.82	16,997.7	7,480.7	24,478.5	26.12	2,229.0	850.8	3,079.8	7.77
1975	40,649.0	25,011.0	65,660.0	75.65	17,370.3	7,639.2	25,009.5	26.01	2,240.2	872.9	3,113.1	7.62
1976	42,689.9	26,370.8	69,060.7	78.59	19,226.4	8,306.4	27,532.7	27.96	2,961.3	1,056.0	4,017.3	9.56
1977	41,899.3	25,461.7	67,361.0	75.64	18,849.7	8,503.5	27,353.2	27.10	3,180.4	1,143.6	4,324.0	9.99
1978	42,657.4	26,093.0	68,750.4	76.21	19,865.5	9,144.3	29,009.8	28.05	3,330.5	1,125.7	4,456.2	10.01
1979	44,218.8	27,339.3	71,558.1	78.12	20,040.1	9,467.0	29,507.1	27.77	3,949.1	1,396.5	5,345.6	11.64
1980	45,657.4	28,537.3	74,194.7	79.94	23,014.5	10,856.1	33,870.5	31.09	2,611.9	933.4	3,545.3	7.49
1981	44,478.0	29,395.0	73,873.0	80.88	26,268.0	12,642.8	38,910.8	36.38	2,463.0	948.1	3,411.1	8.23
1982	45,171.0	30,935.0	76,106.0	82.15	27,853.3	14,785.5	42,638.7	39.06	2,829.1	1,087.2	3,916.3	9.24
1983	47,276.0	32,231.0	79,507.0	84.77	29,789.7	14,796.6	44,586.3	40.09	3,040.3	1,170.8	4,211.2	9.75
1984	49,397.0	33,193.0	82,590.0	86.90	31,759.3	16,194.1	47,953.3	42.29	3,021.4	1,250.2	4,271.6	9.68
1985	52,247.0	35,194.0	87,441.0	90.85	32,953.6	17,082.8	50,036.4	43.29	3,134.6	1,336.2	4,470.8	9.93
1986	51,683.0	35,446.0	87,129.0	89.44	33,655.7	16,736.7	50,392.4	42.80	3,375.5	1,430.7	4,806.2	10.47
1987	53,508.0	36,952.0	90,460.0	91.67	34,103.8	17,302.5	51,406.3	42.82	2,930.7	1,345.2	4,275.9	9.12
1988	57,143.0	38,597.0	95,740.0	95.84	49,034.3	17,930.3	66,964.6	42.95	3,091.2	1,437.8	4,529.0	9.47
1989	57,731.0	39,587.0	97,318.0	96.28	47,560.6	19,609.8	67,170.4	53.90	3,228.8	1,551.3	4,780.2	9.80
1990	58,094.0	41,024.0	99,118.0	96.96	46,086.8	21,289.4	67,376.2	53.10	3,313.4	1,637.6	4,951.0	9.96
1991	59,218.0	42,359.0	101,577.0	98.30	44,613.0	22,968.9	67,581.9	52.34	3,234.1	1,698.5	4,932.7	9.74
1992	60,454.0	44,916.0	105,370.0	100.51	43,139.3	24,648.4	67,787.7	51.59	3,642.7	2,053.1	5,695.8	11.01
1993	61,805.0	46,396.0	108,201.0	101.83	43,935.6	25,715.6	69,651.2	52.11	3,861.9	2,198.6	6,060.4	11.47
1994	62,257.0	46,787.0	109,044.0	101.34	44,720.9	26,113.8	70,834.7	52.11	4,081.0	2,344.0	6,425.1	11.92
1995	62,360.0	47,374.0	109,734.0	100.84	45,555.5	26,776.2	72,331.7	52.34	4,300.2	2,489.5	6,789.7	12.35
1996	62,498.0	47,892.0	110,390.0	100.60	46,428.4	28,102.3	74,530.7	48.50	4,452.0	2,303.0	6,755.0	12.06
1997	61,329.0	47,453.0	108,782.0	98.80					4,632.0	2,446.0	7,078.0	12.39
1998	62,700.0	48,200.0	110,900.0						4,844.0	2,574.0	7,418.0	12.75
1999	64,100.0	49,500.0	113,600.0						4,993.0	2,741.0	7,734.0	13.05
2000	64,000.0	49,800.0	113,800.0									

Sources: see chapter 3.

Table A.6.3: Enrolments per level of education and sex in Japan, 1880-2000												
	Primary education ('000s)				Secondary Education ('000s)				Higher Education ('000s)			
	Boys	Girls	Total	% of relevant age group	Boys	Girls	Total	% of relevant age group	Boys	Girls	Total	% of relevant
1880	1,759.2	586.4	2,345.6	42.36	72.2	18.5	90.7	2.26	7.1	0.0	7.1	0.22
1881	1,927.3	680.0	2,607.3	46.70	73.6	17.1	90.8	2.24	8.5	0.0	8.5	0.26
1882	2,188.3	816.0	3,004.3	53.38	63.7	12.7	76.4	1.87	8.9	0.0	8.9	0.27
1883	2,323.4	914.3	3,237.7	56.99	68.7	12.3	81.0	1.96	9.0	0.1	9.1	0.27
1884	2,285.4	948.0	3,233.4	56.36	70.7	11.3	82.0	1.97	10.0	0.1	10.1	0.30
1885	2,155.8	941.6	3,097.4	53.58	76.6	11.0	87.6	2.09	11.7	0.1	11.8	0.35
1886	1,955.2	847.6	2,802.8	48.24	75.4	12.1	87.5	2.07	12.0	0.1	12.1	0.35
1887	1,897.3	816.3	2,713.6	46.41	86.5	16.4	102.8	2.42	14.0	0.1	14.1	0.41
1888	2,051.9	876.1	2,928.0	49.59	94.3	18.3	112.7	2.63	13.2	0.1	13.3	0.38
1889	2,129.7	902.4	3,032.1	50.79	89.0	18.5	107.5	2.48	14.4	0.1	14.5	0.41
1890	2,179.9	916.5	3,096.4	51.36	92.0	19.6	111.6	2.65	15.9	0.1	16.0	0.45
1891	2,194.4	959.4	3,153.8	51.92	93.8	20.6	114.3	2.70	17.3	0.1	17.4	0.48
1892	2,176.5	988.9	3,165.4	51.72	88.5	19.8	108.2	2.53	16.4	0.1	16.5	0.46
1893	2,267.5	1,070.0	3,337.6	54.11	87.1	19.8	107.0	2.49	14.6	0.1	14.6	0.40
1894	2,349.9	1,151.2	3,501.1	56.55	90.1	19.9	110.0	2.55	14.8	0.1	14.9	0.40
1895	2,433.4	1,236.9	3,670.3	58.97	99.0	21.4	120.4	2.79	15.6	0.1	15.7	0.41
1896	2,518.4	1,359.6	3,878.0	61.98	115.6	25.6	141.2	3.27	15.9	0.1	16.0	0.40
1897	2,539.9	1,454.9	3,994.8	63.49	130.2	29.9	160.1	3.70	18.0	0.2	18.2	0.45
1898	2,527.6	1,534.8	4,062.4	64.12	137.7	31.7	169.4	3.90	20.1	0.2	20.3	0.48
1899	2,618.6	1,684.0	4,302.6	67.16	156.9	36.9	193.8	4.44	21.7	0.2	22.0	0.52
1900	2,786.7	1,896.9	4,683.6	72.32	173.0	45.9	219.0	5.00	23.5	0.3	23.8	0.57
1901	2,925.6	2,055.0	4,980.6	75.94	199.9	61.3	261.1	5.93	27.2	0.5	27.6	0.66
1902	2,977.6	2,157.9	5,135.5	77.27	228.9	78.1	307.0	6.93	31.0	0.7	31.7	0.75
1903	2,909.1	2,175.0	5,084.1	75.52	255.0	97.6	352.5	7.90	31.2	0.8	32.1	0.76
1904	2,910.0	2,244.1	5,154.1	74.54	275.7	112.6	388.3	8.64	36.9	1.2	38.1	0.90
1905	2,979.0	2,369.3	5,348.2	75.48	319.5	138.3	457.8	10.14	38.8	1.4	40.2	0.94
1906	3,050.8	2,464.0	5,514.7	76.06	373.5	157.8	531.3	11.72	40.3	1.4	41.8	0.98
1907	3,139.1	2,574.6	5,713.7	76.93	404.0	170.9	574.9	12.62	42.7	1.4	44.1	1.03
1908	3,271.5	2,724.6	5,996.1	78.66	412.9	177.0	589.9	12.85	45.1	1.4	46.5	1.08
1909	3,507.4	2,966.2	6,473.6	83.98	447.5	188.3	635.8	13.01	45.7	1.3	47.1	1.08
1910	3,691.6	3,170.1	6,861.7	87.98	489.7	197.5	687.3	13.24	45.3	1.2	46.5	1.07
1911	3,774.5	3,249.1	7,023.7	88.93	529.3	214.3	743.6	13.49	47.2	1.3	48.6	1.11
1912	3,777.7	3,259.7	7,037.4	87.96	575.2	238.3	813.4	13.93	48.1	1.3	49.5	1.12
1913	3,804.7	3,291.0	7,095.8	87.57	615.8	259.3	875.1	14.17	51.7	1.5	53.2	1.20
1914	3,890.5	3,373.3	7,263.7	87.65	677.7	286.6	964.3	15.86	52.2	1.6	53.8	1.18
1915	3,988.2	3,466.4	7,454.7	87.97	730.4	307.1	1,037.5	17.34	53.0	1.7	54.6	1.17
1916	4,087.3	3,566.8	7,654.0	88.41	814.1	335.2	1,149.3	19.56	56.4	2.0	58.5	1.23
1917	4,202.5	3,682.1	7,884.5	89.29	914.0	365.6	1,279.6	22.23	59.5	2.5	62.0	1.27
1918	4,329.1	3,808.3	8,137.3	90.64	1,039.9	401.3	1,441.2	25.67	62.3	2.9	65.2	1.31
1919	4,440.7	3,922.2	8,363.0	91.65	1,144.0	436.6	1,580.6	28.40	67.1	3.4	70.5	1.42
1920	4,575.4	4,057.4	8,632.9	92.76	1,242.6	478.0	1,720.6	31.07	76.4	3.4	79.8	1.59
1921	4,695.1	4,176.9	8,872.0	95.18	1,253.4	534.2	1,787.6	31.41	84.1	4.6	88.7	1.76
1922	4,766.5	4,254.1	9,020.6	96.58	1,281.8	596.0	1,877.8	32.08	92.8	5.4	98.1	1.93
1923	4,820.8	4,316.4	9,137.2	97.63	1,305.7	652.2	1,958.0	32.54	100.0	6.7	106.7	2.08
1924	4,840.4	4,347.9	9,188.3	97.98	1,342.1	730.3	2,072.4	33.50	109.5	8.5	118.0	2.28
1925	4,833.2	4,355.4	9,188.6	97.66	1,376.3	795.5	2,171.8	34.11	120.0	10.8	130.8	2.51
1926	4,874.2	4,413.5	9,287.7	96.91	2,358.6	852.9	3,211.5	49.92	131.0	13.2	144.2	2.68

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	Primary education ('000s)				Secondary Education ('000s)				Higher Education ('000s)			
	Boys	Girls	Total	% of relevant age group	Boys	Girls	Total	% of relevant age group	Boys	Girls	Total	% of relevant
1927	4,973.1	4,524.8	9,498.0	97.35	2,406.7	889.6	3,296.3	50.75	137.5	15.1	152.6	2.76
1928	5,057.2	4,623.5	9,680.7	97.51	2,390.3	914.3	3,304.6	50.42	147.8	18.1	165.9	2.91
1929	5,139.5	4,721.4	9,860.9	97.71	2,395.1	945.1	3,340.2	50.55	154.8	20.2	175.0	2.98
1930	5,258.4	4,853.9	10,112.2	98.47	2,407.2	962.8	3,369.9	50.54	157.7	22.5	180.2	2.98
1931	5,394.1	4,987.2	10,381.3	98.76	2,387.5	941.4	3,328.9	49.36	158.5	22.2	180.7	2.97
1932	5,562.8	5,151.4	10,714.2	99.63	2,430.2	942.5	3,372.7	49.47	158.7	21.9	180.6	2.95
1933	5,725.1	5,310.2	11,035.3	100.32	2,427.0	956.8	3,383.8	49.10	159.7	21.7	181.5	2.94
1934	5,822.7	5,409.4	11,232.1	99.98	2,465.3	991.8	3,457.1	49.70	161.9	22.4	184.3	2.96
1935	5,918.5	5,507.2	11,425.6	99.25	2,123.5	1,194.0	3,317.4	47.10	163.7	22.7	186.4	2.97
1936	5,987.0	5,579.9	11,566.9	99.21	2,211.6	1,252.8	3,464.4	47.86	164.4	23.2	187.6	3.01
1937	6,099.2	5,693.5	11,792.7	99.65	2,307.6	1,314.1	3,621.8	48.59	166.1	23.6	189.7	3.05
1938	6,190.6	5,788.1	11,978.7	100.44	2,514.0	1,453.8	3,967.8	52.07	171.4	25.3	196.7	3.19
1939	6,314.0	5,913.0	12,227.0	101.91	2,800.9	1,604.0	4,404.9	56.66	186.3	28.7	215.0	3.53
1940	6,364.9	5,970.2	12,335.1	102.03	2,969.1	1,714.7	4,683.8	58.97	209.7	34.2	243.9	4.05
1941	6,404.9	6,046.3	12,451.1	102.09	3,110.7	1,892.4	5,003.1	62.09	207.3	36.3	243.6	3.88
1942	6,497.5	6,173.2	12,670.7	103.03	3,216.4	2,030.2	5,246.6	64.21	226.4	40.8	267.2	4.09
1943	6,568.0	6,280.2	12,848.2	103.69	3,369.1	2,152.0	5,521.1	66.68	271.7	52.7	324.5	4.78
1944	6,605.1	6,356.2	12,961.3	103.58	3,288.2	2,202.4	5,490.6	80.63	277.9	55.8	333.7	3.85
1945	6,511.5	6,306.4	12,817.9	104.29	3,004.0	2,156.5	5,160.4	76.79	271.4	62.8	334.2	3.82
1946	6,247.6	6,060.6	12,308.2	99.42	2,942.6	2,177.8	5,120.4	75.29	307.1	66.6	373.7	4.13
1947	5,345.6	5,193.8	10,539.4	85.20	4,245.9	3,412.3	7,658.2	75.57	326.9	65.5	392.4	5.30
1948	5,460.6	5,314.1	10,774.7	86.25	3,053.6	3,031.4	6,085.0	59.00	325.6	61.3	386.9	5.09
1949	5,566.3	5,425.6	10,991.9	87.42	3,299.4	3,562.3	6,861.7	65.60	315.9	46.1	362.0	4.65
1950	5,662.8	5,528.6	11,191.4	88.71	3,519.7	3,778.9	7,298.6	69.51	350.4	40.8	391.2	4.95
1951	5,786.9	5,636.1	11,423.0	89.14	3,451.7	3,893.1	7,344.7	69.38	374.8	45.4	420.3	5.22
1952	5,654.4	5,493.9	11,148.3	86.05	3,408.3	4,034.0	7,442.3	69.83	438.5	63.8	502.3	6.13
1953	5,700.3	5,525.2	11,225.5	85.87	3,495.2	4,245.1	7,740.3	72.29	457.2	78.9	536.1	6.45
1954	5,974.2	5,776.8	11,750.9	88.97	3,644.3	4,591.9	8,236.2	76.48	471.6	93.8	565.5	6.70
1955	6,243.9	6,023.1	12,267.0	90.96	3,730.8	4,773.3	8,504.1	78.75	494.3	107.0	601.2	7.03
1956	6,424.2	6,192.1	12,616.3	94.04	3,780.7	4,914.0	8,694.7	79.95	511.4	113.0	624.4	7.29
1957	6,599.9	6,356.4	12,956.3	97.25	3,724.3	4,923.1	8,647.4	79.09	521.2	116.4	637.6	7.45
1958	6,875.6	6,616.5	13,492.1	101.94	3,501.1	4,798.5	8,299.6	75.47	528.9	120.4	649.3	7.59
1959	6,818.4	6,556.3	13,374.7	101.67	3,533.8	4,897.4	8,431.2	76.20	544.0	129.4	673.4	7.87
1960	6,421.2	6,169.4	12,590.7	96.38	3,861.3	5,313.9	9,175.2	82.48	567.7	142.2	709.9	8.30
1961	6,025.9	5,785.0	11,810.9	95.00	4,311.8	5,768.9	10,080.7	87.55	604.0	159.5	763.6	8.90
1962	5,643.4	5,413.5	11,056.9	93.64	4,559.0	6,089.5	10,648.5	89.35	655.4	182.8	838.2	9.75
1963	5,346.7	5,124.7	10,471.4	93.61	4,636.8	6,264.4	10,901.2	88.37	716.3	208.7	925.0	10.72
1964	5,123.8	4,907.2	10,031.0	94.95	4,761.1	6,391.8	11,152.9	87.36	768.0	227.8	995.9	11.50
1965	4,995.3	4,780.2	9,775.5	98.32	4,718.8	6,356.0	11,074.8	83.83	844.8	262.5	1,107.3	12.73
1966	4,897.5	4,686.6	9,584.1	97.39	4,427.8	6,171.7	10,599.5	84.03	945.9	322.2	1,268.1	13.83
1967	4,830.0	4,622.1	9,452.1	96.91	4,167.9	5,932.0	10,099.9	84.01	1,049.4	379.8	1,429.2	14.79
1968	4,794.8	4,588.4	9,383.2	96.96	3,895.1	5,719.2	9,614.3	84.11	1,140.8	423.0	1,563.8	15.37
1969	4,805.0	4,598.2	9,403.2	97.97	3,747.4	5,505.7	9,253.2	85.52	1,206.6	453.2	1,659.8	15.52
1970	4,851.2	4,642.3	9,493.5	99.5	3,658.2	5,341.0	8,999.2	88.36	1,242.5	471.5	1,714.1	15.28
1971	4,905.0	4,690.0	9,595.0	98.79	3,663.6	5,261.2	8,924.8	88.78	1,286.5	504.0	1,790.5	16.68
1972	4,958.6	4,737.5	9,696.1	98.02	3,693.0	5,204.6	8,897.6	89.61	1,327.3	537.7	1,865.0	22.99
1973	5,022.1	4,794.4	9,816.5	97.49	3,789.8	5,249.6	9,039.3	92.26	1,373.8	581.6	1,955.4	25.47

