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Sustainability of Regional Factors on the Gendered Division of Housework in China

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Abstract: In China's labor market, the traditional patterns of "male breadwinners, female housewives" have been changing noticeably, whereas such patterns remain unchanged in the household production field. This phenomenon greatly affects gender equality and social sustainability. Until now, most of the studies have focused on the attribution of micro-factors (e.g., individual income, education level, and time availability) to the formation of this pattern. However, the effect of macro-region factors (e.g., the regional economic development, population composition, employment, and gender norms) on the distribution of housework have been rarely studied. In this study, the data from the China General Social Survey (2015CGSS) and the China Genuine Progress Indicator Survey (2017CGPiS) of Beijing Normal University were comprehensively analyzed. On that basis, a gender norms index was first constructed to measure regional differences in gender concepts. Moreover, this study, by considering macro-region-varying factors, suggested that the synergetic effect between all of the mentioned factors could significantly impact the distribution of housework, especially in eastern China. Nevertheless, in western China, the effect of male gender norms on the distribution of housework is significantly more serious than that of female gender norms, which inspires the authors of this study to strengthen the male's family consciousness education. All of the mentioned findings could help formulate region-differentiated policies and strategies to achieve more reasonably and sustainably distributed housework in China.

Keywords: macro-region factors; gender norms; social sustainability; micro-factors; gender gap; housework division; gender equality

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1. Introduction

Gender equality is important for the development of social sustainability, which is also a critical part of the Sustainable Development Goals (SDGs). Meanwhile, the distribution of housework plays a crucial role in regulating gender equality. However, according to the report in "The Sustainability Development Goals Report 2021", women have already spent about 2.5 times as much time as men on unpaid housework [1]. At the same time, the COVID-19 pandemic is adding to the housework burden for women and squeezing women out of the labor force, which reversely breaks the sustainable development of society. Therefore, studying the influence factors on the housework division and optimizing these factors are of great importance to improve gender equality and social sustainability. It should further point out that, in the "Global Gender Gap Report 2021", the Gender Gap Index in China ranked 107th all over the world, which dropped 44 places in the rankings as compared with the one in 2006 [2], which indicated that the gender gap in China was surging rather than falling. Furthermore, the regional differences in the gender division of housework are obviously existent in China. However, until now, the underlying mechanism behind this phenomenon has not been comprehensively disclosed yet. Evidently, there is an urgent need to consider the micro- and macro-influent factors on evaluating the gender gap in the housework division, especially based on the social situation in China.

Over the last seven decades, one of the most remarkable features of human capital accumulation in China is that numerous women have entered the labor market and gained remarkable achievements in several fields (e.g., politics, economy, education, and culture). In 1949, women accounted for 7.5% of the people employed in urban units. By 2017, however, such a proportion had risen to 37.1%, and women took up 48.6% of the professional and technical personnel in public-owned enterprises and institutions. Besides, 52.5% of regular students were enrolled in normal and short-cycle courses in higher education [3]. As indicated by the mentioned data, the socioeconomic status gap between women and men is being narrowed, and the traditional pattern of "male breadwinner" in the labor market has been overturned. However, in housework, a wide gender gap remains, and women continue to be the backbone of housework. As indicated from the National Time Use Survey in China, the average housework time of women was 3 h and 11 min in 2008, which was 2 h and 2 min more than men. By 2018, the average time devoted to housework by women had fallen to 2 h and 6 min, which was still 1 h and 21 min over the time devoted by men. Though the gender gap in housework is being narrowed slowly, women still devote significantly more time than men and assume a double family-work burden [4]. From this perspective, "male breadwinners, female housewives", the traditional ideas about domestic work in China, has not been changed synchronously as women enjoyed being more economically independent, which may affect the sustainability of regional development on the economy and society in China.

In order to understand the effect of various factors on the housework division, the research method is significantly important to get the objective analysis results. In terms of the research methods, extensive international studies not only considered the effect of these micro-factors above [5–9], but also focused on the macro-factor influences (e.g., regional economic development, population composition, employment, and gender norms) on the housework division [10–15]. For instance, Campana et al. proposed that the division of housework would be equal, especially in a country with a culture of gender equality [16]. In addition, by studying marital status and family composition, some European researchers such as Craig and Mullan find that the composition of the social environment plays a critical role in dominating the time of domestic work, and that relevant policy adjustments would improve gender equality and maintain social sustainability [11,17]. Moreover, as indicated in the research of Ruppanner and Maume, the individual's housework time in the United States may vary by the state-to-state differences in institutional and legislative logics. Moreover, for the states with more traditional gender norms, wives devote significantly more time on housework [18]. However, most of the studies in China were only conducted to explain the current situation of "female housewives" from the perspective of micro-factors [19–22] over the past few years. These studies included [20–22] "the relative resource theory", based on individual's income-education level and other resources for the division of housework bargaining [23–25]; "the time availability theory", based on individual's time use [4,21]; and "the gender awareness theory", stressing gender cognition and gender expectation [26–28]. There is a limited availability of data in China, wherein rare studies have primarily investigated the quantitative influence of macro-factors like socio-cultural beliefs, economic development, and gender norms on the regional gender division of Chinese housework. Thus, the integration of the micro- and macro-influent factors is significantly important to analyze the gender gap in the housework division, especially based on the regional data (such as the macro-factors of economic development, labor force participation, population composition, and gender norms) in China.

2. Materials and Methods

2.1. Definition of Housework

Housework is important to maintain social functioning, and contributes to a broad project of social reproduction, which also perpetuates the social structures associated with family, gender, inequality, and the labor force. This social reproductive labor supports the productive work occurring in the formal market economy.

Housework generally refers to unpaid work done to support family members and/or a home [29]. Unpaid housework comprises of two types of activities, i.e., unpaid daily chores and unpaid day care services (e.g., cooking, cleaning, laundry, shopping, care for the elderly and children, as well as related activities), as suggested from the "International Classification of Activities for Time Use Statistics (2016 ICATUS)".

