



Welfare Participation and Time Use in China

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Abstract

Using the newly available China Family Panel Studies (CFPS) 2010 survey data and a propensity score matching method with tobit regressions, this study examines the possible influence of participation in China's primary welfare program, Dibao, on household head's time use pattern in both urban and rural areas. We find that Dibao lowered recipients time spent on various leisure and social activities and increased their idle time for both urban and rural residents. Urban Dibao recipients also tended to spend less time on education activities, while rural Dibao recipients spent more time on personal care and household activities such as housekeeping and sleeping or resting. Urban Dibao recipients spent more time on work-related activities on typical non-work days, while rural Dibao recipients spent less time on work activities on typical work days. These findings provide pioneering evidence on the possible link between welfare participation and time use patterns in the global welfare literature. As Dibao is constantly expanding, the empirical evidence from this article suggests that Dibao might have some unintended adverse effects on recipients, including less time spent on leisure and social activities, reduced work and education activities or increased underground employment, and more time spent on being idle. Future reforms of Dibao and its supplementary policies and programs need to consider how best to promote both the economic and holistic well-being of the participants.

Keywords: welfare participation, Dibao, time use, propensity score matching, China

Introduction

Cash transfer welfare programs that provide a basic safety net for the poor exist in nearly every country. In addition to receiving cash transfers which directly help boost recipients' income and sometimes even enable them to escape poverty, welfare participation affects many other aspects of recipients' lives, including family consumption patterns, social activities, life satisfaction, and time use. Among these, economic outcomes such as income, poverty, and consumption, are more studied in the literature than social and subjective well-being outcomes. One of such outcomes is time use, an increasingly important aspect of overall human well-being and arguably the most accurate reflection of people's daily life patterns, has been traditionally ignored but recently gaining increasing attention by researchers and policymakers. While the body of research on time use in general has been growing worldwide, the possible link between welfare participation and time use has not been empirically explored.

During the past quarter century, there have been a growing number of both conditional and non-conditional cash transfer programs around the world, especially in developing countries. While both types of programs aim to reduce poverty and provide a safety net for the very poor, conditional cash transfer programs in particular focus on the promotion of human development. Welfare receipt is thus conditional on greater human capital investment such as school enrollment or regular health check-ups, which may infer more time spent on health and educational activities. In contrast, non-conditional cash transfer programs determine participation eligibility almost entirely based on means-testing, sometimes considering household registration or formation, and recipients are free to spend the welfare money anyway they want, which makes it difficult to investigate the possible link between welfare participation and time use.

One possible channel of the link between welfare participation and time use is through how welfare might affect work activities and family formation. Evidence from the US has shown that non-conditional cash transfer programs may distort incentives and lead to reduced work efforts and lower marriage rates (Blank, 2009), which could result in less time spent on work or family activities. Another possible channel of this link could be the strong stigma associated with welfare receipt, which might lead to less time spent on social or leisure activities. Indeed, applicants to Dibao (Minimum Livelihood Guarantee, or MLG), the flagship cash transfer program in China, have to not only have their household income and assets thoroughly checked by local government officials, but also have their names publicly displayed in their communities for peer screening and monitoring (Solinger, 2011). Dibao recipients, fearful of losing their benefits or being scrutinized for their lifestyle, may have to spend less time on social or leisure activities but more time at home. One recent empirical study revealed that Dibao recipients on average lowered their spending on leisure activities by 30% compared to their similarly poor non-recipient peers (Gao, Zhai, Yang, & Li, 2014).

In this article, we use newly available data from urban and rural China with a relatively big subsample of welfare participants to provide pioneering evidence on the possible link between welfare participation and time use as well as daily activity pattern. Using the detailed information collected in the dataset, we are able to investigate not only the major categories of time use such as personal care, work, education, and social activities, but also more detailed time allocation patterns among selected major categories, which provides a valuable opportunity for us to understand the nuances of welfare recipients' daily life. In addition, to be able to use the previously unavailable rural data to examine the possible influence of Dibao in rural areas is a breakthrough in the existing literature, which almost entirely focuses on urban China. Findings

from this article therefore provide important implications for both urban and rural China as well as similar non-conditional cash transfer programs around the world.

One perennial challenge in evaluating the impacts of welfare programs is selection bias (Dehejia & Wahba, 2002; Jalan & Ravallion, 2003; Rosenbaum & Rubin, 1983). Welfare recipients may be systematically different from non-recipients, and the characteristics that are associated with their welfare receipt might also relate to the possible outcomes of welfare participation. In this article, we use a propensity score matching (PSM) method to identify non-recipients who have observed characteristics that are quite similar to those of recipients. The possible link between welfare participation and time use is then estimated by comparing the outcomes of recipients with those of their “matched” non-recipient peers. It should be noted that, even though we use a rich set of characteristics to match the two groups, PSM approaches (like regressions in general) suffer from the inherent threat of matching only on observables. The characteristics that we include in this study are by no means exhaustive and cannot capture all factors associated with welfare participation. Our estimation, though not strictly causal, helps us provide a more reasonable evaluation of the possible link between welfare participation and time use than estimates from models without matching.

Welfare Participation in China: The Dibao Program

China’s primary social assistance program, Dibao, was first experimented in Shanghai in 1993. In an effort to address the needs of the rapidly growing group of the new urban poor, the Shanghai government committed a budget and set up a local minimum livelihood line (i.e., the Dibao line) so that residents whose household per capita income was below this line could subsist by receiving monthly cash transfers that brought their income up to this line. An equally important but less advertized goal was to maintain political stability and social order. Many of

the new poor were laid-off workers who had working abilities but lost their jobs during the market economic reforms. The Dibao benefits therefore served as both a shield from extreme poverty and a deterrent from public protests.

Based on the successful experience of Shanghai, many other city governments facing similar challenges adopted the Dibao program. In 1999, the central government issued a regulation to require all cities nationwide to implement Dibao. City governments were asked to set up their Dibao lines according to local living standards and commit a budget to the Dibao program. The central government offered financial support when the local governments had limited fiscal capacity. All Dibao lines were adjusted annually to reflect changes in local consumer prices but remained lower than local unemployment subsidies and minimum wage to be true to its promise of only a “minimum” level of livelihood.

While Dibao was implemented in urban China and helped reduce poverty among urban residents, rural Dibao was experimented in various provinces and showed some positive effects across localities. In 2007, the central government stipulated that Dibao was to be implemented nationwide in rural China and committed to providing funding support to counties with limited financial capacity. Since 2007, Dibao has expanded rapidly in both urban and rural China, raising the assistance line constantly and covering many more families.

Figure 1 shows that both urban and rural average Dibao lines increased constantly over the years, reaching 330 yuan in urban China and 172 yuan in rural China in 2012 without adjusting for the respective urban and rural consumer price indexes (CPIs). The pace of increase was less steep after adjusting for CPIs, but still the trend of increase held. The urban Dibao lines were substantially higher than the rural ones, without or with adjusting for CPIs.

[Figure 1 about here.]

Have the increases in the Dibao line kept pace with the increases in the average consumption level? Figure 2 presents the trend in urban and rural average Dibao lines as a percentage of per capita consumption. In urban areas, relative to average consumption levels, the average Dibao line first declined, rose again, and then plateaued in recent years, reaching 19% in 2012. The rural Dibao line, however, kept increasing as a share of the average consumption level (with a small drop in 2010) and reached 32% in 2012. Therefore, relative to the average consumption level, the seemingly lower rural Dibao line showed in Figure 1 was actually more generous than the urban line.

[Figure 2 about here.]

Alongside the raises in the Dibao lines have been the increases in both total government expenditure on Dibao and the total number of beneficiaries. Figure 3 shows that the total expenditures on urban Dibao increased continually and reached 75.7 billion yuan in 2013. The growth of the total expenditures on rural Dibao has been even steeper, rising from 10.9 billion yuan in 2007 when it was first implemented nationwide to 86.7 billion yuan in 2013, surpassing the total expenditures on urban Dibao.

[Figure 3 about here.]

As shown in Figure 4, parallel to the trend of government expenditure on Dibao, the number of Dibao recipients also grew rapidly over the years both in absolute terms and as a share of the total population. The number of urban Dibao recipients quickly increased during the early period of its implementation, but has hovered around 22 million since 2002. It reached 20.6 million in 2013, representing 2.8% of the total urban population. The number of rural Dibao recipients grew even more rapidly as compared to the urban trend, especially since its nationwide

implementation in 2007. In 2013, it reached 53.9 million, representing 8.6% of the total rural population.

