I Z A Institute
of Labor Economics
Initiated by Deutsche Post Foundation

DISCUSSION PAPER SERIES

IZA DP No. 16327

Effects of Lottery Wins on Household Labor Supply

Ignacio Belloc
José Alberto Molina
Jorge Velilla

JULY 2023

I Z A Institute
of Labor Economics

Initiated by Deutsche Post Foundation

DISCUSSION PAPER SERIES

IZA DP No. 16327

Effects of Lottery Wins on Household Labor Supply

Ignacio Belloc
University of Zaragoza and IEDIS

José Alberto Molina
University of Zaragoza, IEDIS and IZA

Jorge Velilla
University of Zaragoza and IEDIS

JULY 2023

ISSN: 2365-9793

IZA – Institute of Labor Economics

Schaumburg-Lippe-Straße 5–9
53113 Bonn, Germany

Phone: +49-228-3894-0
Email: publications@iza.org

www.iza.org

ABSTRACT

Effects of Lottery Wins on Household Labor Supply*

This paper analyses the impact of current and past lottery wins on household labor supply in the United Kingdom using data from the British Household Panel Survey 1997-2008. Estimating individual fixed-effects models, we show that male annual hours of work do not respond to lottery wins, whilst female hours of work decrease in response to current and past lottery wins. Specifically, current female annual hours of work decrease by about 26 hours if the partner has won the lottery during that year, and about 28 hours per year if he won the lottery the previous year. When we include large lottery wins (lottery wins worth more than £500), we find a compensation effect within the household, as the recipient's spouse increases his/her hours of work. These results are inconsistent with household unitary models, and suggest that large shocks in unearned income may have a persistent impact on household behavior.

JEL Classification: D13, D31, J22

Keywords: household labor supply, lottery win, fixed-effects models, British Household Panel Survey

Corresponding author:
José Alberto Molina
Department of Economic Analysis
University of Zaragoza
C/ Gran Vía 2
50005 Zaragoza
Spain
E-mail: jamolina@unizar.es

* This paper has benefitted from funding from the Government of Aragón [Project S32_23R]. Ignacio Belloc gratefully acknowledges financial support from the Spanish Ministry of Science, Innovation and Universities through grant FPU20-03564. No declarations of interest.

1. Introduction

This paper addresses the impact of winning the lottery on household labor supply. We consider that winning the lottery is an exogenous shock to the household economic environment and, as such, it may have an impact on household observed behaviors driven by various forces, such as intrahousehold effects (Theloudis et al., 2022), or income and wealth effects (Heathcote et al., 2014). As a consequence, households may respond to this shock by modifying their hours of work.

Some authors have studied the impact of various shocks to the household economic environment on observable behaviors, including gambling, gifts, lottery wins, and inheritances. Such positive shocks can generally be considered as unexpected income changes, and thus are assumed to be exogenous, after certain reasonable assumptions. In addition, they generally represent an improvement in the household's financial situation that may affect recipient decisions regarding earnings, labor supply, mortgages, consumption, or retirement, among other outcomes. Within this context, it is important to study how such wealth shocks affect household labor supply, to test the potential intrahousehold effects of large monetary cash transfers targeting specific groups on household working times, such as pension, tax reforms or basic income programs, as they represent unexpected income changes that can have different effects compared to other income transfers, and generally have an intertemporal aspect, especially for large income shocks such as lottery wins. Nevertheless, many studies in the literature have failed to precisely document how individuals respond to exogenous changes in wealth and unearned income, as it is difficult to find an exogenous unanticipated source of variation in wealth. Hence, in this article, we investigate the extent to which a positive shock in unearned income, through a lottery win, influences household labor supply.

In this context, we use data from the British Household Panel Survey (BHPS) for the period 1997-2008, when information about lottery wins is gathered, to study the impact of lottery wins on labor supply of two-member households in the UK.[1] We consider a lottery win as a major life event and adopt a collective household perspective (Chiappori,

[1] Existing research has used the BHPS to study the impact of the lottery on various household behaviors. Boertien (2012) shows that lottery wins reduce the probability of divorce three years later, Apouey and Clark (2015) study the impact of lottery prizes on physical and mental health, Cheng et al. (2018) study the relationship between lottery wins and health service utilization, Flèche et al. (2021) document a greater probability of being self-employed for those who win a lottery, and Costa-Font and Györi (2023) examine the effect of lottery wins on individual's overweight and body mass index (BMI).

1988, 1992), which has recently become the predominant theoretical framework in household economics for empirically studying household behaviors. This enables us to analyze intrahousehold dynamics and resource allocation, in contrast to the traditional unitary approach (Choukhmane et al., 2023). In doing so, we follow Theloudis et al. (2022), who found that shocks to the household economic environment have a lasting impact on labor supply, and thus analyze how current and past lottery wins impact current spouses' hours of work.

We exploit the panel structure of the BHPS, and estimate fixed-effect models to control for unobserved and time-constant heterogeneity, which captures, for instance, different gambling profiles (e.g., not everyone plays the lottery), or different chances of winning the lottery (lottery wins are random events subject to playing). Although in the UK several authors have acknowledged that many people play lotteries (Wardle et al., 2007; Apouey and Clark, 2015; Flèche et al., 2021; Costa-Font and Györi, 2023), our panel strategy mitigates some potential concerns regarding unobserved permanent individual heterogeneity in preferences. Therefore, by using the fixed-effects estimator, we exploit within-person variations over time and consider lottery wins to be a random source of household economic resources in our identification strategy.

Our results suggest that winning the lottery is unrelated to husbands' annual hours of work. However, current female hours of work are affected by having won the lottery both in the present and in the past. If the husband wins the lottery at the current date, the wife reduces her current hours of work by about 26 hours per year. On the other hand, if he won the lottery one year ago, the current labor supply of the wife is found to decrease by about 28 hours per year. These results suggest that males exhibit an altruistic behavior: if they win the lottery, their wives benefit, as the females fully appropriate the prize and modify their work hours. Furthermore, we use information for the amount of the lottery win and find that it is important: when a given spouse receives a significant lottery win (worth more than £500), his/her spouse increases his/her working hours, suggesting a compensation effect within the household. Unfortunately, data limitations on the number of large lottery wins in the BHPS prevents a deeper analysis.

Our contribution to the literature is then twofold. First, we contribute to the literature on wealth and earnings shocks by studying the impact of lottery wins on labor supply behaviors (Cesarini et al., 2017), focusing on work hours rather than on labor force participation, labor earnings, or other household behaviors. Determining whether

exogenous income shocks affect labor supply is an empirically demanding identification problem, due to the lack of exogenous changes in income (Imbens et al., 2001). Within this context, to the best of our knowledge, this is the first study to address whether household labor supply is impacted by lottery wins, from an intensive margin perspective. Second, we study the impact of winning the lottery, both in the present and in the past, on current household labor supply, resembling the work of Theloudis et al. (2022), who analyze the semipermanent impact of wage shocks on household labor supply in a lifecycle collective model. Prior studies focusing on wealth shocks and their relationships to household labor supply have only focused on static or contemporaneous relationships (Blau and Goodstein, 2016; Niizeki and Hori, 2019). Nevertheless, considerable uncertainty remains about the persistence of any wealth effects on household labor supply, and we thus contribute to these studies by providing a first exploration of the impact of current and past lottery wins on household labor supply, adopting a dynamic model. Within this context, differentiating between short- and long-run lottery win responses in the household decision-making process is important, because household decisions tend to respond gradually to wealth shocks, and simply estimating contemporaneous relationships may not capture the full effect of a positive shock in unearned income.

