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RESEARCH ARTICLE

From home production to modern mills: Labour allocation, gender, and living strategies of Chinese peasant households, *circa* 1910s–1930s

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Abstract
This article offers an explanation for gendered patterns of work in emerging Chinese cotton spinning mills during the early twentieth century from the perspective of household labour allocation. Female workers were rarely employed in mills in the north of the country, but the Yangtze Delta showed a much higher proportion of female factory labour. Whereas many authors have explained women's participation from the viewpoint of patriarchal culture, or physiological differences, this article brings to the fore another, largely neglected but important, explanatory factor for differences in labour allocation in modern factories during early industrialization: the development of handicraft textile production in sending regions. In districts where household cotton textile production persisted, fewer women supplied their labour to the urban factories. Landholding size, real wages, and local agricultural-industrial structures contributed to variations in the living strategies of rural households, affecting the deployment of female family members. Our argument is supported by analyses of gender wage ratios and rural–urban income disparities in different parts of China in order to expose the opportunity structures under which households decided to supply their labour to modern textile factories.

Keywords: China; cotton textile industry; supply of labour; gender; living standards

Introduction

The early decades of the twentieth century witnessed pronounced changes for China's textile production. Cotton textile factories mushroomed in areas where capital had accumulated and transportation had improved, creating hundreds of thousands of jobs. The demand for textile workers simultaneously altered the traditional labour allocation of households. Generally, capitalist industrialists preferred to hire women rather than men, because they supposedly formed a cheaper and more docile labour force. However, female textile workers did not form the majority *in all* Chinese mills. Instead, the gender division of labour varied markedly from region to region in the

early twentieth century, and changed over time.[1] In northern textile cities like Tianjin and Qingdao, for example, female workers comprised only one-seventh to one-eighth of the total workforce in spinning factories. Conversely, the female–male ratio of textile workers in the Yangtze Delta, especially in Shanghai, Wuxi, and Wuhan, reached 3:1 to 4:1 between the 1920s and 1930s.[2]

Earlier scholars have attributed such striking variations in the proportion of male and female textile workers—particularly between Tianjin and Shanghai—to differences in customs and sociocultural norms. In Shanghai, which was more integrated into the global economy, and under the firmer influence of Japanese industrialists, both employers and households would have had fewer moral objections to hiring female labour in the newly established mills.[3] Although we do not wish to deny the importance of cultural norms and values, in this article we aim to provide a novel explanation for why in some regions the overwhelming majority of the workforce in cotton mills was female, while in other regions it was male. We offer household-level empirical data on labour allocation as well as wage data to argue that regional developments in handicraft cotton textile production profoundly influenced household labour allocation decisions and, consequently, the labour supply to modern textile factories.

With the rise of China's modern industrialization since the late nineteenth century, traditional Chinese household textile production evolved in different ways. Hand-spinning and hand-weaving almost disappeared in some regions, but persisted or even thrived in others. There were also districts where a surge of hand-weaving replaced the loss of hand-spinning.[4] In the early 1900s all this had tremendously different consequences for household labour allocation—particularly the work of adult women, who traditionally wove, as well as girls, who usually performed hand-spinning.[5] With this argument, we follow recent studies on China (and beyond) that stress the importance of taking into account local economic developments to explain the differential supply

[1]In fact, women did not form the majority in southern cotton mills before the1920s. In the 1890s, there were fewer female than male workers in Wuhan cotton mills. See Annals Office of the Wuhan Textile Industry Bureau 武漢市地方志編纂委員會: 武漢市志, 工業志 (Wuhan Choreography: Industry) (Wuhan: Wuhan University Press, 1999), p. 619. Even in Shanghai mills in the 1910s, women workers were rarely employed. Honig claims that the change in gender ratios of cotton textile workers occurred in the 1920s due to labour strikes and economic stagnation. See Emily Honig, *Sisters and Strangers: Women in the Shanghai Cotton Mills, 1919–1949* (Stanford: Stanford University Press, 1986), Chapter 2. In this article, we argue that this obvious change in gendered labour allocation between the 1920s and 1930s was also affected by the drastic collapse of household textile production in South China.

[2]We have collected the numbers of textile workers by gender and year in Shanghai, Wuxi, Wuhan, Tianjin and Qingdao; for more details see Table 2 below.

[3]Gail Hershatter, *The Workers of Tianjin, 1900–1949* (Stanford: Stanford University Press, 1986), pp. 55–56; Jack A. Goldstone, 'Gender, Work, and Culture: Why the Industrial Revolution Came Early to England but Late to China', *Sociological Perspectives*, vol. 39, no. 1, 1996, pp. 1–21.

[4]Ramon Myers, 'Cotton Textile Handicraft and the Development of the Cotton Textile Industry in Modern China', *The Economic History Review*, vol. 18, no. 3, 1965, pp. 614–632, although Feuerwerker argues that the loss of the large number of hand-spinners could not be compensated for by the demand for hand-weavers. Albert Feuerwerker, 'Handicraft and Manufactured Cotton Textiles in China, 1871–1910', *The Journal of Economic History*, vol. 30, no. 2, 1970, p. 374.

[5]Laurel Bossen and Hill Gates, *Bound Feet, Young Hands: Tracking the Demise of Footbinding in Village China* (Stanford: Stanford University Press, 2017).

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of labour to the emerging textile factories.[6] This perspective is important, first because it places emphasis on the choices that individual households could make in response to fundamental economic and societal changes in this period. Secondly, it allows for disclosing more variegated patterns between different regions in China that directly relate to the different effects of the rapid economic changes that took place in the late nineteenth and early twentieth centuries, in which textile production took centre stage.

The following section dives deeper into the debates on the explanations for the pronounced gender differences in China's textile mills, and explains our contribution to this historiography. The third section sets the stage by investigating variations in the female share of spinning millhands in various cities.[7] The subsequent section thoroughly analyses the different household strategies of gendered labour deployment based on differentiating economic conditions in handicraft cotton textiles in different localities. It relates this to the gender composition of the cotton mill workforce in different parts of China. The penultimate section tentatively measures and compares household living standards in distinct regions by calculating several main sources of household income by agriculture, home industry, as well as urban textile wages. This sheds further light on the rationale for households to decide whether or not to send female workers to the mills. The article ends with a brief conclusion. Most textile wage data were collected from statistical books, and others are from the secondary literature. Household textile income data as well as the land-population data come primarily from a series of social surveys in the Republican period.

Explaining China's distinct gender differences

Of course, we are not the first to notice the significant gender differences in workers between Chinese cities in the early Republican period. In her impressive study from 1986, Gail Hershatter mostly attributed the proportion of female workers in Tianjin and Shanghai to a combination of the weaker hold of custom and social norms in Shanghai and the Japanese habit of hiring women in cotton mills.[8] However, the involvement of Japanese industrialists is not a sufficient explanation, as Shandong, the northern province with an overwhelming proportion of Japanese cotton factories in the 1910s to 1930s, employed significantly fewer factory women.[9]

[6]Kung James Kai-Sing and Lee Daniel Yiu-Fai, 'Women's Contributions to the Household Economy in pre-1949 China: Evidence from the Lower Yangzi Region', *Modern China*, vol. 36, no. 2, 2010, pp. 210–238; Aditi Dixit and Elise van Nederveen Meerkerk, 'Supply of Labour during Early Industrialization: Agricultural Systems, Textile Factory Work and Gender in Japan and India, ca. 1880–1940', *The Indian Economic and Social History Review*, vol. 59, no. 2, 2022, pp. 223–255.

[7]Shanghai, Wuxi, Wuhan, Qindao, and Tianjin.

[8]Hershatter, *The Workers of Tianjin*, pp. 55–56.

[9]There were nine Japanese cotton mills in Qingdao, Shandong province, before 1937. In 1925, the number of spindles in Japanese cotton mills in Qingdao amounted to 85 per cent of all spindles in the city. However, in 1930, female textile workers only constituted 12.5 per cent of the workforce in cotton mills in Qingdao, and even in 1936, women in the Japanese spinning factories accounted for just 40 per cent of the workforce. See Xing Bixin et al. 邢必信等 (eds), 第二次中國勞動年鑑 (The Second Yearbook of China Labour Statistics) (Beijing: Beiping shehui diaochabu, 1932), p. 21; Qingdao Archives 青島市檔案館, 青島城市歷史讀本 (Historical Book of Qingdao) (Qingdao: Qingdao chubanshe, 2013). Despite such increases, which took place within six years in Qingdao, we see that in 1929 there were four

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Following Hershatter, Jack Goldstone recognizes the influence of Japanese millowners on employing women in Shanghai, but his explanation for the absence of female millworkers in the rest of China predominantly emphasizes traditional virilocal norms and state power, which together would have confined women to the household.[10] Similar cultural explanations have been provided for Wuxi and Ningbo women. Lynda Bell reveals that women in rural areas of Wuxi were isolated and confined to household sericulture production in the late 1920s,[11] and Susan Mann shows that middle-class Ningbo women were restricted to household embroidery.[12] Both authors emphasize that women working outdoors were regarded as a humiliation for their families.

