

# “Long-run Effects of Lottery Wealth on Psychological Well-being”

## Online Appendix

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# 1 Introduction

The Analysis Plan described our intention to compare our causal estimates against two separate benchmarks: household-income gradients and the results of previous quasi-experimental studies, especially of lottery winners. Here, we report additional information about procedures used in these comparisons. Specifically, Section 2 describes how we estimated income gradients using data from the European Social Survey discussed in Section 4.3 of the main paper. Section 3 provides details behind our rescaling of the previous lottery studies discussed in Section 4.4. Section 4 provides English translations of the survey used in this paper.

## 2 Income Gradients in the European Social Survey

We compared the gradients in the *Respondents Sample* with gradients estimated among Swedish respondents from two waves of the European Social Survey (ESS). To maximize comparability, we estimated the ESS gradients using the same sex and age controls, in a sample reweighted to match the sex and age distribution of the *Respondents Sample*. Waves 3 and 7 of the ESS, administered in 2006 and 2014, contain questions about *Happiness* and *Overall LS* phrased very similarly to ours, with the same number of response categories (ESS 2006, ESS 2014). Neither wave contains our measure of *Mental Health*, so our measure of mental health in ESS is instead the respondent’s score on the eight-item version of the Center for Epidemiologic Studies Depression Scale (Randloff 1977). Finally, only Wave 3 contained a question about satisfaction with finances. Hence, we only report one ESS gradient for this variable. The ESS question we use – “And how satisfied are you with your present standard of living?” – is phrased somewhat differently from our survey’s measure of *Financial Life Satisfaction*.

In both ESS waves, respondents are asked to indicate their household income, net of taxes, by choosing one of several categories. Each category corresponds to an interval. In

ESS3, we assign each respondent an income equal to the midpoint of the chosen interval. For households in the highest category, which is unbounded, we assume an annual after-tax income of 1.13M SEK (year-2006 prices). In ESS7, we proceed analogously and set the annual after-tax income to 0.66M SEK (year-2014 prices) for households in the top decile. For comparability, our final income variables are converted to units of year-2011 10K USD, and we apply the same left-censoring threshold (\$6,000) as in the *Respondents Sample*.

### 3 Comparison to Published Estimates from Lottery Studies

We surveyed the literature on the well-being of lottery winners, and in this section, we explain how we transformed the estimates in the original studies to make them comparable to ours. Below we present the detailed calculations behind the figures in Table 4.

#### 3.1 Brickman, Coates and Janoff-Bulman (1978)

The authors of this study compared 22 winners of the Illinois State Lottery to 22 controls selected from the same regions as the winners. The study found no statistically significant differences in average happiness levels (*Past*, *Present* or *Future*) in the two groups. Our calculations below are based on *Present Happiness*, since it most closely resembles our primary outcome *Happiness*. *Present Happiness* is derived from the respondent’s response to a question about their happiness at this stage in their life. Respondents were asked to choose one of six response categories which ranged from 0 (“not at all”) to 5 (“very much”). Table 1 of the study (p. 921) reports that the average *Present Happiness* of winners is 0.18 greater than that of controls. Even though the SD of the *Present Happiness* variable is never reported directly, it can be approximated from other information in the paper. Specifically, the paper reports an  $F$ -statistic of 0.27 from what we assume is a one-way ANOVA  $F$ -test of *Present Happiness* in winners and controls. With only two groups, the  $F$ -statistic is the

squared  $t$ -statistic from a  $t$ -test of equal means (assuming equal variances). The test statistic is  $t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\hat{var}(X) \times \sqrt{2/n}}}$ , where  $\bar{X}_1 - \bar{X}_2$  is the difference in sample means,  $n$  is the per-group sample size and  $\hat{var}(X)$  is an unbiased estimate of the common population variance. Since  $t = \sqrt{F} = \sqrt{0.27} = 0.520$ ,  $\bar{X}_1 - \bar{X}_2 = 0.18$  and  $n = 22$  we have that  $\hat{var}(X) = 1.32$  and hence the sample SD is approximately 1.15. The paper hence reports a difference of  $0.18/1.15 = 0.16$  SD units between winners and controls. The standard error of this estimate is 0.30.

Three of the 22 winners were awarded prizes of \$50K, four won \$100K, two won \$300K, six won \$400K and seven won \$1M (p. 919). We assume these prize amounts are gross of taxes and in year-1978 prices. We therefore convert them to after-tax dollars (year-2011 prices) using the CPI inflation calculator of the Bureau of Labor Statistics and assuming a tax rate of 30%. Net of taxes, the inflation-adjusted prizes therefore ranged from \$123K ( $\$50K \times 3.52 \times 0.7$ ) \$2.46M ( $\$1M \times 3.52 \times 0.7$ ), with an average prize of  $1.69M \times 0.7 = \$1.18M$ . The 30% estimate of the average tax is based on a study of 576 Americans who won a state lottery in the 1970s or early 1980s (Kaplan 1987, p. 177). Kaplan writes that a prize paid out in annual installments of \$50,000 would “often” leave the winner with “less than \$35,000” per year after city, state and federal taxes have been deducted. Since our estimate of the after-tax prize won is \$1.18M, we multiplied these estimates by a factor of  $1/11.8$  to improve their comparability with our main results. This final conversion gives us a rescaled estimate of 0.014 ( $0.16/11.8$ ) SD units per \$100,000 won, with a standard error of 0.025 ( $0.30/11.8$ ).