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	Primary education ('000s)				Secondary Education ('000s)				Higher Education ('000s)			
	Boys	Girls	Total	% of relevant age group	Boys	Girls	Total	% of relevant age group	Boys	Girls	Total	% of relevant
1974	5,163.4	4,925.3	10,088.8	98.42	3,838.3	5,229.8	9,068.0	93.88	1,413.7	624.3	2,038.1	28.19
1975	5,306.8	5,058.0	10,364.8	99.47	3,900.1	5,258.9	9,159.1	96.40	1,462.5	673.3	2,135.8	31.61
1976	5,434.4	5,175.6	10,610.0	99.06	4,061.8	5,224.0	9,285.8	96.54	1,503.3	700.4	2,203.7	32.97
1977	5,544.0	5,275.7	10,819.7	98.43	4,284.0	5,141.9	9,425.9	96.94	1,536.2	724.2	2,260.4	34.26
1978	5,713.9	5,433.0	11,146.9	98.91	4,409.1	5,125.9	9,535.0	97.07	1,549.3	739.9	2,289.2	35.19
1979	5,963.4	5,665.7	11,629.1	100.74	4,435.5	5,105.1	9,540.7	96.22	1,530.2	736.4	2,266.6	35.38
1980	6,067.0	5,759.5	11,826.6	100.10	4,613.0	5,195.1	9,808.1	98.03	1,516.0	736.8	2,252.8	35.75
1981	6,115.0	5,809.7	11,924.7	102.01	4,789.0	5,287.2	10,076.2	97.72	1,500.1	740.9	2,241.0	35.28
1982	6,100.7	5,800.8	11,901.5	102.99	4,935.9	5,383.5	10,319.4	97.20	1,491.4	747.4	2,238.8	34.99
1983	6,015.3	5,724.2	11,739.5	102.79	5,052.1	5,465.2	10,517.3	96.26	1,499.4	761.7	2,261.2	35.08
1984	5,872.0	5,592.2	11,464.2	101.65	5,221.5	5,594.1	10,815.7	96.28	1,500.7	771.9	2,272.6	35.01
1985	5,680.8	5,414.5	11,095.4	99.69	5,477.1	5,786.2	11,263.3	97.59	1,498.7	769.4	2,268.1	34.71
1986	5,462.6	5,202.8	10,665.4	99.80	5,708.6	5,541.7	11,250.3	96.13	1,544.6	865.1	2,409.7	36.97
1987	5,237.6	4,988.7	10,226.3	100.01	5,750.5	5,589.3	11,339.8	97.71	1,577.6	932.6	2,510.2	38.65
1988	5,056.4	4,816.1	9,872.5	101.23	5,731.5	5,578.5	11,310.0	98.30	1,609.7	978.8	2,588.5	40.03
1989	4,919.1	4,687.5	9,606.6	103.57	5,642.9	5,501.0	11,143.9	97.67	1,649.1	1,033.9	2,683.0	41.69
1990	4,798.2	4,575.1	9,373.3	106.67	5,607.1	5,418.7	11,025.7	97.48			2,664.9	41.63
1991	4,686.1	4,471.4	9,157.4	106.84	5,428.8	5,248.0	10,676.9	98.94	1,725.3	1,173.8	2,899.1	44.94
1992	4,578.0	4,369.2	8,947.2	107.09	5,201.3	5,054.0	10,255.3	99.65	1,712.7	1,160.1	2,872.8	51.83
1993	4,504.1	4,294.0	8,798.1	108.16	5,189.4	5,013.1	10,202.5	104.07	2,160.3	1,680.8	3,841.1	58.64
1994	4,409.5	4,202.6	8,612.1	108.90	5,026.4	4,852.2	9,878.6	105.91	2,192.5	1,725.2	3,917.7	59.39
1995	4,282.6	4,087.7	8,370.2	108.69			9,191.9	103.4			3,102.2	46.59
1996	4,148.2	3,057.4	8,105.6	105.01			8,972.4	100.70			3,126.4	46.84
1997	4,020.2	3,835.1	7,855.4	101.4			8,754.2	98.17			3,137.3	46.97
1998			7,664.0	98.70			8,650.0	96.78	1,380.7	1,760.5	3,141.2	46.92
1999			7,500.0	96.40			8,467.0	94.55	1,348.4	1,787.1	3,135.4	46.74
2000			7,366.0	94.52			8,279.9	92.31	1,342.7	1,782.0	3,124.7	46.51

Sources: see chapter 3.

A.7. Attainment and average years of education in Indonesia, India, and Japan, 1890-2000

The construction and sources of the following data on attainment and average years of education is given in chapter 3.

Table A.7.1: Attainment (%) and per capita Average Years of Education in the population of 15 years and older												
years	Indonesia				India				Japan			
	Primary	Secondary	higher	Average years of education	Primary	Secondary	Higher	Average years of education	Primary	Secondary	Higher	Average years of education
1890					3.56	0.70	0.07	0.30	24.17	4.06	0.47	1.71
1891					3.54	0.79	0.07	0.31	24.39	4.18	0.51	1.74
1892					3.72	0.66	0.08	0.31	24.13	4.56	0.55	1.77
1893	4.23	0.16	0.03	0.19	3.82	0.68	0.09	0.31	24.63	4.82	0.59	1.83
1894	4.42	0.19	0.03	0.20	3.91	0.72	0.09	0.32	24.68	5.25	0.64	1.89
1895	4.62	0.15	0.01	0.20	4.02	0.77	0.09	0.34	25.64	5.35	0.63	1.94
1896	4.82	0.17	0.02	0.21	4.13	0.79	0.09	0.35	25.90	5.51	0.66	1.98
1897	4.99	0.19	0.03	0.22	4.23	0.82	0.10	0.36	25.36	6.02	0.69	2.01
1898	5.22	0.21	0.03	0.24	4.34	0.85	0.10	0.37	25.77	6.34	0.74	2.07
1899	5.52	0.25	0.04	0.25	4.45	0.89	0.11	0.38	25.65	6.90	0.79	2.13
1900	5.44	0.20	0.02	0.24	4.57	0.96	0.11	0.39	26.61	7.01	0.78	2.19
1901	5.67	0.22	0.02	0.25	4.70	0.98	0.12	0.40	26.84	7.22	0.82	2.23
1902	5.90	0.25	0.03	0.27	4.83	1.03	0.12	0.42	26.14	7.86	0.87	2.27
1903	6.11	0.26	0.03	0.28	4.97	1.06	0.13	0.43	26.46	8.27	0.92	2.34
1904	6.32	0.28	0.04	0.29	5.11	1.11	0.13	0.44	25.95	8.95	0.99	2.40
1905	6.54	0.29	0.04	0.30	5.25	1.19	0.13	0.46	26.83	9.04	0.97	2.45
1906	6.76	0.31	0.04	0.31	5.40	1.22	0.14	0.47	26.95	9.25	1.02	2.48
1907	7.01	0.32	0.04	0.32	5.56	1.27	0.15	0.49	26.22	10.05	1.07	2.54
1908	7.25	0.34	0.04	0.33	5.73	1.31	0.15	0.51	26.66	10.49	1.14	2.64
1909	7.49	0.36	0.04	0.34	5.89	1.37	0.16	0.52	25.90	11.32	1.22	2.73
1910	7.76	0.38	0.04	0.36	6.04	1.46	0.17	0.54	26.89	11.37	1.18	2.81
1911	8.02	0.40	0.05	0.37	6.20	1.49	0.17	0.56	26.91	11.62	1.24	2.87
1912	8.30	0.42	0.05	0.38	6.37	1.55	0.18	0.57	25.92	12.65	1.30	2.96
1913	8.58	0.44	0.05	0.40	6.53	1.58	0.19	0.59	25.98	13.21	1.38	3.06
1914	8.86	0.46	0.06	0.41	6.67	1.65	0.20	0.61	24.78	14.27	1.48	3.15
1915	9.16	0.49	0.06	0.43	6.83	1.77	0.20	0.63	26.08	14.32	1.43	3.24
1916	9.47	0.51	0.06	0.44	6.99	1.80	0.21	0.64	26.47	14.64	1.49	3.34
1917	9.79	0.54	0.06	0.46	7.17	1.87	0.22	0.66	25.51	15.90	1.57	3.45
1918	10.11	0.57	0.07	0.47	7.37	1.91	0.23	0.68	25.79	16.54	1.67	3.55
1919	10.44	0.59	0.07	0.49	7.57	1.99	0.23	0.70	24.20	17.82	1.79	3.61
1920	10.78	0.63	0.07	0.51	7.75	2.15	0.24	0.73	25.73	17.71	1.74	3.68
1921	11.14	0.66	0.07	0.53	7.99	2.19	0.25	0.75	26.09	17.90	1.81	3.74
1922	11.52	0.70	0.08	0.55	8.24	2.27	0.26	0.77	24.75	19.38	1.91	3.83
1923	11.87	0.73	0.09	0.57	8.51	2.31	0.26	0.79	24.97	20.03	2.04	3.93
1924	12.21	0.77	0.09	0.58	8.77	2.41	0.27	0.82	24.74	21.69	2.20	4.11
1925	12.55	0.81	0.10	0.60	9.03	2.59	0.28	0.86	26.39	21.48	2.12	4.18
1926	12.90	0.85	0.10	0.62	9.30	2.62	0.29	0.88	26.55	21.66	2.21	4.22
1927	13.27	0.91	0.10	0.64	9.56	2.70	0.30	0.90	24.69	23.53	2.33	4.32

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Table A.7.1: Attainment (%) and per capita Average Years of Education in the population of 15 years and older												
years	Indonesia				India				Japan			
	Primary	Secondary	higher	Average years of education	Primary	Secondary	Higher	Average years of education	Primary	Secondary	Higher	Average years of education
1928	13.64	0.95	0.11	0.66	9.82	2.72	0.31	0.92	24.83	24.31	2.48	4.44
1929	14.00	0.99	0.11	0.68	10.06	2.83	0.32	0.95	24.36	25.18	2.66	4.53
1930	14.37	1.05	0.12	0.70	10.29	3.05	0.33	0.99	26.46	24.73	2.54	4.59
1931	14.74	1.10	0.12	0.72	10.54	3.08	0.34	1.01	26.50	24.92	2.64	4.63
1932	15.17	1.16	0.13	0.75	10.82	3.18	0.36	1.04	24.19	27.31	2.77	4.76
1933	15.58	1.21	0.14	0.77	11.10	3.21	0.36	1.06	23.94	28.26	2.93	4.87
1934	15.98	1.27	0.14	0.80	11.38	3.33	0.38	1.09	23.29	29.43	3.14	4.99
1935	16.40	1.33	0.15	0.82	11.65	3.63	0.39	1.14	25.93	28.70	2.97	5.04
1936	16.83	1.40	0.16	0.85	11.96	3.66	0.41	1.17	26.24	28.86	3.08	5.10
1937	17.30	1.47	0.17	0.87	12.26	3.77	0.42	1.20	23.82	31.90	3.22	5.29
1938	17.75	1.54	0.17	0.90	12.57	3.78	0.43	1.22	23.80	33.32	3.43	5.48
1939	18.20	1.62	0.18	0.93	12.87	3.92	0.44	1.25	23.50	34.68	3.69	5.64
1940	18.63	1.70	0.19	0.95	13.16	4.29	0.45	1.31	27.07	33.49	3.47	5.70
1941	19.04	1.79	0.20	0.98	13.48	4.31	0.47	1.34	27.72	33.20	3.60	5.73
1942	19.53	1.89	0.22	1.01	13.81	4.42	0.48	1.37	26.71	36.64	3.78	6.05
1943	19.98	1.98	0.22	1.06	14.19	4.42	0.50	1.40	25.81	38.16	4.05	6.20
1944	20.42	2.07	0.23	1.12	14.73	4.58	0.51	1.45	25.10	39.39	4.38	6.34
1945	20.88	2.16	0.24	1.17	15.29	5.03	0.52	1.53	29.66	37.30	4.08	6.35
1946	21.38	2.27	0.26	1.23	15.93	5.03	0.54	1.57	27.49	36.46	4.23	6.15
1947	21.93	2.39	0.27	1.29	16.57	5.14	0.55	1.62	27.14	38.88	4.40	6.41
1948	22.43	2.50	0.28	1.35	17.19	5.04	0.56	1.65	26.64	41.21	4.66	6.67
1949	22.91	2.63	0.29	1.42	17.81	5.05	0.57	1.69	25.55	42.85	5.09	6.85
1950	23.41	2.76	0.30	1.48	18.40	5.45	0.58	1.77	32.12	39.69	4.69	6.85
1951	23.95	2.87	0.32	1.55	18.84	5.36	0.60	1.79	32.26	41.00	4.85	7.02
1952	24.56	3.00	0.34	1.63	19.25	5.25	0.61	1.80	32.36	42.97	5.11	7.27
1953	25.16	3.11	0.35	1.70	19.68	4.92	0.61	1.79	31.93	45.29	5.37	7.53
1954	26.01	3.20	0.37	1.78	20.23	4.84	0.60	1.82	30.57	47.43	5.72	7.73
1955	26.87	3.30	0.37	1.87	20.84	5.24	0.60	1.90	38.46	42.90	5.23	7.65
1956	27.76	3.42	0.39	1.96	21.58	5.00	0.60	1.92	38.55	44.08	5.48	7.82
1957	28.39	3.57	0.39	2.05	22.27	4.72	0.59	1.93	38.83	45.85	5.76	8.07
1958	28.88	3.69	0.38	2.12	23.00	4.10	0.56	1.90	38.85	48.41	6.03	8.38
1959	29.32	3.79	0.35	2.18	23.72	3.78	0.53	1.91	37.71	50.86	6.30	8.61
1960	29.77	3.86	0.33	2.24	24.40	5.70	0.49	2.14	47.20	44.80	5.60	8.43
1961	29.86	3.82	0.29	2.24	24.66	4.91	0.43	2.06	46.34	45.58	5.76	8.49
1962	29.88	3.64	0.26	2.22	24.83	4.13	0.38	1.98	45.48	46.36	5.92	8.54
1963	30.52	3.76	0.34	2.28	25.21	4.29	0.40	2.03	44.62	47.14	6.08	8.60
1964	31.00	4.15	0.40	2.36	25.23	5.31	0.58	2.16	43.76	47.92	6.24	8.66
1965	31.49	4.60	0.53	2.46	25.30	5.97	0.79	2.27	42.90	48.70	6.40	8.71
1966	32.18	5.00	0.61	2.55	25.68	4.21	1.01	2.14	40.01	52.76	6.89	9.04
1967	33.03	5.42	0.71	2.66	26.14	5.34	1.23	2.33	39.25	53.43	7.08	9.10
1968	34.25	5.84	0.84	2.80	26.55	5.97	1.44	2.45	38.32	54.24	7.44	9.18
1969	35.45	6.30	0.98	2.95	27.13	6.77	1.64	2.60	37.25	54.44	8.31	9.28
1970	36.71	6.73	1.15	3.09	27.66	7.41	1.83	2.73	36.24	54.96	8.8	9.35
1971	37.83	7.19	1.32	3.24	28.11	7.51	1.98	2.79	32.97	57.74	9.29	9.53
1972	39.00	7.66	1.48	3.38	28.61	8.44	2.15	2.95	32.12	58.22	9.67	9.59
1973	40.01	8.15	1.66	3.52	29.11	9.11	2.37	3.08	31.25	58.8	9.95	9.64