Although the concept of housework includes unpaid care services, the majority of household labor studies have excluded them during their research [30]. However, the implications of care on philosophical, political, and economic structures have significant referential values [31], and unpaid care should be evaluated as an important part of housework. Besides, women still perform the majority of housework, and some unpaid daily chores remain stubbornly regarded as "female gender-typed".

2.2. Macro-Level Factors

By shaping the benefits of specialization, bargaining terms, and ease of adherence to gender ideologies and norms, regional context can impact gender differences on the division of housework [13]. Moreover, the gender equality differences at a regional level (i.e., labor force participation and economic development) could exert a moderating effect on the division of housework [30]. In the present study, the macro-factors fell into two aspects: region-varying factors and regional gender norms.

The region-varying factors cover 3 factors (5 indicators), i.e., the economic development factor (the GDP per capita); the labor force participation factor (the proportion of females employed in the number of employed); as well as the population composition factor (i.e., sex ratios, child dependency ratio, as well as aged dependency ratio). On the whole, the mentioned factors significantly affect the division of unpaid housework [16,18]. Modernization and economic development may contribute to the difference of women's bargaining power in housework [32], higher market participation rates may narrow the gender gap in unpaid housework [10,33], and the sex ratio acts as a vital factor to assess the value of women in the marriage market, and thus affects the housework division [34]. Since the care responsibility is normally assumed by women, the number of children and older people is recognized as a critical factor to determine the housework time devoted by men and women [35].

Gender norms act as an important macro-level factor impacting the bargaining power of time allocation [36]. A positive correlation is reported between traditional gender roles and the gender gap in the division of housework. Besides, in the groups with identical gender norms, women and men display similar time-use patterns [37]. Moreover, gender norms could measure the far-reaching influence of social factors (e.g., the social system and cultural concepts) on the behaviors of men and women. Gender norms represent a process of reproduction [38], and both men and women have been exposed to the cultural impacts of corresponding "gender role" concepts since their childhood. They keep learning from the environment, which is reinforced in practice through intergenerational demonstration and the effect of social networks. Subsequently, gender consciousness and gender norms are formed correspondingly, and the intergenerational inheritance of gender consciousness and behavior patterns are achieved. Besides, gender norms exhibit prominently regional characteristics, which are transmitted via generations and are relatively stable [39]. In brief, the gender culture inheritance may be of critical significance to the gender division of housework, and further facilitate the gender role division of "men provide bread, and women offer services for the family" [40]. In the analyzation of gender norms (e.g., gender culture and the gender system), it is clear that men and women are subject to different restrictions and constraints, which also helps both men and women to reflect on the constraints of their own development as an attempt to improve gender equality and fairness of the housework division [41].

2.3. Data Sources and Collection

On the whole, two Micro Survey databases were primarily applied in the present study. The regional housework time use data and individual's micro-level factors were extracted from the 2017 China Genuine Progress Indicator Survey (CGPiS). China Genuine Progress Indicator Survey (CGPiS) refers to a large-scale national comprehensive survey project conducted by the institute of Innovation and Development of Beijing Normal University. CGPiS has been recognized as the first national sampling survey in China, aiming at measuring China's real progress index. Moreover, this survey covered the employment, consumption, time use, environment, health, fertility, and many other aspects. Such a database was launched first in December 2015, and CGPiS in 2017 covered the data of 29 provinces in China with over 40,000 samples.

The macro-level factors (e.g., economic development, labor force participation, and population composition) originate from the China Statistical Yearbook, 2018. Moreover, to analyze the effect of gender norms on housework time, a gender norms index was constructed in the present study to measure the level of gender equality awareness in different regions, and the corresponding data originated from the 2015 China General Social Survey database. CGSS has collected the data at multiple levels of society, community, family, and individuals systematically, which also summarized the trend of social change and presented considerable data related to values and attitudes. The sample survey in CGSS covers 28 provinces. It is noteworthy that, to maintain the consistency of data, the data of Hainan Province in CGPIS were excluded and then matched with those from CGSS.

2.4. Research Methods

In the present study, the least square method (OLS) regression was adopted to estimate the effect of macro-factors and micro-factors on the regional gendered division of housework. The estimation equation is written as:

$$H_{ik} = \alpha + \beta_1 gender_{ik} + \beta_2 X_{ik} + \beta_3 Z_k + \beta_4 gendernorms_k + \delta gendernorms_k \times gender_{ik} + \varepsilon_{ik} \quad (1)$$

where H_{ik} denotes the housework time of individual i in region k; k represents the 28 provinces of China; $gender_{ik}$ takes value 1 if individual i in region k is a woman and values 0 otherwise; X_{ik} expresses a vector of sociodemographic characteristics (e.g., ages, age squared, number of household members, employment, lives in rural/urban areas, marital status, education level, whether migrant and region); and Z_k represents region-varying factors consisting of the annual average growth rate of GDP per capita, the proportion of females employed in the number of those employed in the region, the sex ratios, child dependency ratio, and aged dependency ratio. Moreover, $gendernorms_k$ represents the gender norms index of males and females in region k, and $gendernorms_k * gender_{ik}$ indicates the interaction term between the gender norms index and gender. Finally, ε_{ik} expresses the error term.

3. Results and Discussion

3.1. Regional Differences in the Gender Division of Housework

Table 1 lists the unpaid housework of females and males in the 28 provinces of China, in which the data also fell to the regional distribution in eastern, central, and western China. To have an intuitive contrast on the gendered housework division, the difference of housework time was measured at the penultimate column (Table 1). In this study, the statistical significance complied with the *t*-test, which was including housework time of females and males, gender difference, standard deviations, standard error, and observations of males and females. The results indicate a statistically significant difference between men and women, while the negative value of gendered housework differences revealed that women have devoted significantly more time to housework than men. According to the gender division of housework nationwide, there was a significant gender gap of −1.251 h per day. In addition, the gender gap of the division of housework in central China took the maximal value of −1.401 h, which suggested that women here spent significantly more

time on housework than men. However, the second maximal gender gap was located in eastern China with a gender gap of −1.30 h, and western China showed the minimal gender gap of −0.986 h per day.

Table 1. Regional differences in the gender division of housework (h per day).

