

Online Appendix to the unpublished working paper

“Supply of labour during early industrialization. Agricultural systems, textile factory work and gender in Japan and India, ca. 1880-1940”

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Data sources and methods

While throughout this paper, we have talked about wage rates, it is good to note that the numbers used here are more accurately referred to as daily earnings. Both in the Japanese and in the Indian textile industries, most workers were paid piece rates, although this depended on the job type. Higher-paid workers, most of them male, more often received a fixed time rate, especially when they were in supervisory positions, but even for them employers usually had incentives to pay piece rates, in order to make sure overseers pushed their inferiors to work harder. In some cases, foremen or “jobbers” as they were often called in the Indian case, also performed manual labour themselves while supervising. Having said this, most of our source material itself either recorded daily (or monthly) *earnings*, or, for comparative purposes, calculated time wages from the piece rates and hours/days worked. This is why we also chose to convert all information into (average) daily earnings per occupational group, and sometimes, necessarily, per sector. Below, we will extensively justify how and why we did this with the source material we had at our disposal.

a) Textile mill workers wages

Japan

For Japan, especially in the earlier period, we were only able to locate highly aggregate data from Ohkawa e.a., *Long Term Economic Statistics (LTES)*, Vol. 8 (1967). The series provides average daily earnings in yens separated by gender for the period 1899-1939, for the industrial sector as a whole and for the cotton textile sector. Unfortunately, these daily earnings per year were national averages, and while there were some data available for the cities of Tokyo and Osaka, we decided not to use these, as these only comprised a period of six years and we preferred to have a longitudinal consistent series. As Table A1 below shows, there were also data available for handloom weaving up until WWI, to which we refer in the text once. However, as our focus is on the mechanized textile mills, and not on the rural handloom industry, we have not used these earnings to make the comparison with agricultural day wages. What does appear from those years in which the textile mill earnings and those for handweaving overlap (1899-1914), is that adult women could earn about the same on a daily basis with their side-employment in handweaving as young girls earned fulltime in the textile mills, underlining our point that the opportunity cost of sending married women to the mills was simply too high, taking into account all of the other economic and household duties they performed on the family farms.

India

The Indian data was unfortunately more haphazard, in the sense that we had to combine different sources to come to a consistent series. As Mukerji has also argued, there is different source material available for the period before and after 1921.¹ Like he and Morris, for the period 1882-1921 we use the consistent series of the Manockjee Petit Cotton Mills in Bombay, which lists average monthly earnings for 29 different occupations for a consecutive period of forty years. Of course, it is debatable to what extent one single mill serves as a representant of all Bombay mills, but it is the only source we have. These authors have used the same series have not always done so for the same stretch of time, and, to our knowledge, not to distinguish gender differences in the early Indian textile industry.²

Since the Manockjee data series does not provide differentiated figures for men and women, for each year we have taken the arithmetic mean of wages for reelers and winders as an indication for female wages, and compared this with the average wages of all other workers (ranging from doffers to jobbers) to establish the female-male wage ratio. We use the simple mean because we have no information on the number of workers in each category, which means we could not weight the series appropriately.

Another issue is that the data source provide monthly earnings. While Mukerji has stated that he derives at daily earnings by dividing the monthly pay by 26 days (all days except Sundays), we have chosen to use 25 instead, to account for some holidays. The 1925 report on *Wages and Prices* states that while millowners' granting of holidays other than Sundays varied widely within a range of 4 to 16 days per year,³ we have chosen to take some days into account. Obviously, as we applied these to both the monthly wages for men and women, this has no effect whatsoever on the calculated gender ratios.