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years	Indonesia				India				Japan			
	Primary	Secondary	higher	Average years of education	Primary	Secondary	Higher	Average years of education	Primary	Secondary	Higher	Average years of education
1974	40.87	8.59	1.84	3.65	29.66	9.94	2.58	3.24	30.73	58.64	10.63	9.70
1975	41.48	9.32	2.04	3.79	30.18	10.54	2.79	3.36	30.05	58.94	11.01	9.75
1976	42.11	10.11	2.22	3.94	30.65	10.74	3.04	3.45	27.28	61.38	11.34	9.90
1977	42.69	10.78	2.37	4.07	30.96	11.62	3.18	3.59	26.6	61.78	11.62	9.94
1978	43.68	11.51	2.5	4.23	31.23	12.25	3.33	3.69	25.81	62.45	11.74	9.98
1979	44.61	12.35	2.63	4.39	31.38	13.44	3.5	3.85	25.55	62.25	12.2	10.02
1980	45.26	13.47	2.74	4.57	31.5	14.24	3.67	3.97	25.01	62.54	12.45	10.06
1981	45.8	14.68	2.85	4.75	31.59	14.52	3.83	4.03	22.76	64.54	12.7	10.17
1982	46.24	16.08	2.95	4.93	31.79	15.83	4.04	4.22	22.27	64.84	12.89	10.21
1983	46.61	17.51	3.06	5.12	31.97	16.69	4.2	4.34	21.55	65.37	13.08	10.25
1984	46.59	19.13	3.17	5.31	32.21	17.75	4.34	4.49	21.46	65.01	13.53	10.28
1985	46.76	20.82	3.3	5.52	32.22	18.58	4.49	4.60	21.13	65.08	13.78	10.31
1986	47.44	22.68	3.46	5.78	32.26	19.19	4.63	4.69	19.3	66.64	14.06	10.40
1987	48.25	24.61	3.6	6.06	32.48	20.57	4.78	4.87	19.05	66.74	14.21	10.42
1988	48.96	26.2	3.74	6.29	32.62	21.3	4.97	4.99	18.43	67.02	14.55	10.47
1989	49.99	27.6	3.85	6.51	32.84	22.58	5.15	5.17	18.12	66.61	15.28	10.53
1990	51.2	28.78	3.93	6.72	33.26	23.61	5.33	5.33	17.75	66.44	15.81	10.57
1991	51.46	29.42	3.95	6.81	33.62	24.14	5.52	5.44	16.01	67.79	16.19	10.67
1992	51.64	30.01	3.97	6.88	34.11	25.3	5.72	5.62	16.21	68.03	15.76	10.64
1993	51.66	30.66	4.00	6.96	34.63	25.8	5.91	5.73	16.13	67.77	16.1	10.66
1994	51.67	31.28	4.04	7.03	35.25	26.77	6.09	5.90	16.23	67.02	16.75	10.69
1995	51.51	31.94	4.09	7.10	35.93	27.6	6.28	6.06	16.13	66.67	17.2	10.72
1996	51.23	32.76	4.17	7.18	36.52	27.84	6.39	6.14	14.72	67.74	17.54	10.80
1997	50.94	33.48	4.28	7.26	36.99	28.65	6.53	6.27	15.07	67.81	17.12	10.76
1998	50.63	34.13	4.4	7.33	37.42	29.12	6.65	6.37	16.18	68.61	15.21	10.61
1999	49.93	34.79	4.39	7.35	37.82	36.97	6.37	7.17	20.61	63.51	15.87	10.44
2000	51.01	34.48	4.76	7.44	38.78	37.38	6.6	7.31	20.23	63.41	16.36	10.49

Source: see chapter 3.

A.8. Public and private expenditure on education (current prices) per level of education in Japan, Indonesia, and India, 1880-2000, in national currencies.

The construction and sources of the following data on public and private expenditure on education is given in chapter 3. The only point to note is that the sum of public expenditure per level of education equals that of total public expenditure. We divided capital expenditure between the levels of education according to the share of of each level of education in total current expenditure on education.

Table A.8.1: Public and private expenditure on education in Japan, current Yen							
	Government expenditure				Average per student Yen	Private expenditure	
	Primary	Secondary	Higher	Total		Total	Average per student
	Yen ('000)	Yen ('000)	Yen ('000)	Yen ('000)		Yen ('000)	Yen
1886	6,990	916	349	8,256	2.8	1,118	0.4
1887	6,176	1,008	279	7,462	2.6	2,366	0.9
1888	6,875	1,119	171	8,165	2.7	3,454	1.2
1889	7,077	1,144	136	8,357	2.7	3,919	1.3
1890	7,392	1,151	132	8,675	2.7	4,019	1.3
1891	7,675	1,124	139	8,939	2.7	4,296	1.4
1892	8,304	1,127	173	9,604	2.9	4,390	1.4
1893	9,120	1,344	218	10,683	3.1	4,974	1.5
1894	9,805	1,346	226	11,377	3.1	5,582	1.6
1895	10,670	1,911	93	12,674	3.3	6,477	1.8
1896	12,590	2,818	118	15,526	3.9	5,445	1.4
1897	15,148	3,378	142	18,669	4.5	8,766	2.2
1898	17,585	4,992	149	22,727	5.4	10,462	2.6
1899	20,502	7,263	140	27,905	6.2	12,207	2.8
1900	25,571	9,664	165	35,400	7.2	14,547	3.1
1901	30,507	11,843	234	42,584	8.1	12,576	2.5
1902	32,199	12,086	202	44,487	8.1	14,130	2.7
1903	32,520	11,647	262	44,430	8.1	14,864	2.9
1904	24,912	10,059	285	35,256	6.3	16,191	3.1
1905	27,154	9,940	343	37,437	6.4	18,494	3.5
1906	33,514	10,953	389	44,856	7.4	21,447	3.9
1907	41,845	13,282	506	55,634	8.8	23,792	4.2
1908	54,520	15,582	645	70,747	10.7	23,552	3.9
1909	58,721	17,043	888	76,651	10.7	31,240	4.8
1910	58,070	17,673	893	76,636	10.1	33,893	4.9
1911	60,181	18,620	892	79,693	10.2	37,693	5.4
1912	60,518	19,529	820	80,868	10.2	39,300	5.6
1913	58,434	18,600	927	77,960	9.7	42,587	6.0
1914	57,499	18,387	809	76,695	9.3	45,230	6.2
1915	60,735	19,103	806	80,644	9.4	48,405	6.5
1916	65,196	19,536	895	85,627	9.7	50,150	6.5
1917	72,097	22,703	1,114	95,914	10.4	57,272	7.3
1918	98,110	30,117	1,386	129,613	13.4	67,670	8.3

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	Government expenditure				Average per student	Private expenditure	
	Primary	Secondary	Higher	Total		Total	Average per student
	Yen ('000)	Yen ('000)	Yen ('000)	Yen ('000)		Yen ('000)	Yen
1919	146,809	43,513	1,865	192,187	19.2	85,807	10.2
1920	203,006	63,258	2,717	268,981	25.8	110,070	12.7
1921	223,113	76,789	3,198	303,100	28.2	130,680	14.7
1922	239,807	99,929	4,362	344,097	31.3	144,470	16.0
1923	254,007	96,373	4,924	355,304	31.8	169,484	18.5
1924	265,708	102,070	5,461	373,239	32.8	187,540	20.3
1925	276,883	107,069	4,751	388,703	33.9	195,510	21.2
1926	313,181	122,713	5,382	441,276	35.0	219,826	23.5
1927	326,921	127,746	5,067	459,733	35.6	250,826	26.3
1928	338,440	127,054	5,828	471,322	35.9	255,238	26.2
1929	314,592	127,199	5,378	447,168	33.5	270,527	27.2
1930	280,996	119,773	5,578	406,347	29.8	276,621	27.2
1931	267,593	111,558	3,194	382,345	27.6	284,503	27.2
1932	276,304	105,607	2,990	384,901	27.0	296,709	27.5
1933	294,718	107,171	3,436	405,326	27.8	312,038	28.1
1934	306,161	113,383	3,454	422,998	28.5	339,033	30.0
1935	330,809	119,786	2,682	453,277	30.4	356,697	31.0
1936	349,086	127,920	2,773	479,779	31.6	371,909	32.0
1937	348,034	136,443	2,592	487,069	31.2	406,942	34.3
1938	346,415	142,126	2,823	491,364	30.5	437,999	36.3
1939	352,671	158,100	2,992	513,763	30.5	475,304	38.6
1940	268,771	321,572	5,643	595,986	34.6	554,289	44.6
1941	212,126	253,801	4,445	470,372	26.6	569,681	45.5
1942	155,897	186,526	3,268	345,691	19.0	598,984	46.9
1943	100,041	120,574	0	220,615	11.8	647,691	50.0
1944	45,645	55,355	0	101,000	5.4	696,625	53.3
1945	1,663,051	2,027,310	0	3,690,361	201.8	5,392,158	417.5
1946	5,231,388	6,405,922	366,167	12,003,478	675.4	6,162,913	496.1
1947	16,198,961	19,913,592	2,123,873	38,236,426	2,511.6	4,646,921	435.5
1948	38,456,793	47,437,540	1,059,200	86,953,532	5,114.8	7,922,951	734.5
1949	56,940,675	70,451,242	13,251,080	140,642,996	7,837.6	12,612,108	1,134.3
1950	74,100,058	85,818,489	23,661,450	183,579,997	9,817.7	14,239,664	1,247.3
1951	94,870,741	103,111,380	31,808,885	229,791,006	12,033.9	15,441,399	1,315.7
1952	122,527,478	129,660,216	33,248,305	285,435,998	15,006.8	20,666,228	1,789.6
1953	150,833,298	151,537,500	40,875,208	343,246,007	17,645.9	31,995,211	2,741.1
1954	172,868,276	170,786,694	46,910,027	390,564,996	19,028.0	39,379,133	3,216.5
1955	178,075,730	175,839,771	51,877,492	405,792,993	19,012.1	43,883,384	3,431.1
1956	190,715,482	188,934,950	58,625,568	438,276,000	20,007.5	47,449,304	3,604.7
1957	213,645,494	211,837,695	64,729,819	490,213,007	22,072.0	51,780,181	3,829.7
1958	234,826,131	231,460,003	73,483,863	539,769,997	24,087.8	55,842,574	3,968.9
1959	251,472,868	254,974,120	82,967,018	589,414,006	26,260.9	62,024,409	4,439.1
1960	278,104,980	321,013,310	99,945,716	699,064,005	31,152.7	66,348,808	5,020.0
1961	308,511,704	408,764,407	124,344,890	841,621,001	37,210.1	68,385,550	5,479.2
1962	360,525,862	502,416,897	155,434,243	1,018,377,002	45,251.2	74,532,699	6,324.9
1963	419,781,427	609,551,499	199,770,063	1,229,102,989	55,223.2	159,107,870	14,123.4
1964	493,077,346	694,005,753	261,382,907	1,448,466,006	65,431.9	183,642,318	16,873.5

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	Government expenditure					Private expenditure	
	Primary	Secondary	Higher	Total	Average per student	Total	Average per student
	Yen ('000)	Yen ('000)	Yen ('000)	Yen ('000)	Yen	Yen ('000)	Yen
1965	568,564,032	769,524,236	340,883,735	1,678,972,003	76,618.7	214,565,196	20,028.2
1966	652,541,904	845,339,302	434,682,795	1,932,564,002	90,284.4	229,572,579	21,600.1
1967	742,882,013	926,199,837	498,002,140	2,167,083,990	103,526.2	244,334,162	23,023.2
1968	854,996,208	1,033,008,001	565,448,803	2,453,453,012	119,610.5	257,101,234	24,133.2
1969	1,007,873,477	1,182,920,692	625,464,836	2,816,259,005	138,964.7	268,831,712	24,989.1
1970	1,232,923,281	1,388,862,139	702,063,577	3,323,848,998	164,906.7	287,033,648	26,333.4
1971	1,526,729,288	1,671,441,621	686,697,085	3,884,867,994	191,768.5	319,443,408	28,873.4
1972	1,818,098,597	1,926,892,821	813,760,578	4,558,751,997	223,421.9	352,183,671	31,374.0
1973	2,230,341,660	2,365,521,216	1,020,888,137	5,616,751,013	270,650.9	411,901,212	36,088.1
1974	3,060,505,073	3,251,815,715	1,323,677,191	7,635,997,979	361,321.8	532,746,312	45,347.1
1975	3,554,089,167	3,761,263,232	1,544,313,580	8,859,665,979	410,242.3	667,630,268	55,180.7
1976	3,948,265,464	4,186,061,548	1,822,486,967	9,956,813,979	451,887.5	865,751,690	69,809.0
1977	4,518,158,356	4,724,789,526	2,089,774,145	11,332,722,026	505,062.3	1,029,469,761	81,323.3
1978	5,114,599,558	5,306,404,383	2,330,170,036	12,751,173,978	556,837.8	1,157,173,043	88,951.0
1979	5,529,125,736	5,749,220,008	2,536,297,273	13,814,643,017	591,697.0	1,308,137,676	97,075.4
1980	5,963,906,109	6,266,129,756	2,881,193,126	15,111,228,991	635,040.4	1,499,804,683	109,780.5
1981	6,180,098,943	6,756,403,972	3,198,325,103	16,134,828,018	668,170.9	1,616,527,758	117,593.2
1982	6,176,366,270	7,083,054,710	3,284,492,989	16,543,913,969	679,007.0	1,794,467,518	130,800.3
1983	6,256,495,858	7,462,213,200	3,472,684,927	17,191,393,986	703,886.7	1,799,164,940	132,545.2
1984	6,166,372,135	7,891,353,387	3,709,397,448	17,767,122,970	726,447.4	1,980,973,114	148,863.0
1985	6,367,829,343	8,351,492,469	4,008,678,166	18,727,999,977	763,432.2	1,971,676,634	152,322.7
1986	6,523,522,025	8,524,660,150	4,311,817,795	19,359,999,970	794,908.8	2,036,119,849	162,305.6
1987	6,640,515,181	8,719,974,332	4,587,510,493	19,948,000,006	827,580.9	2,118,024,859	174,179.6
1988	6,894,283,041	8,985,874,957	4,794,841,978	20,674,999,976	868,770.6	2,223,611,390	187,362.0
1989	7,154,149,595	9,216,434,213	5,015,416,209	21,386,000,016	911,944.5	2,350,955,039	201,383.6
1990	7,558,039,897	9,771,897,617	5,480,062,485	22,810,000,000	990,447.0	2,561,590,000	222,631.0
1991	7,840,803,512	10,258,132,447	5,863,064,090	23,962,000,049	1,061,957.1	2,468,564,280	217,246.1
1992	8,067,529,392	10,530,299,726	6,056,170,849	24,653,999,968	1,116,829.4	2,714,085,170	241,466.4
1993	8,018,669,474	10,463,114,144	6,624,216,404	25,106,000,022	1,162,099.8	2,717,523,076	243,527.3
1994	7,962,150,731	10,441,367,859	6,686,481,362	25,089,999,951	1,184,272.2	2,836,253,267	256,326.7
1995	8,186,782,023	10,611,974,410	6,926,243,527	25,724,999,961	1,238,744.4	2,837,989,918	259,960.8
1996	8,205,267,610	10,750,054,875	6,934,677,520	25,890,000,004	1,274,992.3	2,840,736,473	265,415.2
1997	8,102,410,429	10,772,840,443	7,010,749,176	25,886,000,048	1,304,475.0	2,864,436,106	273,089.7
1998	8,086,140,379	10,629,628,992	7,189,230,599	25,904,999,971	1,332,287.9	2,771,657,162	268,259.3
1999	8,009,564,558	10,392,136,122	7,458,299,295	25,859,999,975	1,354,564.6	2,549,747,561	249,950.6
2000	7,991,218,963	10,324,057,438	7,237,723,586	25,552,999,987	1,362,100.3	2,711,015,480	268,258.3