Area	Region	Housework Time			Difference	Std. Err.	Std. Dev.	Observations		
		Female	Male	Total				Female	Male	Total
Eastern	Fujian	2.99	1.35	2.06	−1.635 ***	0.051	2.134	739	982	1721
	Hebei	3.12	1.50	2.38	−1.616 ***	0.056	2.232	856	714	1570
	Shandong	2.71	1.36	2.04	−1.351 ***	0.043	1.962	1070	1038	2108
	Zhejiang	2.56	1.21	1.88	−1.350 ***	0.040	1.935	1134	1163	2297
	Tianjin	2.93	1.60	2.35	−1.334 ***	0.070	2.273	587	456	1043
	Beijing	2.86	1.56	2.35	−1.302 ***	0.058	2.133	828	537	1365
	Liaoning	2.79	1.54	2.24	−1.244 ***	0.043	2.028	1238	980	2218
	Guangdong	2.54	1.38	1.93	−1.166 ***	0.059	2.074	1355	1515	2870
	Jiangsu	2.80	1.77	2.27	−1.020 ***	0.046	1.957	858	920	1778
	Shanghai	2.83	1.85	2.40	−0.983 ***	0.046	1.986	1054	843	1897
	Mean	2.78	1.48	2.15	−1.300 ***	0.015	2.064	9719	9148	18,867
Central	Henan	3.21	1.67	2.43	−1.542 ***	0.066	2.209	540	565	1105
	Anhui	3.24	1.71	2.42	−1.532 ***	0.072	2.268	459	520	979
	Shanxi	3.30	1.80	2.58	−1.502 ***	0.059	2.264	763	697	1460
	Jilin	2.97	1.48	2.23	−1.488 ***	0.056	2.130	726	716	1442
	Jiangxi	3.08	1.62	2.33	−1.457 ***	0.076	2.132	386	406	792
	Inner Mongolia	3.00	1.36	2.25	−1.637 ***	0.093	2.068	268	224	492
	Heilongjiang	3.08	1.79	2.50	−1.291 ***	0.058	2.103	723	595	1318
	Hubei	2.83	1.60	2.19	−1.234 ***	0.054	2.135	761	811	1572
	Hunan	3.03	1.84	2.46	−1.188 ***	0.055	2.180	821	752	1573
	Mean	3.08	1.68	2.39	−1.401 ***	0.021	2.175	5447	5286	10,733
Western	Qinghai	3.01	1.51	2.14	−1.501 ***	0.088	2.363	302	416	718
	Shaanxi	3.09	1.71	2.40	−1.381 ***	0.065	2.271	616	613	1229
	Guizhou	3.06	1.80	2.34	−1.265 ***	0.089	2.327	295	392	687
	Gansu	3.05	2.05	2.47	−1.000 ***	0.077	2.191	343	474	817
	Ningxia	2.75	1.76	2.24	−0.992 ***	0.092	2.115	254	270	524
	Guangxi	2.59	1.64	2.04	−0.950 ***	0.066	1.892	347	472	819
	Chongqing	2.56	1.65	2.07	−0.914 ***	0.053	1.948	629	747	1376
	Sichuan	2.57	1.82	2.17	−0.743 ***	0.049	2.060	806	902	1708
	Yunnan	2.88	2.38	2.60	−0.501 ***	0.070	2.216	428	564	992
	Mean	2.80	1.82	2.26	−0.986 ***	0.023	2.146	4020	4850	8870
All	Mean	2.87	1.62	2.24	−1.251 ***	0.011	2.116	19,186	19,284	38,470

Notes: *** $p < 0.001$.

Among the provinces in eastern China, Fujian contributed to the maximal gender gap of the division of housework, in which women devoted 1.635 h more hours of housework than men. The next one was Hebei province, in which the gender gap was about −1.616 h per day. Moreover, the gender gap in Shanghai province was the minimal one in eastern China with a value of −0.983 h per day. However, for the provinces in central China, Henan showed the maximal gender gap of the division of housework, where women devoted 1.542 h more housework per day than men. Moreover, the mentioned value was slightly larger than the one in Anhui province, with a gender gap of −1.532 h per day. Here, the gender gap of Hunan province (with −1.188 h per day) was the minimal one among the provinces in central China. For the provinces in western China, Qinghai presented the maximal gender gap in the division of housework of −1.501 h per day. Furthermore, the next was Shaanxi with a gap of −1.381 h per day. Yunnan had the minimal difference in western China with a value of −0.501 h per day.

3.2. Gender Norms Index

To measure the degree of equality in different regions, this study constructed a gender norms index based on the data from the 2015CGSS. Moreover, in a section of this survey, five questions regarding the respondents' attitudes toward the roles of women in society were adopted to assess the index. In this study, the respondents were asked to reveal their

"agree" or "disagree" points of view on the following five statements on a scale of 1 to 5 (1 = Strongly Disagree, 2 = Disagree, 3 = Indifferently Agree or Disagree, 4 = Agree, 5 = Strongly Agree): (1) men are highly engaged in their career, while women are family-oriented; (2) men are inherently more capable than women; (3) marrying effectively counts more for women than career achievement; (4) when the economy is in recession, female employees should be fired first; and (5) housework should be shared equally between husbands and wives. Accordingly, the higher scores of (1) – (4), the more traditional gender consciousness would be; the higher score of (5), the more modern gender consciousness would be. To combine the five questions above into one index, the principal component factors (PCA) technique was applied [16], in which the comprehensive factor scores as the "gender norms index" was calculated by the first two principal component factors. In addition, as suggested from calculations, the Kaiser–Meyer–Olkin (KMO) value was about 0.718, the Bartlett spherical test significance was 0.000, and the cumulative variance contribution was 62.6%. Thus, it could be suitable for measuring the gender norms index by using the PCA technique.

According to Table 2, the average of attitudes and the gender norms index in different provinces (28 provinces) were classified as the regions of eastern, central, and western China, and the gender norms index ranged from −0.5 to +0.5. Here, the value of −0.5 represents the most modern awareness of gender equality, and +0.5 represents the most traditional awareness of gender equality. In addition, according to the gender norms index values of different regions, the minimal degree of identification with −0.11 was presented in eastern China, and thus it showed more egalitarian gender norms. On the other hand, the indexes in central and western China were 0.07 and 0.08, and thus the gender norms would be significantly more traditional in the mentioned regions.