As Mukerji, we also make use of the in-depth inquiries into the labour conditions of Indian mill workers that have been taken for the years 1923, 1926, 1933, and 1937.⁴ These reports actually do differentiate between male and female workers, as well as the number of workers per occupation, so we were able to take actual weighted averages of earnings for men and women in the textile industries for these four years. Unlike Mukerji, we do not impute earnings for intermediate years, because we cannot know whether wages in reeling and winding followed general wage trends (and from the varying gender ratios in the years up to 1921, we suspect this *not* to have been the case), so this would not add value to our analysis, as such an assumption would artificially stabilize gender ratios.

¹ Mukerji (1959)

² Morris (1965), Appendix III, 219-225. Morris also provides a useful discussion of the data advising a heavy note of caution on its use. The Mukerji series is for the period 1900 to 1951 and the Morris series extends from 1875 to 1947.

³ BLO (1925), pp. 23-24.

⁴ Findlay Shirras. G., *Report on an Enquiry into the Wages and Hours of Labour in Cotton Mill Industry*, Labour Office, Government of Bombay, 1923; Sedgwick L. J., *Report on an Enquiry into the Wages and Hours of Labour in Cotton Mill Industry*, Labour Office, Government of Bombay, 1925; Bombay Labour Office, *Report on an Enquiry into the Wages and Hours of Labour in Cotton Mill Industry*, Government of Bombay, 1926; BLO, *Wage and Unemployment in the Bombay Textile Industry*, Labour Office, Government of Bombay, 1934; 5. *The Report of the Textile Labour Enquiry Committee*, Government of Bombay, 1937)

b) Agrarian day labourers' wages

Japan

For the agricultural wages, we use the same, nationally aggregated, data from the LTES as we have for textile earnings. These are the wages for unskilled farm labour, and the series is almost complete except for a few missing data points in the 1880s and early 1890s. As can be deduced from our rural-urban wage analysis, nominal earnings for adult men and women in unskilled agricultural labour were on par with earnings in the urban textile industry in the period of large demand in the industry, and after WWI rural wages were even higher. For men, nominal industrial wages became more attractive than rural wages in the late 1920s, while for adult women, they never reached parity again before the end of our period.

India

The agricultural wages for India pertain to the Konkan region (Ratnigiri district), from which the majority of textile workers for the Bombay mills were recruited. As stated in the text, wage developments in Konkan diverged somewhat from those reconstructed by Roy, in the sense that a modest rise was visible here, potentially because the large-scale male migration to the city relieved some of the pressure on the overcrowded agricultural labour market. Yamin (1991) suggests that wages in Ratnagiri were likely to have been at artificially low levels due to the constraints imposed by the oppressive labour tenure system.⁵ This, in conjunction with low prevalence of wage labour in the region, suggests that the modestly increasing wages were likely to be representative of market wage rates for free labour alone.

For male agricultural wages we use the wage series constructed by Mazumdar which refer to the daily wages for the category of field labour and have made no further changes to his series.⁶ The data series is from 1900 to 1936 with a few missing data points in 1920s and 1930s. The data show that urban wages for men were consistently higher throughout period. Until WWI, rural wages were two to two and half times lower than the urban wages. Thereafter, urban wages increased steadily to nearly three and half times higher than the rural wages in 1930s.

⁵ Yamin (1991), 47. For more details on the khoti tenural system refer to the discussion on pages 8-9 of this paper.

⁶ Mazumdar (1973), Appendix, pp. 495-496.

Table A1 – Nominal day wages in Japanese textiles (in yens), men, women, gender wage ratios, 1885-1939

