Gender Perspectives of Time Allocation in China

Anne de Bruin   Na Liu

(Massey University, New Zealand; Xiangtan University, China)

Abstract

This paper uses a unique, recent (2010) twenty four hour Chinese dataset to draw novel insights on gender time allocation on the basis of income and regional rural-urban classifications. Non labor income considerations build on the standard labor income - leisure model. Cultural and family embeddedness perspectives overlay economic explanations. The paper examines the overall nature of the gender gap between time allocation of men and women on an individual basis and also for matched husband-wife couples. The main unit of analysis is 12066 individuals aged 16-60.

Regression findings raise more questions than answers and explanations are speculative. For instance, intra-household access to resources and gender power dynamics may explain why rural females spend more time on market employment /farming than men with increases in non-labor income in the form of rent and interest. Urban related findings imply changing attitudes of urban males with their engagement in more housework. This may conform to urbanization and economic development leading to change in traditional attitudes to gender roles. Suggestions are also put forward to explain other region specific findings such as the increase in leisure of urban males. For example, it likely that increases in leisure hours of higher income individuals is possibly correlated with business networking. Economic necessity push as an explanation for increases in market employment hours is yet another reflection that enters the picture when considering the relationship between transfer payments and time use. Some policy implications of findings are drawn out.

INTRODUCTION

The allocation of resources between couples in households is a valuable test of gender equality. Time allocation to different activities by women and men and in particular the gender division of household labor, is a useful indicator of social change and attitudes to gender roles (Gershuny and Robinson, 1988; Baxter 1997; Baxter and Hewitt 2013). Increasingly time-use analyses are being used to research family welfare (Offer and Schneider, 2011; Gimenez-Nadal and Sevilla, 2012). The ability of individuals to be able to freely make and change time use decisions affects their wellbeing (Floro, 1995). Cross-country analyses also provide useful insights on the impact of changing household income on time spent on domestic work. For example Heisig (2011) confirms an inverse relationship between rising income and housework. Thus with increasing household income, men and women reduce time on housework simultaneously, while women reduce time on housework more, so notably the housework gender gap narrows. However, women continue to spend more time than men on housework and low-income women spend more time on housework than their high-income counterparts (Heisig, 2011).

Against the background of China's rapid economic transition, therefore, scholars are paying more attention to examining the gender implications of the nation's time use allocations. They focus on women's market work (Chang and Dong, 2009; MacPhail and Dong, 2007), the gender division of domestic labor and household status (Qi, 2005), gender wage differentials (Qi and Dong, 2013; Zhang, Han, Liu and Zhao. 2008), and gender roles (Xu and Yeung 2013).

China's economic transformation and movement to a market-oriented economy accompanied by rapid income growth over the last three decades, raises important questions about whether these changes translate into improved gender equality, narrowing household gender differentials in welfare and changed household power dynamics. Extant research points to economic liberalization intensifying pressure for women to play dual roles as market income earners and caregivers and domestic gender inequality having an adverse impact on the position of women in the labor market (Qi and Dong 2013), Similarly MacPhail and Dong (2007) interrogate the 'household status' (in preference to use of the term 'welfare') of women in relation to market work and wages in rural China and find that despite greater access to market work, women in China have a lower household status than men.

MacPhail and Dong (2007) show that just as for men, a higher wage rate leads women to substitute market work for housework, in contrast to men, however, a reduction in domestic labor does not accompany a rise in women's relative household income contribution or market work time. These findings support those of Ghosh and Kanbur (2008) who illustrate that husbands' wage increases lead them to engage in more market work coupled with less housework, while wives spend more time on housework. Furthermore it has been found that higher the wage differential ratio to the sum of wages in dual income Chinese households, the stronger bargaining power of men results in a marked reduction in the man's time on housework but less so for the woman (Qi, 2005). Cook and Dong (2011) highlight the 'harsh choices' between wage income and the caring responsibilities particularly of low-income women in the post economic reform China. Estimates of the economic value of the time devoted to housework highlight the large contribution housework makes to China's GDP – around a third of China's GDP in 2008, with 70% of this being women's' contribution (Dong and An 2012). This housework burden of women is not however at the expense of less market work as women work nearly as much as men in market work. Using data from the first large-scale Chinese survey of time use, Qi and Dong (2013) provide empirical analysis of the impact of housework burdens on the gender earnings gap. Their findings support the feminist economics thesis that domestic gender inequality is a major contributor to the weaker position of women in the labor market. Although not directly related to time use, the gender gap index measures access to resources and opportunities across 135 countries (Hausmann, Tyson, Bekhouche and Zahidi 2012). It shows that China's overall ranking has worsened from 61 in 2011 to 69 in 2012, signaling that a closer look at the gender gap using different measures, such as time use, is warranted. Furthermore, detailed scrutiny of household time allocation is important for better understanding of the gender-differentiated impact of macro level social and economic change. Therefore, the main aim of our study is to provide an in depth examination of the allocation of time across couples (men and women) in order to provide a coherent, comprehensive 'big picture' gender perspective in relation to increases in household income. Hence we examine the effect of household income growth, in terms of both labor and non-labor income, on time use differences in couples across the full range of activities over a 24-hour period on a weekday and at the weekend, as well as in terms of a regional, rural-urban breakdown. We use this well-focused, wide-angle lens, albeit

static picture for broad-brush commentary on the household role, status and wellbeing of women in post-reform China.

Using a unique, recent (2010) twenty-four hour dataset spanning urban and rural regions and an effective sample comprising 12066 individuals aged 16-60 and 6033 matched husband-wife couples, this paper adds to the literature on gender perspectives of time allocation in China. It examines the effect of household income growth on time use patterns and gender differentials in couples. The analysis aims to shed light on the following questions: How does household income growth affect time use patterns of Chinese couples? Does household income growth lead to mitigation of the time use gender gap and is there a difference between rural and urban regions? How does non-labor income of households' impact on time allocation? A discussion of the findings ensues.

Our study makes several contributions. First, it is the first 24-hour time use analysis on the effect of household income growth to time use differentials in couples across 25 provincial divisions[1] in China. It provides a comprehensive set of estimates across all activities on weekdays and at weekends, rather than analyses only on a single activity - housework (MacPhail and Dong, 2007; Qi, 2005), market work (Chang et al., 2011). Second, design of a time use gender gap model, enables a more focused analysis of the time use gender differential than previous studies. Using this indicator, the paper focuses on whether and how household income growth affects time use differentials in couples. Third, non-labor household income considerations are introduced to add to the standard labor income relationship that is routinely studied with respect to time allocation to leisure and domestic caring responsibilities. Fourth, in order to explicitly acknowledge that the household gender division of labor must be situated within broader socio-economic and cultural contexts, it highlights the embeddedness construct (Polanyi, 1944; Granovetter 1985, 1990, 1992). Cultural and family embeddedness is put forward as a complement and supplement to economic explanations. Thus cultural background and social norms are key factors affecting time use patterns of couples and this in turn is integrally related to the embeddedness of intra family dynamics.

Following this introduction, our paper proceeds to provide a description of the data and basic findings. This forms a backdrop for setting out a time use gender gap model to enable econometrically robust findings. Results of our analysis of the time use gender gap follows. We conclude with brief comment on our findings, future research and on policy implications.

DATA AND ELEMENTARY FINDINGS

The rich data used in this paper are from China Family Panel Studies (CFPS), funded by the 985 program of Peking University and carried out by the Institute of Social Science Survey of Peking University. This 2010 data contains 25 provincial divisions including urban and rural regions and abundant economic data on each individual surveyed. The unique Time-use Module provides full 24-hour time-use details over comprehensive categories of time-use. Our sample comprises individuals aged 16-60 years. Chinese labor law sets the minimum market working age to 16 and the retirement age at 60 for males. Although women must retire from market employment at 55, for convenience our sample comprises market workers

---

[1] They comprise: Beijing, Tianjin, Hebei, Shanxi, Liaoning, Jilin, Heilongjiang, Shanghai, Jiangsu, Zhejiang, Anhui, Fujian, Jiangxi, Shandong, Henan, Hubei, Hunan, Guangdong, Guangxi, Chongqing, Sichuan, Guizhou, Yunnan, Shanxi, Gansu.

in the 16-60 year age group. It therefore excludes full time students. The effective sample in our analyses is 12066 individuals and 6033 matched (husband-wife) couples.

There are other sources of time-use data in China. The China Health and Nutrition Survey (CHNS), an international collaborative project between the Carolina Population Center at the University of North Carolina at Chapel Hill and the National Institute of Nutrition and Food Safety at the Chinese Center for Disease Control and Prevention, and also a panel data beginning from 1989 which renews individual and household information in 9 provinces every three years. However, the time-use information only refers to particular activities such as housework, farming etc. and there is no 24-hour time-use data. The first main 24-hour time-use survey in China was completed by the National Bureau of Statistics of China in 2008. This survey, however, was only in 10 selected provinces and has limited detail on the economic background of individuals. The CFPS data we draw on for this paper, therefore, is superior to other Chinese time-use data available. Nevertheless we unequivocally accept that limitations of our study arise from our data since it is static and lacks fine-grained information on time quality and market work. The current availability of only single year data rules out longitudinal comparison. Quality considerations of both work and leisure are important. As Bittman and Wajcman (2000) point out, the quality of women's leisure is lower than that of men as a result of their added housework responsibilities. The nature of market work of men and women is similarly important. For example, reduced occupational choices play a part in women's disadvantage (Elson 1999). Female-male differences in the quality of market work are considerations absent from our study.

Table1 defines and details the key variables in our analysis.