The rest of the paper is organized as follows. Section 2 provides a detailed background of wealth effects on various outcomes and discusses the related literature. Section 3 presents the data, sample selection, and variables. Section 4 outlines the econometric strategy, and Section 5 describes the results. Finally, Section 6 concludes.

2. Literature review

In this section, our objective is to give a summary of the related literature on income shocks' impacts, paying attention to the most recent articles published. Many studies have focused on wealth shocks' impacts on different outputs, such as marital stability, household labor earnings, mortgages, health status, consumption, fertility, and major life cycle decisions such as retirement. Among other exogenous wealth shocks, our literature review indicates that lottery wins, inheritance receipts, or gifts stand out, because these may result in sudden wealth, an exogenous change in income, and this financial improvement could result in changes in individual decisions.

Cesarini et al. (2017) study the effect of wealth on household labor earnings, using a sample of Swedish lottery players from a high-quality administrative data. The authors find that winning a lottery prize modestly reduces labor earnings, and this response is stronger for winners than for their spouses. This last result points to the importance of the lottery winner's identity, and rejects the unitary household model. They also show that winning a lottery prize has roughly constant effects over the ten years after the win. Picchio et al. (2018) analyze data on Dutch State Lottery winners, finding that winning a lottery prize reduces labor earnings, both contemporaneously and in later years, although they find no effect on labor force participation. Besides, when they remove large lottery wins (over €500,000), they only observe an instantaneous effect on labor earnings, suggesting that such labor earnings reduction is mainly concentrated among those who receive a significant lottery win. In a novel paper, Cesarini et al. (2023), using the same three samples of lottery players as in Cesarini et al. (2017), estimate the effects of lottery wins on marriage and fertility, finding interesting heterogenous results by winner's gender. Specifically, males increase their probability of marriage within five years after the lottery (medium-run) and of having children in all time horizons (two, five, and ten years after the lottery), while female winners increase their probability of divorce in two years after the lottery (short-run), but not ten years after the lottery (long-run).

For inheritances, Blau and Goodstein (2016) use data from the Health and Retirement Study (HRS) for a sample of older married couples in the US, focusing on labor force participation, and obtain that receiving an inheritance causes a reduction in the recipient's labor supply, but there is no impact on the recipient's spouse. The authors treat inheritance as a distribution factor, since it is not subject to laws regarding marital property division at divorce in the US, pertaining to the recipient exclusively. In addition, the authors point to the importance of controlling for inheritance expectations in order to interpret inheritances as a source of exogenous variation in wealth, since some inheritances are anticipated for some time beforehand and individuals may change their behavior before receiving the bequest, according to life-cycle models (e.g., adapting her/his intertemporal labor behavior after the reception of an expected inheritance). Similarly, Niizeki and Hori (2019) use Japanese panel microdata, the Family and Lifestyle Survey, to explore the effect of inheritances in the extensive margin of work of individuals aged 21-51, showing that men's labor force participation does not respond to an inheritance, while women's labor force participation decreases due to an inheritance. The authors also reject the unitary model, since whoever receives an inheritance reduces her/his labor supply.

The effect of inheritances and gifts on labor supply has also been extensively analyzed in Europe recently (Doorley and Pestel, 2020; Malo and Sciulli, 2021; Basiglio, 2022; Tur-Sinai et al., 2022; Suari-Andreu, 2023). Doorley and Pestel (2020) examine the effect of inheritances in Germany, using data from the German Socio-Economic Panel (SOEP), finding that women are less likely to work full-time and that their hours of work decrease after receiving an inheritance. By contrast, men appear not to respond. Basiglio (2022) takes a different approach, focusing on the likelihood of divorce, using Dutch panel data from 2002 to 2016. Her findings suggest different impacts according to the recipient, and when the shock (any inheritance and/or gift) is received by the wife the probability of the couple separating increases. Tur-Sinai et al. (2022) use data from the Survey of Health, Ageing and Retirement in Europe (SHARE), where information about inheritances and gifts worth more than €5,000 is gathered, showing no effects of inheritances and gifts on labor force participation, neither for men nor women. Suari-Andreu (2023) also uses data from the SHARE and focuses on the impact of receiving an inheritance on retirement, consumption, and labor supply, documenting that an inheritance does not have large effects on labor supply, retirement, or food consumption.

For the UK, the literature about wealth shocks has focused principally on the impact of lottery wins on different factors (Gardner and Oswald, 2007; Boertien, 2012; Apouey and Clark, 2015; Flèche et al., 2021; Costa-Font and Györi, 2023), using data from the BHPS. For example, Gardner and Oswald (2007) use data from a General Health Questionnaire (GHQ) conducted in the BHPS between 1996 and 2003, and find that lottery winners have significantly better psychological health. On the other hand, Boertien (2012) focuses on separation and finds that lottery wins reduce the probability of separation only when men win, suggesting that a temporary change in income can distract people from problems within the household. Similarly to Gardner and Oswald (2007), Apouey and Clark (2015) focus on health status, although they show different lottery impacts according to the health indicator. Specifically, lottery wins have no effect on overall health, but lottery wins have a positive effect on mental health. Flèche et al. (2021) study the dynamic effect of lottery wins one year before t on the likelihood of becoming self-employed in t, obtaining a significant increase in the probability of self-employment in year t for the top 25% of winners in $t-1$, both men and women, suggesting that the gender entrepreneurial gap could be reduced by improving women's capital access. Finally, Costa-Font and Györi (2023) examine the impact of lottery wins on individual

BMI, from 2002 to 2007, finding a contemporaneously increase in being overweight and that a lottery win of £1,000 reduces the probability of being overweight one year later.

In this paper, we contribute to the literature by examining, for the first time, the impact of lottery wins on household labor supply in the UK. We differ from the prior research in other countries by taking a household perspective and focusing on work hours. Besides, we do not limit our analysis to contemporaneous relationships, as we also study the lagged effects of lottery wins. Specifically, we examine the impact of lottery wins on household labor supply until two years later, to document any persistence in this relationship. Although the BHPS ended in 2008, to the best of the authors' knowledge this dataset represents the only nationally representative survey, publicly available, with individual-level, longitudinal information on lottery wins over time, together with rich information on socio-demographics, labor, and household characteristics.

3. Data and variables

We use data from the BHPS for the years 1997-2008.[2] The BHPS is a nationally representative sample of over 5,000 households and 10,000 individuals across Great Britain, conducted between September and Christmas, for a total of 18 waves from 1991 to 2008, by the Institute for Social and Economic Research (ISER) of the University of Essex. The same individuals were re-interviewed in subsequent waves, so the BHPS is a panel data set. In addition, the design of the BHPS consists of following all participants, and if an individual leaves their original household to form a new one, he/she continues to be interviewed and all the new family members become part of the survey and are interviewed. Since some panel members left the sample (either through death, emigration, or other forms of attrition) new panel members were incorporated throughout the survey period. Initially, the first wave in 1991 collected information from 10,300 individuals belonging to 5,500 households, drawn from 250 postcode areas of Great Britain. In Wave 9 (survey year 1999) two additional samples equally split between Scotland and Wales were added to the panel sample, of 2,000 households, and in Wave 11 (survey year 2001) an additional sample, of 2,900 households, from Northern Ireland was included to cover

[2] Since 2009, the BHPS was suspended and subsumed within a new survey, the Understanding Society Study (UK Household Longitudinal Study (UKHLS)). This resulted in many changes to the survey. Specifically, we do not use that sample in this analysis because it does not include information about lottery wins.

the whole of the United Kingdom. By Wave 18 (2008), about 16,000 individuals participated in the survey.