<i>Year</i>	<i>% of female workers in the Japanese textile factories</i>	<i>Textiles, average Japan, entire industry</i>			<i>Weaving, Japan, handloom production</i>		
		<i>men</i>	<i>women</i>	<i>f/m wage ratio</i>	<i>men</i>	<i>women</i>	<i>f/m wage ratio</i>
1885					0.13	0.08	0.60
1886					0.12	0.08	0.63
1887					0.13	0.07	0.58
1888							
1889							
1890							
1891							
1892					0.12	0.08	0.68
1893							
1894					0.17	0.11	0.66
1895					0.18	0.12	0.63
1896					0.19	0.13	0.68
1897					0.23	0.15	0.67
1898					0.30	0.19	0.62
1899	81	0.30	0.17	0.57	0.41	0.24	0.59
1900	87	0.29	0.18	0.62	0.33	0.20	0.60
1901	87	0.29	0.18	0.62	0.29	0.19	0.66
1902	86	0.29	0.18	0.62	0.33	0.20	0.60
1903	86	0.29	0.18	0.62	0.34	0.19	0.56
1904	88	0.30	0.18	0.60	0.35	0.17	0.49
1905	88	0.31	0.18	0.58	0.34	0.18	0.53
1906	88	0.33	0.19	0.58	0.42	0.21	0.50
1907	88	0.36	0.21	0.58	0.42	0.24	0.57
1908	88	0.41	0.24	0.59	0.44	0.24	0.55
1909	88	0.40	0.25	0.63	0.44	0.26	0.59
1910	88	0.40	0.25	0.63	0.49	0.27	0.55
1911	91	0.42	0.26	0.62	0.43	0.25	0.58
1912	91	0.44	0.26	0.59	0.43	0.27	0.63
1913	91	0.46	0.28	0.61	0.45	0.28	0.62
1914	89	0.46	0.27	0.59	0.46	0.29	0.63
1915	89	0.46	0.26	0.57			
1916	89	0.48	0.28	0.58			
1917	88	0.57	0.34	0.60			
1918	84	0.78	0.49	0.63			
1919	84	1.30	0.84	0.65			
1920	85	1.34	0.85	0.63			
1921	76	1.59	0.96	0.60			
1922	82	1.48	0.92	0.62			

1923	84	1.44	0.86	0.60			
1924	82	1.47	0.86	0.59			
1925	83	1.47	0.87	0.59			
1926	82	1.49	0.88	0.59			
1927	82	1.48	0.84	0.57			
1928	82	1.48	0.82	0.55			
1929	79	1.43	0.76	0.53			
1930	81	1.35	0.66	0.49			
1931	81	1.29	0.59	0.46			
1932	81	1.27	0.55	0.43			
1933	81	1.25	0.55	0.44			
1934	82	1.22	0.56	0.46			
1935	82	1.22	0.57	0.47			
1936	79	1.19	0.58	0.49			
1937	79	1.23	0.62	0.50			
1938	79	1.28	0.65	0.51			
1939	79	1.43	0.70	0.49			

Sources: LTES, 8 (1967) p. 247, Table 27. For weaving: GIPH Website UDavis, data file compiled by David Jacks 2006.

Figures A1a and A1b – Correlations between share of women in industry and gender wage ratio (1.0=total equality), all manufacturing (1a) and textile industry (1b), Japan, 1899-1939