[Figure 4 about here.]

Who are the Dibao recipients? Figure 5 presents the demographic composition of urban and rural Dibao recipients in 2013. Over 60% of all urban Dibao recipients were working-age adults. Among them, most were unemployed and were either not officially registered for their unemployment (20% of all urban recipients) or registered unemployed (18%), while many others held temporary jobs (22%) and very few were working (2%). Among the other urban Dibao recipients, 22% were children (15% students and 7% non-students) and 16% were older persons. Across the age groups, 42% of urban Dibao recipients were women, 8% were disabled, and 3% belonged to the “three-without” group (i.e., without working ability, income source, or source of support), the traditional target of urban China’s welfare programs. Among the rural Dibao recipients, half were working-age adults, 11% were children, and 39% were older persons. About one-third of all rural Dibao recipients were women and 9% were disabled.

[Figure 5 about here.]

A growing body of studies has provided empirical evidence on the targeting and anti-poverty effectiveness of the Dibao program as well as its effects on family consumption patterns. Consistent evidence across studies has shown that Dibao has modest to sizable poverty reduction effects, especially when a relatively low poverty line is used (Du & Park, 2007; Gao, Garfinkel, & Zhai, 2009; Gao, Yang, & Li, 2014; Gustafsson & Deng, 2011; Ravallion, Chen, & Wang, 2006; Wang, 2007). The characteristics that are predictive of Dibao receipt include poor health or disability, unemployment, low education, large household size, and living in a less developed region (Gao, Yang, & Li, 2014; Gustafsson & Deng, 2011; Wu & Ramesh, 2014). A few recent

studies have explored the possible effects of Dibao receipt on family consumption patterns. They found that Dibao enabled recipient families to invest in human capital by spending more on health and education, but receiving Dibao also deterred families from having leisure activities (Du & Park, 2007; Gao, Zhai, & Garfinkel, 2010; Gao, Zhai, et al., 2014).

It is important to note that the vast majority of the existing evidence on the effects of Dibao is from urban China, while the performance and possible effects of rural Dibao has been rarely empirically studied. Only one recent study used 2007-2009 household data matched with administrative data to examine the anti-poverty effects of rural Dibao (Golan, Sicular, & Umapathi, 2014). The authors found that rural Dibao was unable to substantially reduce poverty, which was partly due to the large targeting errors. Their simulation analyses suggested that expanding Dibao coverage to more beneficiaries at the existing benefit level would yield greater poverty reduction. Given the rapid expansions in rural Dibao in recent years and its large number of beneficiaries, it is critical to provide timely evidence on the effects of rural Dibao. In this article, we use newly available household survey data to provide updated evidence on the effects of rural Dibao and to compare the results with those of urban Dibao.

Welfare Participation and Time Use: Existing Evidence and Hypotheses

To our knowledge there is no existing study that directly examines the possible link between welfare participation and time use. We can only infer such a link from a careful interpretation of the evidence on how welfare receipt might affect family consumption patterns. For example, spending more on some items such as education or training might suggest more time engagement on activities related to these items. Some other items, such as food and clothing, might be ambiguous since families may or may not spend more time on such activities simply because they spend more money on them. Below we review the existing literature on the effects

of welfare receipt on family consumption patterns and try to provide plausible hypotheses on the possible relationship between welfare participation and time use patterns for our study.

The effects of conditional cash transfer (CCT) programs on family consumption patterns, among other outcomes, have been rigorously evaluated in the literature in multiple regions and countries. Because of its nature of conditioning cash transfers on human development activities, participation in CCT programs has been found to increase school enrollment, improve preventive health care, and boost total food consumption as well as consumption of more nutritious foods, especially in Latin America (Attanasio & Mesnard, 2006; Barrientos, 2013; Fiszbein et al., 2009; Hoddinott & Skoufias, 2004; Rawlings & Rubio, 2005). This may suggest that welfare recipient families spend more time on education and health care activities than their non-recipient peers. In addition, compared to less nutritious foods (such as fast food), more nutritious foods may require more time for preparation or appeal people to spend more time enjoying them. If this is the case, then welfare recipient families may spend more time on eating or have more shared time with family members because of the shared eating time.

It is much harder to speculate the possible influence of non-conditional cash transfer programs on families' time use pattern because of the lack of mandated activity as a condition for welfare receipt. Evidence from the Earned Income Tax Credit in the US suggested that cash transfers enabled families to spend more on housing, transportation, and education (Gao, Kaushal, & Waldfogel, 2009), which might imply more time spent on housekeeping, transportation, and education activities. Meanwhile, welfare programs may distort incentives and lead to reduced work efforts and lower marriage rates (Blank, 2009), which in turn might suggest less time spent on work or family activities.

In the Chinese context, two recent studies used the national China Household Income Project (CHIP) 2002 and 2007 survey data to examine the possible effects of urban Dibao on family consumption patterns (Gao, Zhai, et al., 2014; Gao, Zhai, & Garfinkel, 2010). They found consistent and robust evidence that welfare receipt enabled families to spend more on health and education, especially medical care, noncompulsory education, and private tutoring. The more recent of the two studies (Gao, Zhai, et al., 2014) also found that welfare participation deterred families from having leisure spending. Using data collected from five big cities (Shanghai, Wuhan, Shenyang, Fuzhou, and Xi'an) in 2001 and 2005, Du and Park (2007) found that Dibao increased recipients' consumption on education and food, but not on health. This set of evidence might suggest that Dibao participation is linked with more time spent on education and health care activities and probably also eating and family activities, but less time on leisure activities. It is important to note that this existing body of literature focuses on urban Dibao only and any hypotheses drawn from it need to be more carefully tested and interpreted for rural Dibao.

Even though not directly focusing on the connection between welfare participation and time use, Zhou and colleagues (2012) recently explored the time use pattern of 37,142 individuals sampled from ten diverse provinces in China and provided some suggestive evidence on time use patterns in both urban and rural areas. The respondents (15 to 74 years old) recorded the time they spent on various daily activities in May 2008. These activities were grouped into maintenance activities (i.e., personal care, household work, caring for and helping household and non-household members), subsistence activities (i.e., labor force participation, primary production, manufacturing and construction, service provision, and education and training), and leisure activities. The authors found that, on average, rural residents spent more time (two hours per day) on subsistence activities than urban residents, due to the lower level of mechanization in

rural China. They also found that those who were retired, unemployed, or homemakers spent more time on leisure activities and less time on subsistence than those who were employed or students. It is important to note that leisure activities in this study were defined as “free time activities” and thus it would be impossible to elaborate the actual meaning of more such activities. This study, though descriptive in nature, provides some suggestive evidence that the time use patterns between urban and rural Dibao recipients might be different.

Methods

Data and Sample

This study uses the 2010 baseline survey data of the China Family Panel Studies (CFPS). CFPS is a national longitudinal annual survey conducted by the Institute of Social Science Survey at Peking University since 2010. By using an implicit stratification, multi-stage, multi-level, and probability proportional to size sampling method (see more details of the sample design in Xie, Qiu, & Lü, 2012), the 2010 data contain 14,960 households from 649 communities across 25 provinces. The sample is representative of 95% of the Chinese population in 2010 (Xie, 2012).

For this study, the household head is our analysis unit. First, we merged the adult dataset (from 14,608 unique families) into the family dataset (with 14,798 unique families) in order to obtain the variables at both individual and family levels. Respondents were asked to identify the family member who could make the decision on family affairs, who is considered to be the household head. Families unable to identify their household heads are dropped from the sample (n=1,290). This yields a sample of 6,389 household heads from urban areas and 6,929 household heads from rural areas, which is the analytical sample of our study. To compare whether the

result patterns are different across the two areas, all analyses are conducted separately in the urban and rural samples.

Measures

Dependent Variables. Time use is a complex and dynamic dimension of people's lives. To accurately capture the exact time use patterns, CFPS asked each respondent to report in detail the average number of hours and minutes spent on various activities in a typical work day and non-work day during the past non-vacation month. It is important to note that work and non-work days were defined by each respondent according to his or her own schedule and thus non-work days may not necessarily correspond to weekends.

In this article, we explore the possible influence of welfare participation on urban and rural residents' time spent on major categories of activities as well as more detailed time allocation patterns on specific activities. The total time spent on a typical work or non-work day is divided into seven major categories, including 1) personal care and household activities; 2) work-related activities; 3) education activities; 4) leisure and social activities; 5) transportation; 6) other activities; and 7) idle time (no specified activity).