Our empirical analysis focuses on 12 waves of data, over the period 1997-2008, when information on lottery wins, our key independent variable, is available. To collect lottery information, the following questions are asked: *"Since September 1st (year before), have you personally received any payments, or payment in kind, from a win on the football pools, national lottery or other form of gambling?"* in all survey waves since 1997. If this question was answered positively, then the respondent was asked: *"About how much in total did you receive (was this worth)? (win on the football pools, national lottery or other form of gambling)"*.[3] Thus, we can distinguish lottery winners (and other gambling winners) from non-lottery winners, and how much in total do winners receive.[4] For this reason, the BHPS has already been used in numerous studies of the impact of lottery wins on various outcomes, such as health (Gardner and Oswald, 2007; Apouey and Clark, 2015; Costa-Font and Györi, 2023), marital stability (Boertien, 2012), self-employment (Flèche et al., 2021), and social ties (Costa-Font and Powdthavee, 2023). Furthermore, contrary to inheritance receipts, lottery winnings are unlikely to be anticipated.

We restrict the sample to two-member households formed by heterosexual spouses (married or cohabiting) between 21 and 65 years old at the time of the interview (Mazzocco, 2007), and that are observed for at least three consecutive years (Theloudis et al., 2022). As our analysis is focused on market work hours, we keep working couples only (i.e., households in which both the husband and wife report positive hours of work through the year). Furthermore, we drop all observations with missing values for the key variables of interest. These restrictions leave us with a final sample of 1,069 unique households whom we follow for at least three consecutive years, formed by a man

[3] Against alternative datasets, such as the SOEP where lottery win information is only available at the household level, in the BHPS the information regarding lottery wins is collected at the individual level, which allows us to distinguish the winning person within the household (if any). This is a tremendous advantage of the BHPS since many works have rejected the well-known income pooling hypothesis (i.e., resources are not equally distributed within the household). This enables us to go deeper into the intrahousehold allocation black box process.

[4] In the UK, a significant share of the population plays the lottery and the national lottery is, overwhelmingly, the main form of gambling (Wardle et al., 2007; Boertien, 2012; Apouey and Clark, 2015; Cheng et al., 2018; Flèche et al., 2021; Costa-Font and Györi, 2023; Costa-Font and Powdthavee, 2023). Thus, we use these questions to proxy for lottery wins, as done in prior studies using the BHPS (Gardner and Oswald, 2007; Boertien, 2012; van Kippersluis and Galama, 2014; Apouey and Clark, 2015; Cheng et al., 2018; Flèche et al., 2021; Costa-Font and Györi, 2023; Costa-Font and Powdthavee, 2023).

(husband) and a woman (wife), corresponding to a total of 6,214 observations (household X year).

The core BHPS questionnaire includes a wide range of socio-demographic factors of households and individuals, such as income, socio-economic values, labor market behavior, education, household composition, and demographics, some of which we use as control variables in the empirical model. These include age (measured in years), wages (defined in pounds/hour, as total labor income over annual hours of work), self-employment status (a dummy taking value 1 for the self-employed, 0 for employees), marital status (value 1 for married couples, 0 otherwise), household size, the number of children, household non-labor earnings, and household wealth (defined as the combined amount received from interest and dividends for both partners).[5] All monetary and wealth amounts are deflated and expressed in 2005 British pounds using the UK Consumer Price Index (CPI).[6] We also include lagged controls for wages, household non-labor income, and wealth. To control for the potential impact of young kids on household labor supply (i.e., younger children demand more time from their parents), we differentiate between the number of children under five years old, and the number of children between five and fifteen years old. We also control for the region of residence (nineteen regions/metropolitan areas), and the survey year.

Descriptive statistics are reported in Table 1, including the mean as well as standard deviations on the individual-level and household-level variables. As for the main variables, male (female) hours of work are on average 1,910 (1,360) hours per year. Regarding lottery wins, about 15% of men in our sample report winning the lottery in the survey year, while the percentage of women winners is about 10.6%. However, the amounts of lottery wins are relatively small (the average lottery win is £23.4 for males and £38.0 for females), as expected, though high standard deviations suggest significant variability. Regarding the rest of the variables, the average husband is about 45 years old, while the average wife is about 43 years old. The hourly wage of husbands is on average £13.4 per hour, against £9.7 per hour for wives, in line with Blundell et al. (2021).

[5] The survey provides information on amount received from interest and dividends divided into brackets. We assign the midpoint of the reference bracket and for the highest bracket we assign the lower bound, since it has no upper bound.

[6] We have extracted the CPI index from the Office for National Statistics (https://www.ons.gov.uk/economy/inflationandpriceindices/timeseries/d7bt/mm23, accessed 17 January 2023).

Furthermore, about 15.4% of males and 17.3% of females have high education level, and 5.2% of males and 2.0% of females are self-employed workers. Finally, 94% of households report being legally married, and the average household is composed of 3.5 members, with on average 1 kid (0.1 child on average between 0 and 4 years old, and 0.8 on average between 5 and 15 years old), and the total non-labor income and wealth are about £2,632.010 and £509.114, respectively.

4. Econometric strategy

We estimate how household labor supply is affected by lottery wins using the fixed-effects estimator (i.e., the "within" estimator) on the following equation, separately for husbands ($j = 1$) and wives ($j = 2$):

$$Y_{it}^{j} = \alpha_i^j + \sum_{k=0}^{2}\left(\beta_{1k}^{j} Lottery_{it-k}^{1} + \beta_{2k}^{j} Lottery_{it-k}^{2} + \gamma_{1k}^{j} w_{it-k}^{1} + \gamma_{2k}^{j} w_{it-k}^{2} + \delta_k^j y_{it-k} + \tau_k^j a_{it-k}\right)$$

$$+\eta^{j'} X_{it}^{j} + \tau_1^j Y_{it-1}^{j} + \tau_2^j Y_{it-2}^{j} + \lambda_t + \theta_r + \varepsilon_{it}^{j}, \quad (1)$$

where i represents the surveyed household ($i = 1, \dots, N$), t denotes the survey year, and r the region of residence. The dependent variable Y_{it}^{j} is the annual hours of work of spouse j. $Lottery_{it-k}^{j}$ is a dummy variable taking value 1 if spouse j in household i won the lottery in period $t-k$, for $k = 0, 1, 2$, 0 otherwise, and w_{it-k}^{j}, y_{it-k}, and a_{it-k} represent log-wages, log-non-labor income, and log-wealth, respectively. Vector X_{it}^{j} represents time-varying socio-demographics, α_i^j represents household-fixed effects, λ_t is year fixed-effects, and θ_r region fixed-effects. Finally, ε_{it}^{j} is the error term. The variables in X_{it}^{j} include spouse j age and its square, self-employment status, marital status, household size, and the number of children in the household (aged 0-4, and 5-15). β_{1k}^{j} and β_{2k}^{j} are our coefficients of interest, measuring the own and spouse lottery win effect on the annual labor supply of a given spouse j, both contemporaneously $k = 0$ and lagged ($k = 1, 2$).

According to prior literature, one major problem in estimating the impact of lottery wins on labor supply is that it is likely that unobserved time-invariant characteristics jointly influence lottery wins and labor supply behaviors, such as risk aversion, time use preferences, or financial knowledge, among others. Therefore, it is important to capture fixed unobservable characteristics. Given the household panel structure of the BHPS, that

follows the same individuals through time, we control for the unobserved heterogeneity of individuals and implement individual fixed-effects panel estimations, in order to remove any time-invariant unobserved heterogeneity in preferences. Specifically, the presence of α_i^j in Equation (1) indicates that we use individual fixed-effects panel estimation. Therefore, this estimation method is preferred to ordinary least squares (OLS), which is subject to possible endogeneities, such as individual or household-level unobservable heterogeneities that may bias the OLS estimates.