### 3.2 Lindahl (2005)

Lindahl (2005) studied 626 Swedish lottery winners and estimated that a windfall of 130,000 SEK (in 1998 prices) reduced an index of mental health problems by 0.061 (SE = 0.027). Lindahl constructs his measure of total lottery prize won from responses to the questions (1) “Have you ever in your life won at least 1,000 Swedish Kronor (SEK) on gambling or lottery

of any kind” and the follow-up question (2) “Approximately how much altogether?”. We err on the side of conservatism and assume respondents report prize amounts that are net of taxes. The SD of the index is 0.95 in the sample of lottery winners and 0.99 in the sample of non-players (Table 1, pp. 147–148). In our calculations below, we set the SD equal to the sample-size weighted average of these two figures (0.98), implying a standardized effect-size estimate of 0.062 (SE = 0.028). To help interpret this estimate, we converted 130,000 year-1998 SEK to units of year-2011 USD. In a first step, we used CPI data from Statistics Sweden to adjust prizes for inflation between 1998 and 2011. In a second step, we subsequently converted the resulting amount of USD using the year-end exchange rate of (6.89). According to these calculations, 130,000 year-1998 SEK is equal to 22,264 year-2011 USD. Thus, it is necessary to multiply Lindahl’s original estimates by a factor of  $100,000/22,264 \sim 4.49$ . This conversion gives a rescaled estimate of 0.280 SD units ( $\sim 0.062 \times 4.49$ ) with a standard error of 0.124 ( $\sim 0.027 \times 4.49$ ). The average amount won was 32,500 year-1998 SEK, corresponding to 5,566 year-2011 USD. Since there were 626 winners, the total prize pool was therefore \$3.5M.

### **3.3 Gardner and Oswald (2007)**

Gardner & Oswald (2007) use longitudinal data from the British Household Panel Survey (BHPS). They find that relative to controls, 137 large-prize winner (defined as a prize greater than £1,000 in year-1998 prices) experience an improvement of 1.406 (SE = 0.50) points on the GHQ scale (Table 2, p. 55) two years after the win. Gardner & Oswald (2007) measure of lottery prize won is derived from responses to two questions (1) “Since September 1st (year before) have you received any payments, or payment in kind, from a win on the football pools, national lottery or other form of gambling?” (2) “About how much in total did you receive? (win on the football pools, national lottery or other form of gambling)”. We again err on the side of conservatism and assume respondents report prize amounts that are net of taxes.

Since the SD of the GHQ variable is 5.42 (Table 1, p. 52), the effect on a standardized outcome variable is 0.259 (SE = 0.092). The average large prize in their sample is £4,300, corresponding to approximately 8,775 year-2011 USD. To facilitate comparisons, we therefore inflate the standardized effect sizes by a factor  $100,000/8,775 \sim 11.4$ . Thus rescaled for comparability, the estimate they report is thus 2.952 SD units (SE = 1.048). Since the average prize won by the 137 large-prize winners was \$8,775 in year-2011 prices, the total prize pool was \$1.2M. The authors report that the largest prize awarded was approximately £120,000, corresponding to \$244,884 in year-2011 prices.

### **3.4 Apouey and Clark (2015)**

This follow-up study to Gardner & Oswald (2007) finds that relative to controls, big-prize winners (defined as total winnings in a year in excess of £500 in year-2005 prices) have larger average GHQ scores in the year of win (0.091, SE = 0.178), the year after win (0.094, SE = 0.143) and two years after win (0.408, SE = 0.142). For life satisfaction, the analogous estimates are 0.0536 (SE = 0.0416), 0.0197 (SE = 0.0325) and 0.102 (SE = 0.0316). Apouey & Clark (2015) do not report SDs for their outcome variables. For GHQ, we therefore use the value 5.42 reported by Gardner & Oswald (2007). For life satisfaction, not analyzed in (Gardner & Oswald 2007), we instead approximate the SD in the estimation sample by the SD among all BHP respondents with non-missing data in the survey waves included in Apouey and Clark’s panel-data analyses. In SD units, the estimated effect on GHQ scores one and two years after the win are therefore 0.0173 (SE = 0.0264) and 0.0753 (SE = 0.0262). For life satisfaction, the analogous estimates are 0.0153 (SE = 0.0253) and 0.0794 (SE = 0.0246).

On page 524, Apouey & Clark (2015) report the average size of small prizes (£61.64), the fraction of prizes classified as big (6%) and the average prize size overall (£245). From this information, we infer that the average big prize is approximately £3,120 in year-2005 prices, or \$5,800 in year-2011 prices. Their standardized estimates should therefore be multiplied

by 17.241 (100,000/5,800). Hence, rescaled for comparability, the estimated effects on GHQ one and two years after the lottery are 0.297 (SE = 0.455) and 1.298 SD units (SE = 0.452). For life satisfaction, the rescaled effects are 0.264 (SE = 0.436) and 1.369 (SE = 0.424). Since there are 11,229 prizes, approximately 674 of which are big (6% of 11,229), the combined value of prizes awarded to big-prize winners is  $674 \times 5,800 = \$3.9\text{M}$  in year-2011 prices. The study reports (p. 524) that the largest win is “over £200,000” but does not provide an exact magnitude. The figure \$371,795 reported in Table 4 is calculated under the simplifying assumption that the largest win is exactly £200,000.