Such 'cultural' explanations are increasingly being criticized. Some scholars contend that industrialization and market exposure diminished cultural restrictions for Chinese women by providing them with job opportunities, thus enhancing their economic contributions to the household.[13] James Kung and Daniel Lee argue that economic considerations, rather than cultural preferences, explain the gendered specialization in Wuxi during the 1920s to 1940s.[14] Indeed, statistics on female workers in Wuxi textile factories in 1930 contradict the customary household segmentation of Wuxi women, as there were three times the number of female than male workers in textile factories.[15] Although cultural norms undoubtedly impacted on labour division in China, they cannot serve as a universal explanation for the heterogeneous deployment of female household members. Mann provides an interesting clue to understanding the economic stimulus for the rise of female urban workers: poor

times the number of women textile workers in Shanghai than their male counterparts, which remained the case in 1946 (see Table 2 in the text). This presented an obvious difference to the gender ratios of textile workers in Qingdao. Furthermore, an investigation into Japanese cotton mills showed that the female–male ratio of workers increased from 3.17 to 3.81 between 1932 and 1936 in Shanghai, while it increased from 0.40 to 0.89 in Qingdao during the same period. See Zhu Xizhou, '國內勞工消息' (The News on Domestic Labour), 國際勞工通訊 (International Labour Newsletter), vol. 4, no. 8, 1937, p. 55.

[10]Goldstone argued that the conditions for women working in mills required households to 'relinquish direct supervision' of their female members. But even in Shanghai in the 1930s, female workers still needed to remit their wages back to their natal families, which meant that some of them even had to delay marriage as a result. The patriarchal control of women was fairly impaired in the collectivization period when all individuals were mobilized in work teams rather than the household unit. Goldstone, 'Gender, Work, and Culture', pp. 1–21.

[11]Lynda S. Bell, 'For Better, For Worse: Women and the World Market in Rural China', *Modern China*, vol. 20, no. 2, 1994, pp. 180–210.

[12]Susan Mann, 'Women's Work in the Ningbo Area, 1900–1936', in *Chinese History in Economic Perspective*, (eds) Thomas Rawski and Lillian Li (Berkeley and Los Angeles: University of California Press, 1992), pp. 243–270.

[13]Marshall Johnson, William L. Parish and Elizabeth Lin, 'Chinese Women, Rural Society, and External Markets', *Economic Development and Cultural Change*, vol. 35, no. 2, 1987, pp. 257–277. In this article, they also mention that 'dependency' theorists/the 'world-system' school generally argue that foreign contact would weaken women's economic contribution when home handicrafts were replaced by imported mechanized products or when capital-intensive factories created fewer jobs resulting in unemployment for both men and women.

[14]Kung and Lee, 'Women's Contributions'.

[15]Xing et al., *The Second Yearbook*, pp. 26–27. These statistics show that, simultaneously, there was only one man for every 13 women in sericulture. This implies that while Bell has a point that many Wuxi women were crowded into this occupation, this did not prevent them from going into the factories as well.

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Ningbo women from the Yangtze Delta with low social status did not work in the fields or household textile production, but they (or their household head) decided that they should migrate to urban mills for higher wages.[16] This indicates that cultural constraints on women's work might have been offset by the economic considerations of poor households.[17] Additionally, Linda Grove has emphasized the role of changing textile technology (the adoption of iron gear looms) in the division of labour in weaving households in northern Chinese weaving centres such as Gaoyang, Baodi, and Weixian.[18]

To investigate the impact of regional economic development on labour supply for the Chinese mills, we make an analytical distinction between three types of 'hinterlands' from which textile workers could be recruited: 1) regions where handicraft textile production had been almost entirely outcompeted by factory production; 2) regions where handicraft textile production—at least weaving but sometimes also spinning[19]—persisted for much longer and the opportunity costs for sending women were relatively high; 3) regions that became proto-industrial, usually located relatively close to larger trading hubs, fuelled with imported factory-made yarns (either from foreign producers or from Chinese mills), and where men as well as women often stayed active in handicraft weaving.[20] While we realize that this typology does not represent all possible types of rural economic development, it does allow us to more carefully analyse regional economic opportunity structures for households in the early twentieth century than other scholars have so far. This will enhance our understanding of why and how families in different regions adopted distinct patterns of labour allocation, especially the deployment of women.

The importance of taking regional economic factors into account as an explanation for gender differences in the emerging textile factories has also been argued for in other Asian case studies. For example, a recent study indicates the impact of agrarian systems and labour regimes on the differential gender composition of the textile workforce in Japan and India.[21] Likewise, for China, Hershatter and Honig have suggested that the nature of economic development could influence the employment of female labour in modern factories, but their arguments lack more specific elaboration and

[16]Mann, 'Women's Work'.

[17]This is also true for Tianjin women. According to Linda Grove, Tianjin cotton mills could only recruit female workers from very poor rural households in the 1930s. See Linda Grove, '中国における女性労働者三世代の軌跡' (Tracing the Footsteps of Three Generations of Chinese Women Workers), in アジア女性史: 比較史の試み (Asian Women's History: Exercises in Comparative History), (eds) 林玲子 and 柳田節子 (Tokyo: 明石書店, 1997), pp. 28–38.

[18]Linda Grove, 'Mechanization and Women's Work in Early Twentieth-century China', in 中国の伝統社会と家族: 柳田節子先生古稀記念 (Traditional Chinese Society and the Family: Essays in Honor of Yanagita Setsuko), (eds) The Editorial Board of the Essays in Honor of Yanagita Setsuko (Tokyo: 汲古書院, 1993), pp. 95–120.

[19]Feuerwerker, 'Handicraft and Manufactured Cotton Textiles', pp. 348, 366, claims that while handspun cloth rapidly declined in Republican China, for a long time it still competed with cloth made with imported yarn because of its high-quality weft.

[20]A fourth recruitment area could possibly have been the urbanized outskirts of cities that already received impoverished rural migrants in an earlier stage. These consisted of men and women in Shanghai, and possibly predominantly men in Tianjin. We will come back to this later in the article.

[21]Dixit and van Nederveen Meerkerk, 'Supply of Labour'.

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Figure 1. Map of China. *Source:* © Wenjun Yu 2023.

empirical evidence.[22] We refine their arguments by taking into account the impact of household landholding size, local commercialization, and industrialization. We argue

[22]Hershatter, *The Workers of Tianjin*; Honig, *Sisters and Strangers*.

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that these factors determined changes in household labour allocation from region to region.

As case studies to explain the patterns of labour allocation in the modern Chinese cotton textile industry, we selected the cities of Tianjin and Qingdao (both located in northern China, see Figure 1) and Shanghai, Wuxi, and Wuhan (situated in the South).[23] In the period under investigation, these cities hosted around 85 per cent of the total industrial spinning workforce in China (see Table 1), and they were all located in areas with a long tradition of household textile production, enabling a comparison of interactions between developments in the rural home industry and mechanized textile industry. For the gender allocation of the labour force in handicraft textile production, we take as case studies Subei and Songjiang, situated in the north of the Jiangsu province, which represent recruitment area type 1 of the disappearing rural textile production area, and Dingxian and Gaoyang in Hebei.[24] Gaoyang may be regarded as a special case due to its success in hand-weaving under the putting-out system, but the combination of agriculture and home industry in the case of Dingxian shows another kind of rural economy. The two cases altogether represent two different types of rural household cotton textile production in North China: the proto-industrial type 3 and the more traditional handicraft households type 2.[25] To prevent an oversimplified North–South comparison, we also take into account a proto-industrial type 3 region in the Yangtze Delta, Nantong, which serves as a point of reference for the northern Gaoyang. The time frame covers the late 1910s through to the 1930s, during which household textile production experienced dramatic changes in the face of competition from imported cotton textiles as well as domestic machine-made cotton products.[26]

China's industrial textile workforce: Gender division of labour and payment

China's modern textile industry developed rapidly alongside the transformation of household textile production in the early twentieth century. By the 1930s, the Chinese cotton textile industry was primarily concentrated in Hebei, Shandong, Jiangsu, and Hubei. The former two were located in northern China, and the latter two were in the South. Hebei was situated in the North China Plain, bordering the textile city of Tianjin.[27] It was one of the chief cotton-producing regions in China, which

[23]Although the industrial cities and hand-weaving districts were representative cases to analyse labour allocation, we admit that the wage data in some cities during certain years were not complete; nevertheless, we can still get a general impression of the gender wage gap in different cities.

[24]For the gendered labour allocation within households, the data on Gaoyang weaving households were not as specific as that of Dingxian, but there are still figures showing the numbers of hand-weaving men and women.

[25]In addition to Gaoyang and Dingxian, Baodi 寶坻 in Hebei and Weixian 潍县 in Shandong were two other hand-weaving centres in North China. The hand-weaving industry in Baodi and Weixian was similar to that in Gaoyang, working with a putting-out system. We have limited data on gendered labour allocation in Baodi and Weixian, so we take Gaoyang and Dingxian as representative case studies which, we believe, can explain general developments in household cotton textile production in much of North China.

[26]Feuerwerker, 'Handicraft and Manufactured Cotton Textiles'.

[27]Tianjin is now a municipal city and the largest port city in North China; it was also at one time administratively part of Hebei.

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Table 1. Share of all Chinese factory spinners by city in China: 1924–1930 (percentages).