Table 2. Regional gender norms index.

Area	Region	Gender Norms Index			Observations	
		Total	Women	Men	Women	Men
Eastern	Fujian	0.09	0.08	0.11	140	134
	Shandong	0.06	−0.01	0.14	312	260
	Jiangsu	−0.03	−0.07	0.03	256	221
	Tianjin	−0.08	−0.14	0.00	150	134
	Shanghai	−0.11	−0.23	0.03	258	222
	Guangdong	−0.13	−0.25	−0.01	257	242
	Hebei	−0.19	−0.17	−0.23	159	110
	Zhejiang	−0.19	−0.23	−0.15	241	191
	Liaoning	−0.20	−0.33	−0.05	204	188
	Beijing	−0.29	−0.40	−0.17	288	242
	Mean	−0.11	−0.19	−0.02	-	-
Central	Anhui	0.21	0.23	0.19	206	177
	Henan	0.16	0.12	0.20	315	255
	Jilin	0.15	0.07	0.24	231	216
	Jiangxi	0.10	0.00	0.21	244	206
	Heilongjiang	0.07	0.05	0.10	272	274
	Hubei	0.01	0.00	0.02	295	262
	Inner Mongolia	−0.01	0.01	−0.02	45	53
	Hunan	−0.04	−0.03	−0.05	238	213
	Shanxi	−0.20	−0.24	−0.16	139	135
	Mean	0.07	0.04	0.10	-	-
Western	Sichuan	0.24	0.20	0.28	284	261
	Chongqing	0.23	0.20	0.25	131	129
	Ningxia	0.12	0.16	0.05	58	35
	Shaanxi	0.14	0.12	0.16	187	164
	Yunnan	0.06	−0.01	0.14	167	170
	Gansu	0.06	0.10	0.00	106	86
	Guangxi	0.03	−0.03	0.08	168	195
	Qinghai	−0.15	−0.24	−0.06	49	49
	Guizhou	−0.28	−0.49	−0.01	138	108
	Mean	0.08	0.03	0.14	-	-
All	Mean	0.00	−0.06	0.06	5538	4932

As revealed from the investigation of the corresponding relations between the gender norms index and the gender gap in the housework division, Fujian Province in eastern China took the maximal gender norms index value of 0.09 (Table 2), which also showed the maximal gender gap of −1.635 (Table 1). Such a situation was suggested to be well-fitted in Anhui and Henan provinces of central China, in which the gender norms indexes reached up to 0.21 and 0.16 (Table 2), corresponding to the significant gender gaps of −1.532 and −1.542 (Table 1), respectively. However, given the specific data in macro-regional difference in eastern, central, and western China, the average values of the gender norms index were calculated to be −0.11, 0.07, and 0.08 (Table 2), while the gender gap of the housework division in the mentioned three regions were −1.300, −1.401, and −0.986 (Table 1), respectively. Accordingly, because the gender norms index was not directly proportional with the gender gap of the housework division, there should be some other region-varying factors (e.g., the effect of economic development and the composition of the population), which would critically adjust the regional housework division [42].

3.3. Region-Varying Factors

As indicated from existing reports, the annual average growth rate of GDP per capita may reciprocally affect the distribution of housework [10,32]. Gender inequality in education would lower the level of social human capital, and employment discrimination against women in the labor market would up-regulate the employment cost of enterprises to down-regulate the economic growth rate [43]. Moreover, modernization and economic development may also lead to the difference in women's bargaining power in housework [44]. Since the division of housework is related to gender equality, the growth rate of GDP per capita should be considered [45].

It is generally known that adding paid time may crowd out unpaid housework, so the higher market participation rates may narrow the gender gap in unpaid housework [46,47]. Furthermore, several studies reported that in regions with higher gender equality, there would be significantly more comprehensive family policies to stimulate women's market participation and relieve the pressure of family care imposed on women [48,49]. For this reason, women's labor participation rate would be higher, and the gender division of housework would be more equal [50]. Thus, this study considered the effect of female employment proportion in regions on the gender difference of housework time.

In addition, some studies suggested the sex ratio as a vital factor to assess the empowerment of women in the marriage market [51]. Since the 1980s, the sex ratio at birth in China has become unbalanced, and the implementation of the one-child policy made this problem increasingly complicated. Moreover, such an imbalance of the sex ratio enhances women's bargaining power in the marriage market and lowers women's labor market participation rate [52]. Thus, the sex ratio acts as a vital factor of the division of unpaid housework.

The number of children is another vital factor determining housework time, where the regions with a higher child dependency ratio may elevate the housework time [53]. From the traditional perspective, the children's care responsibility is assumed by women, so a positive correlation may be found between children's dependency ratio and women's time devoted to housework [54]. Lastly, in regions exhibiting a higher dependency ratio, the need for elder care may be higher [16]. Furthermore, in Chinese families, intergenerational support is remarkably common, and the elderly assume a large part of daily housework and help take care of their grandchildren [20]. Accordingly, the elderly population dependency ratio is also an important explanatory variable for the study of the housework division [55].

Table 3 lists the region-varying factors in the respective province, from which we could get the mean values in eastern/central/western China. Given the mentioned data, the order of the annual average growth rate of GDP per capita was 7.10, 6.80, and 6.10 in western, central, and eastern China, respectively. However, the regional differences of the gender housework division are −0.986, −1.401, and −1.300 in the mentioned three different regions. When looking at the data in western China separately, the average growth rate of GDP per capita here takes the maximal value and has the minimal gender

gap of the division of housework. Thus, it could be effectively explained by the finding that "the faster the average growth rate of GDP corresponds to a larger proportion of female employment; a more balanced the sex ratio, a higher the dependency ratio for children, a lower the dependency ratio for elderly, then a small gender gap of the division of housework". However, according to the analysis of the data nationwide, this tendency is not evident. For instance, in eastern China, the minimal GDP growth rate of 6.10 is achieved, whereas a moderate gender gap of −1.300 has been presented. Thus, a related amendment should be conducted to reconsider relationships with the gender gap of the housework division [56].