Source: see chapter 3

	Government expenditure				Private expenditure		
	primary	secondary	higher	Total	Average per student	Total	average per student
	Rupiah ('000)	Rupiah ('000)	Rupiah ('000)	Rupiah ('000)	Rupiah	Rupiah ('000)	Rupiah
1880	2,665	385	0	3,050	39.5	2,097	27.1
1881	2,628	448	0	3,076	39.7	2,011	26.0
1882	2,817	465	0	3,282	37.6	3,008	34.5
1883	2,897	537	0	3,434	37.5	3,565	38.9
1884	2,896	498	0	3,395	35.1	4,468	46.2
1885	2,932	529	0	3,461	34.7	4,414	44.3
1886	2,895	481	0	3,376	33.0	3,678	36.0
1887	2,973	471	0	3,444	32.6	3,427	32.5
1888	3,024	473	0	3,497	31.0	3,523	31.3
1889	3,151	467	0	3,617	31.3	3,537	30.6
1890	3,235	751	0	3,986	34.2	2,603	22.4
1891	3,282	754	0	4,036	33.5	2,661	22.1
1892	3,393	725	0	4,118	32.0	2,379	18.5
1893	3,583	819	0	4,402	32.4	3,231	23.8
1894	3,636	786	0	4,422	31.0	3,707	26.0
1895	3,840	823	0	4,663	31.1	4,030	26.9
1896	3,927	789	0	4,716	30.7	3,837	25.0
1897	3,976	804	0	4,781	31.0	2,317	15.0
1898	4,075	828	0	4,903	30.5	2,876	17.9
1899	4,189	845	0	5,034	26.3	3,473	18.2
1900	3,323	842	10	4,175	23.0	2,444	13.5
1901	3,431	713	7	4,151	21.2	2,059	10.5
1902	3,590	893	6	4,489	21.6	2,388	11.5
1903	3,771	913	6	4,691	21.0	1,883	8.4
1904	3,974	966	6	4,947	19.6	2,528	10.0
1905	4,133	1,018	6	5,157	19.0	2,885	10.6
1906	4,181	1,060	6	5,247	18.5	2,648	9.3
1907	5,067	1,183	7	6,257	21.1	2,587	8.7
1908	5,449	1,221	6	6,675	20.3	2,737	8.3
1909	6,233	1,422	6	7,661	19.4	3,846	9.7
1910	6,891	1,562	6	8,459	17.3	5,252	10.7
1911	7,606	1,984	3	9,593	16.5	6,082	10.5
1912	8,527	2,012	3	10,542	15.9	6,121	9.2
1913	9,471	2,278	3	11,751	16.3	8,040	11.1
1914	9,716	3,409	6	13,131	18.6	9,259	13.1
1915	11,012	3,845	4	14,861	19.0	11,313	14.5
1916	12,808	3,205	14	16,027	18.5	11,055	12.7
1917	14,387	3,509	5	17,902	19.5	11,176	12.1
1918	15,248	4,233	7	19,488	20.1	10,287	10.6
1919	23,690	6,992	34	30,716	35.1	13,119	15.0
1920	30,126	8,374	16	38,516	39.1	12,563	12.7
1921	32,575	9,784	146	42,506	38.0	20,296	18.1
1922	28,727	10,234	178	39,139	34.2	19,095	16.7
1923	25,983	9,739	170	35,892	30.1	17,610	14.8
1924	27,706	8,829	237	36,772	30.5	18,467	15.3
1925	30,456	9,306	485	40,247	30.8	21,335	16.3

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	Government expenditure						Private expenditure	
	primary	secondary	higher	Total	Average per student	Total	average per student	
	Rupiah ('000)	Rupiah ('000)	Rupiah ('000)	Rupiah ('000)	Rupiah	Rupiah ('000)	Rupiah	
1926	33,209	10,457	534	44,200	31.7	23,172	16.6	
1927	35,801	9,613	802	46,216	29.9	26,658	17.2	
1928	37,363	9,427	840	47,630	28.1	29,664	17.5	
1929	42,407	11,062	946	54,415	33.0	26,581	16.1	
1930	43,756	10,711	1,233	55,700	30.2	23,350	12.7	
1931	43,119	12,364	1,163	56,646	28.8	20,221	10.3	
1932	39,265	11,378	1,085	51,728	25.9	17,464	8.7	
1933	36,573	9,742	1,062	47,377	24.0	16,760	8.5	
1934	31,107	9,297	1,234	41,638	21.2	16,142	8.2	
1935	23,380	6,665	894	30,939	15.5	14,106	7.1	
1936	22,243	4,886	586	27,715	13.1	13,275	6.3	
1937	17,100	4,607	637	22,344	10.2	13,330	6.1	
1938	17,956	5,098	947	24,001	10.3	12,141	5.2	
1939	22,008	6,821	912	29,741	12.3	16,601	6.9	
1940	21,233	6,581	880	28,694	12.2	11,967	5.1	
1941						14,216	6.1	
1942						27,557	22.1	
1943						21,495	15.0	
1944						15,822	10.7	
1945						13,892	5.5	
1946						23,755	7.9	
1947						33,080	9.8	
1948						44,017	11.6	
1949						56,059	13.5	
1950						49,693	9.6	
1951	353,087	96,284	42,317	491,689	89.1	81,636	14.8	
1952	605,253	169,012	72,913	847,178	149.1	86,373	15.2	
1953	565,845	161,752	68,518	796,115	115.2	81,760	11.8	
1954	561,999	164,411	68,406	794,816	106.4	92,075	12.3	
1955	636,788	190,593	77,915	905,295	119.2	132,205	17.4	
1956	739,288	226,319	90,932	1,056,538	134.8	174,565	22.3	
1957	910,526	285,023	112,585	1,308,134	163.4	209,760	26.2	
1958	1,119,773	358,332	139,194	1,617,298	206.4	466,052	59.5	
1959	1,344,644	439,768	168,039	1,952,450	221.1	1,087,304	123.1	
1960	1,656,092	553,424	208,071	2,417,587	246.2	2,980,247	303.6	
1961	2,020,417	689,719	255,215	2,965,351	278.9	3,690,379	347.1	
1962	7,032,379	2,451,860	893,135	10,377,373	892.8	11,293,147	971.6	
1963	19,977,871	7,112,334	2,551,096	29,641,300	2,407.0	26,093,949	2,118.9	
1964	51,174,795	18,599,427	6,570,667	76,344,888	5,967.2	55,712,531	4,354.7	
1965	192,311,638	71,341,733	24,828,344	288,481,715	21,721.1	200,047,290	15,062.6	
1966	2,846,184	1,089,495	370,624	4,306,302	306.3	2,902,723	206.5	
1967	8,386,316	3,311,077	1,101,548	12,798,942	900.3	7,522,383	529.1	
1968	22,554,717	9,181,071	2,988,572	34,724,360	2,486.4	16,951,228	1,213.8	
1969	40,382,463	16,940,972	5,398,171	62,721,607	4,172.3	22,270,514	1,481.5	
1970	54,766,037	23,669,386	7,386,295	85,821,718	5,041.3	23,000,034	1,351.0	
1971	64,596,565	28,751,757	8,790,649	102,138,971	6,451.7	27,109,283	1,712.4	

Continued on the next page

	Government expenditure					Private expenditure	
	primary	secondary	higher	Total	Average per student	Total	average per student
	Rupiah ('000)	Rupiah ('000)	Rupiah ('000)	Rupiah ('000)	Rupiah	Rupiah ('000)	Rupiah
1972	85,133,041	39,631,994	13,231,425	137,996,461	7,495.6	39,056,691	2,121.4
1973	132,083,275	63,908,739	22,204,727	218,196,741	11,431.9	64,163,098	3,361.6
1974	220,096,590	110,684,015	39,903,000	370,683,605	18,737.7	111,090,453	5,615.5
1975	297,895,841	155,704,877	58,092,196	511,692,914	23,827.5	150,546,085	7,010.4
1976	393,976,640	214,039,521	82,449,753	690,465,914	30,093.3	228,735,862	9,969.3
1977	451,092,130	254,745,551	101,105,196	806,942,877	34,217.3	285,753,730	12,117.0
1978	543,685,372	319,191,818	130,278,682	993,155,873	42,473.3	364,633,696	15,594.0
1979	811,033,621	495,066,502	207,444,668	1,513,544,792	58,409.5	403,161,120	15,558.3
1980	1,151,160,979	730,722,331	313,862,488	2,195,745,798	69,044.2	475,999,804	14,967.6
1981	1,337,269,248	882,899,787	388,184,358	2,608,353,392	76,915.1	635,327,887	18,734.8
1982	1,348,213,199	926,031,813	416,232,734	2,690,477,745	75,210.8	767,794,163	21,463.5
1983	1,679,905,609	1,200,715,027	551,092,806	3,431,713,441	91,873.1	849,355,660	22,739.1
1984	1,911,994,855	1,422,516,904	665,961,064	4,000,472,823	101,107.5	1,004,522,464	25,387.9
1985	2,051,077,041	1,588,955,940	758,016,818	4,398,049,799	108,304.7	1,142,999,848	28,147.0
1986	2,088,839,519	1,685,597,817	818,650,331	4,593,087,667	109,553.9	1,326,752,789	31,645.4
1987	2,440,632,401	2,052,330,291	1,013,912,994	5,506,875,686	128,366.0	1,567,931,943	36,548.9
1988	2,610,451,598	2,339,453,830	1,232,839,298	6,182,744,726	142,840.5	1,833,156,248	42,351.5
1989	3,020,805,653	2,749,933,682	1,388,986,887	7,159,726,223	166,992.6	2,081,917,784	48,558.1
1990	3,820,245,241	3,612,335,473	1,834,976,286	9,267,557,000	218,298.0	2,583,000,000	60,843.0
1991	3,922,117,455	3,853,563,104	1,968,280,041	9,743,960,600	229,394.5	3,382,719,156	79,637.1
1992	4,282,132,562	4,373,298,051	2,245,615,499	10,901,046,112	255,099.6	4,050,819,573	94,795.5
1993	4,934,048,506	5,240,064,986	2,704,511,181	12,878,624,673	296,027.9	5,157,116,839	118,540.7
1994	5,428,202,491	5,780,725,486	2,802,231,994	14,011,159,971	317,707.3	7,756,573,683	175,882.3
1995	5,815,517,230	6,209,810,426	2,820,755,870	14,846,083,526	330,429.4	10,659,000,351	237,237.9
1996	7,311,577,799	7,827,742,052	3,323,265,333	18,462,585,184	401,064.3	12,038,399,907	261,509.9
1997	9,600,929,370	10,304,972,059	4,077,112,341	23,983,013,770	537,913.9	13,324,554,157	298,856.3
1998	16,348,196,184	17,590,785,789	6,464,567,995	40,403,549,968	936,646.4	21,106,385,617	489,294.7
1999	15,916,549,964	18,365,249,958	6,121,749,986	40,403,549,908	969,196.3	25,767,896,544	618,118.8
2000						24,597,999,459	

Source: See chapter 3.

Table A.8.3: Public and private expenditure on education in India, current Rupee							
	Government expenditure				Private expenditure		
	Primary	Secondary	Higher	Total	Average per student	Total	Average per student
	Rupee ('000)	Rupee ('000)	Rupee ('000)	Rupee ('000)	Rupee	Rupee ('000)	Rupee
1880	4,016	3,309	1,095	8,420	5.7	5,594	3.8
1881	4,670	3,058	1,033	8,762	5.3	6,495	3.9
1882	4,816	3,170	1,118	9,105	4.9	7,220	3.9
1883	5,232	3,481	1,112	9,825	4.6	8,345	3.9
1884	4,626	4,146	1,156	9,928	4.1	8,712	3.6
1885	4,553	5,035	1,379	10,966	4.3	9,569	3.7
1886	4,610	5,272	1,515	11,398	4.6	9,872	4.0
1887	4,451	5,225	1,570	11,246	4.4	11,368	4.5
1888	4,531	5,396	1,612	11,538	4.4	11,934	4.5
1889	4,495	5,564	1,701	11,760	4.4	12,179	4.5
1890	4,800	5,804	1,763	12,368	4.5	12,627	4.6
1891	5,227	6,228	1,851	13,306	4.6	13,103	4.5
1892	5,226	6,343	1,851	13,420	4.5	13,975	4.7
1893	5,377	6,367	1,846	13,589	4.5	14,314	4.7
1894	5,455	6,373	1,937	13,765	4.4	14,813	4.8
1895	5,717	6,788	1,723	14,228	4.4	15,960	5.0
1896	5,744	6,735	1,698	14,177	4.4	16,208	5.0
1897	5,238	6,879	1,746	13,863	4.4	16,775	5.3
1898	5,383	6,290	1,648	13,321	4.1	17,136	5.3
1899	5,725	6,860	1,752	14,336	4.4	17,839	5.4
1900	5,728	6,885	1,781	14,393	4.4	18,884	5.8
1901	6,181	6,811	1,890	14,882	4.5	19,858	6.0
1902	7,463	7,831	2,181	17,475	5.1	20,812	6.0
1903	7,888	8,804	2,826	19,517	5.1	20,748	5.5
1904	8,214	9,759	3,062	21,035	5.4	21,098	5.4
1905	9,160	10,446	3,361	22,967	6.0	22,077	5.7
1906	9,807	11,237	3,757	24,800	6.3	22,650	5.7
1907	10,675	12,100	4,172	26,947	6.4	24,067	5.7
1908	12,410	15,043	4,509	31,962	6.8	26,038	5.5
1909	11,828	13,920	4,796	30,545	6.7	27,980	6.1
1910	11,819	14,517	5,021	31,357	6.6	29,885	6.3
1911	13,049	15,652	5,578	34,278	6.7	32,719	6.5
1912	16,687	20,486	7,822	44,995	8.0	35,092	6.2
1913	17,826	21,280	7,543	46,650	8.3	38,775	6.9
1914	21,329	27,605	9,188	58,121	9.9	39,729	6.8
1915	18,953	23,651	9,150	51,754	9.7	40,895	7.7
1916	18,165	23,098	8,375	49,639	9.1	41,903	7.7
1917	16,566	21,004	7,728	45,298	8.2	41,833	7.5
1918	6,236	7,953	2,025	16,215	2.6	42,191	6.7
1919	18,994	23,834	9,191	52,019	9.0	39,914	6.9
1920	34,597	38,471	11,555	84,622	14.2	56,539	9.5
1921	40,298	42,641	13,522	96,460	16.3	58,232	9.8
1922	40,103	45,027	12,517	97,647	15.3	60,885	9.6
1923	40,151	44,827	12,631	97,609	14.8	63,496	9.6
1924	40,418	46,549	13,796	100,763	14.4	67,801	9.7