- Please Insert Table1 and 2 here -

Table 2 presents the overall gender time use pattern across four activities in urban and rural regions. Results of t-tests show that gender differentials in specific activities are significant. On average, women spend 131.54 more minutes (2.2 hours) than men on housework in a weekday, 26 more minutes on personal care; while, men spend 137.07 more minutes (2.28 hours) on market work, and 18.1 more minutes on leisure. In general, women spend more time on housework and men spend more time on market work, in both urban and rural regions on weekdays as well as at weekends. This is in keeping with the traditional gender work distribution. Paying attention to mean differences, time use differentials in housework, market work and leisure for urban couples are larger than for rural couples. Turning to the comparison of urban and rural women; rural women devote 236.89 minutes (4 hours) on housework, which are 13.6 more minutes than urban women. Meanwhile, rural women devote 298.49 minutes (5 hours) on market work, which are still 22.4 more minutes than urban women. Nevertheless, rural women spend 160.8 minutes (2.7 hours) on leisure, and this is almost 1 hour less than urban women. Rural women spend more time than urban women on market work and housework at the expense of leisure. This is probably because rural residents are more influenced by traditional social norms and migrant male workers leave housework and farming to their wives living in the rural regions. Interestingly rural men contribute more to housework than urban men in absolute terms. On weekdays, rural men spend 106.04 minutes (1.8 hours) on housework, which are 15 more minutes than urban men. This is possibly due to the slower pace of rural life.

So as to give a general sense of China's relative time allocation position, Table 3 presents an international comparison of gender time-use patterns. It shows that the time allocation of

urban Chinese is similar to other countries. However, Chinese rural residents on average, regardless of whether they are men and women, spend more time on "gainful market work", "study" and "sleeping"; and less time on "unpaid market work", "free time", "travel" and "personal care". These behavioral differentials may be a result of the different urban-rural lifestyles; lower productivity in rural regions is probably another reasonable cause.

- Please Insert Table 3 about here -

Figures 1 and 2 exhibit time use changes in couples with household income growth. They represent our first step to attempt answers to the questions: How does household income growth affect time use pattern in couples? Does household income growth lead to improvement in time use gender differentials?

- Please Insert Figure1 about here -

Figure 1 is the relationship between time spent on housework (Figure1a-1/1a-2), market work (Figure1b-1/1b-2), leisure (Figure1c-1/1c-2), personal care (Figure1d-1/1d-2), and household labor income (HLI) and household non-labor income (HNLI) respectively. It divides the full sample into ten income (yuan per year) groups. It is evident from Figure 1 that HLI and HNLI increases have similar effects on male and female time-use decisions for housework, personal care and leisure. However, there are some differences for market work. In Figure1a-1 and Figure1a-2, with increasing HLI, men's and women's time on housework shows a slight downward trend, but it almost remains at the same level with several minor fluctuations with increasing HNLI. In Figure 1b-1 and Figure.1b-2, men and women spend more time on market work on weekdays when HLI increases, but not surprisingly market work goes down at weekends. Both men's and women's time on market work decreases with increasing HNLI, particularly for individuals in the lowest and highest income groups. Given the negligible amounts of HNLI (1-2, 3-200 yuan), survival may dictate some market work at the lowest income level. On balance however, conforming to the standard income-leisure model, an improvement in income corresponds to an increase in leisure for both males and females, as seen in Figure 1c-1 and Figure 1c-2. However, the decline in time on personal care by men and women and the quite dramatic decline for men on weekdays as seen in Figure 1d-1 and Figure 1d-2, pose questions that may not have been raised had our analysis not been inclusive of all 24-hour activities. Hence we may ask: What is the underlying cause of the decline in time spent on personal care and what is the effect on total wellbeing? Anecdotal evidence might suggest that higher income levels are associated with greater business networking especially for men. For women, the "dual burden" of housework and market work could mean less time available for sleep and lower quality leisure (Burgard and Alishire 2013, Bittman and Wajcman 2000).

- Please Insert Figure 2 about here -

Figure 2a and Figure 2b show the time-use gender gap across 4 activities with increasing HLI and HNLI on weekdays (findings at weekends are similar, therefore omitted). The time-use gender gap (G) is simply defined as individual's time on a specific activity minus matched spouse's time on it. It is obvious that G for couples generally narrows when household income and particularly HLI increases, though does not close even at the highest income point. Of the four activities, the G for personal care is consistently narrower than the other activities. We may conjecture that this is due to relative income inelasticity of personal care

activities e.g. both males and females require minimum amounts of sleep. On the basis of our simple gender gap analysis elementary findings, we therefore suggest that a more sensitive model is needed to test the impact of income growth on gender wellbeing in households. We specify this model in the next section.

MODEL

As with our simple analysis, we divide 24-hour activities into four forms of time use by men and women and focus on the time-use gender gap for housework, personal care, leisure and market work. Due to multicollinearity, household non-labor income (HNLI), which unlike labor income is relatively independent of time use, is taken into the regressions. The model assumes that the time allocation of each individual for activities i on a typical day j is a function of HNLI.

Based on different elasticities with respect to income, it is reasonable to suggest that time spent on housework, personal care, leisure and market work will be different when household non-labor income increases. Usually, individuals engage in market work to earn money for survival and an improved standard of living. Meanwhile, the responsibility of taking care of family members is not normally possible to evade (though some outsourcing to non-family members is possible with high income); and is considerably inelastic. Personal care may also be assumed to be relatively income inelastic. Thus, based on a standard income-leisure model, leisure could be deemed as the only elastic activity for individuals. Hence when HNLI increases, individuals would tend to reduce market work time and enjoy more leisure. Nevertheless, leisure activities are heterogeneous and can also be correlated with business networking in China ("guanxi"). Considering personal preference, how many hours/minutes an individual devotes to housework, personal care, leisure and market work, and whether he/she is able to change the time-use decision freely, are important to factor into an assessment of time-use wellbeing of an individual. Regional differences - in urban and rural regions, in relation to time use with increasing HNLI is also important to analyze. Decomposing HNLI into Household Capital & Property Income (HCPI) and Household Transfer Payment (HTP) is similarly relevant and is tested.

This paper tests conjectures about income growth and gender time-use patterns using two reduced forms. Following existing time-use literature and particularly those on China (Chang MacPhail and Dong, 2011; Qi and Dong, 2013) we assume that the determinants of time allocation are a function of human capital endowment, household demography and regional effects. In order to avoid biased estimations, total household income is controlled as HNLI is deemed the key independent variable. Our examination is for weekday and weekends separately.

Firstly, we examine how increasing household non-labor income affects individual time allocation. Equation 1 has the form:

$$T_{ij} = \alpha_0 + \alpha_1 \log (HNLI_k) + \alpha_2 I + \alpha_3 H + \theta + \varepsilon_{ij} \qquad (1)$$

Where T_{ij} is time in minutes spent on a specific activity (i=housework time, market work time, personal care time, leisure time) per day (j=weekday, weekend); $HNLI_k$ is Household Non-Labor Income (HNLI), k=household total non-labor income, including household capital and property income, household transfer payments), with log of HNLI taken in the

regressions; I is a vector of variables reflecting the characteristics of individuals such as gender, age, age square, Hukou (local residential registration required by law), education years, marital status, provincial dummies; H is a vector of variables that measure the characteristics of the household and includes log of total household income(per year), Number of Family Members (NFM), NFM Square, age of the eldest family member and age of the youngest family member; θ is a regional dummy, capturing regional characteristics; ε is an error term. The primary effect of time allocation to changed HNLI is captured by the coefficient of the variable α_1 in equation 1.

In terms of econometric issues, there has been debate as to which method - maximum likelihood estimation of a Tobit (censored regression) model or Ordinary Least Squares (OLS), is appropriate for analyzing time-diary data, since time spent must be nonnegative and cannot be more than the total amount of time in a given observation period. Empirical evidence has confirmed that Tobit estimates are more sensitive than OLS estimates to the prevalence of zeroes in time-use data and the OLS estimator is still theoretically biased (Foster et al. 2013). Therefore, we run the traditional empirical technique, Tobit specification in estimates of Equation 1.

Equation 2 is specified to test whether income growth leads to gender equity in time use. For the purposes of this paper, we define the **time-use gender gap (G)** as an individual's time spent on a specific activity minus his/her spouse's time in absolute terms. G_{ij} of an individual on activity i where i = time spent on housework/market work/personal care /leisure; and j is either a weekday or weekend day. G_{ij} is a linear variable, with Equation 2 estimated by OLS regression techniques.

$$G_{ij} = \beta_0 + \beta_1 \log (HNLI_k) + \beta_2 I + \beta_3 H + \theta + \mu_{ij} \qquad (2)$$

I and H are vectors of variables capturing individual and household characteristics as in Equation 1; θ is a regional dummy; ε is an error term. Coefficient β_1 in equation 2 would be a meaningful result to the question is there any significant effect on the time-use gender gap when HNLI increases?

RESULTS AND DISCUSSION

Table 4 below provides the empirical results of Tobit estimation on increasing HNLI to gender time-use patterns. The data in line1 indicates that gender time-use pattern across 4 activities significantly changes when HNLI increases, and there are marked gender differentials. In a weekday, when HNLI increases by 1%, men's time on housework significantly decreases by 4.8 minutes, while women's time on housework is totally insensitive. Additionally, time devoted to market work is markedly reduced by 14.2 minutes for men and 29.3 minutes for women, and the decreases are even more at weekends. This leads to the inference that housework time is inelastic, particularly for women. Dramatically, men's time on leisure is insensitive to increasing HNLI, however women's notably decreases. Thus questions that may be posed are: Is the reduction in women's leisure related to market work? Or is it due to their increased engagement in the caring economy? Additionally, time on personal care is slightly reduced for men and women, probably because further time-saving products are purchased by the increasing HNLI. These results, with the exception for personal care time, definitely shows that for women the relationship between HNLI, is more inelastic with respect to women's housework time and comparatively more elastic on market

work time and leisure time. This conforms to traditional social norms on gender work distribution. All in all, increasing HNLI brings more disposable time to men and women, and therefore may be said to have a positive effect on enhancing individual wellbeing in time-use.