### **3.5 Kuhn, Kooreman, Soetevent, and Kapteyn (2011)**

Kuhn et al. (2011) study Dutch Postcode Lottery winners and estimate a treatment effect of €10,000 on happiness, measured using a 10-point scale six months after the lottery event, equal to  $-0.023$  (SE = 0.050). From the paper’s discussion of the results in Table 6 (see p. 2244), we infer that the SD of the paper’s happiness variable is 1.73. Hence, the implied treatment-effect estimate on a standardized outcome is approximately  $-0.015$  SD (SE = 0.029). The data analyzed in the study are from the period 2003-2006, so we assume all monetary values are in units of year-2005 USD. Inflation in Germany between 2005 and 2011 was about 2%, implying €10,000 in 2005 corresponds to about €10,200 in year-2011 prices. At the year-end exchange rate (0.759), a €10,200 prize corresponds to about \$13,400. Therefore, the estimates need to be inflated by  $100,000/13,400 \sim 7.46$  for comparability. This conversion gives a rescaled estimate of  $-0.112$  SD (SE  $\approx 0.216$ ). The study analyzed data from 223 households who won an average net-of-tax prize of €16,747, or \$22,506 in year-2011 prices (the average prize amount includes the monetary value of cars won by some households). The total amount of prizes won is therefore \$5.0M. The paper does not contain information about the largest prizes won by households in the estimation sample.

## 4 Translation of Survey Questions

Below we provide English translations of the survey questions used in this paper. The complete original Swedish version of the survey is provided in our Analysis Plan.

### Mental Health

1. Next we have some questions about how you have been feeling the past two weeks. Mark the alternative that best fits you. During the past two weeks, how often have you...

- ...been able to concentrate at what you are doing?
- ...had troubles sleeping due to anxiety?
- ...felt that you are important?
- ...felt that you can make decisions?
- ...felt under pressure?
- ...been able to handle problems in the everyday life?
- ...been able to appreciate the everyday life?
- ...been able to deal with difficulties?
- ...felt unhappy or depressed?
- ...had low self-confidence?
- ...thought of yourself as a worthless person?
- ...felt rather happy?

Never; Sometimes; Often; Always.



## Happiness

2. Taking all things together, how happy would you say that you are?

- 0: Extremely unhappy
- ...
- 10: Extremely happy

## Overall Life Satisfaction

3. All things considered, how satisfied are you with your life as a whole these days?

- 0: Extremely dissatisfied
- ...
- 10: Extremely satisfied

## Domain-Specific Life Satisfaction

4. Now follow some questions on how satisfied or dissatisfied you are with some different areas of your life. How satisfied or dissatisfied are you with...

- ... your health?
- ... your leisure time?
- ... your personal economy?
- ... your friends?
- ... your relatives?
- ... the home that you live in?
- ... the neighborhood that you live in?

- ...Swedish society?
- ...your work?

Very dissatisfied; Rather dissatisfied; Somewhat dissatisfied; Somewhat satisfied; Rather satisfied; Very satisfied. The last item (“your work”) also includes the option “Not working”.