Continued on the next page

	Government expenditure				Private expenditure		
	Primary	Secondary	Higher	Total	Average per student	Total	Average per student
	Rupee ('000)	Rupee ('000)	Rupee ('000)	Rupee ('000)	Rupee	Rupee ('000)	Rupee
1925	45,047	50,164	14,960	110,171	14.6	71,188	9.5
1926	49,853	55,041	16,298	121,192	15.0	74,514	9.2
1927	52,217	57,856	16,701	126,773	14.8	77,677	9.1
1928	49,847	56,210	15,962	122,019	13.8	82,577	9.4
1929	54,878	63,559	17,661	136,098	15.1	82,175	9.1
1930	56,743	65,271	18,096	140,111	15.4	85,563	9.4
1931	53,070	60,144	16,517	129,731	14.1	86,255	9.4
1932	47,738	56,864	15,814	120,415	13.0	87,257	9.5
1933	52,226	53,618	16,955	122,800	13.0	88,527	9.3
1934	51,559	56,971	16,965	125,494	12.7	96,065	9.7
1935	50,979	60,200	16,971	128,150	12.8	93,646	9.4
1936	52,078	61,591	17,520	131,188	12.8	95,875	9.4
1937	51,461	60,904	20,195	132,560	12.4	100,592	9.4
1938	53,367	63,228	23,722	140,317	12.5	101,475	9.1
1939	56,332	66,787	27,817	150,936	12.9	108,369	9.2
1940	54,792	65,801	32,244	152,836	12.6	115,281	9.5
1941	59,602	70,276	30,857	160,735	13.0	114,189	9.2
1942	62,597	72,687	31,788	167,073	14.0	114,591	9.6
1943	67,990	77,084	34,298	179,371	15.4	127,710	11.0
1944	77,152	88,054	38,324	203,530	16.7	144,432	11.8
1945	88,537	102,771	45,582	236,890	18.2	172,612	13.2
1946	99,616	94,762	46,214	240,592	17.3	162,122	11.7
1947	377,928	338,448	160,431	876,807	57.9	208,973	13.8
1948	286,289	273,029	124,038	683,356	39.7	253,596	14.8
1949	418,601	425,339	178,438	1,022,379	42.5	283,736	11.8
1950	492,879	495,141	165,801	1,153,821	45.5	366,258	14.4
1951	490,871	501,064	253,702	1,245,636	47.2	355,735	13.4
1952	534,909	587,016	254,458	1,376,383	50.3	395,224	14.4
1953	573,962	613,090	290,350	1,477,401	51.0	432,018	14.9
1954	651,343	668,896	326,244	1,646,483	53.0	461,215	14.9
1955	705,042	801,793	389,733	1,896,568	56.2	561,067	16.6
1956	821,248	945,370	296,286	2,062,904	57.3	526,905	14.7
1957	957,486	1,108,635	337,853	2,403,974	63.4	587,065	15.5
1958	906,073	1,360,908	393,384	2,660,365	71.0	642,994	17.2
1959	1,001,531	1,534,520	460,442	2,996,493	67.7	778,940	17.6
1960	984,978	1,695,607	762,917	3,443,502	72.4	878,025	18.4
1961	1,214,225	2,118,130	631,115	3,963,470	73.8	983,442	18.3
1962	1,267,704	2,256,633	870,070	4,394,407	76.4	1,094,927	19.0
1963	1,295,161	2,439,786	1,106,104	4,841,051	78.9	1,206,546	19.7
1964	1,376,816	2,524,887	1,408,146	5,309,849	79.7	1,290,458	19.4
1965	1,531,953	2,762,503	1,568,801	5,863,257	85.9	1,199,707	17.6
1966	1,711,140	3,148,762	1,949,000	6,808,901	94.6	1,617,625	22.5
1967	2,053,243	3,832,450	2,132,439	8,018,132	104.6	1,766,340	23.0
1968	2,095,137	3,897,232	2,810,576	8,802,946	113.7	1,971,951	25.4
1969	2,274,958	4,406,993	3,402,455	10,084,406	126.8	2,089,280	26.2

Continued on the next page

Table A.8.3: Public and private expenditure on education in India, current Rupee							
	Government expenditure				Private expenditure		
	Primary	Secondary	Higher	Total	Average per student	Total	Average per student
	Rupee ('000)	Rupee ('000)	Rupee ('000)	Rupee ('000)	Rupee	Rupee ('000)	Rupee
1970	2,736,111	5,392,926	3,034,820	11,163,858	137.9	2,207,605	27.3
1971	2,436,290	4,810,732	2,930,440	10,177,462	121.8	2,418,033	28.8
1972	3,125,779	4,847,222	2,885,720	10,858,721	123.6	2,628,396	29.9
1973	4,810,578	6,003,718	3,543,579	14,357,875	164.0	2,838,665	32.4
1974	4,293,602	8,612,720	5,047,133	17,953,456	194.1	3,049,031	32.9
1975	8,931,771	6,388,846	5,419,909	20,740,526	221.3	3,259,379	34.9
1976	10,395,652	5,918,505	6,291,962	22,606,119	224.8	3,469,786	34.6
1977	11,415,425	6,564,531	6,995,607	24,975,563	252.2	3,599,673	36.4
1978	15,003,285	6,325,783	7,051,635	28,380,704	277.8	4,322,271	42.4
1979	13,891,037	7,957,630	8,917,145	30,765,813	289.2	3,739,284	35.1
1980	17,412,573	14,743,588	7,522,529	39,678,690	355.5	4,048,441	36.1
1981	17,250,690	14,834,150	10,591,172	42,676,011	367.4	4,691,329	40.3
1982	21,031,628	18,254,912	10,851,814	50,138,353	409.0	3,932,056	32.2
1983	27,567,955	24,140,071	12,025,174	63,733,200	496.8	4,411,772	34.5
1984	32,392,367	28,414,015	14,978,106	75,784,487	562.4	4,894,443	36.0
1985	38,895,838	32,575,907	17,331,589	88,803,333	625.8	5,422,800	37.9
1986	39,442,445	38,281,019	19,174,377	96,897,841	680.5	6,673,169	47.2
1987	42,314,325	40,290,171	19,212,462	101,816,958	697.1	7,342,043	50.4
1988	59,343,359	53,890,067	28,892,936	142,126,362	929.8	8,576,187	56.4
1989	74,281,711	64,667,242	34,926,075	173,875,028	1,027.2	10,261,147	60.6
1990	85,336,070	75,280,033	37,194,897	197,811,000	1,154.0	11,884,000	69.0
1991	92,330,012	83,185,367	39,681,579	215,196,957	1,235.7	14,641,137	84.1
1992	100,187,934	96,061,372	44,035,329	240,284,636	1,343.4	17,289,012	97.0
1993	115,145,290	104,723,051	50,969,009	270,837,350	1,472.5	19,097,426	104.3
1994	137,326,226	120,870,413	59,614,573	317,811,211	1,706.3	22,042,063	118.2
1995	148,579,417	134,714,488	60,654,975	343,948,879	1,821.4	25,778,537	137.0
1996	134,155,940	162,511,561	80,784,400	377,451,902	1,992.9	25,447,259	134.7
1997						33,422,090	176.6
1998						40,949,960	215.9
1999						49,394,453	254.8
2000						55,168,596	284.5

Source: See chapter 3.

A.9. Investment in human capital in Japan 1895-2002 in billion 1990 International USD, converted at PPP

The construction and sources of the following estimates on human capital investments are described in chapter 5.

	Gross fixed capital formation	Change in the value of stocks	Gross capital formation	Appreciation	Net capital formation
1895	3.154	1.400	4.554	3.527	8.082
1896	3.200	1.700	4.900	3.734	8.634
1897	3.649	1.754	5.402	3.948	9.350
1898	4.098	1.729	5.827	4.183	10.010
1899	4.561	1.880	6.441	4.439	10.880
1900	5.012	1.915	6.927	4.717	11.645
1901	5.484	1.997	7.482	5.018	12.500
1902	5.939	2.001	7.940	5.343	13.282
1903	6.398	1.918	8.315	5.692	14.007
1904	6.860	1.755	8.615	6.065	14.680
1905	7.324	1.816	9.140	6.465	15.605
1906	7.802	2.033	9.835	6.891	16.726
1907	8.268	2.103	10.371	7.345	17.716
1908	8.703	2.314	11.018	7.828	18.846
1909	9.098	2.577	11.675	8.339	20.014
1910	9.551	2.524	12.076	8.878	20.954
1911	10.002	2.373	12.375	9.448	21.823
1912	10.472	2.247	12.719	10.049	22.768
1913	10.954	2.093	13.047	10.683	23.731
1914	11.441	2.046	13.487	11.352	24.839
1915	11.921	1.990	13.911	12.057	25.968
1916	12.463	2.349	14.812	12.798	27.610
1917	12.896	1.522	14.418	13.579	27.997
1918	13.469	1.921	15.390	14.397	29.787
1919	13.989	2.076	16.065	15.259	31.324
1920	14.588	2.893	17.481	16.163	33.644
1921	15.152	3.345	18.497	17.114	35.611
1922	15.724	3.682	19.406	18.111	37.518
1923	16.232	3.639	19.871	19.157	39.028
1924	16.791	3.885	20.676	20.251	40.927
1925	17.337	3.893	21.230	21.397	42.627
1926	18.233	6.805	25.038	22.594	47.632
1927	18.917	7.082	25.999	23.856	49.855
1928	19.577	7.021	26.599	25.179	51.777
1929	20.196	6.659	26.855	26.562	53.417
1930	20.705	6.178	26.883	28.008	54.890
1931	21.159	5.890	27.049	29.514	56.562
1932	21.663	5.526	27.190	31.080	58.270
1933	22.140	4.935	27.075	32.711	59.786

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Table A.9.1: Investment in human capital in Japan (billion constant 1990 USD)					
	Gross fixed capital formation	Change in the value of stocks	Gross capital formation	Appreciation	Net capital formation
1934	22.707	4.874	27.581	34.407	61.988
1935	23.252	4.340	27.591	36.173	63.764
1936	23.823	4.071	27.894	38.010	65.904
1937	24.418	3.634	28.052	39.921	67.973
1938	24.933	2.610	27.543	41.911	69.453
1939	25.678	3.122	28.801	43.977	72.778
1940	26.131	2.747	28.878	46.131	75.008
1941	24.824	5.312	30.136	48.365	78.501
1942	25.003	4.967	29.969	50.628	80.597
1943	20.527	-0.341	20.185	52.966	73.151
1944	19.676	1.082	20.759	55.369	76.128
1945	19.587	2.032	21.619	57.161	78.780
1946	20.140	3.773	23.913	55.426	79.339
1947	21.833	2.516	24.349	53.810	78.159
1948	22.051	2.872	24.923	53.025	77.948
1949	24.254	1.864	26.118	51.857	77.975
1950	23.307	5.248	28.555	50.412	78.967
1951	25.227	4.065	29.292	48.634	77.926
1952	27.283	3.146	30.429	46.814	77.244
1953	28.241	3.701	31.943	45.149	77.091
1954	27.685	5.612	33.297	43.997	77.293
1955	26.997	7.804	34.801	42.756	77.556
1956	31.289	5.616	36.904	41.570	78.475
1957	34.034	4.545	38.579	40.512	79.092
1958	36.395	3.506	39.901	39.844	79.744
1959	37.104	4.161	41.265	38.366	79.630
1960	38.082	5.420	43.502	36.745	80.246
1961	36.431	9.460	45.891	34.542	80.433
1962	38.292	11.520	49.811	31.114	80.925
1963	55.546	1.860	57.406	27.994	85.399
1964	63.043	0.308	63.352	24.561	87.912
1965	67.867	-0.574	67.293	22.618	89.911
1966	67.080	1.635	68.715	19.936	88.651
1967	66.696	2.791	69.487	19.627	89.114
1968	69.833	3.138	72.972	16.525	89.497
1969	72.245	3.958	76.203	15.101	91.304
1970	73.673	7.322	80.994	12.511	93.505
1971	76.264	9.078	85.343	11.748	97.091
1972	81.715	12.468	94.183	7.525	101.708
1973	86.388	16.742	103.130	2.160	105.290
1974	91.160	19.134	110.295	-1.511	108.784
1975	95.497	18.215	113.713	-1.131	112.582
1976	97.809	19.389	117.199	-4.728	112.470
1977	100.017	21.166	121.182	-7.652	113.530
1978	105.628	25.041	130.669	-12.796	117.874
1979	110.124	26.961	137.085	-15.839	121.246
1980	112.784	27.210	139.994	-17.431	122.563

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	Gross fixed capital formation	Change in the value of stocks	Gross capital formation	Appreciation	Net capital formation
1981	119.252	26.113	145.365	-19.376	125.989
1982	111.394	37.816	149.210	-21.380	127.830
1983	127.504	28.095	155.599	-22.169	133.430
1984	132.917	31.423	164.340	-24.704	139.636
1985	140.856	30.675	171.532	-25.317	146.215
1986	147.438	31.162	178.600	-25.566	153.033
1987	157.601	30.765	188.367	-27.113	161.253
1988	168.536	27.751	196.287	-25.346	170.942
1989	178.562	22.985	201.547	-21.151	180.397
1990	187.661	22.190	209.851	-2.205	207.646
1991	189.708	22.293	212.002	3.108	215.110
1992	194.297	19.914	214.211	23.092	237.303
1993	205.120	6.975	212.095	42.086	254.181
1994	209.761	3.212	212.973	55.204	268.177
1995	204.684	9.202	213.886	66.874	280.760
1996	203.540	10.516	214.056	71.257	285.313
1997	199.377	12.307	211.684	82.689	294.373
1998	190.259	18.001	208.261	76.287	284.548
1999	207.501	-2.955	204.546	100.034	304.580
2000	206.833	2.032	208.865	98.466	307.331
2001	176.562	28.635	205.197	98.443	303.640
2002	176.554	27.362	203.916	107.665	311.581

Source Estimation: See chapter 5.

A.10. Investment in human capital in Indonesia 1890-2002 in billion 1990 International USD, converted at PPP

The construction and sources of the following estimates on human capital investments are described in chapter 5.