City	1924	1925	1927	1928	1930
South China:					
Shanghai	56.1	56.2	53.1	48.3	50.6
Wuxi	5.8	6.9	5.4	5.0	3.7
Tong Chong Hai	5.5	5.6	5.5	6.3	6.9
Wuhan	7.6	9.3	8.3	10.9	10.4
North China:					
Tianjin	7.2	5.9	6.6	6.6	6.1
Qingdao	2.7	2.5	6.9	6.9	6.0
The rest of China:	15.1	13.6	14.2	16.0	16.3

Source: Fong, *Cotton Industry*, p. 114.

also historically had a large-scale rural handloom-weaving industry. Shandong was a coastal province on the lower reaches of the Yellow River that had cotton cloth factories in its industrial city of Qingdao and a mass of hand-weaving households in rural areas such as Weixian. Jiangsu province was situated in the lower reaches of the Yangtze River and could be described as China's Lancashire, developing the largest-scale mechanized textile manufacture in China. In Hubei, located in the middle basin of the Yangtze River, rural handicraft production was one of the most important forms of household employment, and its cloth found markets throughout China until the late nineteenth century, when it fell into decay.[28] Meanwhile, a modern cotton textile industry was gradually established in its provincial capital city of Wuhan, initiated by Zhang Zhidong[29] and other entrepreneurs. It is unsurprising that because of their abundant raw cotton, convenient transportation, and power supply, as well as the relatively high degree of commercialization, these provinces became modern textile centres in the Republican period. Industrial spindles in these four provinces amounted to almost 85 per cent of total spindleage throughout China in 1930. Jiangsu housed the largest share of textile production, followed by Shandong, Hubei, and Hebei.[30] All mills were established in regions with a long tradition of household textile production. While household spinning and weaving were destroyed most completely in the Yangtze Delta where Jiangsu was partly located, Hebei and Shandong still maintained large-scale household weaving up to the 1930s.[31]

[28]Feuerwerker, 'Handicraft and Manufactured Cotton Textiles', p. 340.

[29]Zhang Zhidong was a government official aiming to rejuvenate China. During his term of office as the governor-general of Hubei and Hunan, Zhang established silk and cotton factories in Wuhan, sending students abroad to learn technologies.

[30]H. D. Fong 方顯廷, *Cotton Industry and Trade in China* (Tianjin: The Chihli Press, 1932), pp. 16–17.

[31]Yan Zhongping 嚴中平, 中國棉紡織史稿 (The History of the Chinese Cotton Textile Industry) (Beijing: shangwu yinshuguan, 2011), p. 324.

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Chinese textile millworkers clustered in these regions. In order to work out the gender composition of the industrial textile workforce, we scrutinize some highly commercialized localities in or nearby those four provinces: respectively Wuxi and Nantong 南通 in Jiangsu province; Qingdao in Shandong province; Tianjin, which was for some time part of Hebei province; and Shanghai.[32] These were the leading textile-producing centres where the majority of industrial textile workers were located. Table 1 shows the distribution of spinning millworkers throughout China between 1924 and 1930.

Almost 85 per cent of industrial spinners were concentrated in these four provinces, with over 50 per cent of the total factory spinning workforce located in Shanghai in most of this period. Tianjin and Qingdao, the two northern cities, together constituted around 10–12 per cent of the total.

The gender composition of the textile workforce shows an obvious contrast between different regional settings (see Table 2). In the late 1920s and early 1930s, female textile workers outnumbered male labourers by three to four in Shanghai, Wuxi, Nantong, and Wuhan (all in South China). The industrial survey on Jiangsu province between 1927 and 1937 also indicated that the numbers of women workers far exceeded male workers in many individual cotton textile factories.[33] Conversely, in North China, the ratio of male to female workers in the textile industry, respectively, reached 7:1 in Tianjin in 1929, and 8:1 in Qingdao in 1930. Fong noted similar differences in gender composition: in 1930, female textile workers in South China respectively amounted to 70.2 per cent in Jiangsu, 72.9 per cent in Zhejiang 浙江, and 42.4 per cent in Hubei. Still then, the proportion of female millworkers was much lower in North China: 6.4 per cent in Shandong in 1930 and 11.0 per cent in Hebei in 1928.[34] In addition, a social survey on the Tianjin spinning industry shows that in 1929 female spinners only accounted for 11 per cent of all workers in the six leading spinning factories, and the Hengyuan 恆源 factory had no female workers whatsoever.[35]

[32]By 1930, six cities were regarded as textile centres in or nearby the four provinces: Wuxi and Tong-Chong-Hai 通崇海 in Jiangsu province, Qingdao in Shandong province, Tianjin in nearby Hebei province, Wuhan in Hubei province, and Shanghai. We only selected four cities due to data availability, but the four cities in the Yangtze Delta and North China provided typical cases to study textile workers and to explore the interaction between home industry and mechanized industry. Furthermore, the four cities located in two regions form the best example to compare regional divergence of labour allocation. In addition, due to the historical administrative division and the data availability, we simply take Nantong 南通 as the representative of *Tong-Chong-Hai* 通崇海 in the Republican period.

[33]The Nanjing Library and the Jiangsu Provincial Social Science Academy's Economic Research Group (eds), 江蘇省工業調查資料統計*:1927–1937* (Statistics of Industrial Survey in Jiangsu Province: 1927–1937) (Nanjing: Nanjing gongxueyuan chubanshe, 1987).

[34]Fong, *Cotton Industry*, pp. 147–148. When looking at the workers in all modern industries in different provinces, we find a similar gap in the gender composition of labour between the northern and southern provinces. For instance, in 1920, the percentage of female workers was only 1.6 per cent in Hebei province, and 35 per cent in Shandong province, whereas it was 73.7 per cent in Jiangsu province. Wang Qingbin et al. 王清彬等 (eds), 第一次中國勞動年鑑 (The First Yearbook of China Labour Statistics) (Beijing: Beiping shehui diaochabu, 1928), p. 567.

[35]Wu Ou 吳甌, '天津市紡紗業調查報告' ('Investigation Report of Tianjin Textile Industry'), in 民國時期社會調查叢編*:* 近代工業卷*(*中*)* (The Series of Social Surveys in the Republic of China: Modern Industry, vol. 2), (eds) Li Wenhai et al. 李文海等 (Fuzhou: Fujian jiaoyu chubanshe, 2014 [1931]), pp. 499–754, here p. 512. The Hengyuan factory in Tianjin had no female workers from 1926 to 1929. Liu

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Table 2. Male and female labourers in textile industry by city.

City	Year	Male	Female	Gender ratio (m/f)
South China:				
Shanghai[1]	1928	28,760	62,584	1:2
	1929	23,064	84,270	1:4
	1946	10,365	35,306	1:3
Wuxi	1930	2,656	7,712	1:3
Nantong	1933[2]	1,679	4,488	1:3
Wuhan[3]	1928	407	1231	1:3
	1929	60%	33%	1:2
	1934	3,378	7,119	1:2
North China:				
Qingdao	1930	17,612	2,085	8:1
Tianjin[4]	1928	13,497	1,842	7:1
	1929	76.96%	9.14%	8:1

Sources: Xing et al., *Second Yearbook*, pp. 17, 20–22; Honig, *Sisters and Strangers*, pp. 14–17; Wu, *Investigation Report*, p. 510; Li, *Wuhan Cotton Textile Labour*, pp. 214–239; Wan Bangen 萬邦恩 (ed.), 武漢紡織工業 (Wuhan Textile Industry) (Wuhan: Wuhan chubanshe, 1991), p. 556; The Nanjing Library and the Jiangsu Provincial Social Science Academy's Economic Research Group (eds), *Statistics of Industrial Survey in Jiangsu Province: 1927–1937*, pp. 23–24.

Notes: [1]Shanghai data in 1929 and 1946 are collected from Emily Honig. Shanghai workers specifically refer to spinning workers. We get the same gender ratio within the whole textile industry in Shanghai when adding the numbers of weaving workers.

[2]We include Nantong as a case to reflect on the gender ratio in Tongchonghai region. The primary source shows no exact investigation year, but the report was published in the January 1934, so it is likely the data from the Dasheng spinning factory refer to 1933. The other investigation on Dasheng factory workers conducted by Mu and Yan also reflected that women workers comprised 77 per cent of the workforce in the 1930s (Mu and Yan, *The Investigation*, p. 184).

[3]Wuhan data in 1928 only include spinning workers in Hankou 漢口 and Hanyang 漢陽 districts. The data for 1929 include spinning and weaving workers in Wuchang and Hankou; here we only give the percentage of male and female workers. The data in 1934 refer to spinning workers in all textile factories that employed more than 10 labourers throughout Wuhan.

[4]Tianjin data in 1929 only give the percentage of male and female labourers.

Low proportions of women workers also appear in a statistical report on the spinning factories of North China: from 1926 to 1929, the male–female ratios of spinning workers were, respectively, 6:1, 7:1, 6:1, and 7:1 in the three leading Tianjin cotton mills. Similarly, in Qingdao of Shandong province, the male–female ratios in Huaxin spinning factory were 5:1, 9:1, 6:1, and 11:1 in the respective years.[36]

Such vast regional differences in gender ratios clearly dismiss physiological or productivity-related explanations for choosing to employ either men or women in modern Chinese mills. Indeed, according to Honig's investigation, Shanghai female spinners were capable of doing the same work as men in the fine yarn room. Moreover, some women undertook heavier manual jobs such as cotton picking and baling even

Xinquan 劉欣銓, '華北紗廠工人工資統計' ('The Statistics on the Numbers and Wages of Labour in Textile Factories in North China'), 社會科學雜誌 (The Journal of Social Science), vol. 6, no. 1, 1935, pp. 141–158, here pp. 144, 148.

[36]Liu, *The Statistics*, pp. 144, 148.