We further investigate the detailed time allocation patterns among four of these major categories. First, personal care and household activities include time spent on sleeping and resting, eating and drinking, personal hygiene, housekeeping, and caring for family members. Second, work-related activities are divided into time spent on primary job and other jobs. Third, education activities include time spent on formal education, completing assignments or reviewing course materials related to formal education, and informal education or other training. Lastly, leisure and social activities include time spent on reading, watching TV and listening to

radio or music, using the internet, exercising, participating in games or other recreational activities, social activities, community service and voluntary activities, and religious activities.

All time use variables in CFPS were coded into hours, with the minutes converted into decimals (with one decimal place). The sum of all major time categories within the respective work and non-work days is very close to 24 hours but may not be exactly 24 hours due to reporting errors.

Key Independent Variable. The key independent variable is whether respondent's family received Dibao benefits at any point during the last year. About 7% ($n = 477$) of the urban sample and about 12% ($n = 813$) of the rural sample were Dibao recipient households. It is possible that some of these families received Dibao during the whole year while some others were recipients for part of the year. Unfortunately the survey did not ask respondents to specify the length of Dibao receipt, thus we are unable to investigate the possible influence of the length or spell of welfare participation. In addition, the survey did not ask about the exact amount of Dibao benefit received by these families, which makes it impossible to study the effects of heterogeneity of treatment in Dibao benefit amount (see Gao, Zhai, et al., 2014 for an analysis of the heterogeneity of treatment in Dibao benefit amount using the CHIP 2007 urban data).

Control Variables. Based on previous research on Dibao (Du & Park, 2007; Gao, Garfinkel, & Zhai, 2009; Gao, Yang, & Li, 2014; Gustafsson & Deng, 2011; Wang, 2007; Wu & Ramesh, 2014), this study uses household heads' individual characteristics as control variables, including age, gender, Chinese Communist Party (CCP) membership, being ethnic minority, marital status, education level (i.e., illiterate, primary school, junior middle school, and high school or above), employment status, and self-perceived health status (i.e., good, fair, and bad health). We also control for household characteristics, including household size, the number of

children under age 18 and the number of members older than age 60 (i.e., none, one, and two or more), and region of residence. Region captures whether a respondent resided in eastern (i.e., Beijing, Tianjin, Hebei, Liaoning, Shanghai, Jiangsu, Zhejiang, Fujian, Shandong, and Guangdong), central (i.e., Shanxi, Jilin, Heilongjiang, Anhui, Henan, Jiangxi, Hubei, and Hunan), or western China (i.e., Guangxi, Chongqing, Sichuan, Guizhou, Yunnan, Shaanxi, and Gansu).

Analytical Strategy: Propensity Score Matching (PSM) and Tobit Regressions

Since it is rarely feasible or ethical to conduct experiments to study the effects of welfare participation, especially in non-conditional cash transfer programs, observational data have been frequently used. Selection bias has been an inherent challenge faced by researchers using observational data to conduct impact evaluation research. To address this issue, an increasing number of studies have used propensity score matching (PSM) to sort out the link between welfare participation and outcomes (Du & Park, 2007; Heckman, Ichimura, & Todd, 1997; Jalan & Ravallion, 2003; Gao, Zhai, et al., 2014; Gao, Zhai, & Garfinkel, 2010).

Our PSM analysis is conducted in the following steps. First, we predict the probability (i.e., propensity score) for each family to receive Dibao using a logistic regression, controlling for the rich array of household head individual characteristics as well as household characteristics listed above. Second, each household head from a Dibao recipient family is then matched with someone whose household did not receive Dibao but had the closest propensity scores, using radius matching with a caliper of 0.01, which is much smaller than 0.25 times a standard deviation of the predicted propensity scores that is usually used in the literature and provides more rigorous estimates (Rosenbaum & Rubin, 1983). This method allows for the use of all comparison units within the maximum distance of the caliper where best matches can be made and thus maximize the use of available cases in the dataset. We also use a common support

option in the matching to limit Dibao recipients to those whose propensity scores overlap with those of non-recipients to assure their comparability. We conduct a balance check to make sure that after matching the control variables in the matched samples are well-balanced (Dehejia & Wahba, 2002). Table 1 presents these balance test results, showing that the matched Dibao recipients and non-recipients are indeed very similar and have no statistically significant differences.

[Table 1 about here.]

Third, to investigate the effects of welfare participation on time use, we run tobit regression models among the matched sample using weights generated in the PSM process. We include control variables in the regression models to take into consideration any impact of the control variables on time use that could confound the relationship between welfare participation and time use. Since many respondents reported zero hours spent on certain activities, we use tobit, instead of OLS, regressions to censor these values to more accurately detect the relationship between welfare participation and time use patterns. We report robust standard errors (or sandwich estimator of variance) for regression coefficients, which are robust to various misspecifications so long as the observations are independent, which is the case for our sample. All analyses are done separately in the urban and rural samples.

To test the robustness of our results, we run two sets of OLS regressions as our sensitivity tests. First, we run OLS regressions among the radius matched sample to test whether the tobit regression results hold. Second, we use one-to-one nearest neighbor matching, instead of radius matching, to check whether the result patterns from our main analyses remain consistent. Radius matching has the advantage of keeping as many as cases in the analyses and having a large sample size and sufficient analytical power. In contrast, one-to-one nearest neighbor matching

identifies only one best match for each Dibao recipient and thus loses many cases for the analyses, which, nevertheless, has the advantage of finding the most comparable case for each Dibao recipient. The results from both sets of sensitivity analyses are very consistent with the main results.

Results

Table 2 presents our main results on the effects of Dibao participation on household head's major time use categories from caliper radius matching and tobit regressions. Overall, we find that welfare participation reduced respondents' time spent on leisure and social activities in both urban and rural areas on both work and non-work days. In addition, urban Dibao recipients tended to spend less time on education activities on both work and non-work days, have more idle time during work days, and spend more time on work-related activities on non-work days. In contrast, rural recipients tended to spend more time on personal care and household activities on both work and non-work days. They also tended to spend less time on work-related activities and more time on unspecified activities or being idle on work days.

[Table 2 about here.]

Specifically, as shown in Table 2, for urban residents, welfare participation was associated with a reduction in time spent on education activities by 2.51 hours ($SE = 0.83$) on a work day and 3.42 hours ($SE = 1.26$) on a non-work day, a rather significant portion of their daily awake hours. Their leisure and social activity time was reduced by 0.55 hours ($SE = 0.15$) and 0.79 hours ($SE = 0.17$) on respective work and non-work days. Dibao recipients also tended to have 0.76 hours ($SE = 0.40$) of idle time more on a typical work day than their non-recipient peers. The boost on work-related activity time, ironically on a non-work day, averaged 1.19 hours ($SE = 0.54$). This is probably because Dibao recipients were able to get menial jobs that

are usually available only on what are considered typical non-work days to supplement their income. Such income may or may not be detected by government officials when investigating family income to determine Dibao eligibility.

In contrast, rural Dibao recipients reduced their leisure and social activity time by 0.49 hours ($SE = 0.11$) and 0.55 hours ($SE = 0.12$) on respective work and non-work days, but tended to spend about 0.42 ($SE = 0.13$) hours more on personal care and household activities on both work and non-work days. Their time spent on non-specified activities or being idle was also lifted by 0.60 hours ($SE = 0.26$) and 0.53 hours ($SE = 0.28$) respectively on typical work days.

What are the more detailed time use patterns among urban and rural Dibao participants? Tables 3-5 present the tobit regression results in the matched samples. Table 3 focuses on personal care and household activities, Table 4 details work-related and education activities, and Table 5 itemizes leisure and social activities. In urban areas, Dibao lowered recipients' time spent on eating and drinking slightly by 0.08 hours on both work and non-work days, but increased their time spent on housekeeping on non-work days by 0.26 hours. In rural areas, the significant boost in time on personal care and household activities due to welfare participation was spent on housekeeping (0.28 hours on work days and 0.30 hours on non-work days) and sleeping and resting (0.16 hours on work days and 0.23 hours on non-work days). In addition, rural Dibao recipients spend less time on personal hygiene (0.07 hours on work days and 0.06 hours on non-work days). On work days, rural Dibao recipients also spent 0.30 hours more caring for family members.

[Table 3 about here.]