Table A.10.1: Investment in human capital in Indonesia (billion constant 1990 USD)

	Gross fixed capital formation	change in the value of stocks	Gross capital formation	Appreciation	Net capital formation
1890	0.057	0.116	0.172	0.071	0.244
1891	0.087	0.107	0.194	0.075	0.269
1892	0.119	0.085	0.204	0.080	0.284
1893	0.148	0.101	0.249	0.086	0.335
1894	0.175	0.109	0.284	0.093	0.378
1895	0.198	0.127	0.325	0.102	0.427
1896	0.220	0.123	0.343	0.111	0.454
1897	0.240	0.079	0.319	0.121	0.440
1898	0.260	0.105	0.366	0.132	0.498
1899	0.279	0.124	0.403	0.145	0.548
1900	0.300	0.115	0.415	0.158	0.573
1901	0.326	0.089	0.415	0.172	0.586
1902	0.356	0.096	0.452	0.187	0.639
1903	0.386	0.081	0.467	0.204	0.671
1904	0.407	0.105	0.512	0.222	0.734
1905	0.429	0.115	0.544	0.242	0.785
1906	0.450	0.107	0.556	0.262	0.819
1907	0.469	0.103	0.572	0.284	0.856
1908	0.493	0.110	0.603	0.308	0.911
1909	0.516	0.139	0.655	0.332	0.987
1910	0.535	0.161	0.696	0.359	1.055
1911	0.559	0.144	0.703	0.386	1.089
1912	0.587	0.125	0.712	0.416	1.127
1913	0.613	0.163	0.776	0.446	1.222
1914	0.638	0.152	0.790	0.479	1.269
1915	0.663	0.185	0.848	0.514	1.362
1916	0.690	0.193	0.883	0.550	1.433
1917	0.722	0.182	0.904	0.588	1.493
1918	0.753	0.131	0.884	0.629	1.513
1919	0.784	0.203	0.988	0.672	1.659
1920	0.813	0.119	0.933	0.717	1.649
1921	0.842	0.204	1.046	0.764	1.810
1922	0.877	0.164	1.041	0.814	1.854
1923	0.916	0.148	1.064	0.866	1.930
1924	0.948	0.177	1.125	0.921	2.046
1925	0.978	0.214	1.191	0.979	2.170
1926	1.011	0.234	1.246	1.039	2.285
1927	1.032	0.279	1.311	1.103	2.414
1928	1.064	0.297	1.361	1.169	2.530
1929	1.102	0.298	1.400	1.238	2.638

Continued on the next page

Table A.10.1: Investment in human capital in Indonesia (billion constant 1990 USD)					
	Gross fixed capital formation	change in the value of stocks	Gross capital formation	Appreciation	Net capital formation
1930	1.131	0.320	1.451	1.310	2.761
1931	1.177	0.307	1.484	1.386	2.869
1932	1.219	0.327	1.545	1.465	3.010
1933	1.268	0.326	1.594	1.548	3.141
1934	1.323	0.225	1.549	1.635	3.183
1935	1.370	0.102	1.472	1.726	3.198
1936	1.407	0.063	1.470	1.822	3.291
1937	1.443	-0.047	1.396	1.922	3.318
1938	1.475	-0.059	1.417	2.026	3.442
1939	1.503	-0.063	1.440	2.487	3.927
1940	1.542	-0.041	1.501	2.434	3.935
1941	1.568	-0.025	1.543	2.371	3.914
1942	1.561	-0.036	1.526	2.370	3.895
1943	1.760	-0.146	1.614	2.349	3.962
1944	1.704	-0.042	1.662	2.353	4.015
1945	1.527	0.241	1.767	2.346	4.113
1946	1.550	0.231	1.781	2.326	4.108
1947	1.559	0.274	1.834	2.336	4.170
1948	1.590	0.411	2.001	2.327	4.328
1949	1.601	0.490	2.090	2.322	4.412
1950	1.608	0.159	1.767	2.273	4.039
1951	1.663	0.137	1.800	2.143	3.943
1952	1.714	0.216	1.930	1.999	3.929
1953	1.727	0.177	1.904	2.003	3.907
1954	1.778	0.226	2.004	1.970	3.974
1955	1.806	0.115	1.921	1.993	3.914
1956	1.872	0.224	2.096	1.975	4.071
1957	1.370	0.713	2.083	1.923	4.007
1958	1.435	0.618	2.053	1.890	3.942
1959	1.618	0.926	2.544	1.768	4.312
1960	1.672	1.159	2.831	1.707	4.539
1961	1.807	1.314	3.121	1.586	4.707
1962	2.107	1.723	3.830	1.387	5.217
1963	2.241	1.654	3.894	1.390	5.284
1964	2.509	1.704	4.213	1.297	5.510
1965	3.339	1.994	5.333	0.704	6.038
1966	3.165	1.854	5.019	0.968	5.987
1967	3.422	1.605	5.027	0.853	5.881
1968	3.605	1.160	4.766	0.897	5.662
1969	4.336	1.241	5.578	0.520	6.098
1970	4.813	1.293	6.106	0.113	6.219
1971	5.461	1.740	7.201	-0.297	6.904
1972	6.208	2.754	8.962	-0.955	8.007
1973	6.385	2.641	9.026	-1.047	7.980
1974	6.591	2.208	8.798	-1.091	7.708
1975	7.099	3.329	10.428	-1.447	8.981
1976	6.929	2.127	9.056	-1.029	8.027
1977	6.783	1.025	7.807	-0.802	7.005

Continued on the next page

Table A.10.1: Investment in human capital in Indonesia (billion constant 1990 USD)					
	Gross fixed capital formation	change in the value of stocks	Gross capital formation	Appreciation	Net capital formation
1978	4.825	2.756	7.581	-0.976	6.605
1979	5.290	2.819	8.109	-1.392	6.716
1980	8.351	1.829	10.180	-2.216	7.964
1981	8.923	2.217	11.140	-2.647	8.493
1982	9.002	1.764	10.766	-2.672	8.094
1983	9.732	1.479	11.211	-3.273	7.938
1984	10.578	2.492	13.069	-4.003	9.066
1985	11.787	3.912	15.699	-4.804	10.894
1986	13.024	6.805	19.829	-5.848	13.981
1987	12.622	7.162	19.785	-6.179	13.606
1988	13.762	5.285	19.047	-6.030	13.017
1989	14.449	3.978	18.427	-6.132	12.295
1990	19.168	13.503	32.671	-9.651	23.021
1991	21.867	20.442	42.309	-11.457	30.852
1992	22.200	18.377	40.577	-12.397	28.180
1993	22.762	18.605	41.368	-12.200	29.167
1994	26.556	2.490	29.046	-10.878	18.167
1995	26.926	4.664	31.590	-10.660	20.930
1996	29.326	8.268	37.594	-12.267	25.327
1997	33.225	10.745	43.970	-14.299	29.671
1998	32.257	7.364	39.622	-12.110	27.511
1999	31.941	3.251	35.192	-9.763	25.429
2000	38.192	5.336	43.528	-13.941	29.587
2001	39.200	4.328	43.528	-12.761	30.767
2002	37.245	6.283	43.528	-12.053	31.475

Sources: See chapter 5.

A.11. Investment in human capital in India 1890-1999 in billion 1990 International USD, converted at PPP

The construction and sources of the following estimates on human capital investments are described in chapter 5.

Table A.11.1: Investment in human capital in India (billion constant 1990 USD)					
	Gross fixed capital formation	change in the value of stocks	Gross capital formation	Appreciation	Net capital formation
1890	0.913	0.683	1.597	-0.323	1.274
1891	0.917	0.723	1.640	-0.341	1.299
1892	0.872	0.641	1.513	-0.360	1.153
1893	0.861	0.682	1.544	-0.379	1.165
1894	0.877	0.830	1.707	-0.397	1.309
1895	0.885	0.870	1.755	-0.416	1.338
1896	0.844	0.684	1.528	-0.435	1.093
1897	0.775	0.474	1.249	-0.454	0.795
1898	0.825	0.769	1.594	-0.473	1.122
1899	0.879	1.022	1.901	-0.492	1.409
1900	0.812	0.660	1.472	-0.511	0.961
1901	0.789	0.671	1.460	-0.529	0.931
1902	0.818	0.875	1.694	-0.548	1.145
1903	0.857	1.122	1.978	-0.567	1.412
1904	0.914	1.218	2.132	-0.586	1.546
1905	0.956	0.994	1.950	-0.605	1.345
1906	1.018	1.035	2.053	-0.625	1.428
1907	1.109	1.066	2.175	-0.645	1.530
1908	1.156	1.022	2.178	-0.666	1.512
1909	1.265	1.148	2.413	-0.687	1.726
1910	1.411	1.336	2.746	-0.709	2.037
1911	1.517	1.512	3.029	-0.732	2.296
1912	1.627	1.403	3.030	-0.757	2.273
1913	1.641	1.427	3.069	-0.782	2.287
1914	1.708	1.441	3.149	-0.807	2.341
1915	1.648	1.015	2.663	-0.834	1.830
1916	1.717	1.372	3.089	-0.859	2.229
1917	1.708	1.363	3.070	-0.886	2.185
1918	1.540	1.268	2.807	-0.912	1.895
1919	1.467	0.782	2.248	-0.937	1.311
1920	1.507	1.130	2.637	-0.961	1.675
1921	1.601	1.306	2.907	-0.986	1.921
1922	1.895	1.892	3.787	-1.011	2.775
1923	2.248	2.404	4.652	-1.040	3.612
1924	2.592	2.651	5.243	-1.072	4.170
1925	2.980	2.835	5.815	-1.108	4.707
1926	3.292	2.794	6.086	-1.149	4.937
1927	3.818	3.412	7.230	-1.194	6.037

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Table A.11.1: Investment in human capital in India (billion constant 1990 USD)					
	Gross fixed capital formation	change in the value of stocks	Gross capital formation	Appreciation	Net capital formation
1928	4.153	3.402	7.555	-1.244	6.311
1929	4.591	3.696	8.287	-1.299	6.987
1930	5.315	4.661	9.975	-1.360	8.615
1931	5.681	4.446	10.127	-1.430	8.696
1932	6.009	4.386	10.395	-1.505	8.889
1933	6.397	4.612	11.009	-1.585	9.424
1934	6.782	4.522	11.304	-1.671	9.632
1935	7.379	4.159	11.539	-1.762	9.776
1936	6.610	2.912	9.521	-1.835	7.687
1937	6.675	3.020	9.694	-1.896	7.799
1938	6.931	3.780	10.711	-1.957	8.754
1939	6.882	3.692	10.573	-1.879	8.694
1940	7.032	3.428	10.460	-1.319	9.141
1941	6.691	3.153	9.844	-0.355	9.489
1942	5.671	1.471	7.141	1.323	8.465
1943	4.542	0.543	5.085	2.865	7.950
1944	4.795	2.789	7.584	2.847	10.432
1945	5.541	4.296	9.837	2.816	12.652
1946	5.825	4.421	10.246	3.595	13.841
1947	5.042	5.043	10.085	5.145	15.230
1948	5.755	6.670	12.425	5.325	17.750
1949	8.643	10.530	19.173	3.182	22.355
1950	10.714	1.778	12.492	3.612	16.104
1951	10.874	1.735	12.610	4.277	16.886
1952	18.128	7.504	25.632	-1.681	23.951
1953	13.568	3.519	17.087	3.308	20.395
1954	15.183	4.387	19.570	2.612	22.182
1955	18.303	6.612	24.915	0.310	25.225
1956	19.435	6.345	25.780	-0.015	25.765
1957	20.265	7.239	27.504	-0.475	27.029
1958	15.682	2.341	18.023	5.087	23.109
1959	16.200	2.712	18.912	5.259	24.171
1960	18.784	3.676	22.460	3.399	25.859
1961	21.054	5.896	26.950	1.612	28.562
1962	22.056	5.655	27.712	1.582	29.294
1963	23.128	6.337	29.465	1.152	30.617
1964	24.361	6.062	30.424	0.976	31.400
1965	26.265	7.106	33.370	0.355	33.725
1966	27.679	7.669	35.348	-0.018	35.330
1967	28.561	8.496	37.058	-0.145	36.912
1968	28.716	7.195	35.911	1.295	37.205
1969	31.387	9.045	40.431	-0.101	40.330
1970	31.519	7.691	39.210	1.015	40.224
1971	29.396	5.781	35.177	3.072	38.248
1972	35.320	9.462	44.782	-2.152	42.630
1973	39.400	13.495	52.895	-7.007	45.888
1974	35.417	7.009	42.425	-3.004	39.421
1975	33.619	7.274	40.893	-2.042	38.851
1976	40.457	10.954	51.411	-8.805	42.606

Continued on the next page

Table A.11.1: Investment in human capital in India (billion constant 1990 USD)					
	Gross fixed capital formation	change in the value of stocks	Gross capital formation	Appreciation	Net capital formation
1977	38.825	8.184	47.009	-8.385	38.624
1978	40.695	9.147	49.842	-10.056	39.786
1979	45.773	8.994	54.767	-15.456	39.311
1980	45.318	7.925	53.243	-15.303	37.941
1981	49.711	8.360	58.071	-20.439	37.632
1982	51.887	6.522	58.409	-21.570	36.839
1983	60.632	13.205	73.838	-29.407	44.431
1984	64.116	10.669	74.785	-29.872	44.913
1985	69.508	14.089	83.597	-35.381	48.215
1986	79.293	17.334	96.626	-40.861	55.766
1987	77.144	14.497	91.641	-35.878	55.763
1988	99.936	33.074	133.010	-53.489	79.520
1989	106.591	38.026	144.617	-58.211	86.406
1990	102.043	31.910	133.953	-52.004	81.949
1991	90.996	21.184	112.179	-38.793	73.386
1992	85.684	17.505	103.189	-30.034	73.155
1993	86.549	21.391	107.940	-25.851	82.089
1994	99.253	31.236	130.489	-35.048	95.441
1995	110.621	40.528	151.149	-45.483	105.667
1996	114.212	37.916	152.128	-44.294	107.835
1997	115.707	37.902	153.609	-43.825	109.785
1998	115.434	36.483	151.917	-40.956	110.961
1999	124.300	43.369	167.670	-57.677	109.993
2000	124.548	45.652	170.200	-58.248	111.952

Sources: See chapter 5.

A.12. Stock of Human Capital in India, Indonesia, and Japan, 1890-2002 in billion 1990 International USD, converted at PPP

The construction and sources of the following estimates of the stock of human capital are described in chapter 5.