One key piece of information provided by the BHPS is the amount of the lottery win received by the individuals (individuals were asked to report the amount of lottery win received during all waves since 1997). As larger lottery wins represent larger increases in unearned income, this may affect labor supply behavior more strongly (Imbens et al., 2001; van Kippersluis and Galama, 2014). Thus, we run Eq. (1) replacing $Lottery_{it-k}^j$ with a dummy variable taking value 1 if spouse *j* in household *i* won a large lottery (worth more than £500) in period $t-k$, for $k = 0, 1, 2$, and 0 otherwise, in order to examine whether those who received such a large lottery win were more likely to modify their annual hours of work. In this case, β_{1k}^j and β_{2k}^j captures the effects of a lottery win worth more than £500 on household labor supply.

5. Results and discussion

5.1 Baseline results

Table 2 shows the main results of estimating Equation (1) on spouses' annual hours of work. These results show that a lottery win has no effect on the men's hours of work, as the estimates for men display no statistically significant coefficients. This indicates that a lottery win, independently of the winner, is not related to the work hours of males. The results for women suggest statistically significant relationships between lottery wins and hours of work. Specifically, annual hours of work of women are reduced by 25.985 hours when their spouse wins the lottery in that year. Additionally, this effect is persistent until one year later, when the peak of decline occurs, since if the spouse won the lottery the previous year, the annual current hours of work of women are reduced by 27.804 hours. Two years later, this effect disappears.

In summary, while men's annual hours of work are not affected by lottery wins, women tend to reduce their labor supply, both contemporaneously and one year after the win. This finding is in line with prior research which documents that labor supply elasticities are larger for women than for men (Keane, 2011) and it rejects the unitary household model (Blau and Goodstein, 2016; Cesarini et al., 2017; Niizeki and Hori, 2019), since the identity of the wealth shock recipient matters.

So far, we have only studied the impact of lottery wins on work hours. However, we acknowledge that a simple dummy strategy for lottery wins ignores lottery win size, and could affect substantially our results. Therefore, we next estimate Eq. (1) and replace the lottery win indicator variable (both in t, $t-1$, and $t-2$) with a dummy variable that takes value 1 for big lottery wins, above £500 in real terms, in t, $t-1$ and $t-2$ for each spouse, 0 otherwise.[7]

Column 1 of Table 3 shows that men increase their labor supply by 125.158 annual hours if their wives have won a large lottery prize in that year, an estimate that is statistically significant at the 5% level. In Column 2 we show that women increase their annual hours of work by 76.156 if their spouse has won a large lottery prize in that year. Consequently, a large lottery win significantly increases the spouse's labor supply at the same time, and the magnitudes range from 76.156 to 125.158. These positive and statistically significant estimates suggest that spouses appear to compensate their winning counterparts by increasing their labor supply contemporaneously. When we look at the two lags for large lottery wins, no statistically significant magnitudes are obtained, suggesting only an immediate effect of large lottery wins on labor supply.

In the UK, most lottery wins accrued during marriage are treated as being owned by spouses equally and in the event of divorce all property acquired during marriage should be divided equally. As argued previously, we consider a lottery win as a shock to household resources, not a shock to individual wealth. Consequently, a lottery win does not empower or increase the bargaining power of a given spouse within the household. However, we find that a lottery win causes a modification in the initial marriage contract, as women reduce their current labor supply if their spouses have won the lottery, both contemporaneously and one year before. Hence, from this perspective, women fully

[7] Results using other thresholds for large lottery wins, such as the median, the third quartile… are available upon request from the authors. We choose not to present these results to save space.

appropriate the benefits of the lottery win. The fact that the distribution of lottery wins across the household matters, rejects a key prediction of the unitary household models. Specifically, it rejects the well-known income pooling hypothesis which suggests that it is the total amount of household resources that matters to household observed behavior. This also suggests a non-random assignment of lottery wins within the household, in line with prior works studying lottery and household behavior (Cesarini et al., 2017), and that men totally transfer the prize to the non-winning spouse, displaying an altruistic behavior. Nevertheless, for large lottery wins in our sample, the results suggest that having such a large wealth shock increases the annual work hours of his/her counterpart. However, this effect is not persistent and disappears one year later.

5.2 Additional checks and alternative specifications and sample criteria

a. Including individuals not in labor force and running Eq. (1) for the labor force participation. Our regressions above focus on individuals employed who declare positive amounts of work hours. In this sensitivity analysis, we also include those not employed in our estimations and perform Eq. (1) using as dependent variable the labor force participation (1 if individual declares positive amounts of annual work hours, 0 otherwise). Hence, we estimate a linear probability model with individual fixed-effects. The results appear in Table 4 for the lottery win dummy variables and in Table 5 for the large lottery win dummy variables.[8] At this point, we obtain that contemporaneously a woman's lottery win is related to an increase in her labor force participation, whereas after two years this effect disappears. For large lottery wins, the estimates in Table 5 suggest that wives reduce their labor force participation if they won a large lottery (worth more than £500) the previous year. Specifically, if they won such a large lottery prize one year before, their current labor force participation is reduced by 9.9%. If the husband won a large lottery two years before, the current wife's probability of being in the labor force is reduced by 8.5%, statistically significant at the 5% level.

b. Testing the impact of lottery wins on full-time status. Another potential mechanism of our estimates could be related to full-time labor supply decisions. Specifically, respondents could adjust their full-time status due to a wealth shock. The results appear

[8] We predict the hourly wages for both spouses using a Mincer-style equation, where a spouse's wage depends on his/her own characteristics (age, education, self-employment status) and household characteristics (marital status, household size, total number of children).

in Table 6 for lottery wins and do not suggest that workers adjust their full-time status due to a lottery win. For large lottery wins, the results are reported in Table 7 and suggest that if the wife won a large prize in $t-1$, the probability of being a full-time worker in t is lower for males, of around 10.7% lower.

c. Omitting individual-specific fixed-effects. Our main specification includes individual fixed-effects, and in Table 8 and 9 we present SURE estimates without fixed-effects, for lottery wins and large lottery wins, where we treat the BHPS as a repeated cross-section and account for correlation within households through the SUR method of estimation. We find that omitting individual fixed-effects strongly affects the results, suggesting that the inclusion of individual fixed-effects is essential to mitigate some potential concerns regarding omitted variables biases.

d. Including individuals over 65 in the sample. Our baseline estimates focus on couples aged between 21 and 65. Alternatively, we also include those over 65 in our estimations and re-run Eq. (1), respectively for lottery wins and large lottery wins. The results in Tables 10 and 11 are very similar to those previously reported.

e. Omitting self-employed workers. Initially, our sample selection focuses on working couples aged between 21 and 65 years with three years of consecutive information. As can be seen in Table 1, 5.2 per cent of males and 2 per cent of females in our baseline sample are self-employed. Self-employed workers may be more flexible in choosing their working hours and, in this robustness check, we exclude self-employed individuals (almost 248 observations from 85 households) from the main sample and run Eq. (1), so we focus on the effect of lottery wins on labor supply of the employed. The results of this robustness check are reported in Tables 12 and 13 and suggest similar results to the main results of Tables 2 and 3, although the magnitudes estimated for large lottery wins are higher in the labor supply of males.