Table 4 details the possible effects of welfare participation on time spent on work and education activities. The result patterns are different between urban and rural areas. In urban

areas, Dibao participation increased recipients' time spent on primary jobs on non-work days by 1.24 hours, probably because their main jobs were from what people usually consider typical non-work days. Urban Dibao recipients spent less time on education activities (including formal and information education or other training) than their non-recipient peers. In rural areas, Dibao recipients spent less time on primary jobs and formal education on work days than their non-recipient peers.

[Table 4 about here.]

As shown in Table 2, the most consistent finding across urban and rural areas is that Dibao lowered participants' time spent on leisure and social activities. Table 5 further elaborates these time use patterns. In urban areas, Dibao lowered participants' time spent on reading, using the internet, exercising, and participating in games or other recreational activities, but increased their time spent on community service and voluntary activities on both work and non-work days. On non-work days, Dibao recipients also spent less time on watching TV or listening to music. This result pattern largely held in rural areas, with the exception that rural Dibao recipients spent less time on social activities but did not spend more time on community service or voluntary activities, perhaps partly because such activities are less clearly defined in rural areas.

[Table 5 about here.]

To test the robustness of these main findings, Table 6 presents the OLS regression results based on radius matching, while Table 7 shows the OLS regression results using one-to-one nearest neighbor matching. These result patterns are very similar to our main results presented above using tobit regressions based on radius matching.

[Tables 6 and 7 about here.]

Conclusion and Discussion

Using the newly available China Family Panel Studies (CFPS) 2010 survey data and a propensity score matching (PSM) method with tobit regressions, this study examines the influence of welfare participation on household head's time use pattern in both urban and rural areas in China. We find that Dibao lowered recipients time spent on various leisure and social activities and increased their idle time for both urban and rural residents. Urban Dibao recipients also tended to spend less time on education activities, while rural Dibao recipients spent more time on personal care and household activities such as housekeeping and sleeping or resting. Urban Dibao recipients spent more time on work-related activities on typical non-work days, while rural Dibao recipients spent less time on work activities on typical work days.

The most consistent finding on reduced leisure activities supports our hypotheses inferred from previous literature based on welfare participation and family consumption patterns. In the Chinese context, this effect may play out through two channels. Dibao recipients might be depressed or have lower interest or engagement in such leisure or social activities due to their bleak outlook for life or future in general. Meanwhile, they might also shy away from such activities out of fear that they be deemed inappropriate welfare recipients by government officials or their neighbors and thus have their Dibao benefits taken away. It is indeed sad news to find that Dibao may have driven the recipients to exercise less, participating in fewer recreational activities, and having fewer social activities. Meanwhile, the good news is that Dibao helped boost time spent on community service and voluntary activities in China, which, however, may be partly due to a more socially desirable response provided by the survey participants.

Regarding work and education activities, our findings confirm some speculations based on the literature that welfare participation may reduce work efforts, including both work-related

activities and education activities. Our finding on urban Dibao identified increased work-related activities on typical non-work days, suggesting that Dibao recipients might only be able to find informal, menial jobs that are only available on what are considered typical non-work days, or might seek out underground jobs to avoid being kicked off the welfare roll.

These findings provide pioneering evidence on the possible link between welfare participation and time use patterns in the global welfare literature. In the Chinese context, it is one of the very first studies to empirically examine rural Dibao and contrast the effects of Dibao for urban and rural residents. As Dibao is constantly expanding, the empirical evidence from this article suggests that Dibao might have some unintended adverse effects on the recipients. These includes less time spent on leisure and social activities, reduced work and education activities or increased underground employment, and more time spent on being idle. The reasons behind such patterns warrant further investigation, probably through qualitative research, and future reforms of Dibao and its supplementary policies and programs need to consider how best to promote both the economic and holistic well-being of the participants. It is also important to examine the possible effects of welfare participation on time use patterns in other countries and regions to see whether the result patterns identified in this article hold around the globe.

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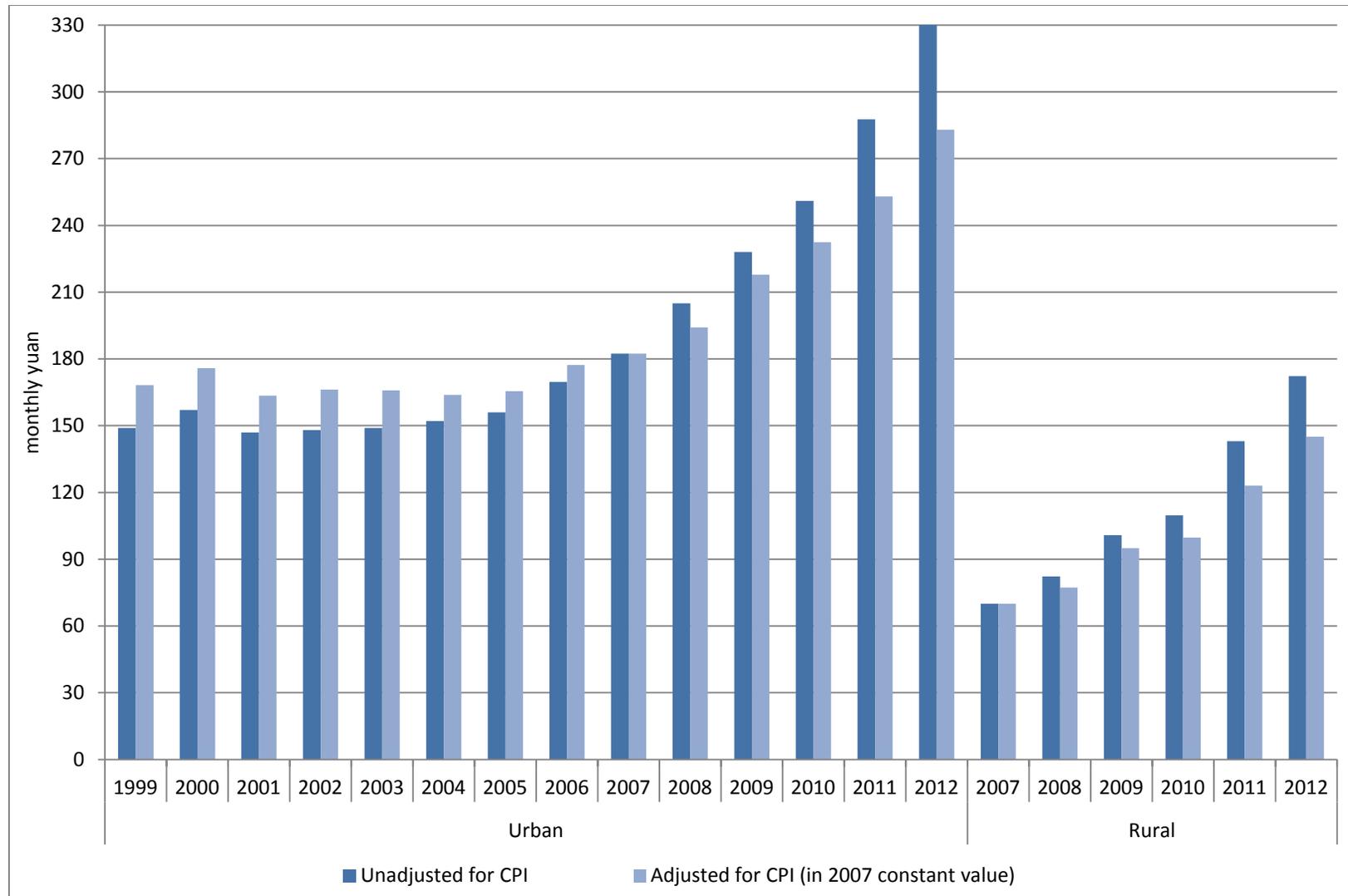


Figure 1. Trends in urban and rural average Dibao lines (monthly yuan).

Sources: Figures unadjusted for consumer price index (CPI) are from Ministry of Civil Affairs (various years); figures adjusted for CPI are from authors' calculations using the unadjusted figures and official urban and rural CPIs, respectively (National Bureau of Statistics, various years).