The results for "age" of family members are significant. Table 4 (line 5-6) indicates that, in a weekday, when the eldest member in household gets 1 year older, men's and women's time on housework increases by 0.3 minutes and 0.4 minutes respectively. Interestingly, women's time on leisure is significantly reduced by 0.4 minute and time on market work notably increases by 1 minute. Although the variation may appear trivial in absolute terms, it reflects that, elders in a family do need care, although they might also give some help with housework. Given these circumstances, it appears that women opt for more market work at the expense of relaxation. It exhibits a complicated picture of household intergenerational work distribution. Reflecting that care of the young is time intensive, when the youngest member gets 1 year older, women' time on housework is markedly reduced 1.5 minutes in a weekday and time on market work significantly increases by 1.8 minutes on a week day. When the young grow older, men too reduce their time on housework by over double that of the reduction by women, indicating that men make a contribution to sharing in the care of the young. However, unlike women they do not increase market work time by much. This reinforces that childcare activities interferes with market work for women. Women even spend 0.3 more minutes on personal care and we conjecture this may be due to a sleep increase since sleep deprivation often accompanies the presence of the very young in a household.

- Please Insert Table 4 about here -

Since we are using single year data, it is necessary to do a robustness test. However, it was not possible for us to find a lagged variable to incorporate into the regression robustly, and to do a Granger causality test. In order to overcome the endogeneity problem, we take the rank of household non-labor income as an instrumental variable of HNLI and estimate Equation 1 by two step Tobit regression techniques once again. The correlation test of key variable and IV indicates that IV is perfect. The results of 2S Tobit regressions are shown in appended Table 12. They confirm that with increasing HNLI, men notably reduce time on housework while women's time on housework remains insensitive; in the same case, time on market work and leisure for men and women both reduce markedly. In fact, time on leisure is flexible and heterogeneous among individuals and families (Hu, 2011; Liu, 2013). Moreover, two groups of data on weekdays and at weekends confirm those findings above; it shows once again that Tobit regressions in our analysis are a good fit.

The estimates of Equation 1, presented in Table 5, shed light on gender differences in urban-rural time-use patterns. The results reveal that women's time on housework is inelastic to increasing HNLI, irrespective of urban or rural region. By contrast, increasing HNLI leads to notable decreases on housework time for men; averagely, in a weekday, rural men reduce 5.2 minutes rather than 4.1 minutes for urban men when HNLI increases by 1%. The comparison shows changing attitudes of urban men with engagement in more housework. It supports the contention that urbanization and economic development leads to change in traditional attitudes to gender roles. Furthermore, time on market work is significantly reduced for either men or women, especially for women. When HNLI increases in 1%, urban men reduce 10 more minutes on market work than rural men, and urban women spend 15 fewer minutes than rural women. Usually, rural residents engage in farming, urban residents go in for formal or informal work. Unlike farming, urban informal work is precarious and often part-time. Following public sector restructuring, predominantly women have been pushed into informal

work (Song and Dong 2009). The participation rate in informal work for women has normally been higher than men's in China (Cook and Wang 2010). Employment uncertainty and high participation rate in the informal sector makes time allocation to work of urban residents more elastic. Therefore, time spent on market work seems flexible for urban residents, particularly for urban women but this might not be an empowering choice.

Turning to time spent on leisure; the regional disaggregation shows that it is rural women who markedly reduce leisure time, by 2.6 minutes in a weekday, when HNLI increases 1%. This is different from the downward trend showed in Figure 1c-1 and Figure 1c-2, and highlights that it is only rural women who reduce their time on leisure. It is probably because rural women traditionally have done more housework and market work than other groups (See Table 2). Similarly, we find significant regional differences in personal care time. We previously observed (in Figure 1) the decline in time on personal care by men and women and the quite dramatic decline for men on weekdays. We now find that this only pertains to urban residents. This raises questions such as: Does this reflect a change in lifestyle caused by urbanization? Is it caused by availability and affordability of timesaving products and processes in a better and freer market? Taking market work and leisure together, rural women notably reduce time on leisure and reduce by less minutes market work than urban women.

- **Please Insert Table 5 about here –**
- **Please Insert Table 6 about here -**

In Table 6 we separate out the impact of household capital and property income. We find rural women significantly spend more time on market work with increasing HNLI in the form of rent and interest. By contrast, there are no notable changes for rural men. We believe this finding adds weight to the possibility that rural women lack access to the income from collective household assets. Intra-household gender power dynamics may explain why rural women are so active to market work. It refutes the gender-neutral Beckerian human capital approach that men and women specialize on domestic or market production on the basis of their productivity (Becker 1991). We contend the high degree of family embeddedness of rural women in China explains this finding (Aldrich and Cliff 2003; Brush et al. 2009; 2014; Jennings & McDougald 2007).

The economic sociology concept of embeddedness emphasizes that economic behaviour cannot be fully understood if the social structure and social relations context is ignored (Polanyi1944; Granovetter 1985, 1990, 1992). Although scholars have refined the notion of embeddedness to include a variety of forms, we focus on two forms - cultural and family embeddedness. At an overarching level, cultural embeddedness broadly encompasses, values, societal norms, religious traditions, rules, laws and institutional framework. Family embeddedness involves participation in family roles, access to household resources and includes the characteristics of the family system. Cultural and family embeddedness intertwine to differentially affect c time allocation. For instance, traditional patriarchal norms play a role in shaping the household gender division of labour. In fact, in transition economies there could be a "renaissance of patriarchy" (Zhurzhenko, 1999: 246). There appears to be evidence of this in China too where there is a rise in the belief that "men manage external affairs while women internal" (*nan zhu wai, nü zhu nei*)" and "a good marriage is better than a career" *(Gan de hao bu ru jia de hao)* (Attane 2012). The decline in the influence of socialist ideology has led to a resurgence of traditional patriarchal values (Cook and Dong 2011). We might therefore expect that in rural areas cultural traditions will

be slow to change, there will be continuation of the feminization of agriculture (Chang MacPhail and Dong, 2011) and a household gender division of labor and resource control that favors men will prevail.

-Please Insert Table 7 about here-

Table 7 shows the Tobit estimation of the time-use gender gap (G) with increasing HNLI across four activities. As shown in Panel A (total sample), increasing HNLI significantly has a positive effect on reducing Gs of housework, leisure and personal care. Averagely in a weekday, when HNLI increases in 1%, Gs of housework, leisure and personal care markedly narrows by 3.5 minutes, 3.4 minutes and 1.5 minutes respectively. However, G of market work is insensitive to growing HNLI. It may be due to the inelasticity of market work time, because individuals have to work to earn money for survival. Thus economic necessity push as an explanation for increases in market employment hours is a reflection that enters the picture when considering the relationship between transfer payments and time use. Our findings can also be consistent with the findings on feminization of agriculture (Chang MacPhail and Dong, 2011). The results in urban and rural regions in Panel B and Panel C conform to the findings by total sample. G of housework, leisure and personal care is sensitive to raising HNLI in either urban or rural region, except for market work. In absolute terms, when HNLI increases in 1%, G of housework on weekdays markedly narrows by 4.5 minutes in urban region, which is more than 2.8 minutes in rural region. G of leisure narrows by 5.5 minutes in urban region, which is more than 1.9 minutes in rural region. G of personal care however, narrows by 1.7 minutes in urban region, more than the 1.2 minutes in the rural region. In general, Gs in urban region narrow faster than in rural region when HNLI increases. It indicates that urban men and women are going to share domestic and market work equally than rural residents, and time use pattern in couple would be more alike at the background of enhancing household income and urbanization. This is compatible with the findings in Papua New Guinea (Umezaki, Yamauchi and Ohtsuka, 2002).

- Please Insert Table 8 about here -

In order to verify whether the effect is diverse in different income groups, we examine the time-use gender gap by three HNLI groups, with the results given in Table 8. It is notable that in the lowest income group, increasing HNLI plays an important role in reducing Gs, even though there is no significant effect on market work. In a weekday, when HNLI increases in 1%, G of housework, leisure and personal care for matched couples markedly narrows by 3.6 minutes, 2.4 minutes and 1.7 minutes respectively. Nevertheless, Gs of four activities in the middle-income group are absolutely insensitive to HNLI. Dramatically, in the highest income group, G of leisure on weekdays significantly narrows by 7.3 minutes. Consequently, increasing HNLI has different effect on Gs in different income groups.

- Please Insert Table 9 about here -

Table 9 shows the empirical results by Household Capital & Property Income (HCPI) and Household Transfer Payment (HTP) independently, with respect to G. HTP is effective in reducing Gs, in the low-income group and HCPI has no effect on reducing G. It is in harmony with the findings above that Gs are more sensitive to increasing HNLI for individuals in the lowest income group and are insensitive for individuals in the highest income group.

Our model gives prominence to HNLI in order to avoid the multicollinearity associated with household labor income. For reasons such as the likelihood of large numbers of urban informal sector workers not having employer contributions to social security, and the impact of retrenchment of socialist welfare state system (cf. Liu, Zhang and Li 2008) and state owned enterprise reform in China on HNLI, arguably HNLI might be inherently flawed and therefore a limitation of our research. Nonetheless we feel that HNLI is a fairly representative indicator of the household income growth trend and our model provides valuable new insights on the gender time use gap of couples. Based on the results of regressions on HNLI, coupled with trends showed in Figure 2, we are able to distil some conclusions on the effect of household labor income growth to the time use gender gap G in couples. It was shown in Figure 2 that Gs of four activities significantly narrow with increasing household labor income, which is faster and more absolute than HNLI growth, even though Gs of a few couples widen beyond 550000 yuan/year. All in all, Gs of housework, leisure and personal care narrow consistently with household labor income growth, though the effect on the G for market work is mixed.