f. Excluding duplications of lottery wins. One possible concern behind our estimates could be related to the identity of the winner, as it is reasonable to think that even if a lottery win was received by a partner, it could be declared to be received at the household level. In Tables 14 and 15, we find no differences when we exclude the cases in which both partners stated that they had received the same lottery win.

g. Restricting to lottery players. Several authors have suggested that a lottery win is a random event for lottery participants. Nevertheless, the BHPS does not contain

information on the frequency at which people participate in the lottery. To address this survey limitation, several studies have restricted the BHPS to lottery winners only (Boertien, 2012; van Kippersluis and Galama, 2014; Cheng et al., 2018; Flèche et al., 2021; Costa-Font and Györi, 2023; Costa-Font and Powdthavee, 2023), arguing that, subject to winning the lottery, the amount of the lottery win is purely random. In this additional robustness check, we follow these studies and restrict our sample to households consisting of spouses who have won the lottery in at least one survey year (either male or female) over the course we observe them, assuming that these households consist of regular lottery players (at least at some point over the sample period). The results appear in Tables 16 and 17 for a sample of 593 household winners, and are nearly identical to our main estimates. Consequently, this restriction has minimal effects on our main results.

6. Conclusions and policy implications

This paper empirically analyzes the impact of lottery wins on household labor supply, focusing on two-member households' annual hours of work. We adopt a household perspective, which allows us to study intrahousehold dynamics, and document different effects depending on the identity of the winning spouse, on the one hand, and the spouse's labor supply, on the other. Using the BHPS, a large nationally representative household panel survey, we show that winning the lottery in the present and in the past is related to a decrease in current work hours among women. Since a lottery win represents an exogenous shock to the household economic environment in terms of unearned income, these results can be considered as a causal link between lottery wins and household labor supply. From a policy point of view, an exogenous change in wealth reduces the incentive to work among females, contrary to males.

Our results complement existing research on the impact of wealth shocks on household behaviors. Household labor supply estimates reject the unitary model of the household, since we find that lottery wins have differential impacts on husbands and wives, and thus we reject the well-known income pooling hypothesis, according to which the identity of the lottery winner should not affect household labor supply decisions. Consequently, it is important to adopt a household perspective when examining the effects of wealth shocks, as the identity of the recipient of the transfer has a significant impact on spouses' decisions. We also find that lottery wins have a lasting impact on

household behaviors, in line with Theloudis et al. (2022), and complementing existing research on lottery wins and other shocks, such as inheritances, that have been reported to be related to household labor supply in a static setting (Blau and Goodstein, 2016; Niizeki and Hori, 2019).

One limitation of this paper is that we cannot account for lottery ticket spending, which could bias our estimates (Picchio et al., 2018; Kim and Oswald, 2021) since a lottery win is a random event subject to actually entering and playing the lottery. Unfortunately, the BHPS does not contain information about the number of times an individual has played the lottery or on players' expenditures on lottery tickets, just the amount of money won from the lottery. Thus, we can only distinguish among winners and non-winners in our econometric strategy, not between regular players, occasional players, and non-players. Alternative panel datasets, such as the SOEP, also suffer from this shortcoming. Nevertheless, the use of a panel household survey enables us to partially control for unobserved time-invariant individual heterogeneity in preferences, and alleviate the problem of omitted information on lottery ticket spending, through the use of panel data estimators and assuming that lottery ticket spending is relatively constant over time (Kim and Oswald, 2021). Furthermore, recent evidence (Kim and Koh, 2021), suggests that controlling for ticket spending has minimal impact on estimates.

Despite these limitations, several implications emerge from this work and the use of lottery wins as random shocks to household wealth in the UK, a region where a large share of the population plays the lottery, makes our results of interest for policy makers. In the current context where many countries have implemented social programmes aiming at alleviating income inequality, such as pensions, tax reforms, or basic income programmes, our results provide new insights into how individuals respond to exogenous changes in unearned income from a household perspective. Public policies should consider our results when designing income transfers, or basic income programs, as according to our results cash transfers to males would flow from males to females within households in the UK. The results of this paper are also relevant in informing policy makers on the design of gambling taxes, since medium-sized lottery wins do not discourage work among households in the UK.

References

Apouey, B., & Clark, A. E. (2015). Winning big but feeling no better? The effect of lottery prizes on physical and mental health. *Health Economics*, 24(5), 516-538. https://doi.org/10.1002/hec.3035

Basiglio, S. (2022). 'Take the Money and Run': Dutch Evidence on Inheritance and Transfer Receiving and Divorce. *Italian Economic Journal*, 8(3), 585-605. https://doi.org/10.1007/s40797-021-00165-0

Blau, D. M., & Goodstein, R. M. (2016). Commitment in the household: Evidence from the effect of inheritances on the labor supply of older married couples. *Labour Economics*, 42, 123-137. https://doi.org/10.1016/j.labeco.2016.08.003

Blundell, R., Costa-Dias, M., Goll, D., & Meghir, C. (2021). Wages, experience, and training of women over the life cycle. *Journal of Labor Economics*, 39(S1), S275-S315. https://doi.org/10.1086/711400

Boertien, D. (2012). Jackpot? Gender differences in the effects of lottery wins on separation. *Journal of Marriage and Family*, 74(5), 1038-1053. https://doi.org/10.1111/j.1741-3737.2012.01003.x

Cesarini, D., Lindqvist, E., Notowidigdo, M. J., & Östling, R. (2017). The effect of wealth on individual and household labor supply: evidence from Swedish lotteries. *American Economic Review*, 107(12), 3917-46. https://doi.org/10.1257/aer.20151589

Cesarini, D., Lindqvist, E., Östling, R., & Terskaya, A. (2023). Fortunate Families? The Effects of Wealth on Marriage and Fertility. *NBER Working Paper 31039*.

Cheng, T. C., Costa-Font, J., & Powdthavee, N. (2018). Do you have to win it to fix it? A longitudinal study of lottery winners and their health-care demand. *American Journal of Health Economics*, 4(1), 26-50. https://doi.org/10.1162/ajhe_a_00092

Chiappori, P. A. (1988). Rational household labor supply. *Econometrica*, 56(1), 63-90. https://doi.org/10.2307/1911842

Chiappori, P. A. (1992). Collective labor supply and welfare. *Journal of Political Economy*, 100(3), 437-467. https://doi.org/10.1086/261825

Choukhmane, T., Goodman, L., & O'Dea, C. (2023). Efficiency in Household Decision Making: Evidence from the Retirement Savings of US Couples. *NBER Working Paper 31195*.