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though men dominated in these departments.[37] Apart from physiological explanations, a probably more important argument for hiring women in textile factories is that industrialists pursued a low wage bill to reduce production costs, and women generally could be paid lower wages.[38] Table 3 represents the monthly wages of male and female labour in spinning/weaving sector in textile mills. It shows that although women's wages were generally lower than men's between 1926 and 1930, there were also striking regional differences.

First of all, nominal wages for men and women were significantly higher in Shanghai than elsewhere, reflecting its more developed economy, but probably also higher consumer prices, which drove up wage rates.[39] Second, with some exceptions, in all cities in the South (Shanghai, Wuxi, and Wuhan), the gender wage gap in textile mills was much smaller, even almost absent in most years. In Wuhan, where piece-rate wages prevailed, men and women even earned consistently equal wages, again pointing to their similar productivity.[40] For certain occupations in Shanghai too, such as scutching, daily earnings for both men and women were the same in 1929, and forewomen earned more than foremen in the roving and spinning departments.[41]

Conversely, in the northern cities in our sample (Tianjin and Qingdao) women earned structurally less than men. This is partly related to a more pronounced division of labour between the sexes in factories in the North: for example, mechanical workers in Qingdao and Tianjin spinning factories earned 16–20 yuan per month during 1926 to 1929, whereas female spinners were paid 7–8 yuan per month. Women were primarily confined to roving, spinning, and reeling, and their monthly earnings were generally lower than men's in the same department (see Table 3).[42] It is unlikely that

[37]Honig, *Sisters and Strangers*, pp. 41–47.

[38]Janet Hunter and Helen Macnaughtan, 'Gender and the Global Textile Industry', in *The Ashgate Companion to the History of Textile Workers*, (eds) Lex Heerma van Voss, Els Hiemstra-Kuperus and Elise van Nederveen Meerkerk (Aldershot: Ashgate, 2010), pp. 703–724.

[39]Ding Li 丁麗, 華北產業工人生存狀況研究*: 1912–1937* (Research on the Living Conditions of Industrial Workers in North China) (Tianjin: Tianjin renmin chubanshe, 2021), pp. 150–153; Song Zhuanyou 宋磚友, Zhang Xiuli 張秀莉 and Zhangsheng 張生 (eds), 上海工人生活研究*: 1843–1949* (Research on Workers' Lives in Shanghai) (Shanghai: Shanghai cishu chubanshe, 2011), pp. 151–153.

[40]Li Jianchang 李建昌, '武漢棉紡織業之勞工' ('Wuhan Cotton Textile Labour'), 實業統計 (The Industry Statistics), vol. 3, no. 3, 1935, pp. 209–234, here pp. 213–216.

[41]Fong, *Cotton Industry*, p. 130. The female–male wage ratio for forewomen was 1:25 in the roving department, and 1:34 in the spinning department.

[42]Liu, 'The Statistics', p. 149. The following table presents the monthly wages (currency: yuan) of male and female workers in three Tianjin spinning factories and one in a Qingdao factory in 1929. No women were employed in the blowing and baling departments; Tianjin 2 factory had no female workers.

	Blowing	Roving		Spinning		Reeling		Baling
Factory	Male	Male	Female	Male	Female	Male	Female	Male
Tianjin 1	11.6	13.3	9.5	10.0	8.3	9.9	9.1	22.4
Tianjin 2	15.5	13.8	–	10.9	–	11.3	–	12.6
Tianjin 3	14.8	16.3	12.5	15.2	13.2	14.1	11.0	13.6
Qingdao 1	11.2	11.7	8.2	10.4	9.0	11.2	9.8	10.5

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Table 3. Monthly wages of textile workers by gender and city: 1926–1930 (in yuan) and gender wage ratios female–male (*F/M*) (1.00 = wage parity).

	Shanghai			Wuxi			Wuhan			Tianjin			Qingdao		
Year	M	F	*F/M*	M	F	*F/M*	M	F	*F/M*	M	F	*F/M*	M	F	*F/M*
1926				9.60	6.00	*0.63*	11.10	12.00	*1.08*	12.35	9.25	*0.75*	12.00		
1927				10.50	8.40	*0.80*	12.60	12.60	*1.00*	12.22	9.62	*0.79*	12.00		
1928	15.17	13.59	*0.90*	11.40	10.50	*0.92*	13.20	12.60	*0.96*	13.00	10.14	*0.78*	13.00	7.80	*0.60*
1929	15.28	12.50	*0.82*	12.00	12.00	*1.00*	13.80	13.20	*0.96*	14.04	10.14	*0.72*	13.00	7.80	*0.60*
1930	15.28	12.05	*0.79*	20.00	15.00	*0.75*	13.80	13.20	*0.96*	16.90	11.44	*0.68*	15.00		

Sources: Chinese Ministry of Industry and Commerce, *Statistical Report*, pp. 24–229; Xing et al., *Second Yearbook*, pp. 45–52; Fong, *Cotton Industry and Trade in China*, p. 135; Liu, *The Statistics*, p. 148; Labor History Research Office of Shandong Federation of Trade Unions (山東省總公會工運史研究室), *Historical Materials on the Qingdao Tragedy* (青岛惨案史料) (Beijing: Gongren chubanshe, 1985), 494–495.

Notes:[1]Wuxi and Qingdao data refer to the monthly wage of spinning workers. Wuhan data are specifically about the monthly wages of spinners in Hankou district. Tianjin data in 1926 refer to the average monthly wage of two spinning factories. The Tianjin data in the years 1928–1930 are the average monthly wage of spinning and weaving, and therefore is a little higher than the wages in other cities. For Tianjin wages, we collected daily wages and multiplied this by 26 working days, as Tianjin workers had one day off per week.

[2]Nantong wage data are absent in the table because the wages of men and women were not available in some years. According to Mu and Yan, *The Investigation*, men's wages ranged between 0.25 and 0.6 yuan per day and women's wages between 0.2 and 0.4 yuan per day during the 1920s and 1930s.

the age composition of the female workforce explains these differences between the North and the South. Women in the Tianjin factories were mostly between 16 and 25 years old. The age of female spinning workers in Qingdao in 1927 typically ranged from 11 to 20, and in Shanghai mills from 12 to 25.[43]

Given that the female–male wage ratio was generally lower in North China than in the South, it seems irrational for capitalists in northern China to have employed more male workers, as it significantly drove up the wage bill because female labourers were demonstrably cheaper. In fact, when the first factories were established in Tianjin in the early 1900s, industrialists tried very hard to recruit women, initially from the further off cities of Shanghai and Henan. This also encouraged young women from the immediate countryside to try their luck in the new mills. However, women from nearby rural areas disliked the factory discipline, and most of them soon returned to their homesteads, where there were alternative opportunities in handicraft textile production or agriculture. At the same time, migrant women workers from the Yangtze Delta could not adjust well to life in Tianjin because of cultural differences—moreover, many locals despised them for their conspicuous consumption.[44]

Apparently, the different gender composition of the workforce in some of the northern Chinese cities cannot be explained from the *demand*side, but rather must be investigated by looking at the *supply* side of labour. The opportunity costs of sending women in the northern regions *en masse* to the cotton mills were too large for many households, especially because they earned comparatively less than men in these factories. Moreover, there were still ample opportunities for women to engage in handicraft textile production in the rural areas around Tianjin and Qingdao. In the immediate surroundings of Shanghai, Wuxi, and Wuhan, on the other hand, where women could earn almost as much as men in textile factories—possibly also because there were alternatives in the industrial and service sectors for men—and opportunities in rural handicraft production had waned, it made more sense to send female household members to work in the factories.[45] We will now move on to discuss the conditions under which the differential supply of labour came about in these sending households.

Moving to the factory? Rural cotton textile production under transition

Although part of the textile mill workforce was recruited from urban residents in the period we investigate, the vast majority of the workers were migrant peasants or craftspeople from the rural vicinity of the factories. In the northern cotton mills, rural households from Hebei and Shandong provinces formed the principal labour reservoir. According to a 1932 social survey of the Tianjin industry, around 24.9 per cent

[43]Honig, *Sisters and Strangers*, p. 172; Liu Mingkui 劉明逵 (ed.), 中國工人階級歷史狀況*: 1840–1849* (The Historical Condition of the Chinese Working Class: 1840–1849) (Beijing: Zhonggong Zhongyang dangxiao chubanshe, 1985), pp. 191–192.

[44]Hershatter, *The Workers of Tianjin*, p. 148.

[45]Nantong was a unique place where hand weaving and factory yarn production coexisted. As the Dasheng spinning factory was founded in the rural areas of Nantong, rural women could commute between home and the cotton mills. Many women were also engaged in agricultural or handicraft production after their factory work, which reduced their opportunity cost if they worked in factories. See Jiang Ping 姜平, *Nantong Native Cloth* 南通土布 (Suzhou: Suzhou University Press, 2012), pp. 71–73.