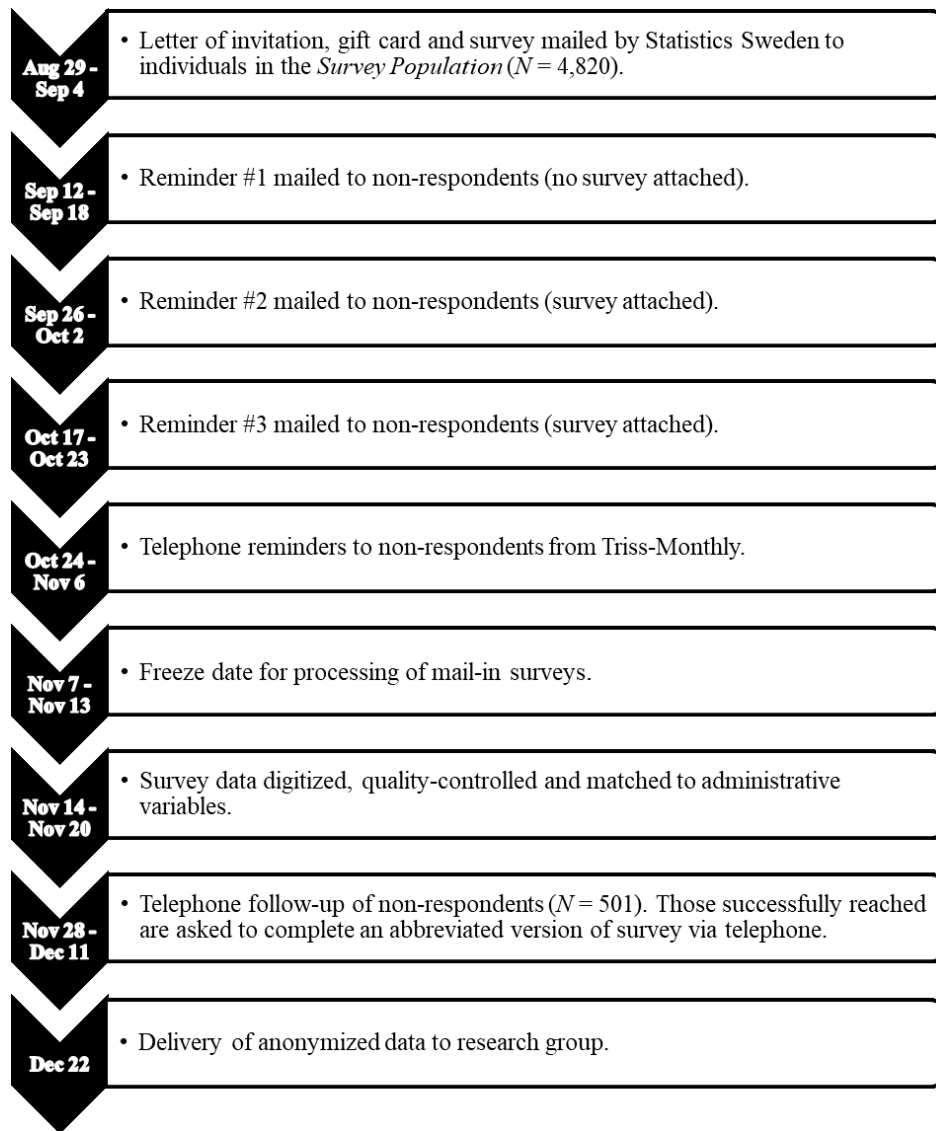
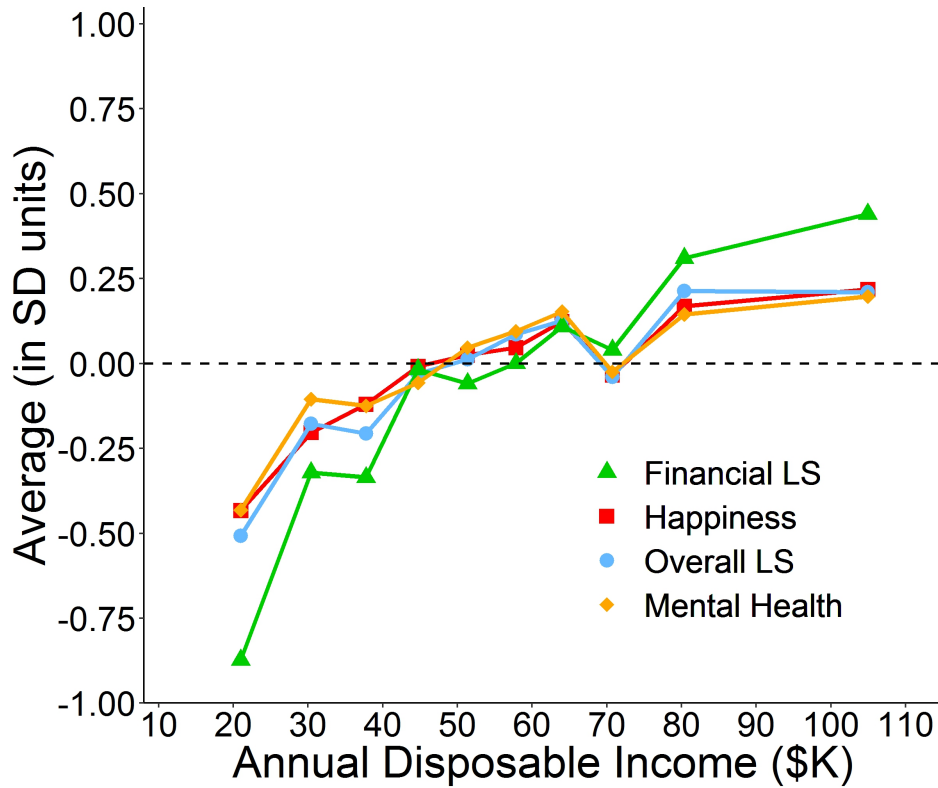


Figure A1: Schematic overview of survey-data-collection timeline.



**Figure A2: Well-Being Income Gradients with Respect to Permanent Annual Income**

This figure depicts the average of our primary outcomes by household-permanent-income. All calculations are based on the restricted Respondents Sample composed of small-prize winners (<20K only).

**Table A1: Selecting Sample of Survey Respondents.**

	Kombi	Triss-Lumpsum	Triss-Monthly	Total
	(1)	(2)	(3)	(4)
Time Period	1998-2011	1994-2011	1997-2011	1994-2011
# Prizes Awarded	499	5,057	824	6,380
<u>Original Restrictions</u>				
# Quality Control	7	190	36	233
# Share Prize	0	342	61	403
# Multiple Winners in Group	0	8	0	8
# Age <18 at Win	0	19	0	19
# Born < 1941	230	12	119	1552
# <4 Valid Controls (Kombi)	3	0	0	3
# Deceased before 2011	0	1	0	1
<u>Statistics Sweden</u>				
# Deceased, Emigrated, No Address	18	229	38	285
<u>Survey Population</u>				
# Prizes	241	3065	570	3876
# Controls	964	0	0	964
<b><i>N</i></b>	<b>1,205</b>	<b>3,065</b>	<b>570</b>	<b>4,840</b>
# Unique Individuals	1,196	3,061	570	4,820
<u>Survey Respondents</u>				
Survey Respondents	909	1,977	365	3,251
Abbreviated Survey	20	78	13	111
<b><i>N</i></b>	<b>929</b>	<b>2,055</b>	<b>378</b>	<b>3,362</b>
# Unique Individuals	<b>920</b>	<b>2,051</b>	<b>378</b>	<b>3,344</b>