Table 3. Region-varying factors (%).

Area	Region	Annual Average Growth Rate of GDP per Capita	The Proportion of Female Employment in Regional	Sex Ratio	Child Dependency Ratio	Aged Dependency Ratio
Eastern	Fujian	7.10	44.90	104.12	25.67	13.23
	Hebei	5.90	42.40	103.14	25.57	16.80
	Shandong	6.50	43.60	101.68	25.49	18.64
	Zhejiang	6.60	45.20	111.48	16.15	16.56
	Tianjin	3.30	41.20	111.10	14.59	14.57
	Beijing	6.70	43.50	102.65	14.25	16.32
	Liaoning	4.30	40.60	100.12	13.39	18.57
	Guangdong	6.00	41.60	113.46	22.32	10.27
	Jiangsu	6.80	42.30	103.02	18.52	19.19
	Shanghai	6.80	42.80	103.54	13.12	18.82
	Mean	6.10	42.80	105.66	20.67	16.00
Central	Henan	7.40	43.60	104.49	30.53	15.88
	Anhui	7.50	43.00	104.92	28.13	19.14
	Shanxi	6.50	40.70	108.34	20.69	11.92
	Jilin	6.00	44.10	102.42	16.51	16.18
	Jiangxi	8.10	40.90	108.28	31.47	14.21
	Inner Mongolia	3.60	37.90	100.79	17.91	14.33
	Heilongjiang	6.70	43.90	103.83	12.76	15.58
	Hubei	7.30	44.50	106.34	21.99	17.00
	Hunan	7.40	45.20	101.68	26.51	17.53
	Mean	6.80	42.60	104.65	24.55	16.09
Western	Qinghai	6.40	44.20	105.93	27.80	10.96
	Shaanxi	7.30	45.50	97.38	21.34	15.14
	Guizhou	9.40	45.70	107.23	30.97	14.47
	Gansu	3.00	41.90	103.27	24.33	14.32
	Ningxia	6.70	43.40	96.91	25.11	11.56
	Guangxi	6.30	43.10	109.20	32.73	14.33
	Chongqing	8.20	43.50	99.57	23.65	20.60
	Sichuan	7.50	43.60	101.93	22.53	19.83
	Yunnan	8.80	46.10	107.41	26.06	11.56
	Mean	7.10	44.10	103.66	25.72	15.88
All	Mean	6.30	41.90	104.81	23.39	15.86

3.4. Regression Results: All Samples

Table 4 lists the regression results for the overall samples, and Model (1) listed the regression results without considering regional differences. As indicated from the calculated data in Model (1), the micro-factors of gender, age, number of household members, unemployment in the labor market, lives in rural areas, education level, and migrants were statistically significant (labeled with the asterisks in Table 4), where women spend 1.204 h more on housework per day than men. In Model (2), all region-varying factors were covered in the regression model, and the results revealed that the coefficient remained unchanged, thereby demonstrating that though the cross-regional differences might help explain the gender differences in the housework division [57], it could be mainly attributed to the effect of individual demographic characteristics [58].

Table 4. OLS regressions on the time devoted to housework.

Variables	Model (1)	Model (2)	Model (3)	Model (4)
	All Sample	All + Region-Varying Factors	All + Region-Varying Factors + Gender Norms Index	All + Region-Varying Factors + Gender Norms Index + Gender Norms Index * Gender
Women	1.204 ***	1.204 ***	1.259 ***	1.276 ***
	(58.19)	(58.19)	(43.48)	(43.08)
Age	0.103 ***	0.103 ***	0.103 ***	0.103 ***
	(23.86)	(23.86)	(23.89)	(23.88)
Age squared	−0.000794 ***	−0.000794 ***	−0.000794 ***	−0.000793 ***
	(−19.38)	(−19.38)	(−19.39)	(−19.39)
Number of household members	0.0494 ***	0.0494 ***	0.0493 ***	0.0492 ***
	(6.40)	(6.40)	(6.38)	(6.37)
Unemployment	0.504 ***	0.504 ***	0.502 ***	0.502 ***
	(21.29)	(21.29)	(21.25)	(21.25)
Live in rural area	0.210 ***	0.210 ***	0.211 ***	0.210 ***
	(8.23)	(8.23)	(8.24)	(8.21)
Married	−0.0138	−0.0138	−0.0151	−0.0148
	(−0.36)	(−0.36)	(−0.40)	(−0.39)
migrant	−0.0781 **	−0.0781 **	−0.0774 **	−0.0768 **
	(−2.64)	(−2.64)	(−2.61)	(−2.59)
Junior high school education	−0.0644 *	−0.0644 *	−0.0634 *	−0.0639 *
	(−2.34)	(−2.34)	(−2.31)	(−2.32)
Secondary education	−0.157 ***	−0.157 ***	−0.156 ***	−0.156 ***
	(−5.02)	(−5.02)	(−4.97)	(−4.99)
University education and above	−0.515 ***	−0.515 ***	−0.514 ***	−0.515 ***
	(−14.90)	(−14.90)	(−14.88)	(−14.89)
GDP per capita growth rate	-	−0.0539 *	−0.0608 *	−0.0666 **
	-	(−2.24)	(−2.52)	(−2.75)
The proportion of female employment in regional	-	0.0839 ***	0.0815 ***	0.0823 ***
	-	(5.11)	(4.96)	(5.00)
Sex ratio	-	−0.0120	−0.00859	−0.00960
	-	(−1.17)	(−0.84)	(−0.93)
Child dependency ratio	-	0.0122	0.00921	0.00802
	-	(1.36)	(1.02)	(0.88)
Aged dependency ratio	-	−0.0237	−0.0332 *	−0.0354 **
	-	(−1.82)	(−2.48)	(−2.64)
Gender norms index	-	-	0.491 **	1.280 ***
	-	-	(2.79)	(3.71)
Gender norms index * gender	-	-	-	−0.385 **
				(−2.66)
Constant	−1.632 ***	−3.468 **	−3.535 **	−3.391 **
	(−12.84)	(−2.72)	(−2.77)	(−2.66)
N	38,470	38,470	38,470	38,470