Costa-Font, J., & Györi, M. (2023). Income windfalls and overweight: evidence from lottery wins. *Empirical Economics*, 64(5), 2005-2026. https://doi.org/10.1007/s00181-022-02312-7

Costa-Font, J., & Powdthavee, N. (2023). Does money strengthen our social ties? Longitudinal evidence of lottery winners. *Rationality and Society*, 35(2), 139-166. https://doi.org/10.1177/10434631231159567

Doorley, K., & Pestel, N. (2020). Labour supply after inheritances and the role of expectations. *Oxford Bulletin of Economics and Statistics*, 82(4), 843-863. https://doi.org/10.1111/obes.12353

Flèche, S., Lepinteur, A., & Powdthavee, N. (2021). The importance of capital in closing the entrepreneurial gender gap: a longitudinal study of lottery wins. *Journal of Economic Behavior & Organization*, 188, 591-607. https://doi.org/10.1016/j.jebo.2021.05.038

Gardner, J., & Oswald, A. J. (2007). Money and mental wellbeing: A longitudinal study of medium-sized lottery wins. *Journal of Health Economics*, 26(1), 49-60. https://doi.org/10.1016/j.jhealeco.2006.08.004

Heathcote, J., K. Storesletten, & Violante, G.L. (2014). Consumption and labor supply with partial insurance: An analytical framework. *American Economic Review*, 104(7), 2075-2126. https://doi.org/10.1257/aer.104.7.2075

Imbens, G. W., Rubin, D. B., & Sacerdote, B. I. (2001). Estimating the effect of unearned income on labor earnings, savings, and consumption: Evidence from a survey of lottery players. *American Economic Review*, 91(4), 778-794. https://doi.org/10.1257/aer.91.4.778

Keane, M. P. (2011). Labor supply and taxes: A survey. *Journal of Economic Literature*, 49(4), 961-1075. https://doi.org/10.1257/jel.49.4.961

Kim, S., & Koh, K. (2021). The effects of income on health: Evidence from lottery wins in Singapore. *Journal of Health Economics*, 76, 102414. https://doi.org/10.1016/j.jhealeco.2020.102414

Kim, S., & Oswald, A. J. (2021). Happy Lottery Winners and Lottery-Ticket Bias. *Review of Income and Wealth*, 67(2), 317-333. https://doi.org/10.1111/roiw.12469

Malo, M. A., & Sciulli, D. (2021). Wealth transfers and labour supply: impact of inheritances and gifts by gender in Europe. *International Journal of Manpower*, 42(8), 1450-1478. https://doi.org/10.1108/IJM-09-2020-0425

Mazzocco, M. (2007). Household intertemporal behaviour: A collective characterization and a test of commitment. *The Review of Economic Studies*, 74(3), 857-895. https://doi.org/10.1111/j.1467-937X.2007.00447.x

Niizeki, T., & Hori, M. (2019). The effect of inheritance receipt on individual labor supply: Evidence from Japanese microdata. *Japan and the World Economy*, 49, 176-186. https://doi.org/10.1016/j.japwor.2018.11.004

Picchio, M., Suetens, S., & van Ours, J. C. (2018). Labour supply effects of winning a lottery. *The Economic Journal*, 128(611), 1700-1729. https://doi.org/10.1111/ecoj.12465

Suari-Andreu, E. (2023). Labour supply, retirement, and consumption responses of older Europeans to inheritance receipt. *Empirical Economics*, 64, 33-75. https://doi.org/10.1007/s00181-022-02242-4

Theloudis, A., Velilla, J., Chiappori, P-A., Gimenez-Nadal, J.I., & Molina, J.A. (2022). Commitment and the dynamics of household labor supply. *HCEO Paper 11/2022*.

Tur-Sinai, A., Künemund, H., & Vogel, C. (2022). Inheritances and work for pay—will the expected wave of bequests undermine active ageing policies?. *European Journal of Ageing*, 1-11. https://doi.org/10.1007/s10433-022-00706-1

Van Kippersluis, H., & Galama, T. J. (2014). Wealth and health behavior: Testing the concept of a health cost. *European Economic Revie*w, 72, 197-220. https://doi.org/10.1016/j.euroecorev.2014.10.003

Wardle, H. (2007). British gambling prevalence survey 2007. The Stationery Office.

Table 1. Descriptive statistics

	Males		Females		Diff.
	Mean	Std. Dev.	Mean	Std. Dev.	(*p*-value)
Individual variables					
Work hours	1,910.089	372.448	1,360.330	475.154	(<0.001)
Lottery win	0.150	0.357	0.106	0.307	(<0.001)
Lottery amount	23.435	283.850	38.003	1,924.067	(0.554)
Age	45.029	8.428	43.180	8.305	(<0.001)
Wage rate (pounds per hour)	13.368	9.784	9.658	8.471	(<0.001)
Low education	0.464	0.499	0.513	0.500	(<0.001)
Middle education	0.382	0.486	0.313	0.464	(<0.001)
High education	0.154	0.361	0.173	0.378	(<0.001)
Self-employed	0.052	0.221	0.020	0.139	(<0.001)

	Mean	Std. Dev.
Household variables		
Married	0.939	0.238
# household members	3.483	1.067
# children aged 0-4	0.123	0.368
# children aged 5-15	0.800	0.950
Household non-labor income	2,632.010	4,780.927
Household wealth	509.114	2,679.695
# observations (household X year)	**6,214**	
# households	**1,069**	

Notes: Data from BHPS 1997-2008. The whole sample consists of working couples between 21 and 65 years old. *p*-values for the *t*-test on the equality of means for males vs. females are reported in parentheses.

Table 2. Current and past impacts of lottery wins (*FE estimates*)

	Male	Female
Dependent variable: Annual hours of work		
Lottery win *t*		
Self	-12.065	10.896
	(12.256)	(14.468)
Spouse	21.030	-25.985**
	(14.132)	(12.505)
Lottery win *t-1*		
Self	6.801	13.527
	(11.928)	(14.182)
Spouse	-9.256	-27.804**
	(13.856)	(12.161)
Lottery win *t-2*		
Self	5.521	2.005
	(11.458)	(13.903)
Spouse	-3.628	6.575
	(13.570)	(11.726)
Number of observations	3,786	3,786
Number of households	1,069	1,069
R-squared	0.152	0.280

Notes: All specifications include controls for wages for both spouses (in *t*, *t-1*, *t-2*), age and age squared, self-employment status, marital status, household size, number of children, household non-labor income (in *t*, *t-1*, *t-2*), household wealth (in *t*, *t-1*, *t-2*) and lagged annual hours of work (*t-1*, *t-2*). Standard errors in parentheses. Each regression also includes time and regional dummies, and individual fixed-effects. *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$.

Table 3. Current and past impacts of large lottery wins (*FE estimates*)

	Male	Female
Dependent variable: Annual hours of work		
Large lottery win *t*		
Self	-39.472	-50.857
	(43.957)	(58.635)
Spouse	125.158**	76.156*
	(57.308)	(45.084)
Large lottery win *t-1*		
Self	25.165	-99.611
	(46.806)	(61.182)
Spouse	-49.042	31.039
	(59.728)	(47.825)
Large lottery win *t-2*		
Self	7.297	-40.370
	(45.998)	(57.319)
Spouse	14.468	10.959
	(55.941)	(47.133)
Number of observations	3,786	3,786
Number of households	1,069	1,069
R-squared	0.153	0.279

Notes: All specifications include controls for wages for both spouses (in *t*, *t-1*, *t-2*), age and age squared, self-employment status, marital status, household size, number of children, household non-labor income (in *t*, *t-1*, *t-2*), household wealth (in *t*, *t-1*, *t-2*) and lagged annual hours of work (*t-1*, *t-2*). Standard errors in parentheses. Each regression also includes time and regional dummies, and individual fixed-effects. *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$.

Table 4. Additional checks: Labor force participation and lottery wins (*FE estimates*)

	Male	Female
Dependent variable: LFP		
Lottery win *t*		
Self	-0.010	0.030**
	(0.010)	(0.013)
Spouse	0.012	0.004
	(0.011)	(0.012)
Lottery win *t-1*		
Self	-0.001	-0.001
	(0.009)	(0.012)
Spouse	-0.002	-0.004
	(0.010)	(0.011)
Lottery win *t-2*		
Self	-0.013	-0.027**
	(0.009)	(0.012)
Spouse	-0.013	-0.017
	(0.010)	(0.011)
Number of observations	7,181	7,181
Number of households	1,799	1,799
R-squared	0.095	0.136

Notes: All specifications include controls for predicted wages for both spouses (in *t*, *t-1*, *t-2*), age and age squared, self-employment status, marital status, household size, number of children, household non-labor income (in *t*, *t-1*, *t-2*), household wealth (in *t*, *t-1*, *t-2*) and lagged annual hours of work (*t-1*, *t-2*). Standard errors in parentheses. Each regression also includes time and regional dummies, and individual fixed-effects. *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$.