This table summarizes the procedure by which we arrived at our final *Survey Population*. Failed quality control includes winners without information about ticket balance (Kombi only), missing or incorrect personal identification number, uncertainty about the identity of the winner, and so on. The table also reports survey participation by lottery (columns 1-3) and overall (column 4) and the number of players who participated who responded to the abbreviated telephone survey. We dropped prizes if the winning player’s personal identification number (“PIN”) could not be reliably determined or if key covariates (e.g., information about the number of tickets owned in Kombi) were missing. From each of the two Triss samples, we dropped subjects for whom we had indications that the winning ticket was jointly owned. Such players constitute  $\sim 7\%$  of the sample (for details on joint ownership, see Section IV in the Online Appendix of (Cesarini et al. 2016)). We also dropped a small number of Triss players who won multiple prizes under the same prize plan. We restricted the sample to prizes won by players aged 18 or above at the time of win and who were at most 75 years of age when surveyed. For each large-prize event in Kombi, we sought to identify suitable experimental controls. A non-winning player was deemed a suitable control if their sex, year of birth and number of tickets owned (in the month of win) were identical to that of the winner. For three large-prize winners, we were unable to identify four controls satisfying these criteria; we therefore dropped them. In a final step, we added four experimental controls for each large-prize winner in Kombi.

**Table A2: Testing Endogenous Selection into the Respondents Sample.**

<i>Outcome</i>	Mail-in Survey		Phone Survey	Mail-in or Phone
	(1)	(2)	(3)	(4)
Effect (\$100K)	-0.0057	-0.0024	0.0077	-0.0024
SE	(0.0040)	(0.0059)	(0.0183)	(0.0058)
<i>p</i> (analytical)	[0.154]	[0.677]	[0.675]	[0.682]
<i>p</i> (resampling)	[0.151]	[0.678]	[0.634]	[0.688]
<i>N</i>	4,840	4,840	501	4,840
Proportion	67.2%	67.2%	22.2%	69.5%
Group FEs	No	Yes	Yes	Yes

This table reports the results from Diagnostic Test 1 in the Analysis Plan. The first two columns report coefficient estimates from a regression of an indicator variable equal to 1 for subjects who returned a mail-in survey and 0 for subjects who did not, on prize amount won. The results without group identifier fixed effects are shown in column 1 and the results with the group identifier fixed effects are in column 2. Column 3 shows the results from an analogous specification estimated among players invited to the abbreviated telephone survey (see Figure A1). Here, the dependent variable is an indicator equal to one for subjects who agreed to participate. Finally, column 4 shows the results from a specification in which survey participation is defined as either having returned the mail-in survey or having answered the abbreviated telephone survey. Across all specifications, we fail to see any indications that survey participation was impacted by the outcome of the lottery.

**Table A3: Testing for Conditional Random Assignment of Lottery Prizes.**

	Survey Population				Respondents Sample			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Kombi	X	X	X		X	X	X	
Triss-Monthly	X	X		X	X	X		X
Triss-Lumpsum	X	X		X	X	X		X
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
		Group ID	Group ID	Group ID		Group ID	Group ID	Group ID
Fixed Effects	None	Group ID	Group ID	Group ID	None	Group ID	Group ID	Group ID
$N$	4,840	4,840	1,205	3,635	3,362	3,362	929	2,433
<u>Pre-Lottery Characteristics</u>								
Age (Beta/SE)	0.525	1.049	N/A	1.045	0.274	0.798	N/A	0.709
$p$ (analytical)	0.599	0.294	N/A	0.296	0.784	0.425	N/A	0.478
Age <sup>2</sup> (Beta/SE)	-0.710	-0.782	N/A	-0.809	-0.366	-0.550	N/A	-0.485
$p$ (analytical)	0.478	0.435	N/A	0.419	0.714	0.582	N/A	0.628
Female (Beta/SE)	0.952	0.792	N/A	0.809	1.006	0.959	N/A	1.002
$p$ (analytical)	0.341	0.429	N/A	0.418	0.314	0.338	N/A	0.317
College (Beta/SE)	0.750	1.516	-0.278	1.732	1.150	1.508	0.086	1.619
$p$ (analytical)	0.453	0.130	0.781	0.083	0.250	0.132	0.932	0.106
Married (Beta/SE)	0.118	-0.594	-0.971	-0.290	0.127	-0.769	-1.375	-0.303
$p$ (analytical)	0.906	0.552	0.332	0.772	0.899	0.442	0.169	0.762
Swedish (Beta/SE)	-1.197	-1.060	-1.091	-0.844	-1.497	-1.318	-1.503	-1.028
$p$ (analytical)	0.231	0.289	0.275	0.399	0.135	0.187	0.133	0.304
# Children (Beta/SE)	-0.080	0.836	1.552	0.437	0.297	-0.049	0.599	-0.210
$p$ (analytical)	0.936	0.403	0.121	0.662	0.766	0.961	0.549	0.833
Capital Income (Beta/SE)	0.098	-0.043	-1.609	0.157	-0.290	-0.593	-1.649	-0.446
$p$ (analytical)	0.922	0.965	0.108	0.876	0.772	0.553	0.100	0.656
Labor Income (Beta/SE)	0.839	0.382	-0.314	0.477	1.199	0.652	-0.244	0.748
$p$ (analytical)	0.402	0.702	0.754	0.633	0.230	0.514	0.808	0.455
<u>Joint Test of Baseline Covariates</u>								
$F$ -statistic	0.716	1.247	1.054	1.262	0.889	1.256	1.021	1.265
$p$ (analytical)	0.694	0.261	0.389	0.253	0.535	0.256	0.410	0.251
$p$ (resampling)	0.638	0.305	0.360	0.306	0.345	0.231	0.420	0.304