Notes: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

To examine the effect of gender norms, Model (3) incorporated the gender norms index regression, and the results revealed that the gender norms index coefficient was positive and statistically significant. To be specific, the coefficient increased from 1.204 h per day in Model (1) to 1.259 h per day in Model (3). Furthermore, when the gender norms index and gender interaction term were added into Model (4), the gender gap of housework would expand to 1.276 h, and the gender gap in housework hours would expand by about 5.48% compared with Model (1). Accordingly, as compared with the non-traditional gender norms region, women in the traditional gender norms area could spend significantly more time on housework, and the housework time division of the gender gap would be expanded [12]. Furthermore, the coefficient of interaction term was negative and significant at the level of 0.05, which indicated that the male's gender norms could more noticeably impact the division of housework than that of females. Thus, changing male's gender norms might noticeably help narrow the gender division of housework [59].

3.5. Regression Results: Eastern, Central, and Western

To determine the separated effects of regional macro-factors on the gender difference of the division of housework, the regression analysis was conducted here on samples in three different regions (i.e., in eastern, central, and western China). Here, Table 5 lists the regression result in eastern China, where the regional characteristics in Model (1) were not considered. The results revealed that women engaged in about 1.197 h more housework per day than men. After region-varying factors were added into Model (2), the coefficient of the gender gap (1.197 h per day) was identical to the one in Model (1). However, when the gender norms index was added into Model (3), the gender gap of housework hours increased from 1.197 h per day to 1.439 h per day, and the gender norms index was positive and statistically significant. As revealed from all of the mentioned results, the gender gap of the division of housework would be broadened, especially in the regions with more traditional gender norms. Besides, if the interaction term of the gender norms index and gender were added into Model (4), the gender gap was significant with an increment from 1.197 to 1.442 (marking a growth rate of 20.5%). However, the interaction term between the gender norms index and the gender coefficient was not statistically significant (with a value of 0.044), which indicated that gender would not enhance or weaken the effect of the gender norms index on the gender gap of the division of housework. Thus, the gender gap of the division of housework in eastern China could be obviously impacted by both the sexes' gender norms.

Table 5. OLS regressions results—eastern sample.

Variables	Model (1)	Model (2)	Model (3)	Model (4)
	All Eastern Sample	All Eastern Sample + Region-Varying Factors	All Eastern Sample + Region-Varying Factors + Gender Norms Index	All Eastern Sample + Region-varying Factors + Gender Norms Index + Gender Norms Index * Gender
Women	1.197 ***	1.197 ***	1.439 ***	1.442 ***
	(42.14)	(42.14)	(28.75)	(27.62)
Age	0.112 ***	0.112 ***	0.113 ***	0.113 ***
	(19.96)	(19.96)	(20.05)	(20.06)
Age squared	−0.000870 ***	−0.000870 ***	−0.000873 ***	−0.000873 ***
	(−16.34)	(−16.34)	(−16.40)	(−16.41)
Number of household members	0.0342 **	0.0342 **	0.0331 **	0.0331 **
	(3.04)	(3.04)	(2.94)	(2.94)
Unemployment	0.623 ***	0.623 ***	0.620 ***	0.619 ***
	(18.66)	(18.66)	(18.57)	(18.56)
Live in rural area	0.166 ***	0.166 ***	0.169 ***	0.169 ***
	(4.45)	(4.45)	(4.51)	(4.51)
Married	−0.0550	−0.0550	−0.0600	−0.0601
	(−1.10)	(−1.10)	(−1.19)	(−1.19)
Migrant	−0.0169	−0.0169	−0.0148	−0.0149
	(−0.43)	(−0.43)	(−0.38)	(−0.38)
Junior high school education	0.0301	0.0301	0.0358	0.0359
	(0.76)	(0.76)	(0.91)	(0.91)
Secondary education	−0.0285	−0.0285	−0.0211	−0.0209
	(−0.65)	(−0.65)	(−0.48)	(−0.48)
University education and above	−0.338 ***	−0.338 ***	−0.334 ***	−0.334 ***
	(−7.09)	(−7.09)	(−7.03)	(−7.03)
GDP per capita growth rate	-	−0.0286	0.151 ***	0.150 ***
	-	(−0.83)	(3.35)	(3.33)
The proportion of female employment in regional	-	−0.0168	−0.105 ***	−0.106 ***
	-	(−0.74)	(−3.97)	(−3.98)
Sex ratio	-	−0.0307 ***	−0.0198 **	−0.0200 **
	-	(−5.07)	(−3.16)	(−3.14)
Child dependency ratio	-	−0.00963	−0.0557 ***	−0.0555 ***
	-	(−1.93)	(−6.03)	(−5.92)
Aged dependency ratio	-	−0.0502 ***	−0.0427 ***	−0.0428 ***
	-	(−4.64)	(−3.94)	(−3.95)
Gender norms index	-	-	1.553 ***	1.475 **
	-	-	(5.90)	(2.82)
Gender norms index * gender	-	-	-	0.0442
	-	-	-	(0.17)
Constant	−2.027 ***	3.000 **	5.384 ***	5.409 ***
	(−13.00)	(2.96)	(4.98)	(4.96)
N	18,867	18,867	18,867	18,867

Notes: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

The regression results in central China are listed in Table 6. Regardless of the region-varying factors, Model (1) presented that women in the central region devoted 1.374 h more on housework per day than men. After the region-varying factors were introduced into Model (2), the result was almost consistent with the one in Model (1). Moreover, if including the gender norms index into Model (3), the value became 1.329, where the gender norms index was not statistically significant. By further adding the interaction term of gender norms index and gender into Model (4), the gender gap decreased −3.7% from 1.374 to 1.323. Moreover, the coefficient of the interaction term was also not significant (0.233). All of the mentioned results revealed that the gender norms index could not characterize the gender difference of housework hours in central China.

Table 6. OLS regressions results—central sample.