Table 5. Additional checks: Labor force participation and large lottery wins (*FE estimates*)

	Male	Female
Dependent variable: LFP		
Large lottery win *t*		
Self	-0.037	-0.040
	(0.034)	(0.047)
Spouse	0.005	0.011
	(0.039)	(0.041)
Large lottery win *t-1*		
Self	-0.037	-0.099**
	(0.036)	(0.048)
Spouse	0.065	0.072*
	(0.040)	(0.043)
Large lottery win *t-2*		
Self	-0.050	0.057
	(0.036)	(0.049)
Spouse	0.065	-0.085**
	(0.041)	(0.043)
Number of observations	7,181	7,181
Number of households	1,799	1,799
R-squared	0.096	0.136

Notes: All specifications include controls for predicted wages for both spouses (in *t*, *t-1*, *t-2*), age and age squared, self-employment status, marital status, household size, number of children, household non-labor income (in *t*, *t-1*, *t-2*), household wealth (in *t*, *t-1*, *t-2*) and lagged annual hours of work (*t-1*, *t-2*). Standard errors in parentheses. Each regression also includes time and regional dummies, and individual fixed-effects. *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$.

Table 6. Additional checks: Full-time status and lottery wins (*FE estimates*)

	Male	Female
Dependent variable: Full-time status		
Lottery win *t*		
Self	-0.000	0.015
	(0.007)	(0.021)
Spouse	0.014*	-0.023
	(0.008)	(0.018)
Lottery win *t-1*		
Self	0.012*	-0.005
	(0.006)	(0.020)
Spouse	-0.005	-0.028
	(0.007)	(0.017)
Lottery win *t-2*		
Self	0.004	-0.010
	(0.006)	(0.020)
Spouse	0.001	-0.015
	(0.007)	(0.017)
Number of observations	3,786	3,786
Number of households	1,069	1,069
R-squared	0.089	0.087

Notes: All specifications include controls for wages for both spouses (in *t*, *t-1*, *t-2*), age and age squared, self-employment status, marital status, household size, number of children, household non-labor income (in *t*, *t-1*, *t-2*), household wealth (in *t*, *t-1*, *t-2*) and lagged full-time status (*t-1*, *t-2*). Standard errors in parentheses. Each regression also includes time and regional dummies, and individual fixed-effects. *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$.

Table 7. Additional checks: Full-time status and large lottery wins (*FE estimates*)

	Male	Female
Dependent variable: Full-time status		
Large lottery win *t*		
Self	-0.009	-0.011
	(0.024)	(0.084)
Spouse	0.053*	0.070
	(0.031)	(0.065)
Large lottery win *t-1*		
Self	0.017	-0.067
	(0.025)	(0.088)
Spouse	-0.107***	0.047
	(0.032)	(0.069)
Large lottery win *t-2*		
Self	0.012	-0.011
	(0.025)	(0.082)
Spouse	-0.058*	-0.125*
	(0.030)	(0.068)
Number of observations	3,786	3,786
Number of households	1,069	1,069
R-squared	0.093	0.088

Notes: All specifications include controls for wages for both spouses (in *t*, *t-1*, *t-2*), age and age squared, self-employment status, marital status, household size, number of children, household non-labor income (in *t*, *t-1*, *t-2*), household wealth (in *t*, *t-1*, *t-2*) and lagged full-time status (*t-1*, *t-2*). Standard errors in parentheses. Each regression also includes time and regional dummies, and individual fixed-effects. *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$.

Table 8. Current and past impacts of lottery wins (*SURE estimates*)

	Male	Female
Dependent variable: Annual hours of work		
Lottery win *t*		
Self	-10.166	17.435
	(11.391)	(12.919)
Spouse	6.926	-31.351***
	(12.961)	(11.346)
Lottery win *t-1*		
Self	8.948	4.880
	(11.033)	(12.571)
Spouse	-22.590*	-10.513
	(12.609)	(10.973)
Lottery win *t-2*		
Self	4.450	-21.174*
	(10.715)	(12.396)
Spouse	0.642	6.385
	(12.438)	(10.654)
Number of observations	3,786	3,786
Number of households	1,069	1,069
R-squared	0.632	0.786

Notes: All specifications include controls for wages for both spouses (in *t*, *t-1*, *t-2*), age and age squared, self-employment status, marital status, household size, number of children, household non-labor income (in *t*, *t-1*, *t-2*), household wealth (in *t*, *t-1*, *t-2*) and lagged annual hours of work (*t-1*, *t-2*). Standard errors in parentheses. Each regression also includes time and regional dummies. *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$.

Table 9. Current and past impacts of large lottery wins (*SURE estimates*)

	Male	Female
Dependent variable: Annual hours of work		
Large lottery win *t*		
Self	-39.688	-39.372
	(40.659)	(56.198)
Spouse	12.866	38.547
	(56.359)	(40.563)
Large lottery win *t-1*		
Self	-6.408	-24.981
	(44.003)	(52.037)
Spouse	-109.152**	-19.763
	(52.155)	-43.904
Large lottery win *t-2*		
Self	37.656	15.172
	(42.820)	(54.974)
Spouse	47.458	-45.569
	(55.093)	(42.722)
Number of observations	3,786	3,786
Number of households	1,069	1,069
R-squared	0.633	0.786

Notes: All specifications include controls for wages for both spouses (in *t*, *t-1*, *t-2*), age and age squared, self-employment status, marital status, household size, number of children, household non-labor income (in *t*, *t-1*, *t-2*), household wealth (in *t*, *t-1*, *t-2*) and lagged annual hours of work (*t-1*, *t-2*). Standard errors in parentheses. Each regression also includes time and regional dummies. *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$.

Table 10. Including individuals over 65: Lottery wins (*FE estimates*)

	Male	Female
Dependent variable: Annual hours of work		
Lottery win *t*		
Self	-12.604	8.050
	(12.417)	(14.362)
Spouse	23.904*	-26.076**
	(14.291)	(12.440)
Lottery win *t-1*		
Self	4.646	13.567
	(12.107)	(14.082)
Spouse	-5.118	-28.099**
	(14.021)	(12.120)
Lottery win *t-2*		
Self	4.411	2.430
	(11.645)	(13.834)
Spouse	-2.313	5.001
	(13.752)	(11.702)
Number of observations	3,812	3,812
Number of households	1,076	1,076
R-squared	0.157	0.278

Notes: All specifications include controls for wages for both spouses (in *t*, *t-1*, *t-2*), age and age squared, self-employment status, marital status, household size, number of children, household non-labor income (in *t*, *t-1*, *t-2*), household wealth (in *t*, *t-1*, *t-2*) and lagged annual hours of work (*t-1*, *t-2*). Standard errors in parentheses. Each regression also includes time and regional dummies, and individual fixed-effects. *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$.