CONCLUDING COMMENTS

Hitherto mainstream study of gender differences in time allocation has focused on work and leisure, and labor income. Decomposition across four time use activities, labor income (HLI) as well as non-labor income (HNLI) which is further disaggregated into household capital and property income (HCPI) and household transfer payment (HTP), and also urban-rural provincial divisions, resulted in our study uncovering new gender perspectives on time allocation. Hence in addition to the unsurprising result, conforming with other countries, that intra couple differences in work exist in China with women generally spending more time on housework and men more time on market work; we found other novel results. For instance our initial finding in relation to the decline in time spent on personal care when HLI and HNLI increased was problematic to explain but the subsequent rural-urban exposition was valuable in revealing that this decline only pertained to the urban population. The latter finding provoked supposition about the implications of lifestyle changes with urbanization. Urban related findings showing that the time-use gender gap narrows faster in urban regions than rural regions with increasing income and also pointed to male engagement in more housework, led to inferences about changing attitudes of urban males. Similarly age related findings give rise to explanatory uncertainty. It brings up questions on household intra-generational work and the burden of the caring role of women. The fact that rural women increased their market work in the face of rising household capital and property income, while men did not, similarly sparked questions about the lack of access and control of rural women to the income from collective assets of the family.

Overall our findings raise more questions than answers and explanations we suggest are speculative. However not in dispute is our claim that at an overarching level, cultural and social factors captured by cultural embeddedness, intertwines with household circumstances to affect the extent to which the family embeddedness of women might enable or constrain the flexibility women have in their time allocation. Thus for instance, time-honored expectations that married Chinese women must care for elders in the household and particularly their parents-in-law (Liu, Dong and Zheng 2010), limits their time availability for other activities. In similar vein, cultural convention that men are the decision makers on household finances, can explain a lack of women's control over resources and access to non-

labor capital income, and support our time allocation findings especially with regard to rural women. Research has confirmed that even in the most westernized urban region of China – Shanghai, male breadwinner norms prevail (Xu and Yeung 2013). In fact, given that Shanghai men are associated with a reputation of being henpecked or more caring family men engaging in household chores – described by a "specific Shanghai term *madasao*" (Xu and Yeung 2013, p. 189), we decided to conduct an exploratory exercise with our Shanghai data (N = 908 matched couples). Our findings however conformed to the general time use patterns for urban regions. Nevertheless we mention now that more research that examines gender time allocation patterns and decisions at more disaggregated local and regional levels are warranted. Further research to verify the likelihood that increases in leisure hours of higher income individuals is correlated with business networking could also yield interesting results. Women's time allocation wellbeing implications of male control of household assets in rural regions and the feminization of agriculture are also areas that need further exploration. More qualitative empirical research needs to be conducted to complement quantitative analysis. We therefore recommend mixed method research e.g. MacPhail and Dong (2007) when possible. It is encouraging that increasingly; scholars are urging that social and family norms be explicitly considered in examining how economic development affects the gender allocation of time (Burda, Hamermesh, and Weil 2013). Qualitative research can be a means for obtaining fine grained information on the role that cultural norms play in time allocation decisions.

It is fortunate that the paucity of detailed Chinese data sets on time use has begun to change. This affords greater opportunity to further examine the context and dynamics of gendered time allocation decisions and their wellbeing implications. Such research can inform enlightened policymaking. We hope our research is a small step forward in raising awareness that state policy can make a difference by acknowledging that non-labor income has a critical role to play in the wellbeing of women (and men) via enhancing the flexibility of time allocation choices. Well-informed urbanization policies also can play a role in breaking down gender role stereotyping and time use preferences.

REFERENCES

Aldrich, Howard E. and Cliff, Jennifer. 2003. "The pervasive effects of family on entrepreneurship: toward a family embeddedness perspective", *Journal of Business Venturing,* vol. 18, pp. 573-96.

Attane, Isabelle 2012. "Being a Woman in China Today: A Demography of Gender" *China perspectives* 2012(4): 4-15. Available *http://chinaperspectives.revues.org/6013?file=1*

Baxter, Janeen. 1997. "Gender Equality and Participation in Domestic Labour: A Cross-National Perspective", *Journal of Comparative Family Studies* 28(3): 220–47.

Baxter, Janeen and Belinda Hewitt. 2013. "Negotiating Domestic Labor: Women's Earnings and Housework Time in Australia" *Feminist Economics*, 19(1): 29-53.

Becker, Gary. S. 1991. "A Treatise on the Family, Enlarged edition. Cambridge", MA: Harvard University Press.

Berik, Günseli and Ebru Kongar. 2013. "Time Allocation of Married Mothers and Fathers in

Hard Times: The 2007-09 US Recession" *Feminist Economics* DOI:10.1080/13545701.2013.798425.

Berik, Günseli, Xiao-yuan Dong and Gale Summerfield. 2007. "China's Transition and Feminist Economics" *Feminist Economics*, 13(3-4): 1 - 33.

Bittman, Michael and Judy Wajcman. 2000. "The Rush Hour: The Character of Leisure Time and Gender Equity." *Social Forces* 79(1): 165-189.

Brush, Candida, de Bruin, Anne and Welter, Friederike. 2009, "A gender-aware framework for women's entrepreneurship" *International Journal of Gender and Entrepreneurship,* 1(1): 8-24.

Brush, Candida, de Bruin, Anne and Welter, Friederike. forthcoming 2014. Advancing Theory Development in Venture Creation: Signposts for Understanding Gender" in Kate Lewis, Colette Henry, Elizabeth Gatewood and John Watson eds. *Women's Entrepreneurship in the 21st Century: An International Multi-level Research Analysis.* Edward Elgar.

Burda, Michael, Daniel S. Hamermesh, and Philippe Weil (2013). "Total work and gender: facts and possible explanations." *Journal of Population Economics* 26 (1): 239-261.

Burgard, Sarah A. and Jennifer A. Alishire. 2013. "Gender and Time for Sleep among U.S. Adults" *American Sociological Review* 78(1): 51–69.

Chang, Honqin, Fiona MacPhail and Xiao-yuan Dong. 2011. "The Feminization of Labor and the Time-Use Gender Gap in Rural China" *Feminist Economics* 17(4): 93-124.

Chang, Hongqin and Xiao-yuan Dong. 2009. "The Impact of Migrant Market workers' Migration to Left-Behind Family Members' Time Allocation in Rural China" *World Economic Papers* (Chinese Journal) 4(2009): 63-76.

Chi, Wei and Bo Li. 2008. "Glass ceiling or sticky floor? Examining the gender earnings differential across the earnings distribution in urban China, 1987–2004" *Journal of Comparative Economics* 36(2): 243-263.

China National Bureau of Statistics 2011."Summary on 2008 Time-use Survey" Translated by Henry Lee for the Australian Time-use Research Group.

Cook, Sarah and Xiao-yuan Dong. 2011. "Harsh Choices: Chinese Women's Paid Work and Unpaid Care Responsibilities under Economic Reform" *Development and Change* 42(4): 947–965.

Cook, Sarah and Meiyan Wang. 2010. "Feminization of Informal Employment? The impacts of Urban Labor Market Restructuring on Women's Work and Welfare", in Xiao-yuan Dong and Sarah Cook (eds) "Gender Equality and China's Economic Transition: Informal Participation and Care Provision" Beijing: Economic Science Press: 89-112.

Dong, Xiao-yuan and Xinli An. 2012. "The Gender Patterns and Value of Unpaid Work: Findings from China's First Large-Scale Time Use Sirvey" UNRISD Research Paper

2012-6 (October).

Dong, Xiao-yuan and Liqin Zhang. 2009. "Economic Transition and Gender Differentials in Wages and Productivity: Evidence from Chinese Manufacturing Enterprises" *Journal of Development Economics* 88(1): 144-156.

Elson, Diane. 1999. "Labor Markets as Gendered Institutions: Equality, Efficiency and Empowerment Issues." *World Development* 27(3): 611-627.

Floro, Maria S. 1995. "Economic Restructuring, Gender and the Allocation of Time", *World Development* 23(11):1913-1929.

Foster, Gigi and Charlene M. Kalenkoski. 2013. "Tobit or OLS? An empirical evaluation under different diary window lengths" *Applied Economics* 45(20): 2994-3010.

Gershuny, Jonathan and John P. Robinson. 1988. "Historical Changes in the Household Division of Labor", *Demography* 25(4): 537-552.

Ghosh, Suman and RaviKanbur. 2008. "Male wages and female welfare Private markets, public goods, and intrahousehold inequality" *Oxford Economic Papers* 60(2008): 42-56.

Gimenez-Nadal, Jose Ignacio and Almudena Sevilla. 2012. "Trends in time allocation: A cross-country analysis" *European Economic Review* 56(2012): 1338-1359.

Granovetter, Mark 1985. 'Economic action and social structure: the problem of embeddedness', *American Journal of Sociology*, vol. 91, pp. 481-510.

Granovetter, Mark, 1990. "The old and new economic sociology: a history and an agenda", in Roger O Friedland & Alexander F Robertson (eds), *Beyond the marketplace: Rethinking Economy and Society,* Aldine de Gruyter, New York, NY.

Granovetter, Mark. 1992. "Economic institutions as social constructions: A framework for analysis", *Acta Sociologica*, 35, 3-11.

Gronua, Reuben.1977. "The Theory of Home Production: The Past Ten Years" *Journal of Labor Economics* 15(2): 197–205.

Gustafsson, Björn and Shi Li. 2000. "Economic transformation and the gender earnings gap in urban China" *Journal of Population Economics* 13: 305-329.

Heisig, Jan P.2011. "Who does more housework: Rich or poor? A comparison of 33 countries" *American Sociological Review* 76(1): 74-99.

Hausmann, Ricardo, Laura D. Tyson, and Saadia Zahidi 2012. ''Global Gender Gap Report 2012" World Economic Forum, Geneva, Switzerland.

Hu, Jun-hui. 2011. "Non-Labor Income on the Allocation of Family Time——Comparative Study Based on the Work of Heterogeneous" *China Industrial Economics* (Chinese Journal) 1(2011): 86-96.