Table A.12.1: Human Capital Stock in Asia in billion constant 1990 USD			
	Japan	Indonesia	India
	Total HC	Total HC	Total HC
	Billion USD	Billion USD	Billion USD
1890		2.430	81.641
1891		2.592	82.216
1892		2.791	82.728
1893		3.025	83.211
1894	114.152	3.293	83.691
1895	120.837	3.593	84.159
1896	127.775	3.924	84.568
1897	135.375	4.286	84.889
1898	143.660	4.679	85.241
1899	152.664	5.102	85.628
1900	162.398	5.561	85.930
1901	172.905	6.058	86.190
1902	184.192	6.602	86.460
1903	196.286	7.192	86.749
1904	209.216	7.821	87.078
1905	223.010	8.492	87.428
1906	237.710	9.204	87.821
1907	253.330	9.958	88.285
1908	269.868	10.759	88.776
1909	287.313	11.608	89.354
1910	305.750	12.501	90.055
1911	325.208	13.447	90.840
1912	345.738	14.449	91.710
1913	367.385	15.509	92.569
1914	390.189	16.627	93.469
1915	414.178	17.804	94.283
1916	439.451	19.045	95.140
1917	465.938	20.357	95.962
1918	493.817	21.739	96.589
1919	523.079	23.196	97.119
1920	553.845	24.727	97.664
1921	586.126	26.333	98.280
1922	619.978	28.025	99.163
1923	655.384	29.807	100.370
1924	692.445	31.678	101.890
1925	731.197	33.635	103.762
1926	772.044	35.687	105.904
1927	814.839	37.823	108.529

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Table A.12.1: Human Capital Stock in Asia in billion constant 1990 USD			
	Japan	Indonesia	India
	Total HC	Total HC	Total HC
	Billion USD	Billion USD	Billion USD
1928	859.618	40.057	111.437
1929	906.400	42.398	114.729
1930	955.137	44.840	118.683
1931	1,005.836	47.403	122.934
1932	1,058.608	50.088	127.436
1933	1,113.489	52.905	132.248
1934	1,170.634	55.865	137.359
1935	1,230.090	58.962	142.975
1936	1,291.958	62.192	147.750
1937	1,356.333	65.559	152.529
1938	1,423.214	69.062	157.502
1939	1,492.909	73.055	162.504
1940	1,565.213	77.033	168.217
1941	1,638.445	80.974	174.553
1942	1,714.122	84.907	181.547
1943	1,787.662	89.017	188.954
1944	1,862.758	93.076	196.598
1945	1,939.557	96.950	204.955
1946	2,015.166	100.828	214.376
1947	2,090.845	104.724	224.566
1948	2,165.954	108.642	235.649
1949	2,242.092	112.566	247.475
1950	2,315.836	116.447	261.802
1951	2,389.717	120.254	276.954
1952	2,463.832	123.967	293.400
1953	2,537.237	127.697	310.277
1954	2,608.931	131.446	328.072
1955	2,678.695	135.245	346.686
1956	2,751.564	139.092	366.105
1957	2,826.118	142.386	385.896
1958	2,902.365	145.711	406.666
1959	2,977.841	149.097	428.126
1960	3,052.673	152.477	450.309
1961	3,123.651	155.870	472.974
1962	3,193.059	159.364	496.613
1963	3,276.601	162.995	520.893
1964	3,364.207	166.801	546.230
1965	3,454.693	170.845	572.850
1966	3,541.710	174.978	600.511
1967	3,628.033	179.254	628.927
1968	3,714.392	183.756	658.938
1969	3,801.738	188.612	690.224
1970	3,887.922	193.539	722.757
1971	3,975.935	198.703	755.224
1972	4,065.175	203.956	788.393
1973	4,153.723	209.295	820.785
1974	4,243.372	214.795	853.198

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Table A.12.1: Human Capital Stock in Asia in billion constant 1990 USD			
	Japan	Indonesia	India
	Total HC	Total HC	Total HC
	Billion USD	Billion USD	Billion USD
1975	4,337.739	220.447	884.775
1976	4,430.820	226.347	916.427
1977	4,523.184	232.327	946.866
1978	4,616.017	236.176	977.504
1979	4,710.301	240.074	1,007.817
1980	4,805.653	246.208	1,037.829
1981	4,905.529	252.484	1,067.093
1982	4,995.543	258.813	1,097.400
1983	5,100.878	265.271	1,128.604
1984	5,209.090	271.845	1,162.825
1985	5,324.629	278.826	1,196.916
1986	5,446.500	286.000	1,235.297
1987	5,576.987	292.441	1,276.531
1988	5,720.177	300.170	1,322.874
1989	5,877.588	308.484	1,371.130
1990	6,063.044	317.992	1,421.088
1991	6,255.861	328.386	1,473.260
1992	6,473.249	338.169	1,528.897
1993	6,720.457	348.714	1,589.587
1994	6,781.718	364.380	1,653.774
1995	7,255.723	380.637	1,718.877
1996	7,868.083	397.682	1,788.764
1997	8,140.154	416.588	1,860.618
1998	8,406.708	436.724	1,935.075
1999	8,160.215	458.897	2,001.645
2000	8,641.733	483.135	2,064.639
2001	9,123.252	509.564	
2002	9,407.486	534.749	

Source: See chapter 5.

A.13. A method of inserting human capital formation in GDP using the expenditure approach, 1890-2002.

A.13.1 Introduction

After we have calculated the formation and stocks of human capital (chapter 5 and appendices A.8-A.11), one problem remains. If we want to insert human capital in growth equations, we run regressions of GDP on human capital. However, GDP consists of private consumption expenditure, government consumption expenditure, plus exports, minus imports, and plus investment (gross fixed capital formation). However, should this gross fixed capital formation not also include total investment in human capital besides physical capital? In present-day GDP estimates (and older estimates as well) often only direct government and private expenditure on education are included. As a consequence, shares of human capital formation such as ‘foregone wages’ and ‘home education’ are not inserted in the national accounts. There are some exceptions however. Kendrick (1976) adjusted GDP for human capital formation not included in the national accounts. Furthermore, in their extensive work on inserting human capital in the national accounts Jorgenson and Fraumeni (1989, table 5.1) did the same, which resulted in a more than doubling of the level of GDP for the United States.

From above perspective, it might be important to incorporate human capital into the national accounts. However, there is also a further, largely theoretical reason to include human capital formation in GDP. In growth theory, where human capital formation is also included, human capital formation can be defined as a part of GDP or it can be seen as separated from GDP, although the latter would seem to be somewhat odd. However, human capital formation can not completely be seen as a part of GDP as GDP excludes such human capital components as foregone wages and home education. On the other hand, human capital also cannot be seen as completely separated from GDP as GDP includes private and government direct expenditure on education (Barro and Sala-i-Martin 2004, 248). This may make a difference. Kendrick (1976, table A-1 and B-2) estimated that about 50% of gross human capital formation was included in the national accounts. Jorgenson and Fraumeni (1989) estimated this figure to be lower because of their valuation of non-market time as human capital which is excluded from current GDP estimates.

Therefore, it is important to see how GDP increases when the complete estimated human capital accumulation is included. We start by applying this method on the data on current GDP derived using the expenditure approach for Indonesia (appendix A.4). This allows us to

see how the human capital formation relates to the other parts of GDP. Yet, as also indicated in appendix A.4, the constant prices series estimated using the production approach from Van der Eng (2003) are more accurate. Therefore, when we present in table A.13.3 the GDP figures corrected for human capital formation for all three countries in mln. constant 1990 intl. dollars we will use the more accurate estimates from Van der Eng (2003).

A.13.2 Inserting human capital formation in Indonesian GDP using the expenditure approach

From appendix A.4 we have GDP and its components in current prices and from appendix A.10 we have the gross human capital formation. Unfortunately, we cannot simply insert gross human capital formation in the national accounts as the direct expenditure from individuals and the government are already included in the household and government consumption expenditure respectively. Therefore we deducted government expenditure on education and private expenditure on education as given in chapter 3 and appendix A.8 from government consumption expenditure and household consumption expenditure respectively. Next, we inserted Gross Human Capital Formation in the national accounts to arrive at the new GDP.

The first thing that we may notice is that the share of human capital in GDP was fairly low, at least somewhat lower than that of physical capital.¹⁸⁶ The share of human capital formation in GDP seems to increase continuously over the twentieth century. However, the

Table A.13.1: Comparison between GDP in current prices with and without human capital formation in Indonesia using the expenditure approach				
	Share in GDP		Share HC not in National Accounts	GDP with HC/Normal GDP
	Physical capital	Human Capital		
1890	0.64%	0.54%	56.25%	100.30%
1900	1.41%	1.06%	80.22%	100.86%
1910	2.19%	2.00%	80.14%	101.63%
1920	5.35%	2.61%	79.15%	102.11%
1930	6.88%	2.15%	60.61%	101.32%
1940	8.23%	2.46%	69.61%	101.74%
1950	5.67%	4.80%	92.92%	104.67%
1960	7.33%	6.12%	78.95%	105.08%
1970	8.70%	10.32%	70.70%	107.87%
1980	20.72%	6.57%	11.23%	100.74%
1990	31.37%	10.75%	43.55%	104.91%
2000*	18.06%	6.23%	12.68%	100.80%

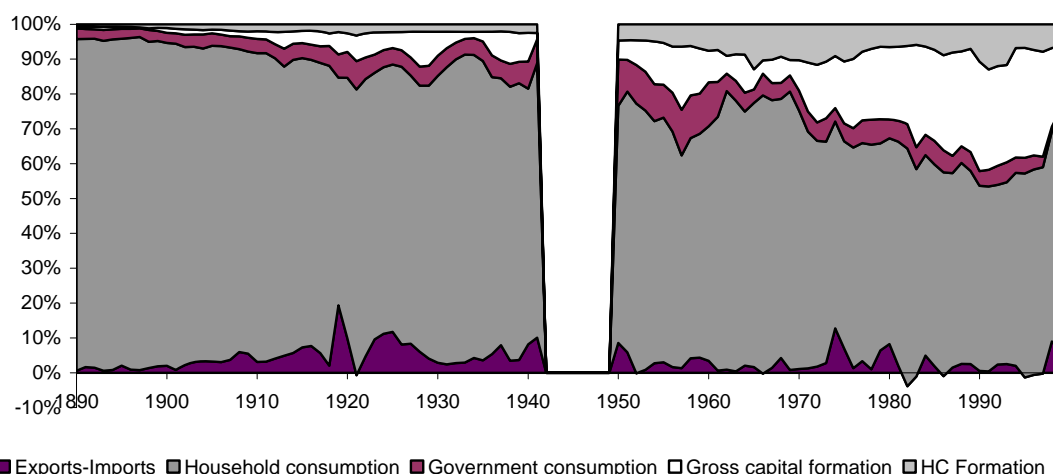
*1999

¹⁸⁶ Note that these are not factor shares because we are talking about GDP calculated using the expenditure approach.

maximum is around 10% of the GDP. This low figure might partly be caused by the lower depreciation (or even appreciation) of human capital compared to physical capital. As a consequence, as we already noted in chapter 5, the human and physical capital stock are of about the same magnitude while the gross human capital formation is lower than that of physical capital. Therefore, our results diverge somewhat from the results found by Kendrick (1976) and Jorgenson and Fraumeni (1986). This is of course not surprising as our definition and construction of human capital differs significantly from theirs. A second point to note is that the share of human capital formation not included in GDP is significantly different at the

Figure A.13.1

Percentage division of GDP in Indonesia 1890-2000 in current prices in expenditure shares including human capital formation



Note: We included exports minus imports. In years when the value of the imports were larger than the value of the exports the other parts of GDP first have to make up this negative difference. Hence, for some years there is a negative value.

start of the twentieth century than at the end. Indeed, we note that around 1900 about 80% of human capital formation was not inserted in GDP. This may come as no surprise as much of this education was informal. When formal education increased strongly in Indonesia, we see that the share of human capital not included in GDP decreased. A third important point to note is that GDP increases due to the insertion of human capital. This follows logically from the situation that part of human capital was not inserted in the 'normal' GDP figures. On average it seems that the GDP increases by about 2% due to the inclusion of human capital. Finally, whereas the shares of human and physical capital were about equal until 1970, they diverged strongly afterwards. This is what we also found in chapter 5. There, we pointed out

that the per capita stock of human capital had a logistic curve with strong growth between the 1930s and 1960s. As a consequence, the growth of the gross human capital formation was less strong after the 1970s. The gross physical capital stocks, however, increased strongly after that period thus increasing the share of gross physical capital formation in GDP relative to gross human capital formation.

Table A.13.2: GDP (expenditure approach) corrected for human capital in billion current rupiah in Indonesia, 1890-2000

	Household consumption	Government consumption	Gross capital formation	Gross Human capital Formation	Exports-Imports	GDP
1890	2.66	0.09	0.02	0.02	0.02	2.80
1891	2.69	0.08	0.02	0.02	0.05	2.86
1892	2.83	0.08	0.02	0.02	0.04	3.00
1893	2.52	0.08	0.02	0.02	0.02	2.66
1894	2.80	0.09	0.02	0.02	0.02	2.96
1895	2.95	0.09	0.02	0.02	0.06	3.14
1896	3.20	0.09	0.02	0.03	0.03	3.36
1897	3.53	0.09	0.01	0.03	0.03	3.69
1898	2.55	0.09	0.01	0.03	0.04	2.72
1899	2.93	0.09	0.03	0.03	0.06	3.14
1900	2.92	0.09	0.04	0.03	0.06	3.15
1901	3.02	0.10	0.04	0.04	0.03	3.23
1902	2.60	0.10	0.04	0.04	0.06	2.85
1903	2.62	0.10	0.04	0.05	0.09	2.89
1904	2.34	0.11	0.03	0.04	0.09	2.61
1905	2.64	0.10	0.03	0.05	0.09	2.91
1906	2.79	0.10	0.04	0.05	0.09	3.08
1907	2.85	0.10	0.05	0.06	0.12	3.18
1908	2.77	0.12	0.05	0.06	0.19	3.19
1909	2.74	0.13	0.06	0.06	0.17	3.16
1910	3.06	0.14	0.08	0.07	0.11	3.45
1911	3.37	0.15	0.09	0.08	0.12	3.81
1912	3.45	0.16	0.14	0.09	0.16	4.00
1913	3.22	0.20	0.18	0.09	0.19	3.89
1914	3.78	0.21	0.16	0.09	0.26	4.49
1915	4.21	0.22	0.18	0.09	0.37	5.08
1916	4.52	0.24	0.22	0.10	0.42	5.50
1917	4.36	0.25	0.22	0.11	0.30	5.24
1918	4.70	0.31	0.20	0.14	0.11	5.46
1919	4.63	0.47	0.46	0.16	1.37	7.09
1920	7.03	0.70	0.50	0.24	0.93	9.40
1921	5.82	0.58	0.52	0.23	-0.05	7.10
1922	6.25	0.49	0.55	0.20	0.37	7.86
1923	5.89	0.40	0.49	0.18	0.74	7.70
1924	5.86	0.38	0.39	0.18	0.85	7.66
1925	6.21	0.38	0.37	0.18	0.95	8.10
1926	6.62	0.40	0.43	0.19	0.67	8.31
1927	6.76	0.45	0.65	0.19	0.73	8.78
1928	7.07	0.50	0.93	0.19	0.56	9.25

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Table A.13.2: GDP (expenditure approach) corrected for human capital in billion current rupiah in Indonesia, 1890-2000						
	Household consumption	Government consumption	Gross capital formation	Gross Human capital Formation	Exports-Imports	GDP
1929	7.41	0.54	0.93	0.20	0.38	9.46
1930	7.69	0.54	0.64	0.20	0.27	9.34
1931	7.32	0.47	0.40	0.18	0.21	8.59
1932	6.40	0.36	0.23	0.16	0.20	7.35
1933	5.79	0.30	0.13	0.15	0.19	6.55
1934	5.28	0.29	0.11	0.13	0.26	6.07
1935	4.86	0.32	0.16	0.12	0.20	5.66
1936	4.30	0.34	0.37	0.11	0.29	5.41
1937	4.41	0.29	0.48	0.12	0.46	5.76
1938	4.28	0.36	0.50	0.12	0.19	5.44
1939	4.98	0.38	0.52	0.16	0.23	6.27
1940	3.99	0.42	0.45	0.13	0.44	5.43
1941	4.78	0.41	0.11	0.15	0.61	6.06
1942	5.20			0.21		5.42
1943	3.89			0.21		4.10
1944	5.59			0.33		5.91
1945	6.20			0.49		6.69
1946	8.28			0.85		9.13
1947	11.45			1.24		12.69
1948	16.84			1.76	-0.80	17.80
1949	24.31			2.25	-0.60	25.97
1950	32.75	6.39	2.64	2.23	4.13	48.14
1951	61.30	7.42	4.59	3.79	4.81	81.92
1952	72.32	10.35	6.63	4.29	-0.16	93.42
1953	72.60	10.87	8.81	4.50	0.86	97.64
1954	69.90	10.67	12.27	5.03	2.73	100.60
1955	83.65	11.25	14.25	6.38	3.63	119.16
1956	84.02	13.85	16.42	7.98	2.03	124.31
1957	82.85	17.77	24.56	8.70	1.77	135.66
1958	126.60	24.69	28.36	12.49	8.29	200.42
1959	173.20	31.08	34.91	18.71	11.74	269.64
1960	227.65	42.68	30.70	25.65	11.59	338.26
1961	381.91	52.43	48.10	38.70	3.10	524.24
1962	1,168.71	72.92	74.80	132.07	13.14	1,461.64
1963	2,700.41	198.66	263.00	300.28	13.43	3,475.78
1964	5,765.59	431.86	862.00	688.90	165.10	7,913.43
1965	20,702.45	1,041.32	1,586.70	3,529.75	451.22	27,311.45
1966	300.40	23.49	14.30	38.90	-0.94	376.15
1967	778.48	49.70	67.90	103.24	14.64	1,013.96
1968	1,754.25	108.78	177.90	219.74	101.28	2,361.95
1969	2,337.63	135.78	129.11	300.42	23.90	2,926.84
1970	2,669.80	207.18	313.13	371.43	38.64	3,600.18
1971	2,805.49	238.86	580.00	454.82	52.61	4,131.78
1972	3,362.54	276.00	857.00	604.24	92.47	5,192.26
1973	4,726.54	497.80	1,208.00	797.43	204.33	7,434.10
1974	7,147.51	470.32	1,797.00	1,094.37	1,535.79	12,044.98
1975	8,593.95	742.01	2,571.70	1,543.52	1,005.18	14,456.36