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cotton of textile workers came from the locality, 53.3 per cent were recruited from adjacent Hebei province, and about 18.9 per cent workers were from neighbouring provinces.[46] Another survey showed that Tianjin residents comprised 23.8 per cent of the workforce in Yuyuan, Hengyuan, and Huaxin factories, about 79.1 per cent workers were from Hebei, and the rest primarily came from Shandong and Henan.[47] As for the Japanese spinning factories in Shanghai, 83 per cent of the workers migrated from Jiangsu province, local residents comprised 12 per cent, and the rest primarily came from nearby Anhui province.[48] The Chinese spinning factories in Shanghai primarily recruited workers from local families and the southern part of Jiangsu province, but some Chinese factories also hired a few people from poor regions in the northern parts of Jiangsu.[49]

The labour supply in Shanghai and Tianjin cotton mills suggests a segmented labour market in both regions. This is because, on the one hand, people were attached to their native land. Working in nearby factories enabled them to supplement the household income during the agricultural off-season or to provide cash for extras for the family. On the other hand, the labour recruitment mechanism in both northern and southern cotton mills relied heavily on the foreman or personal networks of relatives, friends, and family.[50] Furthermore, most cotton mill workers came from provinces where hand-spinning and hand-weaving had once prevailed. Therefore, we will now analyse local developments in rural handicraft textile production to assess how these affected labour supply to the factories.

As mentioned, there was a long tradition of hand-spinning and hand-weaving in Hebei, Shandong, and Jiangsu. However, as China became increasingly engaged in the global economy in the course of the nineteenth century, domestic handicraft production of cotton textiles suffered serious blows, first from imported textiles and later from the Chinese mills themselves. As in many other industrializing countries, hand-spinning was the first to decline. Because spinning created a bottleneck in the handicraft production system, as it required several hand-spinners to provide one weaver with yarn, it was often replaced with cheaper machine-spun yarn. Factory yarns, particularly suitable for warps, quite rapidly replaced hand-spun yarns throughout large parts of China. Hand-spinning in China first disappeared in areas with active foreign trade, intensive capital investment, and convenient transportation, before gradually declining throughout China. From 1870 to 1910, traditional yarn production, according to Myers' statistics, disappeared in a wide range of areas such as parts

[46]Liu Mingkui 劉明逵 and Tang Yuliang 唐玉良 (eds), 中國近代工人階級和工人運動 *(第一冊)* (The Modern Chinese Working Class and the Labour Movements, vol. 1) (Beijing: Zhonggong Zhongyang dangxiao chubanshe, 2002), p. 174.

[47]Fong, *Cotton Industry*, p. 115.

[48]Ibid. According to Robert Cliver, women from the northern Jiangsu province preferred to work in Japanese cotton mills where they could avoid the prejudices of Shanghai locals and women from other parts of Jiangnan district. Robert Cliver, 'China', in *The Ashgate Companion to the History of Textile Workers*, pp. 103–140, here p. 122.

[49]Compilation Committee of Shanghai Textile Industry Annals《上海紡織工業志》編纂委員會, 上海紡織工業志 (Annals of Shanghai Textile Industry) (Shanghai: Shanghai Academy of Social Science Publisher, 1998).

[50]Hershatter, *The Workers of Tianjin*, p. 51; Honig, *Sisters and Strangers*.

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of Hebei, Shandong, Jiangsu, Hunan, Yunnan, Guangxi, and Fujian.[51] Nevertheless, the decline of hand-spinning did not mean this tradition died out completely across China. Many rural households still spun cotton yarn for the production of native cloth (*tubu*土布), as preparation for hand-weaving instead of being sold in local markets.[52]

While in many rural parts of China, handicraft weaving for (supra)local markets at first experienced an upsurge from the use of factory-made yarns, and in some regions, new proto-industrial centres emerged,[53] it dramatically disintegrated in many rural areas in the Yangtze Delta. Consequently, many rural spinners and weavers from Jiangsu formed the mainstay of the workforce in Shanghai mills. This region thus typifies our rural sending region type 1. Conversely, handloom-weaving continued to flourish longer in the countryside in Hebei and Shandong. These diverging regional developments in the handicraft textile industry deserve further scrutiny as a potential explanation for the varying gendered division of labour in modern textile factories in both regions.

By focusing on the more profitable weaving, some households managed to increase their competitiveness with factory industry.[54] As weaving became mechanized decades later than spinning in China,[55] home-produced cloth still occupied a large share of the domestic market, in which handmade cloth remained popular in part due to its durability. Hand-weaving presumably amounted to 61 per cent of total cloth production, as opposed to 39 per cent being machine-made, each year in the 1930s.[56] In 1936, 30 per cent of rural households throughout China still wove manually.[57]

Although it is difficult to know precisely all the remaining handloom-weaving areas in China, they chiefly clustered in regions with abundant cotton resources and a long tradition of cotton textile production. Hebei was the most important hand-weaving province, with at least 69 per cent of all counties still engaged in hand-weaving in 1929. Cotton production primarily centred along the upper reaches of the Hutuo and Daqing rivers.[58] Gaoyang and Dingxian, the two most prominent hand-weaving districts in Hebei, developed different modes of handicraft production: rural households in Gaoyang were organized by cloth merchants under the putting-out system, providing their labour in exchange for wages paid by middlemen, resembling rural textile region type 3.[59] The county of Dingxian, on the other hand, rather resembled textile

[51]Myers, 'Cotton Textile Handicraft', pp. 621–624.

[52]By the 1930s, hand-spun cotton yarn still accounted for 17 per cent of total production. Yan, *The History of the Chinese Cotton Textile Industry*, p. 386.

[53]Feuerwerker, 'Handicraft and Manufactured Cotton Textiles', p. 345.

[54]This was also found in some developing countries. For instance, Elise van Nederveen Meerkerk finds that Javanese women partly benefitted from the global trade by using cheaper imported yarn and semi-finished cloth to engage in hand-weaving and *batik* production. Elise van Nederveen Meerkerk, 'Challenging the De-industrialization Thesis: Gender and Indigenous Textile Production in Java under Dutch Colonial Rule, c. 1830–1920', *Economic History Review*, vol. 70, no. 4, 2017, pp. 1219–1243.

[55]Myers, 'Cotton Textile Handicraft', p. 624.

[56]Yan, *The History of the Chinese Cotton Textile Industry*, pp. 388, 390.

[57]Xu Xinwu 徐新吾, 江南土布史 (The History of Homespun Cloth in Jiangnan) (Shanghai: Shanghai shehui kexueyuan chubanshe, 1992), p. 217.

[58]Yan, *The History of the Chinese Cotton Textile Industry*, p. 323.

[59]Linda Grove, *A Chinese Economic Revolution: Rural Entrepreneurship in the Twentieth Century* (Lanham: Rowman and Littlefield, 2006), p. 444, notes that in the early 1900s, merchants set up a specific marketing

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Table 4. The numbers of men and women in cotton textile production in a village in Dingxian, 1932.

Category	No. of men	% of category	No. of women	% of category
Cotton ginning	28	78%	8	22%
Fluffing	1	100%	0	0%
Sifting cotton	2	50%	2	50%
Spinning	87	13%	587	87%
Spinning and weaving	6	6%	103	94%
Preparation, combing and weaving	206	36%	364	64%
Weaving	339	64%	191	36%
Total	**669**	**35%**	**1,255**	**65%**

Source: Yan, *The History of Chinese Cotton Textile Industry*, p. 344.

region type 2, in which peasant households produced cloth alongside food crops for their own subsistence. Next to Hebei, Shandong was the second largest hand-weaving centre. Handicraft weaving was concentrated in villages along the Yellow River basin and Jiao-Ji Railway. According to an investigation into the rural economy along the Jiao-ji Railway in 1944, about 76 per cent of the 45 investigated counties undertook hand-weaving. The annual native cloth production of the investigated weaving counties reached eight million bolts,[60] equalling about 11 million working days of spinning and weaving.[61] In South China, Jiangsu and Hubei retained pockets of handicraft cloth production, but in terms of production and sales were not comparable to that of Hebei and Shandong.[62]

The weaving households in Dingxian and Gaoyang of Hebei province provide some clues to understand household strategies of labour allocation in the face of the rising modern textile industry. In Dingxian, where weaving was the most important subsidiary activity, women outnumbered men in the handicraft production of cotton textiles (see Table 4).

Women still engaged in hand-spinning, as well as preparation for weaving and hand-weaving itself, while men concentrated on cotton ginning and hand-weaving. A 1932 investigation of 669 textile households in Dingxian shows that around 43 per cent of households exclusively focused on spinning and 37 per cent of households specialized in hand-weaving.[63] Such separation between hand-spinning and hand-weaving indicated a further social division based on the commercialization of household cotton textile production. However, according to Zhang, in Dingxian the home textile industry was subordinate to agricultural production, and

system in Gaoyang, sending (factory-made) yarns to small weaving workshops all over the countryside via a putting-out system. This model was consequently followed in other parts of China.

[60]Yan, *The History of the Chinese Cotton Textile Industry*, pp. 324–325.

[61]Based on Bossen and Gates, *Bound Feet*, p. 190, note 42.

[62]Yan, *The History of the Chinese Cotton Textile Industry*, pp. 327, 329.

[63]Ibid., p. 346.

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the earnings from textile production constituted just 17.8 per cent of household income.[64]

The gender division of Dingxian households active in handicraft textile production partly depended on the size of peasant families' landholdings. We take Daxizhang, a village in Dingxian, as an example to illustrate the connection between landholding and the population involved in the home industry—92 per cent were hand-spinning and hand-weaving—and to further explore the gendered division of labour in rural households.

Table 5 shows households with different size landholdings between 0 and 99 mu (15.8 acres). Both men and women engaged less in handicraft production when the size of their plot increased, suggesting that handicraft manufacture for the local market was important for the survival of poorer families with less arable land. However, the decline identified with increasing landholding size was much less pronounced for women. The vast majority of households (74 per cent) in Daxizhang village owned plots smaller than 25 mu or no land at all (11 per cent), which attests to the widespread poverty prevalent in North China. In these lowest social segments, women's engagement in handicraft production was almost omnipresent. Even though in poor households many men were *also* engaged in textile production, women seem to have been much more important in handicraft production in all social strata. This means that their labour could be more profitably employed and was more difficult than men's labour to free up for other activities such as agricultural or factory wage work.