Variables	Model (1)	Model (2)	Model (3)	Model (4)
	All Central Sample	All Central Sample + Region-Varying Factors	All Central Sample + Region-Varying Factors + Gender Norms Index	All Central Sample + Region-Varying Factors + Gender Norms Index+ Gender Norms Index * Gender
Women	1.374 ***	1.374 ***	1.329 ***	1.323 ***
	(33.93)	(33.93)	(26.92)	(26.45)
Age	0.102 ***	0.102 ***	0.102 ***	0.102 ***
	(10.17)	(10.17)	(10.15)	(10.15)
Age squared	−0.000764 ***	−0.000764 ***	−0.000765 ***	−0.000764 ***
	(−8.02)	(−8.02)	(−8.00)	(−8.00)
Number of household members	0.0568 ***	0.0568 ***	0.0568 ***	0.0567 ***
	(3.84)	(3.84)	(3.85)	(3.84)
Unemployment	0.398 ***	0.398 ***	0.398 ***	0.399 ***
	(8.95)	(8.95)	(8.96)	(8.97)
Live in rural area	0.123 **	0.123 **	0.126 **	0.126 **
	(2.66)	(2.66)	(2.71)	(2.71)
Married	−0.00566	−0.00566	−0.00419	−0.00372
	(−0.07)	(−0.07)	(−0.05)	(−0.05)
Migrant	−0.109	−0.109	−0.109	−0.109
	(−1.75)	(−1.75)	(−1.75)	(−1.76)
Junior high school education	−0.0990	−0.0990	−0.0991	−0.0989
	(−1.92)	(−1.92)	(−1.93)	(−1.92)
Secondary education	−0.228 ***	−0.228 ***	−0.228 ***	−0.228 ***
	(−3.87)	(−3.87)	(−3.87)	(−3.86)
University education and above	−0.598 ***	−0.598 ***	−0.598 ***	−0.597 ***
	(−8.63)	(−8.63)	(−8.63)	(−8.62)
GDP per capita growth rate	-	−0.141	−0.0189	−0.0211
	-	(−1.87)	(−0.18)	(−0.20)
The proportion of female employment in regional	-	0.0924 **	0.0210	0.0240
	-	(2.94)	(0.39)	(0.44)
Sex ratio	-	0.0453	0.0380	0.0375
	-	(1.75)	(1.44)	(1.42)
Child dependency ratio	-	0.00765	−0.00622	−0.00541
	-	(1.37)	(−0.61)	(−0.53)
Aged dependency ratio	-	−0.000646	0.0468	0.0414
	-	(−0.03)	(1.34)	(1.15)
Gender norms index	-	-	−0.806	−1.092
	-	-	(−1.65)	(−1.76)
Gender norms index * gender	-	-	-	0.233
	-	-	-	(0.72)
constant	−1.639 ***	−9.502 **	−6.921	−6.913
	(−6.58)	(−2.65)	(−1.76)	(−1.75)
N	10,733	10,733	10,733	10,733

Notes: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

The regression results of the samples in western China are listed in Table 7, in which women spent 1.010 h more on housework per day than men (in Model (1)). However, given the interaction term of the gender norms index and gender, the gender gap of the division of housework in Model (4) expanded to 1.178 h per day (marking a growth rate of 16.6%). Moreover, the gender norms index was positive and statistically significant, while the coefficient of the interaction term was negative (−1.312) and significant at the level

of 0.05. All of the mentioned results suggested that the gender norms of men in western China noticeably influence the division of housework than that of women, and the gender norms of men were more likely to determine the division of housework in western China.

Table 7. OLS regressions results—western sample.

Variables	Model (1)	Model (2)	Model (3)	Model (4)
	All Western Sample	All Western Sample + Region-Varying Factors	All Western Sample + Region-Varying Factors+ Gender Norms Index	All Western Sample + Region-Varying Factors+ Gender Norms Index + Gender Norms Index * Gender
Women	1.010 ***	1.010 ***	0.972 ***	1.178 ***
	(22.64)	(22.64)	(18.37)	(14.37)
Age	0.0861 ***	0.0861 ***	0.0862 ***	0.0868 ***
	(10.07)	(10.07)	(10.08)	(10.16)
Age squared	−0.000673 ***	−0.000673 ***	−0.000674 ***	−0.000680 ***
	(−8.36)	(−8.36)	(−8.37)	(−8.46)
Number of household member	0.0545 ***	0.0545 ***	0.0546 ***	0.0555 ***
	(3.62)	(3.62)	(3.63)	(3.70)
Unemployment	0.408 ***	0.408 ***	0.410 ***	0.411 ***
	(8.05)	(8.05)	(8.07)	(8.11)
Live in rural area	0.352 ***	0.352 ***	0.353 ***	0.359 ***
	(6.57)	(6.57)	(6.58)	(6.71)
Married	0.0648	0.0648	0.0657	0.0692
	(0.80)	(0.80)	(0.81)	(0.86)
Migrant	−0.132 *	−0.132 *	−0.133 *	−0.131 *
	(−2.04)	(−2.04)	(−2.06)	(−2.04)
Junior high school education	−0.139 *	−0.139 *	−0.138 *	−0.134 *
	(−2.43)	(−2.43)	(−2.40)	(−2.34)
Secondary education	−0.281 ***	−0.281 ***	−0.280 ***	−0.276 ***
	(−4.06)	(−4.06)	(−4.05)	(−4.00)
University education and above	−0.726 ***	−0.726 ***	−0.725 ***	−0.714 ***
	(−9.87)	(−9.87)	(−9.85)	(−9.71)
GDP per capita growth rate	-	−0.0681	−0.0568	−0.0830 *
	-	(−1.81)	(−1.47)	(−2.11)
The proportion of female employment in regional	-	0.0749	0.0676	0.0657
	-	(1.36)	(1.22)	(1.19)
Sex ratio	-	0.0335 **	0.0321 *	0.0326 **
	-	(2.68)	(2.56)	(2.60)
Child dependency ratio	-	−0.0605 **	−0.0635 **	−0.0599 **
	-	(−3.14)	(−3.26)	(−3.07)
Aged dependency ratio	-	−0.0298 *	−0.0259	−0.0405 *
	-	(−2.00)	(−1.70)	(−2.56)
Gender norms index	-	-	−0.413	2.487 **
	-	-	(−1.25)	(2.75)
Gender norms index * gender	-	-	-	−1.312 ***
	-	-	-	(−3.42)
constant	−0.807 ***	−5.306 *	−4.841*	−4.744 *
	(−3.44)	(−2.33)	(−2.10)	(−2.06)
N	8870	8870	8870	8870