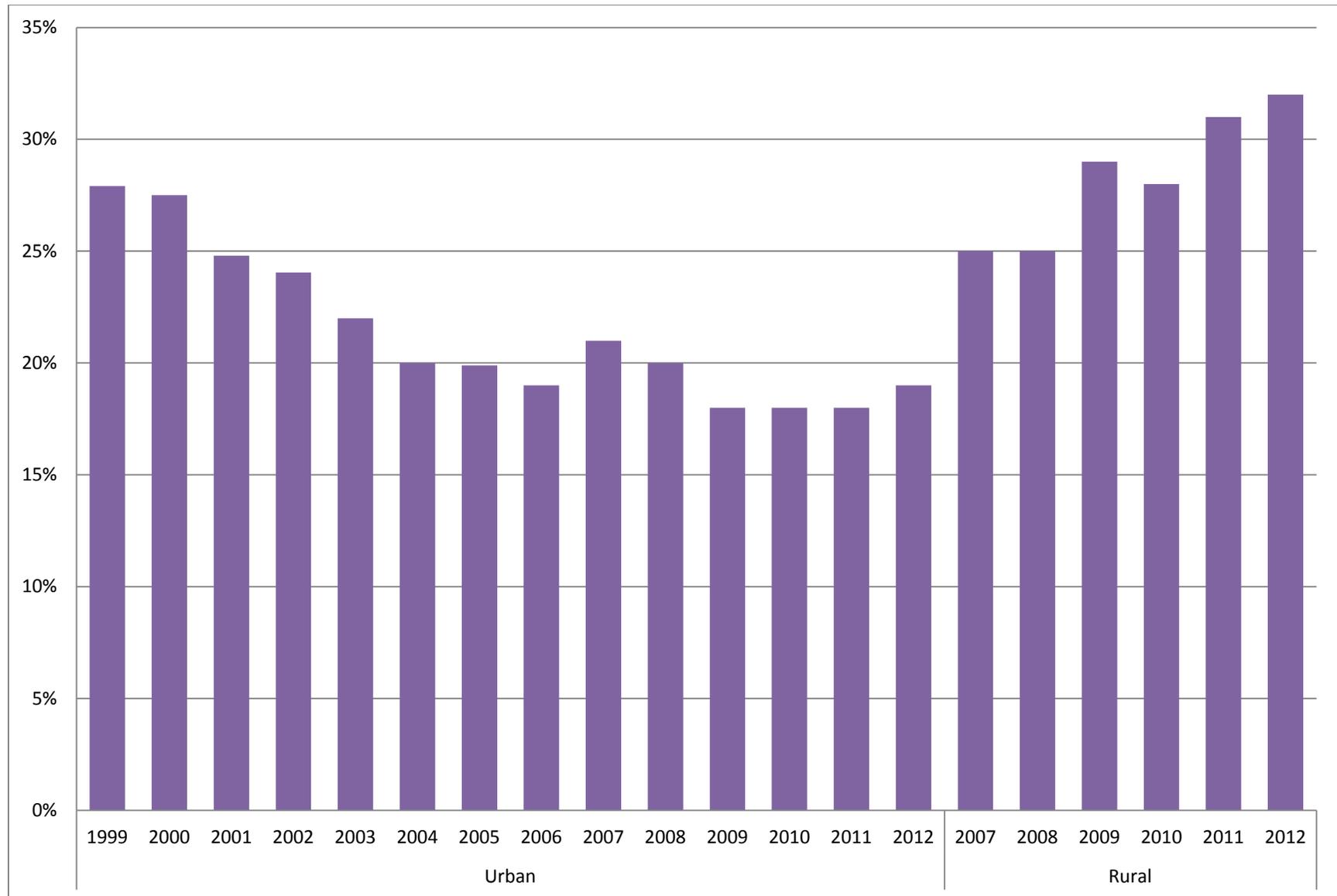


Figure 2. *Urban and rural average Dibao lines as a percentage of per capita consumption*

Sources: Authors' calculations from Ministry of Civil Affairs (various years) and National Bureau of Statistics (various years).

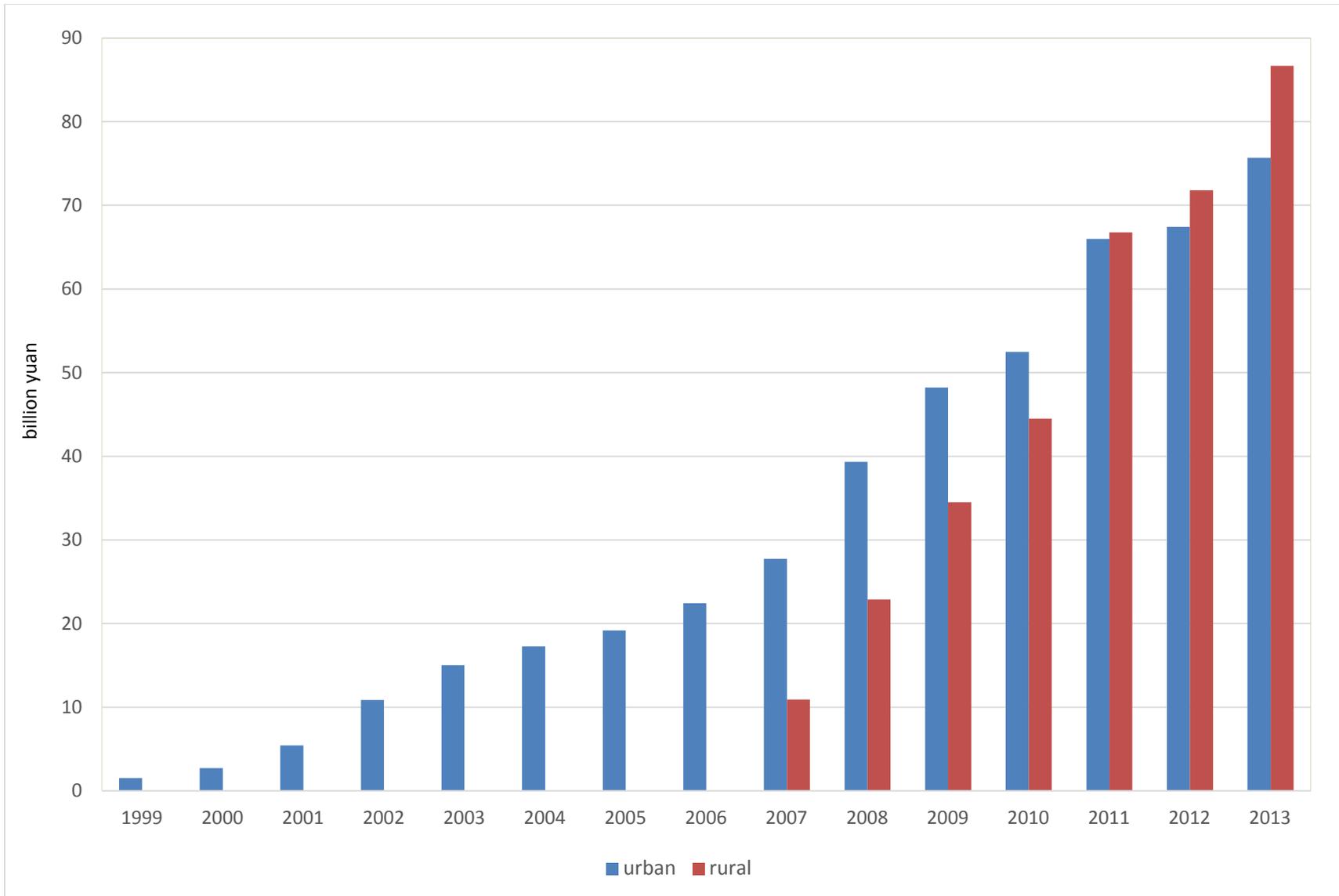


Figure 3. *Total government expenditure on urban and rural Dibao (billion yuan)*

Sources: Authors' calculations from Ministry of Civil Affairs (various years).