Jennings, Jennifer E. and Megan S. McDougald 2007. "Work-family interface experiences and coping strategies: implications for entrepreneurship research and practice", *Academy of Management Review,* 32 (3): 747-760.

Livermore, Tanya, Joan Rodgers, and Peter Siminski. 2011. "The Effect of Motherhood on Wages and Wage Growth: Evidence for Australia." *Economic Record* 87.s1: 80-91.

Liu, Na. 2013. "Non-Labor Income and Time Allocation - An Empirical Analysis Based on China Micro Data" *World Economic Papers* (Chinese Journal) 4(2013): 98-120.

Liu, Lan, Xiao-yuan and Xiaoying Zheng (2010). "Parental Care and Married Women's Labour Supply: Evidence from Urban China", *Feminist Economics* 13(3): 169-92.

Liu, Bohong, Yongying Zhang, and Yani Li. 2008. "Reconciling work and family: Issues and policies in China." *ILO, Asia. Available at: http://www. ilo. org/asia/library/pub4. htm*

MacPhail, Fiona and Xiao-yuan Dong. 2007. "Women's Market Work and Household Status in Rural China: Evidence from Jiangsu and Shandong in the Late 1990s" *Feminist Economics* 13(3-4): 93-124.

Ng, Ying Chu. 2007. "Gender earnings differentials and regional economic development in urban China, 1988–1997" *Review of Income and Wealth* 53 (1): 148-166.

Offer, Shira and Barbara Schneider. 2011. "Revisiting the Gender Gap in Time-use Patterns: Multitasking and well-being among mothers and fathers in dual-earner families" *American Sociological Review* 76(6): 809-833.

Polanyi, K. 1944. "*The Great Transformation*", Holt Rienhart, New York.

Qi, Liangshu. 2005. "The Impact of Changes in Bargaining Power On Housework Time Allocation: Evidence from Chinese Double-Income Households" *Economic Research* (Chinese Journal) 9: 78-90.

Qi, Liangshu and Xiao-yuan Dong. 2013. "Housework Burdens, Quality of Market Work Time, and Men's and Women's Earnings in China" Department of Economics Working Paper No 2013-01, The University of Winnipeg, Available: http://ideas.repec.org/s/win/winwop.html

Sevilla, Almudena, Jose I. Gimenez-Nadal and Jonathan Gershuny. 2012. "Leisure Inequality in the United States: 1965-2003" *Demography* 49(2012): 939–964.

Song, Yueping and Xiao-yuan Dong (2009). "Gender and Occupational Mobility in Urban China during the Conomic Transition". Chinese Women Economists Working Paper Series. Beijing, National School of Development Peking University.

Umezaki, Masahiro, Taro Yamauchi and Ryutaro Ohtsuka. 2002. "Time allocation to subsistence activities among the Huli in rural and urban Papua New Guinea" *Journal of Biosocial Science* 34(1): 133-137.

Welter, Friederike and David Smallbone 2010. "The Embeddedness of Women's

Entrepreneurship in a Transition Context', in Candida G Brush, Anne de Bruin, Elizabeth J Gatewood and Colette Henry (eds) *Women entrepreneurs and the global environment for growth: a research perspective*, Edward Elgar, Cheltenham and Northampton, MA.

Xu, Qiong and Wei-Jun Jean Yeung 2013.''Hoping for a Phoenix: Shanghai Fathers and Their Daughter" *Journal of Family Issues* 34(2): 184-209.

Zhang, Junsen, Jun Han, Pak-Wai Liu and Yaohui Zhao.2008."Trends in the Gender Earnings Differential in Urban China, 1988-2004" *Industrial and Labor Relations Review* 61 (2):224-243.

Zhang,Yanxia and Mavis Maclean. 2012. "Rolling back of the state in child care? Evidence from urban China", *International Journal of Sociology and Social Policy*, 32 (11/12): 664-681.

Zhurzhenko, Tatiana. (1999). 'Gender and identity formation in post-Socialist Ukraine: The case of women in the shuttle business', in R. Bridgman, S. Cole and H. Howard-Bobiwash (eds), *Feminist Fields: Ethnographic Insights*, Ontario: Broadview Press, 243–263.

Table1 Definitions of Key Variables

	Variables	Definitions
Time Allocation (minutes/day)	Housework Time (Weekday/ Weekend)	Housework on weekdays/a weekend day includes taking care of family and cleaning.
	Market work Time (Weekday/ Weekend)	Market work including salary and agriculture related market work (farming)# on weekdays/ a weekend day.
	Personal Care Time (Weekday/ Weekend)	Personal care on weekdays/ a weekend day includes sleeping, bathing, eating, drinking etc.
	Leisure Time (Weekday/ Weekend)	Leisure on weekdays/ a weekend day includes watching TV, reading, doing sports, playing games via internet, hobbies, social communication etc.
Time-Use Gender Gap (minutes/day)	Time-Use Gender Gap (G) of Housework (Weekday/ Weekend)	Individual housework /market work/personal care/ leisure time minus matched spouse house market work /market work/personal care/ leisure time, respectively, on weekdays/a weekend day
	G of Market work (Weekday/ Weekend)	
	G of Personal Care (Weekday/ Weekend)	
	G of Leisure (Weekday/ Weekend)	
Household Income (yuan/year)	Household Labor Income	Total household labor income comprises**:** (i) salaries of husband and wife in full-time and part-time jobs, bonus, employer cash benefits, imputed cash equivalent of goods; (ii) household net business income from non-agricultural and agricultural business operation. (iii) household agricultural income includes livestock raring, fishing etc.
	Household Non-Labor Income	Household Non-Labor Income (HNLI), is total non-labor income of all family members includes interest on deposits, rental income, superannuation income, private social security insurance income, government minimum safety net welfare benefits and imputed cash equivalent of gifts.## HNLI includes HCPI and HTP.
	Household Capital and Property Income	Household Capital and Property Income (HCPI), which is total capital and property income of all family members comprising interest on deposits and rental income e.g. from leasing house, land, farming tools and equipment.
	Household Transfer Payment	Household Transfer Payment (HTP), which is total transfer payment of all family members, covers superannuation income, private social security insurance income, government minimum safety net welfare benefits and imputed cash equivalent of gifts.

Note: Housework time+ Market work time+ Personal care time +Leisure time = 24 hours

Some respondents reported part-time study under market work time. Analysis however showed that this averaged less than half an hour per week with a maximum of four minutes per day.

Returns from bonds, stocks and funds are excluded from HNLI because of abnormal losses in 2010 as a consequence of the 2008 global financial crisis.

Table2 Daily Time-Use across Four Activities

Minutes/day		Men (N=6033)	Women (N=6033)	Mean Difference	Gender Ratio	Urban				Rural			
						Men (N=2896)	Women (N=2896)	Mean Difference	Gender Ratio	Men (N=3137)	Women (N=3137)	Mean Difference	Gender Ratio
Housework	Weekday	98.82 （111.85） ***	230.36 （163.55）	131.54	233.11%	91.01 (105.94)***	223.28 (168.51)	132.27	245.34%	106.04 (116.60)***	236.89 (158.58)	130.85	223.40%
	Weekend	122.40 （124.06） ***	252.84 （162.94）	130.44	206.57%	119.41 (124.34) ***	253.51 (170.69)	134.1	212.30%	125.16 (123.75)***	252.22 (155.48)	127.06	201.52%
Personal Care	Weekday	608.50 （102.04） ***	634.50 （107.99）	26	104.27%	593.53 (94.54)***	618.27 (102.04)	24.74	104.17%	622.31 (106.67)***	649.48 (111.13)	27.17	104.37%
	Weekend	639.63 （115.98） ***	656.58 （115.76）	16.95	102.65%	629.11 (119.21)***	645.38 (117.30)	16.27	102.59%	649.34 (112.05)***	666.90 (113.36)	17.56	102.70%
Leisure	Weekday	208.82 （142.83） ***	190.71 （137.67）	-18.11	91.33%	244.52 (149.54)***	223.10 (145.07)	-21.42	91.24%	175.86 (127.79)***	160.81 (123.15)	-15.05	91.44%
	Weekend	282.30 （185.09） ***	232.80 （156.80）	-49.5	82.47%	333.53 (192.28)***	275.70 (163.95)	-57.83	82.66%	235.00 (164.63)***	193.20 (138.59)	-41.8	82.21%
Market work	Weekday	424.82 （225.55） ***	287.75 （247.16）	-137.07	67.73%	419.14 (234.48)***	276.13 (261. 38)	-143.01	65.88%	430.06 (216.88)***	298.49 (232.80)	-131.57	69.41%
	Weekend	252.26 （258.52） ***	174.88 （227.90）	-77.38	69.33%	215.20 (262.89)***	141.65 (228.58)	-73.55	65.82%	286.47 (249.62)***	205.57 (222.94)	-80.9	71.76%

NOTE: Men and women are in matched couple households. Mean Difference=Women's time minus Men's time on each activity. Significance of t-test: ***t<0.01.In parenthesis: Standard deviation. Significances of t-test are all at t<0.01. The listing of activities is placed according to gender time-use mean difference, which equals to women's time on a specific activity minus men's.