This table reports results from Diagnostic Test 2 in the Analysis Plan. Each column reports results from a regression in which the dependent variable is the lottery prize. In all specifications, we control for baseline characteristics measured at  $t = -1$ . Under the null hypothesis of conditional random assignment, variables determined before the lottery should not have any predictive power conditional on the group-identifier fixed effects. The table shows  $t$ -statistics, that is, coefficient estimates divided by their standard errors. The resampling-based  $p$ -values are constructed by performing 10,000 simulations to approximate the distribution of covariate coefficients under the null hypothesis of zero treatment effects, as described in the main text.

Table A4: Treatment-effect Estimates in the *Survey Population* and *Respondents Sample*.

	$t = 0$ Net Wealth		$t = 0$ Total Debt		$t = 1$ Capital Income		$t = 1$ Labor Income	
	Survey Population	Respondents Sample	Survey Population	Respondents Sample	Survey Population	Respondents Sample	Survey Population	Respondents Sample
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Effect (\$100)	53.256	53.523	-2.392	-1.178	0.722	0.532	-1.196	-1.211
SE	(3.836)	(5.110)	(0.978)	(1.500)	(0.197)	(0.178)	(0.180)	(0.219)
$p$ (analytical)	[<0.001]	[<0.001]	[0.015]	[0.433]	[<0.001]	[0.003]	[<0.001]	[<0.001]
$p$ (resampling)	[<0.001]	[<0.001]	[0.002]	[0.178]	[<0.001]	[0.003]	[<0.001]	[<0.001]
Mean	84,637	90,951	43,387	44,482	-331	-195	32,857	33,966
S.D.	137,053	141,577	54,072	53,325	8,329	8,918	22,677	23,175
$N$	1,976	1,403	1,976	1,403	4,129	2,901	4,129	2,901
Years-of-Win								
Restrictions	2000-2007	2000-2007	2000-2007	2000-2007	1994-2009	1994-2009	1994-2009	1994-2009

This table reports the results from Diagnostic Test 3 in the Analysis Plan. We estimated the treatment effect of lottery wealth on a number of register-based outcome variables in the *Survey Population* and examined whether the coefficients moved appreciably when the estimation sample was restricted to the *Respondents Sample*. In all specifications, we control for baseline characteristics measured at  $t = -1$  and the lag of the dependent variable. The sample restrictions in columns 1-4 are needed because the outcomes – wealth and debt at year-end in the year of the lottery event – are only available in government registers 1999-2007. Hence, the analyses are restricted to the subset of players who won during this period. Estimates in column 1-4 data are restricted to the lotteries that pay lump-sum prizes (Kombi and Triss-Lumpsum). The sample restrictions in 5-8 reflect the fact that the last year for which we have income data for the *Survey Population* is 2010. As discussed in the Analysis Plan, evidence of systematic differences between the two sets of coefficient estimates could, but need not, be an indication of endogenous selection into the *Respondents Sample*. We find no evidence of systematic differences in the coefficient estimates. In columns 1, 3, 5, and 7 we report estimates from the *Survey Population* (the smaller sample sizes in columns 1 and 3 reflect the fact that financial variables are only available 2000-2007 and net wealth and debt at year-end in the year of the lottery event is only defined for players who won in these years). In columns 2, 4, 6, and 8, we report the results from exactly analogous analyses conducted with non-respondents omitted from the estimation sample. For all pre-specified outcomes –  $t = 0$  net wealth,  $t = 0$  debt,  $t = 0$  capital income, and  $t = 0$  labor income – the estimated treatment effects are similar in magnitude.



**Table A5: Robustness Analyses.**

	Happiness	Overall Life Satisfaction	Financial Life Satisfaction	Mental Health
	(1)	(2)	(3)	(4)
<u>Original Estimate</u>				
Effect (\$100K)	0.016	0.037	0.067	0.013
SE	(0.014)	(0.014)	(0.012)	(0.016)
<u>Reweightd Estimate</u>				
Effect (\$100K)	0.010	0.045	N/A	N/A
SE	(0.015)	(0.018)	N/A	N/A
$p$ (analytical)	[0.506]	[0.013]	N/A	N/A
$p$ (resampling)	[0.643]	[0.079]	N/A	N/A
$N$	3,327	3,331	N/A	N/A
<u>Drop Large Prizes (above \$580K)</u>				
Effect (\$100K)	0.021	0.029	0.075	0.000
SE	(0.025)	(0.024)	(0.023)	(0.025)
$p$ (analytical)	[0.399]	[0.240]	[0.001]	[0.987]
$p$ (resampling)	[0.383]	[0.240]	[0.003]	[0.986]
$N$	3,227	3,230	3,119	3,053

This table reports the results from two pre-registered robustness analyses. In the first robustness analyses, we weight each respondent to the abbreviated telephone survey such that the weighted fraction of mail-in survey non-respondents in the estimation sample matches the population fraction of 33%. This robustness check is not feasible for the two outcomes that were not measured in the abbreviated survey. The second robustness check reports the results when excluding very large prizes, define as a prize above 4M SEK in the Analysis Plan.