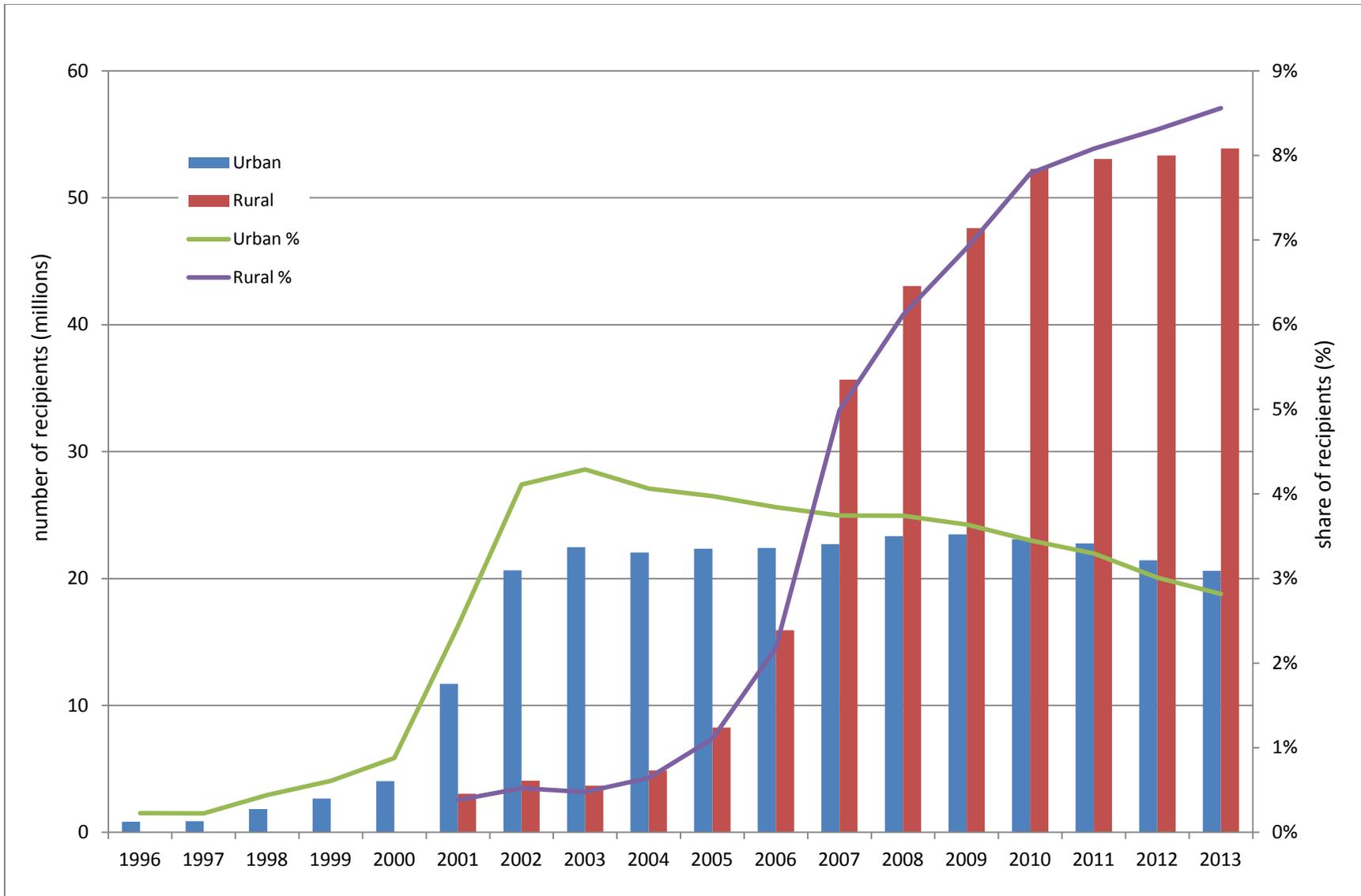


Figure 4. Total number of Dibao recipients (million persons) and as a percentage of respective urban and rural populations in China
Sources: Authors' calculations from Ministry of Civil Affairs (various years) and National Bureau of Statistics (various years).

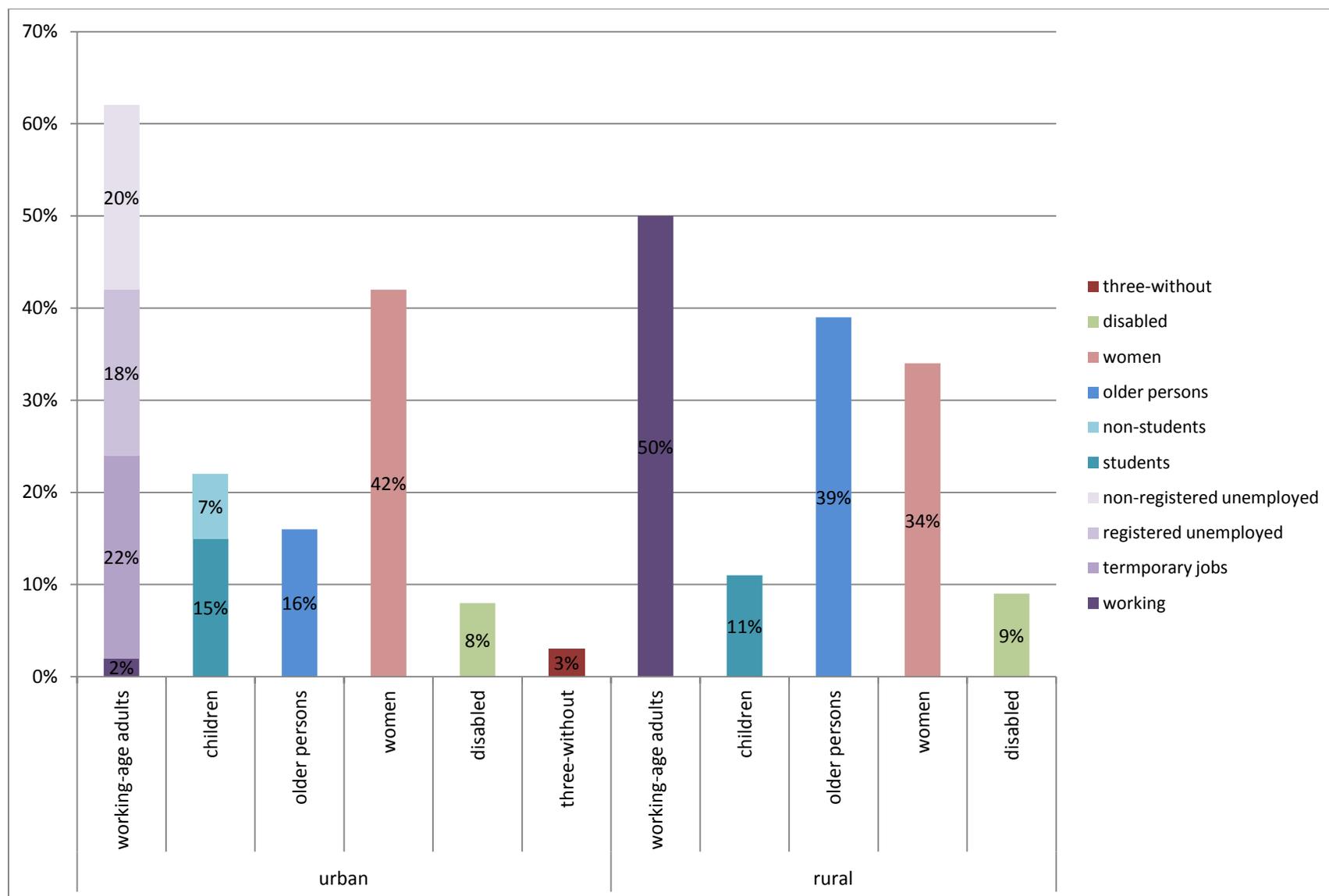


Figure 5. Demographic characteristics of Dibao recipients in urban and rural China in 2013

Sources: Ministry of Civil Affairs (2014).