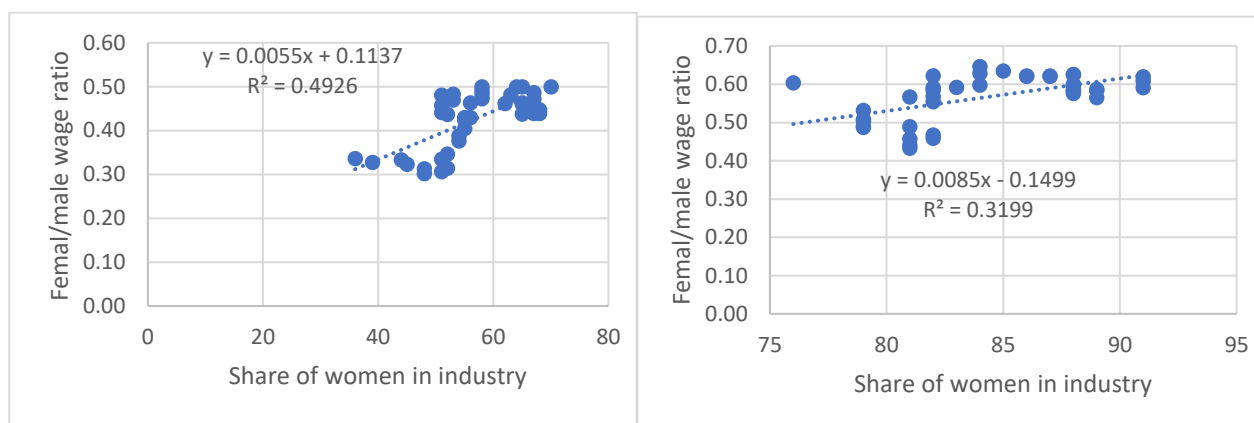


Table A2 – Female-male wage ratios in some occupations in the Bombay textile mills, 1923, 1926, 1933 and 1937 (1.0 = wage parity)

1923	Women		Men		wage ratio f/m
	no. of workers	rupees/day	no. of workers	rupees/day	
Coolie (mixing and waste room)	67	0.74	167	1.05	0.70
Gaiter (ring spinning)	280	1.02	644	1.03	0.99
Reeler, August 1923	9,665	0.78	1,273	0.77	1.01
Side piecer, August 1923	1,058	0.95	14,267	1.02	0.93
Sweeper	1,953	0.54	216	0.73	0.74
Tarwalla or follower (ring spinning)	939	0.79	4,205	0.90	0.88
Total	14,276		20,892		

1926	Women		Men		wage ratio f/m
	no. of workers	rupees/day	no. of workers	rupees/day	
Doffer	2,452	0.71	1,931	0.76	0.93
Colour winder	unknown	0.78	unknown	1.06	0.74
Grey winder	unknown	0.72	unknown	0.75	0.96
Pirn winder	unknown	0.85	unknown	1.05	0.81
Single side sider	636	0.95	5,244	1.02	0.93
Total	3,088		7,175		

1933	Women		Men		wage ratio f/m
	no. of workers	rupees/day	no. of workers	rupees/day	
reeler, average wage	6,519	0.64	8	0.54	1.19
reeler, December 1933	5,052	0.68	120	0.54	1.26
single side sider	737	0.82	8,889	0.85	0.96
Winder, grey and colour	7,143	0.73	22	0.68	1.07
Winder, grey	4,403	0.65	14	0.69	0.94
Winder, colour	2,429	0.84	8	0.67	1.25
Total	26,283		9,061		

1937	Women		Men		wage ratio f/m
	no. of workers	rupees/day	no. of workers	rupees/day	
Doffer	1,090	0.64	6,950	0.66	0.97
Double side sider	195	1.16	4,468	1.11	1.05
Drawing tenter	unknown	0.99	1,035	0.99	1.00
Single side sider	296	0.83	4,701	0.86	0.97
Winder	14,725	0.68	281	0.96	0.71
Total	16,306		17,435		

Sources: BLO, *Report on an Enquiry into Wages and hours of labour in the cotton mill industry*, 1925, 1926; *General Wage Census Part I Perennial Factories 3rd Report - May 1934*; BLO, *Wages and Unemployment in the Bombay Cotton Textile Industry*; BLO, *Report of the Textile Labour Inquiry Committee 1937-1938* (1938).

Table A3 – Number of Gainful Workers by Sex and Industry (Reclassification of Census Population), Japan, 1920-1940