Table 11. Including individuals over 65: Large lottery wins (*FE estimates*)

	Male	Female
Dependent variable: Annual hours of work		
Large lottery win *t*		
Self	-41.410	-68.004
	(44.802)	(58.430)
Spouse	134.543**	76.232*
	(58.197)	(45.107)
Large lottery win *t-1*		
Self	27.124	-123.004**
	(47.706)	(60.810)
Spouse	-34.617	31.312
	(60.505)	(47.849)
Large lottery win *t-2*		
Self	8.703	-58.344
	(46.879)	(57.089)
Spouse	28.433	13.722
	(56.753)	(47.151)
Number of observations	3,812	3,812
Number of households	1,076	1,076
R-squared	0.158	0.278

Notes: All specifications include controls for wages for both spouses (in *t*, *t-1*, *t-2*), age and age squared, self-employment status, marital status, household size, number of children, household non-labor income (in *t*, *t-1*, *t-2*), household wealth (in *t*, *t-1*, *t-2*) and lagged annual hours of work (*t-1*, *t-2*). Standard errors in parentheses. Each regression also includes time and regional dummies, and individual fixed-effects. *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$.

Table 12. Omitting self-employed workers: Lottery wins (*FE estimates*)

	Male	Female
Dependent variable: Annual hours of work		
Lottery win *t*		
Self	-6.361	1.810
	(11.773)	(14.818)
Spouse	23.885*	-27.989**
	(13.545)	(12.846)
Lottery win *t-1*		
Self	15.313	1.810
	(11.365)	(14.818)
Spouse	-3.943	-28.997**
	(13.127)	(12.413)
Lottery win *t-2*		
Self	10.102	-0.300
	(10.978)	(14.097)
Spouse	-5.209	7.612
	(12.887)	(11.995)
Number of observations	3,538	3,538
Number of households	984	984
R-squared	0.122	0.277

Notes: All specifications include controls for wages for both spouses (in *t*, *t-1*, *t-2*), age and age squared, marital status, household size, number of children, household non-labor income (in *t*, *t-1*, *t-2*), household wealth (in *t*, *t-1*, *t-2*) and lagged annual hours of work (*t-1*, *t-2*). Standard errors in parentheses. Each regression also includes time and regional dummies, and individual fixed-effects. *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$.

Table 13. Omitting self-employed workers: Large lottery wins (*FE estimates*)

	Male	Female
Dependent variable: Annual hours of work		
Large lottery win *t*		
Self	-59.528	-21.943
	(42.788)	(60.904)
Spouse	176.940**	81.019*
	(55.637)	(46.816)
Large lottery win *t-1*		
Self	13.499	-89.252
	(45.218)	(64.649)
Spouse	-14.080	45.284
	(58.982)	(49.495)
Large lottery win *t-2*		
Self	-7.726	-68.563
	(44.331)	(58.016)
Spouse	9.068	19.000
	(52.958)	(48.546)
Number of observations	3,538	3,538
Number of households	984	984
R-squared	0.124	0.276

Notes: All specifications include controls for wages for both spouses (in *t*, *t-1*, *t-2*), age and age squared, marital status, household size, number of children, household non-labor income (in *t*, *t-1*, *t-2*), household wealth (in *t*, *t-1*, *t-2*) and lagged annual hours of work (*t-1*, *t-2*). Standard errors in parentheses. Each regression also includes time and regional dummies, and individual fixed-effects. *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$.

Table 14. Current and past impacts of lottery wins (*FE estimates, excluding same amounts*)

	Male	Female
Dependent variable: Annual hours of work		
Lottery win *t*		
Self	-11.451	1.229
	(13.098)	(15.973)
Spouse	21.931	-24.330*
	(15.606)	(13.352)
Lottery win *t-1*		
Self	10.696	7.918
	(12.790)	(15.439)
Spouse	-1.393	-30.158**
	(15.074)	(13.024)
Lottery win *t-2*		
Self	1.668	6.873
	(12.318)	(15.377)
Spouse	-0.046	6.602
	(14.999)	(12.590)
Number of observations	3,643	3,643
Number of households	1,053	1,053
R-squared	0.155	0.274

Notes: All specifications include controls for wages for both spouses (in *t*, *t-1*, *t-2*), age and age squared, self-employment status, marital status, household size, number of children, household non-labor income (in *t*, *t-1*, *t-2*), household wealth (in *t*, *t-1*, *t-2*) and lagged annual hours of work (*t-1*, *t-2*). Standard errors in parentheses. Each regression also includes time and regional dummies, and individual fixed-effects. *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$.

Table 15. Current and past impacts of large lottery wins (*FE estimates, excluding same amounts*)

	Male	Female
Dependent variable: Annual hours of work		
Large lottery win *t*		
Self	-21.122	-40.961
	(47.273)	(63.315)
Spouse	123.415**	75.722
	(61.991)	(48.457)
Large lottery win *t-1*		
Self	28.386	-86.369
	(50.028)	(65.043)
Spouse	-74.649	16.776
	(63.596)	(51.076)
Large lottery win *t-2*		
Self	-5.053	-57.499
	(48.861)	(69.006)
Spouse	-45.230	-8.016
	(67.293)	(50.000)
Number of observations	3,643	3,643
Number of households	1,053	1,053
R-squared	0.156	0.273

Notes: All specifications include controls for wages for both spouses (in *t*, *t-1*, *t-2*), age and age squared, self-employment status, marital status, household size, number of children, household non-labor income (in *t*, *t-1*, *t-2*), household wealth (in *t*, *t-1*, *t-2*) and lagged annual hours of work (*t-1*, *t-2*). Standard errors in parentheses. Each regression also includes time and regional dummies, and individual fixed-effects. *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$.

Table 16. Omitting non-winner households: Lottery wins (*FE estimates*)

	Male	Female
Dependent variable: Annual hours of work		
Lottery win *t*		
Self	-14.600	10.326
	(11.877)	(15.044)
Spouse	20.729	-24.339*
	(13.694)	(12.972)
Lottery win *t-1*		
Self	4.254	11.458
	(11.562)	(14.773)
Spouse	-11.329	-27.935**
	(13.459)	(12.615)
Lottery win *t-2*		
Self	6.177	-0.560
	(11.071)	(14.480)
Spouse	-6.294	5.984
	(13.165)	(12.153)
Number of observations	2,231	2,231
Number of households	593	593
R-squared	0.146	0.272

Notes: All specifications include controls for wages for both spouses (in *t*, *t-1*, *t-2*), age and age squared, self-employment status, marital status, household size, number of children, household non-labor income (in *t*, *t-1*, *t-2*), household wealth (in *t*, *t-1*, *t-2*) and lagged annual hours of work (*t-1*, *t-2*). Standard errors in parentheses. Each regression also includes time and regional dummies, and individual fixed-effects. *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$.

Table 17. Omitting non-winner households: Large lottery wins (*FE estimates*)

	Male	Female
Dependent variable: Annual hours of work		
Large lottery win *t*		
Self	-35.930	-43.784
	(42.512)	(60.782)
Spouse	127.233**	84.878*
	(55.410)	(46.833)
Large lottery win *t-1*		
Self	18.490	-90.348
	(45.468)	(63.494)
Spouse	-55.616	47.469
	(57.782)	(49.740)
Large lottery win *t-2*		
Self	2.366	-42.191
	(44.434)	(59.551)
Spouse	2.456	12.582
	(54.182)	(48.849)
Number of observations	2,231	2,231
Number of households	593	593
R-squared	0.148	0.271

Notes: All specifications include controls for wages for both spouses (in *t*, *t-1*, *t-2*), age and age squared, self-employment status, marital status, household size, number of children, household non-labor income (in *t*, *t-1*, *t-2*), household wealth (in *t*, *t-1*, *t-2*) and lagged annual hours of work (*t-1*, *t-2*). Standard errors in parentheses. Each regression also includes time and regional dummies, and individual fixed-effects. *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$.