Notes: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

3.6. Instructions on the Development of Social Sustainability

From the analyses above, we could find that the housework division is an important part of the gender equality of society. Meanwhile, gender equality is a critical index to evaluate the development potential of social sustainability. As a result, we should summarize the results of data here and propose targeted policies to improve gender equality in China. In this text, if the gender norms index was increased by one unit (Table 4), the gender gap of the housework division would be widened to 1.208 h per day. Therefore, enhancing the awareness of gender equality through concept education, training, and propaganda would benefit the development of social sustainability. In addition, from Table 4, we could also conclude that the increase of GDP per capita by 1% would result in a decrease of 0.0666 h per day in the gender gap of the housework division, which indicates that an increase of GDP per capita would optimize gender equality. Moreover, the aged dependency ratio has little effect on the gender gap of the housework division (increasing

1% corresponds to a decrease of gender gap by 0.0354 h per day in Table 4), which may be attributed to the distinct Chinese culture where elders share the domestic work to have a positive influence on the gender equality and promote the sustainability development of society.

However, when analyzing the proportion of female employment in China, its increment of 1% would result in an extended gender gap of the housework division by 0.0823 h per day. This result is apparently contrary to the prevailing opinion in current literature. Further investigation confirms that this phenomenon is greatly connected with the regional difference in the proportion of female employment. If the proportion of female employment increases by 1%, the gender gap of the housework division would be narrowed to 0.106 h in eastern China. Nevertheless, in western China and in central China, the effect of female employment on the gender gap of the housework division is relatively small and insignificant, which corresponds to a broadening of the gender gap by 0.0657 h and 0.0240 h, respectively. Therefore, in eastern China, policy direction should encourage more women to participate in the market, which would have a significantly positive impact on gender equality and sustainable social development. Moreover, for the GDP per capita in western China, the increment of 1% for GDP would induce a decrement of 0.0830 h per day for the gender gap of the housework division. However, in eastern China and central China, the effect of GDP per capita on the gender gap of the housework division is not significant (Tables 5–7). Therefore, boosting economic development is a priority choice for the development of social sustainability in western China. In terms of gender norms, the gender gap of the housework division was primarily determined by male gender norms in western China, while in eastern China, the gender norms of both males and females could impact the gender gap. Therefore, we need to try to correct the traditional gender norms through concept education, training, propaganda, etc. in China in order to achieve the healthy development of social sustainability [60].

4. Conclusions

As Chinese society is leaping forward, the traditional pattern of labor market division in China is changing noticeably. However, for the family pattern of the division of housework, "male breadwinners, female housewives" continues to be the dominant concept to maintain family stability, and gender inequality remains in the housework division [61,62]. To reasonably explain this phenomenon, the effects of micro-factors (e.g., individual income and education) on the distribution of housework have been extensively investigated. However, several studies highlighted that the regional gender difference of the division of housework apparently exists in China [27], and the effect of regional gender norms and region-varying factors on the gender division of housework has been scarcely examined.

The present study first revealed that the gender gap in the housework division exists universally across the country. Central China took the maximal value of −1.401 h per day, and the next ones were −1.300 and −0.986 h per day in eastern and western China, respectively. To interpret the mentioned regional differences, the gender norms index was set, and the region-varying factors were analyzed. As confirmed from the results, the mentioned two factors are relevant but not decisive on the variance of the gender gap in the housework division. To further confirm the regional differences of the division of housework, the regression was conducted for samples in eastern, central, and western China. As revealed from the results, the synergetic effect between region-varying factors, regional gender norms, and the interaction term between gender norms and gender act as the vital factors to determine the final result of the gender gap in the housework division. For instance, in eastern China, if the synergetic effect was considered, the gender gap of the division of housework would be widened by 20.5%. With the identical assessment methods, the mentioned values would be 16.6% and −3.7% in western and central China, respectively.

In addition, given the interaction term between gender norms and gender, the OLS regression value was significant at −1.312 h in western China, which demonstrated that the gender gap of the division of housework was primarily determined by male gender norms.

Moreover, the OLS regression values were not significant at 0.233 h and 0.044 h in central and eastern China, respectively, whereas the gender norms index value in eastern China was significant at 1.475 h. It was therefore indicated that the gender gap of the division of housework could be impacted by the sexes' gender norms here. Furthermore, neither the interaction term nor the gender norms index value was significant in central China, which revealed that the micro-factor of this study should critically impact the variance of the gender gap of the division of housework.

The synergetic effect between region-varying factors and regional gender norms acts as the vital factor to determine the gender gap of the housework division, which implicates us to formulate differentially regional policies to achieve gender equality and social sustainability in China. However, in eastern China, the proportion of female employment is the most important region-varying factor in narrowing gender inequality in the housework division, so employment-promoting measures would be more efficient. Furthermore, in western China, GDP is the key point of the region-varying factors in shortening the gender inequality in the household. Therefore, boosting economic development is a priority for social sustainable development. In addition, not only in some of the literature [1,63–66], but also in our own work, we have found that regulating social policies to transform gender norms—such as improving women's political participation status, promoting women to enter the core position of society, and correcting the traditional gender norms through concept education, training, propaganda etc.—plays a positive role in gender equality, and benefits the development of social sustainability. Moreover, these research results further indicate that promoting economic development, the governance of the sex ratio imbalance, the improvement of government-provided childcare services, and setting up the elderly care system could also create favorable conditions for gender equality and sustainable social development.

To the best of the authors' knowledge, this was the first time and first report that elucidated the synergetic effects of regional gender norms and region-varying factors on the regional gender division of housework. All of the mentioned discoveries would facilitate policy formulation on forming a gender equal society, while inversely fostering the achievement of a reasonable distribution of housework to expedite the social sustainability of development in China.

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