	1920*				1920 ⁺				1930 ⁺				1940			
	m		f		m		f		m		f		m	f		
Manufacturing total	2,012,100		1,302,800		2,955,032		1,613,192		3,274,460		1,458,469		4,975,969		1,896,493	
Ceramics, stone & clay	143,500	7.1%	22,500	1.7%	154,113	5.2%	36,017	2.2%	149,761	4.6%	27,996	1.9%	233,517	4.7%	57,017	3.0%
Metal industry	273,100	13.6%	16,400	1.3%	444,562	15.0%	22,166	1.4%	374,029	11.4%	17,402	1.2%	632,115	12.7%	56,869	3.0%
Machine & tool manufacturing	149,900	7.4%	9,600	0.7%	364,435	12.3%	25,814	1.6%	496,897	15.2%	17,919	1.2%	1,896,848	38.1%	226,517	11.9%
Chemical industry	65,400	3.3%	17,300	1.3%	124,121	4.2%	37,936	2.4%	146,899	4.5%	33,831	2.3%	296,323	6.0%	85,715	4.5%
Textile industry	265,100	13.2%	757,700	58.2%	417,752	14.1%	952,570	59.0%	491,770	15.0%	934,108	64.0%	461,097	9.3%	870,689	45.9%
Clothing industry	234,300	11.6%	162,300	12.5%	277,614	9.4%	181,373	11.2%	305,214	9.3%	174,333	12.0%	228,245	4.6%	250,919	13.2%
Paper & paper products	54,300	2.7%	30,400	2.3%	85,216	2.9%	39,639	2.5%	96,506	2.9%	27,614	1.9%	125,370	2.5%	56,616	3.0%
Leather, bone & feather products	23,000	1.1%	5,500	0.4%	36,195	1.2%	7,171	0.4%	28,654	0.9%	4,390	0.3%	67,318	1.4%	12,281	0.6%
Wood & bamboo products	424,400	21.1%	122,800	9.4%	537,057	18.2%	130,758	8.1%	583,495	17.8%	68,515	4.7%	571,887	11.5%	110,609	5.8%
Food & beverage	308,500	15.3%	149,700	11.5%	392,418	13.3%	161,767	10.0%	433,815	13.2%	136,503	9.4%	299,552	6.0%	130,784	6.9%
Printing & bookbinding	45,300	2.3%	4,100	0.3%	79,345	2.7%	7,881	0.5%	125,269	3.8%	8,002	0.5%	113,596	2.3%	21,533	1.1%
Other manufacturing	25,300	1.3%	4,500	0.3%	42,204	1.4%	10,100	0.6%	42,151	1.3%	7,856	0.5%	50,101	1.0%	16,944	0.9%

Sources: LTES, 2(1988), Table 7, 202-203

Notes: 1920*: Includes only Japanese population; 1920⁺ refers to the Japanese, persons from colonial territories, and foreigners; 1930⁺ same as 1920⁺; 1940 includes Japanese and persons from colonial territories.

Table A4 Main Female Occupations, Ratnagiri 1881-1921 (Total numbers of women employed in each occupation, and sex ratio of male/female workers in each occupation)

Occupation	1881		1991		1911		1921	
	Workers	SR	Workers	SR	Workers	SR	Worker	SR
Cultivators	1,34,587	136	246724	94	2,04,629	107	62,369	107
Field labourers*	32,805	70	19305	65	49515	46	3824	44
General Labourers	27,140	53	7272	61	2394	72	769	ND
Fisherman/Sellers	7,584	105	11417	97	8228	122	2010	428
Domestic Servants	733	410	1307	285	2619	188	3105	59
Sheep/Cattle herds**	1,063	814	1002	751	1729	751		
Beggars***	5,076	135	3554	168	2777	241	1954	65
Cotton spinner	1,899	11	108	21			1004	40
Cotton weaver	123	342	166	620	2322	61	741	275
Showmaker	631	321	955	208	413	404	445	364
Potter	727	193	758	116	1136	91	769	111
Oil maker/sellers	704	300	827	222	580	250	345	260
Basket weavers	378	59	1002	70	925	49	405	75
Porter	156	69	506	105	268	210	579	33
Total female population	5,24,037		620402		6,50,256		628013	

Notes: * includes farm servants; ** includes breeders and sellers; *** includes paupers, prostitutes, and religious beggars

Source: Yamin (1991), Table 2.6, 305