In Gaoyang,[65] hand-weaving became the predominant source of income for households. On the one hand, this may have been related to the pressure of a higher population compared to Dingxian, but, on the other hand, the prevalence of a putting-out system offered opportunities for households in Gaoyang to engage in more lucrative economic activities alongside subsistence agriculture. Cloth merchants distributed yarn to rural weaving households, offering a piece wage for their products. In addition to waged weavers, there were a few 'independent' weaving households that sold their products to middlemen themselves. Both types of households allocated more family labour to hand-weaving than to agricultural work. Moreover, the merchants' wage payments induced changes in the gender division of work: an occupational analysis of 382 Gaoyang households from 1933 reports that not only were over 75 per cent of the women involved in (the preparations for) hand-weaving, but also 63.3 per cent of the men in these households.[66] More specifically, three times more men than women were involved in hand-weaving in this region. Women predominantly prepared the

[64]Zhang Shiwen 張世文, '定縣大西漥村之家庭手工業調查' ('The Investigation of Home Industry in Daxizhang Village of Dingxian'), in 民國時期社會調查叢編: 鄉村經濟卷 (中) (The Series of Social Surveys in the Republic of China: Rural Economy, vol. 2), (eds) Li Wenhai et al. 李文海等 (Fuzhou: Fujian jiaoyu chubanshe, 2009 [1934]), pp. 301–316, here p. 313.

[65]The Gaoyang weaving district actually included a number of counties such as Gaoyang, Lixian, and Qingyuan in Hebei province.

[66]Francesca Bray argues that the long-standing division of labour in which only women were engaged in textile production had already started to shift in the eighteenth century, but in many—particularly non-commercial—regions, it was still a predominantly female domain. Francesca Bray, *Technology and Gender: Fabrics of Power in Late Imperial China* (Berkeley: University of California Press 1997), p. 183.

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Table 5. Landholding by peasant households, and their engagement in handicraft production by gender in Daxizhang village (Dingxian county), 1932.

		Population			Population engaged in home industry			Percentage of handicraft producers by gender (%)		
Land-holding (mu)[1]	No. of households	M	F	Total	M	F	Total	M	F	Total
0	31[2]	63	46	109	37	44	81	58.7	95.7	74.3
1–24	202	476	366	842	316	346	662	66.4	94.5	78.6
25–49	27	85	78	163	26	69	95	30.6	88.5	58.3
50–74	10	40	40	80	9	28	37	22.5	70.0	46.3
79–99	1	5	6	11	–	4	4	–	66.7	36.4
Above 100	3	11	12	23	–	9	9	–	75.0	39.1
Total	**274**	**680**	**548**	**1228**	**388**	**500**	**888**	**57.1**	**91.2**	**72.3**

Source: Zhang, 'The Investigation of Home Industry in Daxizhang Village of Dingxian', p. 306.
Notes: [1]mu = 0.16 acre.
[2]The table in the original source lists the number as 36, but this seems to be a clerical error by the editor according to the data information shown in other tables of the original source.

loom for weaving, by setting up the warp: they outnumbered men by 4.5 times in warping.[67]

Linda Grove also investigated the changes in gendered labour allocation in the domestic system of cotton textile production in the Gaoyang weaving district. She attributes the male domination of hand-weaving to the introduction of new technology in the region. The adoption of iron gear looms would have required the physical strength of men to operate the machinery; furthermore, men could concentrate on hand-weaving because of their limited involvement in household duties.[68] Grove's discussion also makes clear how the introduction of new technology stimulated the continuation of domestic cotton textile production in Gaoyang.

Both men and women were indispensable for this type of proto-industrial organization. The improved productivity and increased investments in iron gear looms forced weaving households to utilize more family labour to maximize profits. Female family members were not always sufficient for this form of household-based production, requiring some weaving households to hire extra labourers. Particularly during the 1920s, Gaoyang weaving households faced labour shortages. In 1926, around 60–70 per cent of weaving households hired extra labourers from local and nearby villages to weave for commercial purposes. Even during the economic stagnation of the early 1930s, around 40 per cent of households continued to do so. Each household normally hired one to three labourers; some with more looms could recruit over ten workers.[69]

To summarize, given that both women and men were an indispensable workforce for this profitable type of household-based textile production, there were few incentives to send either to urban factories. Rather, the region was interwoven with Tianjin's industries in quite different ways. Gaoyang weaving households both used cheap machine-spun yarn from nearby Tianjin spinning mills, and mostly bought their iron weaving looms from the newly established metal industry in that city.[70]

The cases of Dingxian and Gaoyang reveal that household textile production was resilient and persistent in Republican North China. In Dingxian, where agriculture consumed the majority of male labour, households still deployed surplus labour in hand-spinning and hand-weaving, attempting to make good use of their full labour potential. Considering the large number of poor smallholders, this side activity was necessary, and almost all women from the lowest echelons, but also higher up the social ladder, were involved in spinning and weaving. This potentially only freed up male labour for textile factory work. For proto-industrial Gaoyang households, labour allocation patterns worked quite differently. Hand-weaving in Gaoyang became a specialized and quite profitable occupation that absorbed more labour than in Dingxian, and did not free up labourers—either male or female—for the Tianjin mills.

Handicraft textile production developed differently in the Yangtze Delta, a region with a highly dense population and developed commercialization. Most

[67]Wu Zhi 吳知, '鄉村織布工業的一個研究' ('An Investigation of the Rural Weaving Industry'), in 民國時期社會調查叢編: 鄉村經濟卷 (中) (The Series of Social Surveys in the Republic of China: Rural Economy, vol. 2), (eds) Li Wenhai et al. 李文海等 (Fuzhou: Fujian jiaoyu chubanshe, (2009 [1936]), pp. 317–491, here p. 384.

[68]Grove, 'Mechanization and Women's Work'; Grove, *A Chinese Economic Revolution*, pp. 206–207.

[69]Wu, *An Investigation*, pp. 401–403.

[70]Grove, *A Chinese Economic Revolution*, pp. 23, 31.

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rural textile production had been severely hampered here since China opened to the world market, and it was also where domestic mechanized production was most prominent. In this context, the earnings of hand-spinning as well as hand-weaving fell from the early twentieth century, leading to a reallocation of household labour to prevent the decline of households' living standards. This reallocation mostly concerned women's work as women had formed the primary workforce of domestic cotton textile production. Consequently, many women who abandoned hand-weaving sought opportunities in urban textile factories.[71] Local gazetteers of Baoshan and Chuansha counties also highlight that women who used to spin and weave at home had started working in factories.[72] Such changes in the most advanced textile-producing centres are also mentioned by Ma and Wright. They provide ample evidence to demonstrate that in Songjiang and Taicang prefectures[73] many hand-spinning and hand-weaving women were absorbed into Shanghai's modern industry for better employment opportunities from the early twentieth century.[74]

In addition, by the 1920s and 1930s, Nantong, located in central-Jiangsu, had replaced Songjiang and Taicang as one of the new hand-weaving centres in the Yangtze Delta.[75] Here, hand-weaving according to a proto-industrial type of organization developed into the dominant occupation for local men, with women being primarily confined to agriculture.[76] Conversely, in the relatively poor places in the northern Jiangsu province (normally called Subei), hand-weaving had been a by-employment for women only.[77] However, their low income from hand-weaving as well as the frequent natural disasters in Subei pushed rural households into poverty, leading many poor peasants to migrate to industrial cities. It was usually Subei women that staffed

[71]Xu, *The History of Homespun Cloth*, pp. 302–307.

[72]Huang Yanpei 黃炎培 (ed.), 川沙縣志 (Gazetteer of Chuansha County) (n.p., 1936), vol. 5, p. 25a; Zhang Yungao 張允高 and Qian Gan 錢淦 (eds), 寶山縣續志 (The Complementary Gazetteer of Baoshan County) (n.p., 1921), vol. 6, pp. 399–400.

[73]The Songjiang and Taicang prefectures are located in the south of Jiangsu and were the traditional handicraft textile centres in the Yangtze Delta.

[74]Junya Ma and Tim Wright, 'Industrialization and Handicraft Cloth: The Jiangsu Peasant Economy in the Late Nineteenth and Early Twentieth Centuries', *Modern Asian Studies*, vol. 44, no. 6, 2010, pp. 1337–1372, here pp. 1349–1350.

[75]In addition to Nantong, Haimen and some other counties together constituted the newly emerged hand-weaving centre in central Jiangsu province.

[76]Ma and Wright, 'Industrialization and Handicraft Cloth'; Kathy Le Mons Walker, 'Economic Growth, Peasant Marginalization, and the Sexual Division of Labour in Early Twentieth-Century China: Women's Work in Nantong County', *Modern China*, vol. 19, no. 3, 1993, pp. 354–365. The vibrant hand-weaving sector in Nantong was an exception to the general development in the Yangtze Delta. Still, there was an obvious household gender division in the sense that men wove (or worked for wages) and women farmed. The feminization of agriculture in Nantong was quite similar to the case of Indian women (see Dixit and van Nederveen Meerkerk, 'Supply of Labour'). The reason women in Songjiang and Taicang, rather than those in other parts of the Yangtze Delta, first staffed the Shanghai cotton mills was partly because they were highly skilled textile producers who initially outcompeted other women in the labour market. Moreover, Songjiang and Taicang households primarily relied on handicraft income and they had to respond quickly when the hand-weaving industry was challenged by machine-made products. Ma and Wright, 'Industrialization and Handicraft Cloth', pp. 1344–1346.