Table 1. Balance check of demographic characteristics by Dibao receipt status before and after propensity score matching

	Urban before matching (n=6,242)					Urban after matching (n=5,453)					Rural before matching (n=6,671)					Rural after matching (n=6,291)				
	Non-dibao (n=5,784)		Dibao (n=458)		P	Non-Dibao (n=4,999)		Dibao (n=454)		P	Non-dibao (n=5,910)		Dibao (n=761)		P	Non-Dibao (n=5,538)		Dibao (n=753)		P
	Mean	SD	Mean	SD		Mean	SD	Mean	SD		Mean	SD	Mean	SD		Mean	SD	Mean	SD	
Household Head Characteristics																				
Age	50.36	13.61	51.92	13.04	*	52.16	14.06	51.83	13.03		49.67	12.00	53.14	13.57	***	53.18	13.34	52.96	13.50	
Male	0.66	0.47	0.66	0.48		0.66	0.47	0.65	0.48		0.81	0.40	0.81	0.39		0.80	0.40	0.81	0.39	
Communist Party member	0.16	0.37	0.08	0.27	***	0.08	0.28	0.08	0.27		0.09	0.28	0.09	0.28		0.08	0.28	0.09	0.28	
Ethnic minority	0.04	0.20	0.08	0.27	***	0.08	0.28	0.08	0.27		0.10	0.30	0.18	0.38	***	0.17	0.37	0.18	0.38	
Married	0.87	0.34	0.75	0.43	***	0.76	0.43	0.76	0.43		0.91	0.28	0.76	0.43	***	0.77	0.42	0.77	0.42	
Employed	0.51	0.50	0.34	0.47	***	0.34	0.47	0.34	0.47		0.65	0.48	0.53	0.50	***	0.54	0.50	0.54	0.50	
Education Level																				
Illiterate	0.16	0.37	0.29	0.45	***	0.29	0.45	0.29	0.45		0.32	0.47	0.47	0.50	***	0.48	0.50	0.47	0.50	
Primary school	0.17	0.37	0.19	0.39		0.20	0.40	0.19	0.40		0.28	0.45	0.27	0.44		0.27	0.45	0.27	0.45	
junior middle school	0.33	0.47	0.30	0.46		0.30	0.46	0.30	0.46		0.29	0.45	0.20	0.40	***	0.20	0.40	0.21	0.40	
≥ High school	0.34	0.47	0.22	0.41	***	0.21	0.41	0.22	0.41		0.10	0.31	0.05	0.22	***	0.05	0.22	0.05	0.22	
Self-perceived health status																				
Good	0.45	0.50	0.33	0.47	***	0.33	0.47	0.33	0.47		0.46	0.50	0.34	0.47	***	0.34	0.47	0.34	0.47	
Fair	0.42	0.49	0.40	0.49		0.41	0.49	0.40	0.49		0.35	0.48	0.32	0.47		0.33	0.47	0.33	0.47	
Bad	0.13	0.34	0.28	0.45	***	0.26	0.44	0.27	0.45		0.19	0.39	0.34	0.47	***	0.33	0.47	0.33	0.47	
Household Characteristics																				
Household size	3.38	1.50	3.57	1.74	*	3.61	1.76	3.57	1.74		4.17	1.82	3.91	1.89	***	3.95	1.95	3.93	1.89	
Number of children (<18 years)																				
0	0.64	0.48	0.65	0.48		0.64	0.48	0.64	0.48		0.59	0.49	0.62	0.49		0.62	0.49	0.61	0.49	
1	0.27	0.45	0.26	0.44		0.25	0.43	0.26	0.44		0.20	0.40	0.17	0.37	*	0.17	0.37	0.17	0.38	
≥ 2	0.09	0.29	0.10	0.30		0.11	0.31	0.10	0.30		0.21	0.41	0.22	0.41		0.21	0.41	0.22	0.41	
Number of elders (≥ 60 years)																				
0	0.55	0.50	0.58	0.49		0.57	0.49	0.58	0.49		0.54	0.50	0.62	0.49	***	0.62	0.49	0.62	0.49	
1	0.27	0.44	0.29	0.45		0.29	0.45	0.28	0.45		0.29	0.45	0.27	0.45		0.27	0.45	0.27	0.45	
≥ 2	0.18	0.39	0.14	0.34	**	0.14	0.34	0.14	0.34		0.17	0.37	0.11	0.31	***	0.11	0.31	0.11	0.31	
Region																				
Western	0.15	0.35	0.21	0.41	**	0.21	0.41	0.20	0.40		0.35	0.48	0.49	0.50	***	0.49	0.50	0.49	0.50	
Central	0.29	0.45	0.41	0.49	***	0.40	0.49	0.41	0.49		0.29	0.45	0.27	0.45		0.28	0.45	0.27	0.45	
Eastern	0.56	0.50	0.39	0.49	***	0.38	0.49	0.39	0.49		0.37	0.48	0.24	0.43	***	0.23	0.42	0.24	0.43	

Notes: Means with standard deviations in parentheses; Chi-square (for categorical variables) and t tests (for continuous variables) were used to test significant group differences between Dibao recipients and non-recipients before and after propensity score matching; *** p < 0.001, ** p < 0.01, * p < 0.05.

Table 2. *Tobit regression results on the effects of Dibao receipt on household head's major time use categories based on radius matching*

Outcome variables	Urban matched sample (n=5,453)				Rural matched sample (n=6,291)			
	Work Day		Non-Work Day		Work Day		Non-Work Day	
	Coef.	Robust SE	Coef.	Robust SE	Coef.	Robust SE	Coef.	Robust SE
Personal care and household activities	0.13	0.16	0.15	0.16	0.42	0.13 **	0.43	0.13 **
Work-related activities	0.21	0.34	1.19	0.54 *	-0.46	0.20 *	-0.42	0.28
Education activities	-2.51	0.83 **	-3.42	1.26 **	-0.19	0.89	0.24	1.04
Leisure and social activities	-0.55	0.15 ***	-0.79	0.17 ***	-0.49	0.11 ***	-0.55	0.12 ***
Transportation	-0.07	0.07	0.03	0.09	0.03	0.07	0.06	0.08
Other activities	0.52	0.40	0.55	0.35	0.60	0.26 *	0.41	0.28
Idle time (no specified activity)	0.76	0.40 +	0.63	0.39	0.53	0.28 +	0.26	0.29

Notes: Tobit regression results based on propensity score radius matching within .01 caliper are reported. Each pair of regression coefficients and robust standard error is from a separate regression model run among the matched sample. All regressions controlled for household head characteristics and household characteristics listed in Table 1. *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, + $p < 0.10$.

Table 3. *Tobit regression results on the effects of Dibao receipt on household head's detailed time use pattern on personal care and household activities based on radius matching*

Outcome variables	Urban matched sample (n=5,453)				Rural matched sample (n=6,291)			
	Work Day		Non-Work Day		Work Day		Non-Work Day	
	Coef.	Robust SE	Coef.	Robust SE	Coef.	Robust SE	Coef.	Robust SE
Personal care and household activities	0.13	0.16	0.15	0.16	0.42	0.13 **	0.43	0.13 **
Sleeping and resting	0.10	0.10	0.02	0.11	0.16	0.08 *	0.23	0.08 **
Eating and drinking	-0.08	0.03 *	-0.08	0.04 *	-0.01	0.03	-0.02	0.03
Personal hygiene	-0.04	0.03	-0.02	0.03	-0.07	0.02 ***	-0.06	0.02 **
Housekeeping	0.15	0.10	0.26	0.09 **	0.28	0.10 **	0.30	0.10 **
Caring for family members	0.10	0.20	0.06	0.20	0.30	0.13 *	0.17	0.13

Notes: Tobit regression results based on propensity score radius matching within .01 caliper are reported. Each pair of regression coefficients and robust standard error is from a separate regression model run among the matched sample. All regressions controlled for household head characteristics and household characteristics listed in Table 1. *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, + $p < 0.10$.

Table 4. *Tobit regression results on the effects of Dibao receipt on household head's detailed time use pattern on work-related and education activities based on radius matching*

Outcome variables	Urban matched sample (n=5,453)					Rural matched sample (n=6,291)				
	Work Day		Non-Work Day			Work Day		Non-Work Day		
	Coef.	Robust SE	Coef.	Robust SE	*	Coef.	Robust SE	Coef.	Robust SE	
Work-related activities	0.21	0.34	1.19	0.54	*	-0.46	0.20	*	-0.42	0.28
Primary job	0.16	0.35	1.24	0.57	*	-0.40	0.20	*	-0.31	0.28
Other jobs	0.50	1.17	0.33	1.12		-1.29	0.83		-0.61	0.69
Education activities	-2.51	0.83	**	-3.42	1.26	**	-0.19	0.89	0.24	1.04
Formal education	-1.55	0.24	***	-	-	-3.26	1.93	+	-0.65	1.53
Completing assignments or reviewing course materials related to formal education	-1.91	0.97	*	-1.83	0.81	*	0.47	0.84	0.00	0.36
Informal education or other training	-2.71	1.16	*	-2.68	1.27	*	-0.66	1.08	-0.25	0.99

Notes: Tobit regression results based on propensity score radius matching within .01 caliper are reported. Each pair of regression coefficients and robust standard error is from a separate regression model run among the matched sample. All regressions controlled for household head characteristics and household characteristics listed in Table 1. *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, + $p < 0.10$. The regressions models were unable to estimate coefficients on time spent on formal education in the rural sample because very few respondents reported such activities.