Table A6: Dimensions of Life Satisfaction (Post Hoc).

Overall	Spare									
	Financial	Health	Time	Friends	Relatives	Home	Neighborhood	Society	Work	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	
Effect (\$100K)	0.067	0.006	0.026	0.002	0.001	0.008	0.010	-0.006	-0.018	
SE	(0.012)	(0.016)	(0.014)	(0.017)	(0.014)	(0.020)	(0.013)	(0.016)	(0.026)	
$p$ (analytical)	[<0.001]	[0.689]	[0.072]	[0.929]	[0.932]	[0.692]	[0.457]	[0.724]	[0.497]	
$p$ (resampling)	[<0.001]	[0.670]	[0.082]	[0.920]	[0.935]	[0.612]	[0.503]	[0.704]	[0.438]	
Correlation with <i>Overall LS</i>	0.46	0.54	0.61	0.46	0.41	0.45	0.36	0.27	0.43	
$N$	3,216	3,224	3,211	3,210	3,213	3,220	3,220	3,210	1,667	

This table reports the results from post hoc analyses of the effect of lottery wealth on domain-specific aspects of life satisfaction. We control for baseline controls measured at  $t = -1$  and group-identifier fixed effects in all specifications. All outcomes are measured in SD units. Standard errors are clustered at the level of the individual. For point of reference, columns 1-4 report results for two of our primary outcomes: *Overall LS* and *Financial LS*.

**Table A7: Heterogeneous Effects.**

	Year of Lottery		Prize Type		Disp. Income		Age		Sex	
	1994 to 2004	2005 to 2011	Lumpsum	Monthly	Below Median	Above Median	Below Age 51	At least 51	Male	Female
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Happiness										
Effect (\$100K)	0.038	-0.008	0.037	-0.015	0.002	0.027	0.016	0.022	0.020	0.011
SE	(0.021)	(0.020)	(0.020)	(0.021)	(0.020)	(0.016)	(0.019)	(0.018)	(0.018)	(0.018)
<i>p</i>	[0.062]	[0.713]	[0.068]	[0.473]	[0.922]	[0.096]	[0.388]	[0.234]	[0.267]	[0.555]
<i>p</i> equal	[0.112]		[0.075]		[0.253]		[0.813]		[0.684]	
<i>N</i>	1,659	1,668	2,031	375	1,429	1,893	1,663	1,664	1,722	1,605
Overall										
Effect (\$100K)	0.058	0.017	0.063	0.002	0.031	0.042	0.040	0.037	0.035	0.040
SE	(0.020)	(0.020)	(0.019)	(0.022)	(0.020)	(0.016)	(0.019)	(0.018)	(0.017)	(0.018)
<i>p</i>	[0.004]	[0.403]	[0.001]	[0.925]	[0.126]	[0.009]	[0.031]	[0.039]	[0.045]	[0.028]
<i>p</i> equal	[0.153]		[0.038]		[0.596]		[0.896]		[0.827]	
<i>N</i>	1,665	1,666	2,036	372	1,432	1,894	1,662	1,669	1,722	1,609
Financial										
Effect (\$100K)	0.053	0.082	0.058	0.083	0.086	0.055	0.056	0.081	0.061	0.078
SE	(0.016)	(0.019)	(0.016)	(0.018)	(0.016)	(0.013)	(0.014)	(0.016)	(0.015)	(0.014)
<i>p</i>	[0.001]	[<0.001]	[<0.001]	[<0.001]	[<0.001]	[<0.001]	[<0.001]	[<0.001]	[<0.001]	[<0.001]
<i>p</i> equal	[0.237]		[0.286]		[0.059]		[0.152]		[0.287]	
<i>N</i>	1,604	1,612	1,955	360	1,378	1,833	1,596	1,620	1,669	1,547
Mental										
Effect (\$100K)	0.047	-0.024	0.026	-0.013	0.007	0.018	0.020	0.012	0.009	0.018
SE	(0.022)	(0.021)	(0.021)	(0.026)	(0.022)	(0.018)	(0.020)	(0.020)	(0.018)	(0.020)
<i>p</i>	[0.035]	[0.245]	[0.200]	[0.616]	[0.755]	[0.314]	[0.324]	[0.533]	[0.615]	[0.376]
<i>p</i> equal	[0.019]		[0.233]		[0.638]		[0.748]		[0.698]	
<i>N</i>	1,568	1,579	1,916	349	1,340	1,803	1,577	1,570	1,635	1,512

This table reports the results from the five pre-registered heterogeneity analyses. Columns 1 and 2 show results separately for winners before or after January 1, 2005. Columns 3 and 4 show the results separately for Triss-Lumpsum and Triss-Monthly winners. Columns 5 and 6 display results separately for those above or below the median income in a representative sample. This analysis is based on individual disposable income (in the pre-lottery year) and compared to the population median which is calculated conditional on the respondent's sex and age category (18-27, 28-37, ..., 68+) in the year prior to the win. Column 7 and 8 show the result for winners above or below the median age in the sample. Finally, columns 9 and 10 show the results separately for men and women. All regressions include the baseline control variables measured at  $t = -1$ , indicator variable for the dimension of heterogeneity being examined (e.g. 1 if female in the sex-heterogeneity analyses), and interactions between the indicator and the baseline characteristics. We also control for group identifier fixed effects and their interactions with the indicator.