[77]Ibid., p. 1356.

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the lowest-paid roving sections of the Shanghai spinning mills in the 1920s and Subei men supplying their labour as 'coolies'.[78]

Outside the pockets of proto-industrial textile production such as Nantong, the combination of hardship in the countryside and relatively high nominal wages offered by the factories explains why a large numbers of female labourers were drawn to the urban textile industry in Yangtze Delta. This contrasted to the labour allocation in Shandong and Hebei, where—despite existing poverty—women still had ample opportunities to contribute to household income by domestic textile production, as we will now go on to illustrate.

Women's economic contributions to the household

In late eighteenth-century Songjiang prefecture women's daily earnings from domestic spinning and weaving had risen to around 70 per cent of those from men's agricultural labour. Some skilled women could sustain an entire family by handicraft cotton production. Their specialization in textile production was regarded as rational and profitable in terms of family income and welfare.[79]

However, with the decline of hand-weaving from the late nineteenth century, women's income-generating opportunities in this area decreased drastically.[80] A local gazetteer described this trend in Chuansha county of Yangtze Delta: 'Handicraft weaving was widespread thirty years ago, lacemaking and knitting towels were popular ten years ago, young girls earned 0.3–0.4 yuan per day by lacing but now [in 1927] they just get 0.1 yuan per day, that's why they enter into spinning factories as wage worker.'[81] Another source from the early 1920s on hand-weaving women in rural Shanghai reports average earnings of 0.2–0.3 yuan per day (5–6 yuan per month) provided that women worked long days at the loom.[82] Because most weaving households had no or a miniscule plot of arable land, women's weaving income was vital for household livelihoods. However, their earnings of 5–6 yuan per month with intensive labour input contributed little to household subsistence compared to the heyday of handicraft production in the Qing period.[83] Women's earnings from hand-weaving continued to decrease into the late 1930s.[84] Households thus must have fared worse under these deteriorating circumstances. All these examples imply that women's real

[78]Honig, *Sisters and Strangers*, pp. 62–65; Emily Honig, *Creating Chinese Ethnicity. Subei People in Shanghai,1850–1980* (New Haven: Yale University Press, 1992), pp. 58–76.

[79]Li Bozhong, 'Involution and Chinese Cotton Textile Production', in *The Spinning World: A History of Cotton Textiles, 1200–1850*, (eds) Giorgio Riello and Prasannan Parthasarathi (Oxford: Oxford University Press, 2009), pp. 387–396, here pp. 389, 393.

[80]Xu, *The History of Homespun Cloth*, p. 294.

[81]Zhang Youyi 章有義, 中國近代農業史資料 第二輯 *1912–1927* (Materials on Chinese Modern Agricultural History, vol. 2: 1912–1927) (Beijing: Kexue chubanshe, 2016 [1957]), pp. 420–421.

[82]Xu, *The History of Homespun Cloth*, pp. 242–244.

[83]In the early-middle period of Qing China, the income from producing one bolt of cloth was equal to 20–21 catties of rice, but by the 1910s this had dropped to 4–5 catties of rice. Li Bozhong 李伯重, '男耕女织'与'妇女半边天'角色的形成: 明清江南农家妇女劳动问题探讨之二' ('The Formation of the Role of "Men Ploughed and Women Wove" and "Women Hold Up Half the Sky": A Discussion on the Labour Problems of Rural Women in Ming and Qing Jiangnan'), 中国经济史研究 (Researches in Chinese Economic History), no. 3, 1997, pp. 10–22, here p. 16; Xu, *The History of Homespun Cloth*, p. 243.

[84]Xu, *The History of Homespun Cloth*, pp. 248–249.

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incomes from rural textile production had become negligible compared to the Qing period.

Instead, an industrial survey conducted by the Ministry of Industry and Commerce in 1929 showed that the wages of female workers in Shanghai cotton mills was around 12–13 yuan per month—significantly higher than the monthly 5–6 yuan a hard-working handloom weaver would earn. As the basic cost of living for an urban female labourer was about 5 yuan per month, 7–8 yuan was left for other household consumption.[85] Furthermore, according to a household survey, remittances by young Shanghai factory women to their families comprised 19.7 per cent of household income, implying that some families could only make ends meet with their daughters' earnings.[86] Such a wage gap between handicraft and industrial textile production also existed in Nantong. Over the period 1920–1940, the average day wage for female millhands was between 0.3 and 0.35 yuan, whereas the daily income for hand-weavers in the year 1937 was between 0.06 and 0.08 yuan, without considering the labour input in the preparation and finishing processes of cotton cloth production.[87]

Women workers in the Yangtze cotton mills not only earned more than female hand-weavers but also more than agricultural labourers. In the 1920s, in Jiangyin, Wuxi, and Songjiang, male agricultural wage labourers normally earned 27–35 yuan per year, and the annual earnings of female rural workers averaged between 12–20 yuan. Female textile workers in Shanghai, however, could earn 140 yuan per year: four to five times as much as the male agricultural wage.[88] Similarly, in the Dasheng spinning factory in Nantong, a women worker earned 89.25 yuan per year and a farming labourer only received an annual income of 40–56 yuan.[89] It thus made sense for women from rural areas where agricultural work and hand-weaving were not profitable enough to try their luck in the cotton mills.[90]

In northern China, women's contributions from handicraft textile production remained important for the household income in this period. For example, in some villages of Hebei and Tianjin districts (not the hand-weaving centres), peasant households with different size landholdings found it difficult to sustain a

[85]Chinese Ministry of Industry and Commerce 中國工商部, '全國工人生活及工業生產調查統計報告書' ('Statistical Report on the National Survey of Workers' Lives and Industrial Production'), in 民國時期社會調查叢編: 城市勞工生活卷 (上) (The Series of Social Investigations in the Republic of China: The Lives of Urban Labour, vol. 1), (eds) Li Wenhai et al. 李文海等 (Fuzhou: Fujian jiaoyu chubanshe, 2014 [1930]), pp. 1–229, here p. 4. According to the survey, the living costs of one male adult labourer in Shanghai was 6.2 yuan per month, and women's living expenses were 80 per cent of men's, around 5 yuan per month.

[86]Honig, *Sisters and Strangers*, pp. 52, 158.

[87]Yan, *The History of the Chinese Cotton Textile Industry*, pp. 280–281; Mu Xuan 穆烜 and Yan Xuexi 嚴學熙, 大生紗廠工人生活的調查: *1899–1949* (The Investigation on Workers of Dasheng Spinning Factory: 1899–1949) (Nanjing: Jiangsu renmin chubanshe, 1994), p. 199.

[88]Wang, *First Yearbook*, p. 543.

[89]Mu and Yan, *The Investigation*, pp. 199, 211.

[90]Note that Nantong was a special case, as the textile factories were established in a rural environment. After night shifts, women sometimes had to do field work upon returning to their homesteads. See Yuan Yi, 'Malfunctioning Machinery: The Global Making of Chinese Cotton Mills, 1877–1937', PhD thesis, Columbia University 2020; available at: https://academiccommons.columbia.edu/doi/10.7916/d8-nam9-5835 [accessed 28 November 2024].

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livelihood from agricultural yields alone, but they could earn an additional yearly income of 7–28 yuan from by-employment, including hand-weaving. Based on daily per capita basic grain consumption in Hebei in 1928, we roughly estimate that this economic contribution could support the cost of grain for one person for between five and 18 months.[91] Although the exact contribution of hand-weaving among household by-employment is unclear, handicraft cloth production certainly played a role in supporting peasants' subsistence. This contribution was even more important in the relatively advanced hand-weaving districts. For instance, in 1932, households in the Daxizhang village of Dingxian on average earned about 41 yuan annually through cloth manufacture—considerably more than the district averages. Here, women's earnings from handicraft production reached *circa* 68 per cent of men's.[92] The income from hand-weaving alone could support one person's grain consumption for five-and-a-half months.[93] Considering that each household on average contained 1.8 woman working in home industry, we can safely say that their income was crucial in uplifting household living standards in this region.

The economic contribution of Gaoyang textile workers was perhaps more visible because commercialized hand-weaving was the dominant source of household income here, and men also wove. An analysis of the income structure of 344 weaving households in Gaoyang shows that the average income from hand-weaving and the net sales revenue of cloth products respectively constituted 49.1 and 29.8 per cent of overall household income (152.9 yuan) in 1932. The remaining 21.1 per cent came from farming and other by-employment. Assuming that the annual cost of grain consumption for each household was around 107.2 yuan, then there was still 45.7 yuan left for each household.[94] We do not know precisely which share women earned, as weaving households were paid as a collective, but their joint efforts made up an income well above subsistence. This domestic system of cloth manufacturing in Gaoyang consolidated the collaboration of all male and female family workers. While men primarily engaged in hand-weaving, women were still indispensable both for auxiliary tasks in cloth production and other household work. It must be noted that Gaoyang was a special type of rural economy, in which handicraft industry and marketing were organized by merchants. However, as indicated above, the Gaoyang model was followed in other parts of China, and Grove has even called it 'an important element in China's "economic miracle" of the late twentieth century'.[95]

[91]Zhang, *Materials*, p. 414.