Table 5. Tobit regression results on the effects of Dibao receipt on household head's detailed time use pattern on leisure and social activities based on radius matching

Outcome variables	Urban matched sample (n=5,453)						Rural matched sample (n=6,291)					
	Work Day			Non-Work Day			Work Day		Non-Work Day			
	Coef.	Robust SE		Coef.	Robust SE		Coef.	Robust SE	Coef.	Robust SE		
Leisure and social activities	-0.55	0.15	***	-0.79	0.17	***	-0.49	0.11	***	-0.55	0.12	***
Reading	-0.19	0.10	+	-0.28	0.12	*	-0.36	0.14	*	-0.42	0.14	**
Watching TV and listening to radio or music	-0.12	0.10		-0.23	0.11	*	-0.16	0.07	*	-0.20	0.08	**
Using the internet	-0.80	0.33	*	-1.27	0.34	***	-1.98	0.74	**	-1.15	0.67	+
Exercising	-0.52	0.12	***	-0.54	0.12	***	-0.21	0.18		-0.14	0.17	
Participating in games or other recreational activities	-0.42	0.21	*	-0.43	0.20	*	-0.45	0.20	*	-0.47	0.19	*
Social activities	0.00	0.10		-0.07	0.11		-0.26	0.10	**	-0.23	0.11	*
Community service and voluntary activities	0.48	0.27	+	0.56	0.25	*	-0.65	0.57		-0.46	0.56	
Religious activities	-0.03	0.42		-0.15	0.49		-0.36	0.44		-0.59	0.47	

Notes: Tobit regression results based on propensity score radius matching within .01 caliper are reported. Each pair of regression coefficients and robust standard error is from a separate regression model run among the matched sample. All regressions controlled for household head characteristics and household characteristics listed in Table 1. *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, + $p < 0.10$.

Table 6. Sensitivity test: OLS regression results on the effects of Dibao receipt on household head's time use pattern based on radius matching

Outcome variables	Urban matched sample (n=5,453)				Rural matched sample (n=6,291)			
	Work Day		Non-Work Day		Work Day		Non-Work Day	
	Coef.	Robust SE	Coef.	Robust SE	Coef.	Robust SE	Coef.	Robust SE
Personal care and household activities	0.13	0.16	0.15	0.16	0.42	0.13 **	0.43	0.13 **
Sleeping and resting	0.11	0.10	0.02	0.11	0.16	0.08 *	0.23	0.08 **
Eating and drinking	-0.08	0.03	-0.08	0.04 *	-0.01	0.03	-0.02	0.03
Personal hygiene	-0.04	0.03	-0.02	0.03	-0.07	0.02 ***	-0.06	0.02 **
Housekeeping	0.10	0.08	0.20	0.08 *	0.27	0.08 **	0.27	0.08 **
Caring for family members	0.03	0.09	0.03	0.10	0.09	0.05	0.06	0.06
Work-related activities	0.02	0.17	0.29	0.19	-0.38	0.13 **	-0.28	0.15 +
Primary job	-0.01	0.17	0.28	0.19	-0.33	0.13 *	-0.21	0.14
Other jobs	0.03	0.06	0.00	0.05	-0.05	0.03	-0.07	0.04 +
Education activities	-0.03	0.01 **	-0.03	0.01 ***	0.00	0.01	0.01	0.01
Formal education	-0.01	0.01	-0.01	0.00 **	-0.01	0.00 *	0.00	0.01
Completing assignments or reviewing course materials related to formal education	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Informal education or other training	-0.02	0.00 ***	-0.01	0.00 **	0.00	0.01	0.00	0.01
Leisure and social activities	-0.52	0.14 ***	-0.77	0.16 ***	-0.42	0.10 ***	-0.47	0.11 ***
Reading	-0.04	0.03	-0.06	0.04 +	-0.03	0.02 *	-0.05	0.02 **
Watching TV and listening to radio or music	-0.06	0.09	-0.17	0.10 +	-0.12	0.05 *	-0.14	0.06 *
Using the internet	-0.08	0.03 *	-0.15	0.04 ***	-0.02	0.01 **	-0.02	0.01 *
Exercising	-0.20	0.04 ***	-0.20	0.04 ***	-0.02	0.02	-0.02	0.02
Participating in games or other recreational activities	-0.11	0.05 *	-0.13	0.06 +	-0.10	0.04 **	-0.11	0.04 **
Social activities	-0.03	0.06	-0.05	0.06	-0.13	0.05 *	-0.11	0.06 *
Community service and voluntary activities	0.00	0.01	0.01	0.01	-0.01	0.01	0.00	0.01
Religious activities	-0.02	0.02	-0.02	0.03	0.00	0.01	-0.01	0.01
Transportation	-0.05	0.03	0.00	0.04	0.01	0.03	0.03	0.03
Other activities	0.11	0.12	0.15	0.12	0.23	0.08 **	0.19	0.10 *
Idle time (no specified activity)	0.26	0.13 *	0.15	0.12	0.13	0.09	0.06	0.10

Notes: OLS regression results based on propensity score radius matching within .01 caliper are reported. Each pair of regression coefficients and robust standard error is from a separate regression model run among the matched sample. All regressions controlled for household head characteristics and household characteristics listed in Table 1. *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, + $p < 0.10$.

Table 7. Sensitivity test: OLS regression results on the effects of Dibao receipt on household head's time use pattern based on one-to-one matching

Outcome variables	Urban matched sample (n=916)				Rural matched sample (n=1,518)			
	Work Day		Non-Work Day		Work Day		Non-Work Day	
	Coef.	Robust SE	Coef.	Robust SE	Coef.	Robust SE	Coef.	Robust SE
Personal care and household activities	0.31	0.19	0.44	0.20 *	0.33	0.16 *	0.24	0.16
Sleeping and resting	0.11	0.11	0.05	0.13	0.15	0.09	0.15	0.09
Eating and drinking	-0.11	0.05 *	-0.07	0.05	0.01	0.04	-0.01	0.04
Personal hygiene	-0.03	0.03	0.01	0.03	-0.06	0.03 *	-0.05	0.03
Housekeeping	0.14	0.09	0.29	0.10 **	0.21	0.10 *	0.20	0.10 *
Caring for family members	0.20	0.10 +	0.19	0.11 +	0.07	0.07	0.02	0.07
Work-related activities	-0.03	0.21	0.13	0.24	-0.31	0.17 +	-0.19	0.18
Primary job	-0.06	0.21	0.12	0.23	-0.25	0.17	-0.09	0.18
Other jobs	0.03	0.08	0.01	0.07	-0.06	0.05	-0.09	0.06
Education activities	-0.05	0.02 *	-0.02	0.02	0.00	0.01	0.01	0.01
Formal education	-0.02	0.01	0.00	0.00	-0.01	0.01	0.01	0.01
Completing assignments or reviewing course materials related to formal education	-0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Informal education or other training	-0.02	0.02	-0.01	0.02	0.00	0.01	0.00	0.01
Leisure and social activities	-0.64	0.18 **	-0.87	0.20 ***	-0.49	0.12 ***	-0.56	0.13 ***
Reading	-0.04	0.04	-0.05	0.04	-0.01	0.02	-0.03	0.02
Watching TV and listening to radio or music	-0.18	0.11	-0.22	0.12 +	-0.19	0.07 **	-0.19	0.07 *
Using the internet	-0.10	0.05 +	-0.18	0.06 **	-0.01	0.01	-0.01	0.01
Exercising	-0.18	0.05 ***	-0.15	0.05 **	-0.02	0.03	-0.01	0.03
Participating in games or other recreational activities	0.02	0.07	-0.05	0.08	-0.09	0.05 *	-0.13	0.06 *
Social activities	-0.10	0.07	-0.18	0.08 *	-0.15	0.06 *	-0.17	0.07 *
Community service and voluntary activities	-0.01	0.02	0.00	0.02	-0.01	0.01	0.00	0.01
Religious activities	-0.06	0.03 +	-0.06	0.04 +	-0.01	0.02	-0.01	0.02
Transportation	-0.05	0.04	0.00	0.05	-0.01	0.04	0.01	0.04
Other activities	0.02	0.16	0.16	0.15	0.20	0.10 *	0.22	0.12 +
Idle time (no specified activity)	0.31	0.16 *	0.08	0.18	0.20	0.11 +	0.16	0.12

Notes: OLS regression results based on propensity score radius matching within .25 standard deviation caliper are reported. Each pair of regression coefficients and robust standard error is from a separate regression model run among the matched sample. All regressions controlled for household head characteristics and household characteristics listed in Table 1. *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, + $p < 0.10$.