Table 3 International Comparison of Time Use

Men

Minutes/day	China Rural	Japan	Latvia	U.S.	Italy	Sweden	U.K.	Australia	China Urban	France	Germany
Gainful work, study	409	363	295	273	266	265	258	256	253	243	215
Domestic work	59	62	129	128	95	149	138	130	96	142	141
Travel	74	77	73	75	95	90	90	74	89	63	87
Sleep	543	481	508	511	497	481	498	517	538	525	492
Meals, personal care	156	174	145	104	179	131	124	141	162	181	153
Free time, unspecial time	199	283	290	349	308	324	332	322	302	286	352
Total	1440	1440	1440	1440	1440	1440	1440	1440	1440	1440	1440

Women

Minutes/day	China Rural	Japan	Latvia	U.S.	Italy	Sweden	U.K.	Australia	China Urban	France	Germany
Gainful work, study	300	198	221	200	126	192	153	143	194	151	125
Domestic work	226	254	269	215	320	222	255	252	216	270	251
Travel	52	59	64	68	74	83	85	68	80	54	78
Sleep	546	471	515	518	499	491	507	515	543	535	499
Meals, personal care	140	196	142	117	173	148	136	156	155	182	163
Free time, unspecial time	176	262	229	322	248	304	304	306	252	248	324
Total	1440	1440	1440	1440	1440	1440	1440	1440	1440	1440	1440

NOTE: original resource is "Summary on 2008 Time-use Survey" by National Bureau of Statistics, China; Translation. Henry Lee for Australian

Figure 1 Gender Time-Use: Household Income and Activities
(Ten HLI and HNLI Groups; Four Activities)
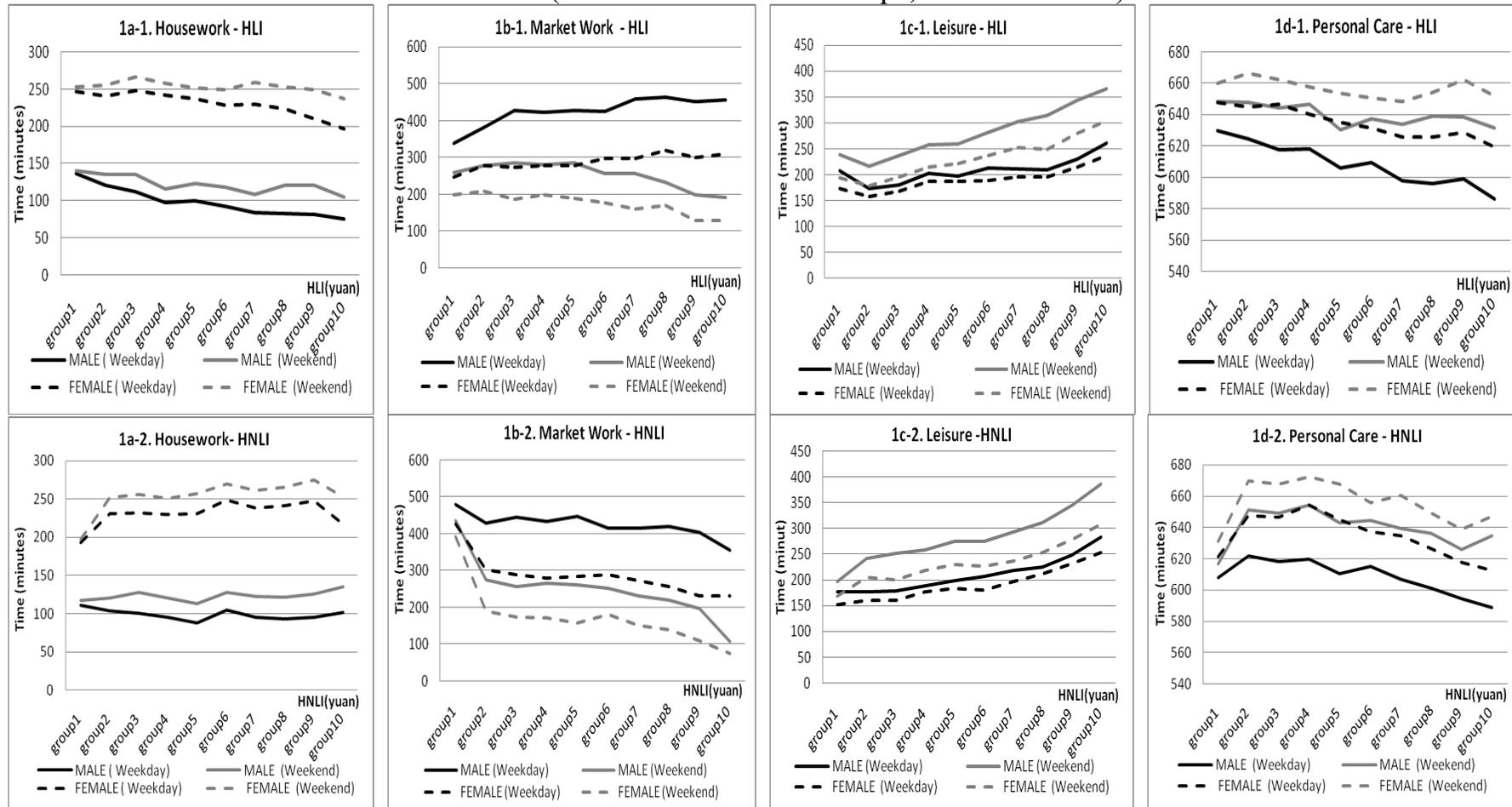
Notes: Men and women are in matched couple households.

Figure 2 Time-Use Gender Gap and Household Income (week days)