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	Household consumption	Government consumption	Gross capital formation	Gross Human capital Formation	Exports-Imports	GDP
1976	10,235.06	900.03	3,204.90	1,607.25	207.50	16,154.75
1977	12,172.65	1,270.36	3,826.40	1,536.83	648.60	19,454.83
1978	14,819.87	1,665.74	4,670.70	1,612.63	231.90	23,000.84
1979	19,110.54	2,219.86	6,704.30	2,076.87	2,074.00	32,185.56
1980	27,026.90	2,492.45	9,485.20	3,009.71	3,769.40	45,783.67
1981	34,933.77	3,216.88	11,553.40	3,527.26	1,125.70	54,357.01
1982	40,909.64	4,166.22	13,467.10	3,732.16	-2,336.50	59,938.63
1983	43,889.89	4,645.37	21,668.40	4,344.40	-787.40	73,760.66
1984	50,394.25	5,120.51	22,176.70	5,594.05	4,357.70	87,643.21
1985	55,713.93	6,491.33	25,136.20	7,037.22	1,833.60	96,212.29
1986	62,028.12	6,734.13	28,888.20	9,406.77	-1,026.30	106,030.92
1987	70,419.58	6,253.74	37,491.02	10,256.23	1,918.50	126,339.07
1988	79,210.88	6,568.80	37,453.52	10,668.16	3,494.20	137,395.56
1989	86,669.18	8,523.72	46,318.96	10,983.38	3,904.00	156,399.24
1990	103,729.30	8,305.04	61,255.39	20,994.55	1,007.40	195,291.69
1991	121,649.66	11,030.78	65,880.06	29,746.49	888.10	229,195.08
1992	131,824.29	13,816.29	73,129.89	30,676.94	6,047.80	255,495.21
1993	153,183.88	16,873.83	82,003.36	34,303.31	7,389.60	293,753.98
1994	211,800.80	16,989.06	120,034.84	26,137.56	7,563.70	382,525.96
1995	269,214.08	20,733.49	145,056.33	31,108.93	-6,064.00	460,048.83
1996	320,036.92	21,807.35	164,181.80	39,971.98	-3,278.70	542,719.35
1997	373,878.66	19,027.50	190,189.36	49,663.93	-1,728.50	631,030.95
1998	626,694.69	13,969.23	233,981.93	70,882.37	93,186.70	1,038,714.91
1999	812,303.32	32,187.02	219,788.69	75,857.94	76,839.90	1,216,976.87

A.13.3 GDP figures including human capital formation for Japan, India, and Indonesia, 1890-2000 in 1990 Intl. USD.

These figures are estimated in the same way as is done for Indonesia in appendix A.13.2. However, the difference between these estimates for Indonesia and those from appendix A.13.2 is, besides that these are in constant 1990 intl. USD, that here we made use of the, more reliable, GDP estimates of Van der Eng (2002). Readers interested in the increase in GDP due to the inclusion of human capital formation are referred to table 7.8 in chapter 7.

	Japan	India	Indonesia
1890		79,964.14	24,701.77
1891		82,583.29	25,355.06
1892		85,201.81	26,387.13
1893		88,131.25	27,155.35
1894		89,083.39	27,587.96

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Table A.13.3: GDP corrected for Gross Human Capital Formation in Japan, India, and Indonesia 1890-2000 in 1990 International USD, converted at PPP (millions)

	Japan	India	Indonesia
1895	50,963.03	88,989.51	28,123.50
1896	48,731.53	89,595.72	28,157.73
1897	50,074.58	91,587.67	28,696.67
1898	59,027.02	94,120.32	29,141.76
1899	55,436.95	95,917.43	30,873.02
1900	57,977.98	96,853.27	32,080.59
1901	60,270.06	99,903.22	31,704.65
1902	57,908.55	103,386.54	31,280.92
1903	61,907.90	101,614.73	33,036.67
1904	62,801.18	106,036.27	33,739.43
1905	62,351.84	107,327.89	34,270.64
1906	69,985.48	110,610.45	35,336.13
1907	72,361.42	114,894.35	36,181.10
1908	73,161.16	120,646.38	36,314.46
1909	73,463.65	133,188.34	38,197.81
1910	74,829.37	129,505.38	40,737.39
1911	78,660.57	131,179.59	43,001.12
1912	81,494.50	131,814.87	43,397.42
1913	83,014.99	134,568.98	45,755.95
1914	81,140.05	137,776.48	45,665.45
1915	87,770.65	142,597.00	46,255.17
1916	100,477.28	145,715.15	47,002.55
1917	103,184.85	142,418.47	47,186.15
1918	105,168.85	144,116.59	48,296.23
1919	115,124.97	139,936.47	52,118.19
1920	109,658.77	147,093.04	51,516.55
1921	120,448.43	149,268.35	51,972.83
1922	120,627.30	154,452.08	52,769.96
1923	120,866.86	155,771.11	53,610.56
1924	124,383.18	154,988.50	56,458.48
1925	129,260.69	157,495.88	58,392.76
1926	133,296.98	157,895.88	61,578.08
1927	135,452.98	161,246.53	65,798.50
1928	145,099.10	163,581.61	68,918.14
1929	149,161.85	167,377.75	70,844.07
1930	139,530.32	170,579.16	71,403.39
1931	140,062.15	172,899.89	66,078.88
1932	150,160.96	173,953.29	65,337.14
1933	162,654.18	175,591.09	64,927.11
1934	163,114.04	174,904.11	65,261.08
1935	166,791.91	175,406.47	67,585.88
1936	177,559.80	171,902.97	72,459.65
1937	185,446.65	169,246.48	79,452.44
1938	196,364.63	169,877.86	81,036.10
1939	225,701.12	170,761.57	81,882.66
1940	231,722.94	172,374.55	87,725.98
1941	236,592.91	174,225.10	90,391.94

Continued on the next page

Table A.13.3: GDP corrected for Gross Human Capital Formation in Japan, India, and Indonesia 1890-2000 in 1990 International USD, converted at PPP (millions)

	Japan	India	Indonesia
1942	235,992.22	174,322.76	72,704.71
1943	229,940.04	177,147.47	59,031.48
1944	222,780.09	181,231.63	46,909.45
1945	120,845.68	185,700.77	41,673.92
1946	131,860.21	189,826.56	43,294.88
1947	141,012.44	192,682.78	49,955.14
1948	158,543.25	202,156.41	58,430.16
1949	167,931.48	216,232.63	63,771.21
1950	181,592.59	222,342.79	67,999.67
1951	201,985.36	236,821.36	72,832.31
1952	222,529.21	256,031.08	76,188.76
1953	237,436.02	262,329.67	79,925.97
1954	250,179.90	274,651.74	84,934.02
1955	270,670.14	285,277.40	87,179.87
1956	290,507.44	301,797.88	88,472.68
1957	310,597.74	300,036.50	94,351.00
1958	327,079.20	311,422.52	91,003.15
1959	354,749.53	317,919.62	95,259.41
1960	398,132.79	342,023.95	99,317.57
1961	443,053.59	355,718.77	106,030.59
1962	481,562.57	363,689.04	106,533.17
1963	523,272.45	382,287.41	102,542.37
1964	583,072.70	410,532.19	106,448.33
1965	616,233.75	398,226.79	108,665.18
1966	676,889.72	402,689.25	108,177.84
1967	746,556.19	434,713.15	105,776.66
1968	839,950.00	443,967.56	115,306.83
1969	940,980.77	475,597.09	129,407.80
1970	1,039,378.87	496,393.38	142,928.75
1971	1,085,959.40	497,899.57	151,354.69
1972	1,177,033.26	506,167.80	169,083.89
1973	1,271,535.02	534,966.50	192,730.08
1974	1,256,910.84	530,335.74	201,299.07
1975	1,294,794.92	572,600.41	202,327.81
1976	1,345,339.06	587,034.85	217,551.99
1977	1,402,013.57	625,368.83	232,594.28
1978	1,476,165.04	658,199.66	242,050.95
1979	1,556,862.01	631,416.15	254,586.32
1980	1,601,007.04	670,341.97	276,948.12
1981	1,654,083.62	715,185.13	295,810.26
1982	1,706,728.41	735,555.13	284,804.81
1983	1,749,962.17	804,971.95	295,458.74
1984	1,823,618.30	832,507.73	317,051.71
1985	1,905,710.71	869,819.52	326,778.21
1986	1,963,212.76	916,391.75	349,798.28
1987	2,048,568.87	949,825.66	365,447.97
1988	2,175,679.40	1,076,429.82	384,642.56

Continued on the next page

Table A.13.3: GDP corrected for Gross Human Capital Formation in Japan, India, and Indonesia 1890-2000 in 1990 International USD, converted at PPP (millions)

	Japan	India	Indonesia
1989	2,280,928.80	1,148,279.40	417,003.22
1990	2,396,762.29	1,189,408.85	465,130.68
1991	2,469,924.85	1,183,394.71	497,299.92
1992	2,491,992.98	1,232,434.28	545,256.41
1993	2,499,377.68	1,300,925.80	580,154.57
1994	2,525,531.58	1,409,666.78	607,417.22
1995	2,560,483.84	1,524,148.50	657,679.44
1996	2,647,031.34	1,636,498.03	713,018.05
1997	2,691,819.50	1,704,380.12	746,864.27
1998	2,662,275.68	1,801,892.98	644,650.29
1999	2,676,887.67	1,907,249.35	649,026.85
2000	2,740,612.23	2,002,061.24	

Sources: Appendices A.2; A.7; A.8-A.10.

A.14. Correcting for the bias caused by using a dynamic model to estimate Lucasian growth (converting a dynamic model into a static model)

If we write the Lucasian production function in such way that it is empirically estimable, we end up with a regression of the growth of per capita GDP on the growth of per capita human capital at time t . However, many studies (ours included) replace the growth of human capital with its first lag ($\Delta \ln h_{t-1}$) because of the endogeneity.

However, in the Lucas model we should have used variables at time t . Normally one would expect that the inclusion of time lags of the independent variables would not make much difference for the estimated coefficients. Indeed, this is what is done in much of the literature.¹⁸⁷ Unfortunately, in the specific Lucasian case there might be another problem which stems from the second sector (in which human capital is formed). When we use time lags, our regression may suffer from an omitted variable bias, which may create a bias in the human capital coefficient. To see this, take a regression with human capital (for simplicity without the imbalance effect and without a trend and constant as we used in chapter 7):

$$\Delta \ln y_t = \beta_2 \Delta \ln y_{t-1} + \beta_3 \ln y_{t-1} + \beta_4 \Delta \ln h_{t-1} \quad (\text{A.15.1})$$

Rewriting this model gives:

$$\ln y_t - \ln y_{t-1} = \beta_2 \ln y_{t-1} - \beta_2 \ln y_{t-2} + \beta_3 \ln y_{t-1} + \beta_4 \ln h_{t-1} - \beta_4 \ln h_{t-2} \quad (\text{A.15.2})$$

Now, as we have seen in chapter 6, the accumulation of human capital, under the assumption of constant marginal returns, can be written as:

$$\Delta h_t = B_t (1 - u_t) h_{t-1} \quad (\text{A.15.3})$$

Or in levels:

$$h_t = [1 + B_t (1 - u_t)] h_{t-1} \quad (\text{A.15.4})$$

Now, we rewrite this in logarithm:

$$\ln h_t = \ln [1 + B_t (1 - u_t)] + \ln h_{t-1} \quad (\text{A.15.5})$$

Now inserting this in equation A.15.2 gives:

$$\begin{aligned} \ln y_t - \ln y_{t-1} &= \beta_2 \ln y_{t-1} - \beta_2 \ln y_{t-2} + \beta_3 \ln y_{t-1} + \beta_4 \ln h_{t-1} - \beta_4 \ln h_{t-2} \\ &= \beta_2 \ln y_{t-1} - \beta_2 \ln y_{t-2} + \beta_3 \ln y_{t-1} + \beta_4 \ln [1 + B_{t-1} (1 - u_{t-1})] + \beta_4 \ln h_{t-2} - \beta_4 \ln [1 + B_{t-2} (1 - u_{t-2})] \\ &\quad - \beta_4 \ln h_{t-3} \end{aligned}$$

That is:

¹⁸⁷ Sianesi and Van Reenen (2003) suggest that lags may solve the endogeneity problem. However, they remain sceptical.

$$\begin{aligned}\Delta \ln y_t &= \beta_2 \ln y_{t-1} - \beta_2 \ln y_{t-2} + \beta_3 \ln y_{t-1} + \beta_4 \Delta \ln h_{t-1} = \\ &= \beta_2 \Delta \ln y_{t-1} + \beta_3 \ln y_{t-1} + \beta_4 \Delta \ln [I + B_{t-1}(1-u_{t-1})] + \beta_4 \Delta \ln h_{t-2} + \beta_5 \ln [I + B_{t-2}(1-u_{t-2})] \\ &+ \beta_5 \ln h_{t-2}\end{aligned}$$

In above equation we can see that, when using the lag of the growth of human capital, in fact one omits $\beta_4 \Delta \ln [I + B_{t-1}(1-u_{t-1})]$ from the equation. Therefore, although theoretically the effect of $\Delta \ln hc$ on per capita GDP growth (in the static model) can be written as $1 + \gamma$, where γ is the external effect of the growth of the per capita stock of human capital (see chapter 2) now part of $1 + \gamma$ cannot be estimated. Admittedly, this problem is likely to be more serious for the log-level of human capital than for the growth of human capital because the time lags of u and B are stronger correlated in the latter case. Indeed, doing a preliminary test with the log-level of human capital and the growth of human capital side by side in an equation showed that this was indeed the case. This is in itself interesting because the omission of $\beta_4 \Delta \ln [I + B_{t-1}(1-u_{t-1})]$ would only be a problem if B and/or u are not constant which is what we argued in chapter 6. Nevertheless, in both cases there is an effect. Now, if we refer to the estimated biased coefficient as β_4 , than by correcting for the bias we can calculate $1 + \gamma$ as:

$$\beta_4 = \frac{\Delta \ln [I + B_{t-1}(1-u_{t-1})]}{\Delta \ln h_{t-2}} (1 + \gamma) + (1 + \gamma) \quad (\text{A.15.8})$$

Rewriting gives:

$$(1 + \gamma) = \beta_4 \cdot \left[I + \frac{\Delta \ln [I + B_{t-1}(1-u_{t-1})]}{\Delta \ln h_{t-2}} \right]^{-1} \quad (\text{A.15.9})$$

Equation A.15.9 offers a way to correct the coefficient of the growth and the level of human capital for the use of one time lag. But how can we empirically estimate these equations? We first have to correct for the omission of $B*(1-u)$, as indicated in equation A.15.6. This can easily be achieved. We rewrite the equation (A.15.3):

$$\dot{h}_t = B_t (1 - u_t) h_{t-1} - \delta h_{t-1} \quad (\text{A.15.12})$$

However, as we have the gross fixed human capital formation (the increase in the stock, while ignoring the depreciation) we can also write:

$$GFHCF_t = B_t (1 - u_t) h_{t-1} \quad (\text{A.15.13})$$

, or $GFHCF_t/h_{t-1} = B_t(1-u_t)$. In other words, dividing the gross fixed human capital investment in year t by the human capital stock in year $t-1$, gives $B_t(1-u_t)$ which we need in order to correct the coefficient of $\Delta \ln h_{t-1}$ for it to capture the effect of $\Delta \ln h_t$ on $\Delta \ln y_t$ (see equation A.15.9).