[92]Zhang, *The Investigation*, pp. 310–316.

[93]According to a social survey in Dingxian in 1928, each household (comprising six members on average) spent about 107.15 yuan on grain for one year, and one person spent 1.49 yuan on grain consumption per month. See Li Jinghan 李景漢, 定縣社會概況調查 (Dingxian: A Social Survey) (Beijing: Zhonghua pingmin jiaoyu cujinhui, 1933), pp. 313–316.

[94]Wu, *An Investigation*, p. 405. In fact, more than half of the investigated households could not earn an income at the average level. But hired labourers for household textile production were provided with meals and accommodation by their employers, which reduced their expenses. For those poor households, we can imagine most family members chose to be wage workers as they did not have enough production capital.

[95]Grove, *A Chinese Economic Revolution*, p. 261.

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In sharp contrast, in Tianjin cotton mills around 58.6 per cent of the employed households could not make ends meet.[96] It is impossible to compare household living standards between Gaoyang and Tianjin due to a lack of information on Gaoyang households' consumption. Nevertheless, a rough comparison of wage work in the two districts shows that Gaoyang weaving labourers normally earned 60–80 yuan (excluding meals and accommodation) per year between 1925 and 1928, although this wage dropped to 40 yuan in 1931. In Tianjin cotton mills, the wage of a female textile worker was about 11 yuan per month in 1930, but from this she would have had to pay 7.3 yuan per month for food and rent.[97] What she would then be able to send home on an annual basis—assuming that she worked year-round—was about 44 yuan, which presumably was not an attractive alternative to the lucrative work she could do as a weaver or, more likely, as a reeler and warper, in family-based household textile production.

This all implies that the opportunity cost of a rural woman worker leaving her handloom and moving to the factory was high in Hebei province until the early 1930s. Apart from women's economic contributions from domestic textile production, their many other—unpaid—household tasks made them essential for rural households to survive and even reach an income level above subsistence. In Dingxian, a large number of women took on hand-spinning or hand-weaving as a side activity because the sufficient arable land had essentially improved the wellbeing of households. In Gaoyang, where the putting-out system facilitated a more vibrant hand-weaving industry, this constituted the main source of household income. These factors contributed to the persistence and resilience of household cotton manufacture in competition with mechanized production, which delayed (but ultimately did not prevent) the disintegration of the traditional household labour allocation. Presumably, landless rural men, whose wages in cotton mills were significantly higher (see Table 3 above), did try their luck in the Tianjin and Qingdao factories. For men, there were also many other alternatives in those cities, for example in the machine and metal industries, the chemical industry, or paper and printing, in which only very few women worked.[98]

For South China, Philip Huang has emphasized that population pressure had disturbed farming households in the Yangtze Delta and forced surplus labour to perform agricultural work below the marginal return.[99] Although Huang also insists on a similar 'agricultural involution' in North China, landholding size per capita indicates a more dramatic situation in the Yangtze Delta, which could only be countered in the really commercial pockets of rural textile production such as Nantong. Our comparison of rural versus factory earnings supports this: more often than in the North, farming households in the South could not survive, and the disappearing income from handicraft cotton products aggravated the crisis. These problems induced Yangtze women from impoverished rural regions to migrate to the nearby metropolitan city

[96]Fong, *Cotton Industry*, p. 140.

[97]Wu, *Investigation Report*, pp. 586–587. Taking the Yuyuan factory as an example, each female worker roughly spent 7 yuan on food and 0.3 yuan on rent per month.

[98]*The Social Bureau of Tianjin Special Municipal Social Office* 天津特別市社會公署社會局編: *Social Statistics Monthly* 社會統計月刊, vol. 1, no. 1, 1939.

[99]Philip Huang, *The Peasant Family and Rural Development in the Yangtze Delta, 1350–1988* (Stanford: Stanford University Press 1990).

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of Shanghai, where a large number of cotton mills were concentrated, which provided relatively higher income-generating possibilities for them.[100]

Conclusion

This article has provided a supply-side explanation for the remarkably different gender divisions in emergent Chinese cotton mills in different industrial cities by taking into account regional economic developments. Global trade and the development of the modern textile industry affected the Yangtze Delta and Shanghai more directly, and earlier, than other parts of China. Yarn imports and Chinese factory yarns were substituted for local hand-spinning from the late nineteenth century, and only a few highly specialized and commercialized rural weaving regions, such as Nantong, managed to survive. In many poorer regions of the Delta, such as Subei, the relatively rapid decline of hand-weaving, in combination with low agricultural incomes, greatly impoverished farming households. The century-old combination of agriculture and handicraft cotton textile production was no longer economically attractive for many Yangtze households. They either gave up handicraft textile production to seek industrial work in urban factories, or entered into other activities with higher economic returns.

Nevertheless, subsistence crisis was not the sole reason for Jiangnan inhabitants to migrate, as the relatively wealthier households in the 'macro-core' of Yangtze Delta (such as Songjiang and Taicang) were also attracted by well-paid urban jobs. The dual-economic impetus—forced by poverty and lured by higher wages—increasingly destroyed the traditional household economy of 'men tilled and women wove' and simultaneously created a growing urban working class that not only consisted of male workers, but was in the 1920s and 1930s complemented by women. Female textile workers were latecomers in cotton mills in other industrial cities in South China (such as Wuxi and Wuhan), but around 1930, they outnumbered male textile labourers by a factor of 3:4. Although Shanghai's earlier industrialization in the textile sector might have led the way in employing female workers, it is still astonishing that the later industrializers such as Wuhan and Wuxi quickly caught up to reach a similar gender ratio of textile workforce in the 1930s.

Over the same period, conversely, there was hardly any increase in female cotton millhands in northern cities, despite early attempts to attract them, both from nearby and further away. Until 1947, female textile workers in Tianjin consistently remained a minority.[101] In 1930, women textile workers in Qingdao formed only one-eighth of the mill workforce. This small increase in female labour has been partly attributed to local norms and degrees of industrialization. But within South China, these factors did not prevent the rapid growth of female workers, as the less industrialized

[100]Other opportunities for former handweaving women were lacemaking and knitting. Some women started engaging in activities such as planting and selling vegetables and fruit. Xu, *The History of Homespun Cloth*, pp. 302–307.

[101]Hershatter, *The Workers of Tianjin*, p. 55. Until the late 1940s—so not until three decades after the beginning of Tianjin's modern textile industrialization—the share of female workers remained far behind that in Shanghai. Therefore, we are hesitant to agree with Hershatter that the different gender ratios between Shanghai and Tianjin textile millhands were a purely chronological phenomenon.

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cities like Wuhan and Wuxi show. This article has argued that in North China, the relatively more vibrant household textile industry retained women's work in rural hand-spinning and (particularly) hand-weaving, thus largely explaining the relatively low female labour supply to northern urban textile factories. In fact, the surrounding countryside provided the main market for Tianjin's factory yarns, suggesting the integration of urban–rural production *and* labour markets, in which men predominantly formed the urban labour force, and women could make a considerable extra income by hand-weaving. Some specialized handicraft textile regions with an active putting-out system, such as Gaoyang, were less integrated in terms of their labour market, as household labour was needed at and around the handloom. Nevertheless, it was also economically integrated, as it received capital and machinery by urban merchants and presumably sold part of its locally woven *tubu* to Tianjin consumers.

The persistence of rural cotton handicraft manufacturing rested primarily on sufficient arable land. The percentage of landowning farmers was much higher than in the Yangtze Delta, which may have stimulated northern peasants to sustain their subsistence by combining land farming with by-employment, because such a combination allowed for more security.[102] Peasant households in this context had not disassembled the existing pattern of labour allocation in the form of the household unit.[103]

The gender wage differentials we have presented here support our argument that households at least partly based their labour allocation decisions on economic considerations. The gender wage ratios in the Shanghai/Wuhan cotton mills were much more on par, and at any rate earnings in these cities were much higher than what could be earned in the surrounding countryside. These relatively high wages convinced many households in the South to send their (often young unmarried) female members to urban factories. However, women in Northeast China were paid much less relative to men in the same department in cotton mills, and unmarried women here were probably relatively more often still needed for hand-spinning.[104] For rural women active in household textile production in the North, their annual handicraft income was even lower than that of female millworkers, but the higher urban living costs partly offset this difference. Moreover, as average plots were slightly bigger, women's working time in handicraft production was lower, and most rural women in northern households flexibly shifted between agricultural work, handicraft production, and domestic and care work. Most women would not go to work in mills unless factory wages drastically compensated for the opportunity cost of leaving their rural (industrial) employment.

[102]See also Grove, *A Chinese Economic Revolution*, p. 75.

[103]The combination of agriculture and home industry in North China consumed rural labour and reduced the labour supply in urban factories, but this did not prevent the migration of rural labourers from poor households. In light of the traditional culture that confined women to domestic production or agricultural work (this migration pattern still prevailed in 1980s China), it was usually men in the household who first migrated. As previously discussed, the workforce in modern cotton mills primarily came from bankrupted rural households. This means that in North China as well there were many bankrupted poor households that sent their male members to seek their fortune in cities, most likely then being followed by female members, for whom there may have been fewer opportunities there. As the share of married women among female textile factory workers in Tianjin was higher than in Shanghai, these may have been 'following wives' who were desperate enough to accept very low factory wages.

[104]Bossen and Gates, *Bound Feet*, p. 42.

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