2a. Time-Use Gender Gap and HLI

2b.Time-Use Gender Gap and HNLI

Table 4 Tobit Estimation of Time-Use for Four Activities

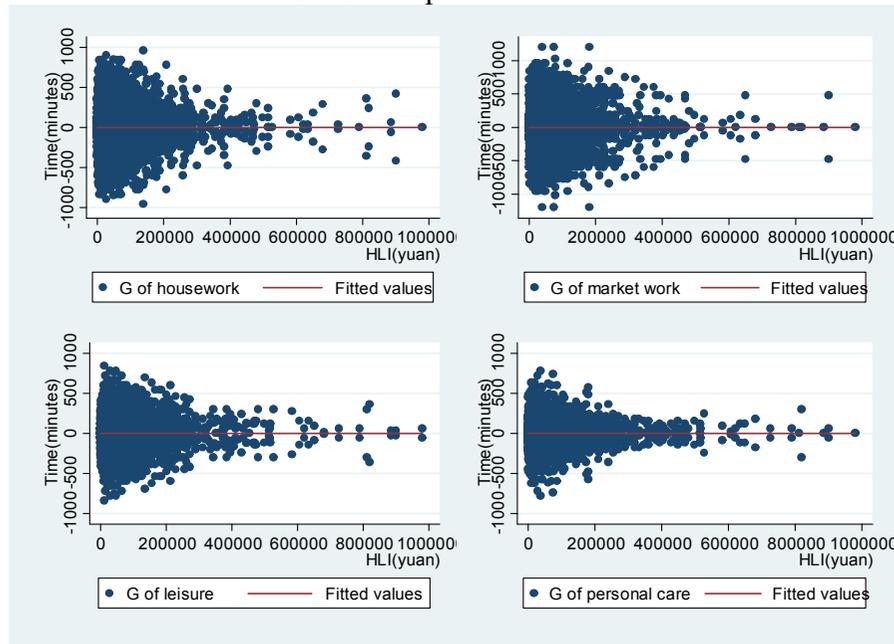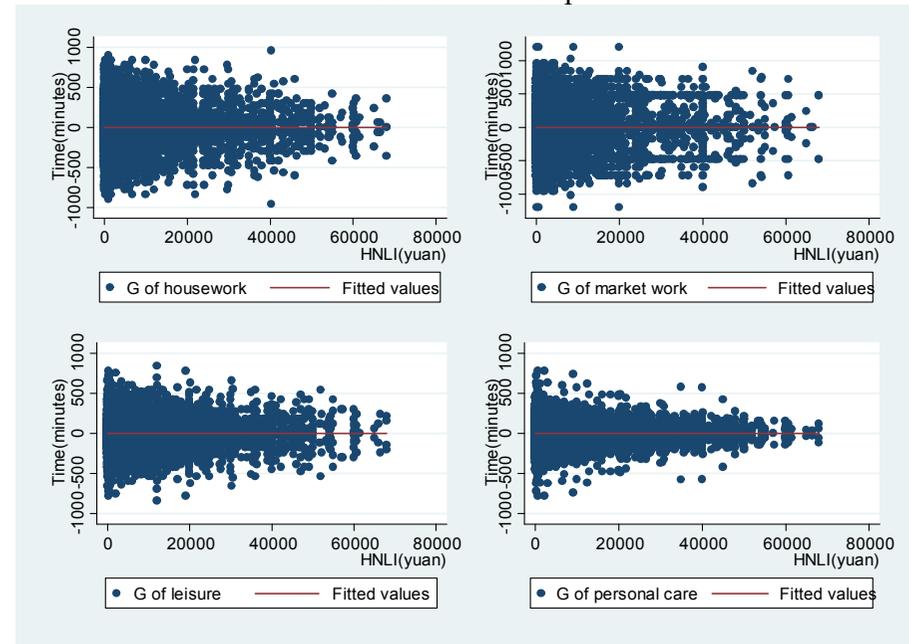|	Housework				Market work				Leisure				Personal Care			
	Weekday		Weekend		Weekday		Weekend		Weekday		Weekend		Weekday		Weekend	
VARIABLES	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Log HNLI	-4.763***	-0.816	-4.622***	0.263	-14.17***	-29.27***	-35.35***	-45.87***	0.193	-1.923***	-0.550	-3.157***	-1.032**	-1.159**	-0.546	-1.024*
	(0.700)	(0.758)	(0.776)	(0.816)	(1.386)	(1.869)	(2.230)	(2.393)	(0.659)	(0.670)	(0.813)	(0.765)	(0.523)	(0.557)	(0.606)	(0.614)
Log family income	-9.591***	-8.058***	-10.23***	-10.48***	32.24***	27.70***	2.582	4.859	11.98***	14.12***	16.53***	17.52***	-1.034	0.711	-0.592	1.676
	(1.769)	(1.854)	(1.919)	(1.964)	(3.505)	(4.751)	(5.677)	(6.100)	(1.651)	(1.651)	(1.997)	(1.865)	(1.306)	(1.363)	(1.485)	(1.479)
NFM	-9.252*	-21.92***	-4.364	-28.89***	-10.49	-3.559	43.30***	33.26*	-3.109	6.341	-9.637*	4.352	4.139	0.329	-5.224	-0.475
	(4.828)	(5.121)	(5.260)	(5.442)	(9.562)	(13.13)	(15.83)	(17.87)	(4.508)	(4.524)	(5.488)	(5.101)	(3.572)	(3.761)	(4.090)	(4.096)
NFM Square	0.824**	1.707***	0.532	2.336***	0.532	-0.133	-1.468	-1.973	0.310	-0.535*	0.725*	-0.500	-0.458*	-0.288	0.139	-0.306
	(0.340)	(0.361)	(0.370)	(0.384)	(0.673)	(0.927)	(1.111)	(1.282)	(0.318)	(0.319)	(0.387)	(0.359)	(0.252)	(0.265)	(0.288)	(0.289)
Age of eldest member	0.298*	0.431**	0.230	0.449**	-0.271	1.079**	-1.046*	0.686	-0.258	-0.444***	-0.164	-0.353**	0.0484	0.185	0.234	0.128
	(0.170)	(0.179)	(0.185)	(0.190)	(0.337)	(0.455)	(0.557)	(0.599)	(0.159)	(0.158)	(0.193)	(0.178)	(0.126)	(0.131)	(0.144)	(0.143)
Age of youngest member	-1.528***	-3.577***	-1.711***	-3.993***	0.138	1.795***	2.105***	2.233***	1.098***	1.847***	1.230***	2.020***	0.107	0.338**	-0.184	0.344**
	(0.205)	(0.219)	(0.224)	(0.232)	(0.409)	(0.570)	(0.684)	(0.762)	(0.191)	(0.193)	(0.233)	(0.218)	(0.151)	(0.160)	(0.173)	(0.174)
Hukou	7.458	-10.25*	9.910*	-15.90***	-54.46***	-27.02*	-164.1***	-91.31***	18.97***	14.70***	9.024	7.247	-17.98***	-19.03***	-16.64***	-15.63***
	(4.879)	(5.338)	(5.318)	(5.671)	(9.598)	(13.82)	(16.20)	(18.84)	(4.505)	(4.703)	(5.507)	(5.308)	(3.576)	(3.919)	(4.107)	(4.265)
Regional dummy	2.288	0.609	1.194	7.844	-6.511	-32.24***	20.35	-12.62	28.13***	16.65***	32.83***	21.95***	-13.16***	-15.21***	-12.89***	-11.68***
	(4.379)	(4.593)	(4.755)	(4.875)	(8.571)	(11.81)	(14.10)	(15.54)	(4.033)	(4.054)	(4.913)	(4.568)	(3.198)	(3.370)	(3.662)	(3.667)
Age	-3.785***	-4.927***	-5.704***	-8.976***	20.22***	62.59***	24.40***	58.65***	-3.605***	-1.098	-2.630	1.685	-2.123**	-1.990*	-2.137*	-2.604**
	(1.429)	(1.424)	(1.550)	(1.494)	(2.813)	(3.700)	(4.698)	(4.997)	(1.324)	(1.258)	(1.610)	(1.402)	(1.049)	(1.045)	(1.198)	(1.123)
Age Square	0.0531***	0.0772***	0.0826***	0.130***	-0.288***	-0.819***	-0.298***	-0.719***	0.0335**	0.00784	0.0157	-0.0270	0.0242*	0.00789	0.0216	0.0145
	(0.0168)	(0.0175)	(0.0182)	(0.0183)	(0.0331)	(0.0453)	(0.0553)	(0.0608)	(0.0156)	(0.0154)	(0.0189)	(0.0171)	(0.0124)	(0.0128)	(0.0141)	(0.0137)
Educated years	-0.400	-0.263	0.469	-0.504	3.548***	7.309***	-0.431	-3.677**	4.149***	4.056***	4.838***	5.622***	0.711**	-0.523	-0.176	-1.059***
	(0.447)	(0.480)	(0.487)	(0.508)	(0.885)	(1.227)	(1.460)	(1.618)	(0.416)	(0.424)	(0.506)	(0.477)	(0.329)	(0.352)	(0.377)	(0.382)
Marital status	94.44**	-26.59	116.1**	-19.18	12.63	-42.50	-88.58	-251.6*	14.05	-33.18	60.42	-17.61	-85.72***	46.38	-105.8***	44.52
	(45.60)	(48.84)	(49.17)	(52.02)	(81.35)	(124.3)	(136.6)	(152.4)	(38.38)	(42.39)	(46.97)	(47.85)	(30.23)	(35.43)	(34.61)	(38.56)
χ^2	1377.03	2556.83	950.97	1672.08	644.09	1028.55	1000.02	1150.73	2615.51	2295.51	3167.19	2314.90	870.61	936.78	804.27	783.94
P	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Log likelihood	-28839.205	-36758.062	-31125.565	-37501.223	-35953.185	-29567.357	-26452.658	-21335.101	-35523.933	-35145.399	-37151.675	-36122.068	-35705.196	-36015.798	-36457.783	-36487.111
N	5,980	5,983	5,980	5,983	5,980	5,983	5,980	5,983	5,980	5,983	5,980	5,983	5,978	5,981	5,978	5,982

NOTE: Men and women are in matched couple households. HNLI is Household Non-Labor Income. NFM is Number of Family Members. Regional dummy is defined by rural=0, urban=1. Other controlled variables: market work hours (only in housework, personal care and leisure time-use regressions), region dummies. *significant at 10%,**significant at 5%,*** significant at 1%.

Table 5 Tobit Estimation of Time-Use for Four Activities and Regional Classification（Weekday）

VARIABLES	Housework				Market work				Leisure				Personal Care			
	Urban Male	Urban Female	Rural Male	Rural Female	Urban Male	Urban Female	Rural Male	Rural Female	Urban Male	Urban Female	Rural Male	Rural Female	Urban Male	Urban Female	Rural Male	Rural Female
Log HNLI	-4.124***	-0.712	-5.224***	-1.115	-19.69***	-37.17***	-9.138***	-22.34***	0.769	-0.690	-0.201	-2.552***	-1.649**	-1.778**	-0.647	-0.630
	(1.109)	(1.251)	(0.909)	(0.949)	(2.281)	(3.387)	(1.714)	(2.120)	(1.090)	(1.116)	(0.815)	(0.817)	(0.795)	(0.853)	(0.705)	(0.743)
Age of eldest member	0.415	0.362	0.117	0.457**	-0.0479	2.252***	-0.233	0.398	-0.585**	-0.619**	-0.0413	-0.413**	0.0339	0.111	0.0674	0.272
	(0.269)	(0.295)	(0.222)	(0.225)	(0.557)	(0.829)	(0.417)	(0.517)	(0.262)	(0.263)	(0.197)	(0.194)	(0.191)	(0.201)	(0.170)	(0.176)
Age of youngest member	-1.645***	-3.262***	-1.400***	-3.913***	1.175*	2.727***	-0.372	2.475***	1.396***	1.779***	0.868***	1.992***	0.319	0.556**	-0.0461	0.247
	(0.307)	(0.342)	(0.288)	(0.295)	(0.641)	(0.998)	(0.541)	(0.686)	(0.298)	(0.305)	(0.255)	(0.254)	(0.217)	(0.233)	(0.220)	(0.231)
χ^2	546.57	1271.82	898.65	1334.53	562.88	689.24	243.31	504.07	1264.29	1042.18	1090.54	1045.48	301.94	377.96	503.87	515.88
P	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Log likelihood	-13568.70	-17569.43	-15220.3	-19149.45	-16786.63	-12982.83	-19061.95	-16419.63	-17453.66	-17372.28	-18002.95	-17697.40	-16961.05	-17164.01	-18694.43	-18800.46
N	2,869	2,873	3,111	3,110	2,869	2,873	3,111	3,110	2,869	2,873	3,111	3,110	2,867	2,871	3,111	3,110

NOTE: Men and women are in matched couple households. Log HNLI stands for Log Household Non-Labor Income. Controlled variables are as showed in Equation1. *significant at 10%,**significant at 5%,*** significant at 1%.

Table 6 Coefficients of Tobit Estimation on Time-Use: HCPI (Simply)

VARIABLES	Housework		Market work		Leisure		Personal Care		Sample
	Weekday	Weekend	Weekday	Weekend	Weekday	Weekend	Weekday	Weekend	
Log HCPI	-2.157**	-2.770***	**-0.430**	-9.808***	3.545***	3.047***	-0.271	-0.531	
	(0.969)	(1.023)	**(1.790)**	(2.755)	(0.842)	(0.987)	(0.729)	(0.772)	Rural Male
Log HCPI	-0.648	-1.010	**4.046***	-7.092**	2.592***	2.995***	0.519	0.556	
	(0.969)	(1.004)	**(2.270)**	(2.883)	(0.832)	(0.928)	(0.758)	(0.776)	Rural Female

Note: Men and women are in matched couple households. Log HTP stands for Log Household Transfer Payment. Log HCPI stands for Log Household Capital & property income. Controlled variables are as showed in Equation1. *significant at 10%,**significant at 5%,*** significant at 1%.

Table 7 OLS Estimation of Time-Use Gender Gap: Four Activities

VARIABLES	Housework		Market work		Leisure		Personal Care	
	Weekday	Weekend	Weekday	Weekend	Weekday	Weekend	Weekday	Weekend
Panel A :Total Sample								
LogHNLI	-3.518***	-3.332***	0.302	0.378	-3.362***	-3.976***	-1.467***	-1.737***
	(0.664)	(0.685)	(1.064)	(0.952)	(0.590)	(0.680)	(0.463)	(0.497)
N	11,963	11,963	11,963	11,963	11,963	11,963	11,957	11,957
Adj-R^2	0.4116	0.3783	0.1983	0.0884	0.0993	0.1199	0.0711	0.0339
F	221.20	192.54	80.95	32.34	35.70	43.87	25.07	12.04
P	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Panel B:Urban Sample								
LogHNLI	-4.487***	-3.693***	0.386	0.700	-5.451***	-5.229***	-1.743**	-1.971**
	(1.077)	(1.118)	(1.835)	(1.617)	(1.047)	(1.191)	(0.748)	(0.809)
N	5,742	5,742	5,742	5,742	5,742	5,742	5,736	5,738
Adj-R^2	0.4129	0.3803	0.1866	0.0696	0.1283	0.1335	0.0626	0.0320
F	110.12	96.21	37.58	12.93	23.83	24.90	11.35	6.13
P	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Panel C :Rural Sample								
LogHNLI	-2.752***	-3.043***	0.236	0.163	-1.927***	-2.951***	-1.229**	-1.542**
	(0.855)	(0.875)	(1.284)	(1.172)	(0.677)	(0.797)	(0.599)	(0.639)
N	6,221	6,221	6,221	6,221	6,221	6,221	6,221	6,219
Adj-R^2	0.4115	0.3757	0.2087	0.1044	0.0708	0.1043	0.0758	0.0319
F	121.82	104.96	47.87	21.72	14.17	21.11	15.18	6.70
P	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Note: Time-use gender gap is for men and women in matched couple households.Log HNLI stands for Log Household Non-Labor Income.Controlled variables are as showed in Equation 2. *significant at 10%,**significant at 5%,*** significant at 1%.

Table 8 OLS Estimation of Time-Use Gender Gap: Four Activities, Three Income Groups

VARIABLES	Housework		Market work		Leisure		Personal Care	
	Weekday	Weekend	Weekday	Weekend	Weekday	Weekend	Weekday	Weekend
Non-Labor Income Percentile (below 33.3%)								
LogHNLI	-3.587***	-4.737***	0.0335	-0.0261	-2.399***	-4.827***	-1.675**	-2.372***
	(1.090)	(1.135)	(1.679)	(1.565)	(0.922)	(1.089)	(0.768)	(0.821)
N	4,192	4,192	4,192	4,192	4,192	4,192	4,192	4,190
Adj-R^2	0.4115	0.3757	0.2087	0.1044	0.0708	0.1043	0.0758	0.0319
Non-Labor Income Percentile (33.3%- 66.6%)								
LogHNLI	-2.929	0.133	-0.0215	-0.290	-2.240	0.600	-1.235	-0.0774
	(5.752)	(5.856)	(9.386)	(8.850)	(5.014)	(5.800)	(4.107)	(4.309)
N	3,755	3,755	3,755	3,755	3,755	3,755	3,753	3,753
Adj-R^2	0.4331	0.4007	0.2107	0.1087	0.0898	0.1141	0.0711	0.0332
Non-Labor Income Percentile (above66.6%)								
LogHNLI	-6.070	-2.613	1.730	1.155	-7.345*	-3.654	-2.451	-1.124
	(4.428)	(4.568)	(7.347)	(6.086)	(4.115)	(4.631)	(3.011)	(3.311)
N	4,016	4,016	4,016	4,016	4,016	4,016	4,012	4,014
Adj-R^2	0.3989	0.3564	0.1905	0.0547	0.1247	0.1423	0.0544	0.0209

Note: Time-use gender gap is for men and women in matched couple households. Log HNLI stands for Log Household Non-Labor Income. Controlled variables are as showed in Equation2. *significant at 10%,**significant at 5%,*** significant at 1%.

Table 9 OLS Estimation on Time-Use Gender Gap: HCPI and HTP
(Total Sample)

VARIABLES	Housework		Market work		Leisure		Personal Care	
	Weekday	Weekend	Weekday	Weekend	Weekday	Weekend	Weekday	Weekend
Log HCPI	0.164	-0.506	-0.0637	-0.0260	0.0531	-0.637	0.0781	-0.222
	(0.542)	(0.552)	(0.877)	(0.785)	(0.481)	(0.548)	(0.377)	(0.401)
N	11,963	11,963	11,963	11,963	11,963	11,963	11,957	11,957
Adj-R^2	0.4102	0.3771	0.1983	0.0884	0.0968	0.1174	0.0703	0.0329
Log HTP	-2.153***	-1.725***	0.281	0.304	-2.039***	-2.018***	-0.921***	-0.913**
	(0.499)	(0.510)	(0.802)	(0.718)	(0.443)	(0.507)	(0.348)	(0.371)
N	11,963	11,963	11,963	11,963	11,963	11,963	11,957	11,957
Adj-R^2	0.4111	0.3777	0.1983	0.0884	0.0984	0.1185	0.0708	0.0334

Note: Time-use gender gap is for men and women in matched couple households. Log HTP stands for Log Household Transfer Payment. Log HCPI stands for Log Household Capital & property income. Controlled variables are as showed in Equation 2.
*significant at 10%,**significant at 5%,*** significant at 1%.

Appendix

Table10 Descriptive Statistics: Key Variables in Regressions

	Variables	Observations	Mean	Std. Dev.	Min	Max
Time Allocation (minutes/day)	Housework Time (Weekday)	12066	164.59	154.77	0	960
	Housework Time (Weekend)	12066	187.62	158.82	0	960
	Market work Time (Weekday)	12066	356.29	246.32	0	1200
	Market work Time (Weekend)	12066	213.57	246.73	0	1200
	Leisure Time (Weekday)	12066	199.76	140.56	0	960
	Leisure Time (Weekend)	12066	257.55	173.30	0	960
	Personal Care Time (Weekday)	12062	621.50	105.86	0	1320
	Personal Care Time (Weekend)	12063	648.10	116.17	0	1440
Time-Use Gender Gap (minutes/day)	G of Housework (Weekday)	12066	0	221.01	-960	960
	G of Housework (Weekend)	12066	0	219.06	-900	900
	G of Market work (Weekday)	12066	0	306.81	-1200	1200
	G of Market work (Weekend)	12066	0	257.78	-1200	1200
	G of Leisure (Weekday)	12066	0	158.44	-840	840
	G of Leisure (Weekend)	12066	0	182.56	-810	810
	G of Personal Care (Weekday)	12060	0	122.75	-780	780
	G of Personal Care (Weekend)	12060	0	127.89	-900	900
Household Income (yuan/year)	Household Labor Income	11824	60290.67	96660.25	20390.5	3069900
	Log Household Labor Income	11824	10.50	1.13	0	14.94
	Household Non-labor Income	12066	5189.64	9595.56	0	68000
	Log Household Non-labor Income	12066	6.50	2.81	0	11.13
	Household Capital & Property Income	12066	698.97	2919.52	0	60000
	Log Household Capital & Property Income	12066	2.14	3.08	0	11.00
	Household Transfer Payment	12066	4490.67	8873.37	0	66500

	Log Household Transfer Payment	12066	5.55	3.52	0	11.10

Table11 Descriptive Statistics: Other Controlled Variables in Regressions

	Variables	Observations	Mean	Std. Dev.	Min	Max
Household Feature Variable	Total Household Income	12066	38029.08	55657.2	0	2040830
	LogHouseholdIncome	11980	10.07	1.14	0	14.53
	Number of Family Members(NFM)	12066	4.38	1.67	2	17
	NFM Square	12066	21.92	19.42	4	289
	Age of the Eldest Family Member	12064	53.91	13.31	20	97
	Age of the Youngest Family Member	12064	15.17	13.84	0	60
Personal Feature Variable	Gender (male=1)	12066	0.5	0.5	0	1
	Age	12066	42.64	10.03	16	60
	Age Square	12066	1918.81	842.71	256	3600
	Hukou (non-agriculture hukou=1)	12052	0.30	0.46	0	1
	Regional dummy (urban=1)	12066	0.48	0.50	0	1
	Education Years	12066	6.78	4.73	0	22
	Marital Status(in marriage=1)	12065	0.99	0.04	0	1
Regional Dummies	*Omitted*					

Table 12 2S Tobit Estimation of Time-Use: IV Test

VARIABLES	Housework				Market work				Leisure				Personal Care			
	Weekday		Weekend		Weekday		Weekend		Weekday		Weekend		Weekday		Weekend	
	Male	*Female*	*Male*	*Female*	*Male*	*Female*	*Male*	*Female*	*Male*	*Female*	*Male*	*Female*	*Male*	*Female*	*Male*	*Female*
Log HNLI	-3.406***	-0.227	-2.966***	1.140	-15.29***	-27.57***	-31.77***	-37.64***	1.243*	-0.945	0.343	-2.663***	-1.539***	-1.905***	-1.163*	-1.503**
	(0.768)	(0.823)	(0.847)	(0.885)	(1.504)	(2.055)	(2.474)	(2.695)	(0.715)	(0.728)	(0.881)	(0.831)	(0.566)	(0.604)	(0.656)	(0.665)
Individual Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Household Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Regional Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
The correlation test of HNLI and IV	18.63	3.39	23.74	6.57	3.64	3.92	10.84	40.08	14.47	11.84	6.89	2.34	5.46	10.20	5.98	3.48
P	0.0000	0.0657	0.0000	0,0104	0.0564	0.0478	0.0010	0.0000	0.0001	0.0006	0.0087	0.1257	0.0195	0.0014	0.0145	0.0620
Wald test χ^2	1478.62	3168.00	986.52	1929.02	659.70	954.55	849.61	850.15	3249.00	2754.15	4158.34	2786.31	940.57	1019.43	863.32	840.17
P	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
N	5,980	5,983	5,980	5,983	5,980	5,983	5,980	5,983	5,980	5,983	5,980	5,983	5,978	5,981	5,978	5,982

NOTE: Men and women are in matched couple households. Log HNLI stands for Log Household Non-Labor Income. Controlled variables are as showed in Equation1. *significant at 10%,**significant at 5%,*** significant at 1%.