**Table A8: Heterogeneity by Years-Since-Win (Post Hoc).**

Years of Lottery Win	Happiness		Overall Life Satisfaction		Financial Life Satisfaction		Mental Health					
	Effect (\$100K)	SE	N	Effect (\$100K)	SE	N	Effect (\$100K)	SE	N			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1994-1996	0.060	(0.043)	347	0.072	(0.033)	347	0.020	(0.028)	334	0.054	(0.035)	326
1997-1999	0.025	(0.039)	411	0.062	(0.044)	413	0.049	(0.028)	394	0.050	(0.038)	384
2000-2002	0.035	(0.040)	515	0.058	(0.041)	516	0.120	(0.036)	504	0.006	(0.054)	494
2003-2005	0.047	(0.036)	577	0.055	(0.037)	580	0.086	(0.029)	556	0.096	(0.042)	542
2006-2008	-0.015	(0.031)	756	-0.008	(0.029)	757	0.052	(0.022)	735	-0.051	(0.029)	724
2009-2011	-0.001	(0.030)	721	0.044	(0.031)	718	0.104	(0.032)	693	-0.005	(0.032)	677

This table reports results from post hoc analyses of treatment-effect heterogeneity by years-since-win. The specifications are analogous to the pre-registered heterogeneity analyses, except with players assigned to six different groups instead of the original two.

**Table A9: Comparison to Income Gradients in European Social Survey**

	Happiness				Overall Life Satisfaction			
	Respondents Sample		ESS		Respondents Sample		ESS	
	Small-Prize Winners	All	Wave 3	Wave 7	Small-Prize Winners	All	Wave 3	Wave 7
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<u>Lin-Lin</u>								
Gradient (\$10K)	0.073	0.074	0.061	0.113	0.083	0.081	0.064	0.111
SE	(0.009)	(0.007)	(0.009)	(0.012)	(0.009)	(0.007)	(0.009)	(0.012)
<i>N</i>	2,104	3,309	1,439	1,292	2,107	3,313	1,442	1,292
<u>Lin-Log</u>								
Gradient (ln(Income))	0.417	0.414	0.356	0.523	0.477	0.456	0.348	0.502
SE	(0.047)	(0.037)	(0.047)	(0.052)	(0.046)	(0.036)	(0.046)	(0.052)
<i>N</i>	2,104	3,309	1,439	1,292	2,107	3,313	1,442	1,292
	Financial Life Satisfaction				Mental Health			
	Respondents Sample		ESS		Respondents Sample		ESS	
	Small-Prize Winners	All	Wave 3	Wave 7	Small-Prize Winners	All	Wave 3	Wave 7
	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
<u>Lin-Lin</u>								
Gradient (\$10K)	0.140	0.110	0.109	N/A	0.067	0.068	0.053	0.082
SE	(0.009)	(0.007)	(0.009)	N/A	(0.009)	(0.007)	(0.009)	(0.011)
<i>N</i>	2,038	3,198	1,442	N/A	1,999	3,129	1,429	1,292
<u>Lin-Log</u>								
Gradient (ln(Income))	0.769	0.607	0.594	N/A	0.387	0.378	0.296	0.387
SE	(0.047)	(0.036)	(0.046)	N/A	(0.048)	(0.038)	(0.046)	(0.050)
<i>N</i>	2,038	3,198	1,442	N/A	1,999	3,129	1,429	1,292

This table compares the income-well-being gradient in our restricted *Respondents Sample* (limited to players whose prizes are below \$20K), the full *Respondents Sample*, and Swedish respondents in waves 3 (2006) and 7 (2014) of the ESS. All gradients are estimated controlling for sex, a fourth-order age polynomial and sex-by-age interactions. To maximize comparability, the ESS regressions are weighted to ensure a sex- and age distribution that matches the restricted *Respondents Sample*. In the lottery samples, income is defined as the respondent’s average annual household disposable income between 2004 and 2014. We left censor annual income observations at \$6K in all analyses. In the ESS analyses, we sought to define the outcomes as similarly as possible. The *Happiness* and *Overall LS* measures in both waves of the ESS are near-identical to our survey measures. Our measure of *Financial LS* from wave 3 of the ESS is based on responses to the question: "And how satisfied are you with your present standard of living?" (no suitable measure of financial life satisfaction is available in wave 7). Finally, our measure of *Mental Health* in both ESS waves is the eight-item version of the Center for Epidemiologic Studies Depression Scale, coded so higher values imply better mental health.

**Table A10: Comparison to Permanent-Income Gradients in Respondents Sample.**

	Happiness		Overall Life Satisfaction		Financial Life Satisfaction		Mental Health	
	Effect	Gradient	Effect	Gradient	Effect	Gradient	Effect	Gradient
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<u>Lin-Lin (Group FEs)</u>								
Effect/Gradient (\$10K)	0.027	0.073	0.062	0.083	0.112	0.140	0.021	0.067
SE	(0.024)	(0.009)	(0.024)	(0.009)	(0.020)	(0.009)	(0.027)	(0.009)
<i>p</i> (analytical)	[0.257]	[0.000]	[0.009]	[0.000]	[0.000]	[0.000]	[0.423]	[0.000]
<i>p</i> equal effects		[0.062]		[0.403]		[0.179]		[0.084]
<i>N</i>	3,327	2,104	3,331	2,107	3,216	2,038	3,147	1,999
<u>Lin-Lin (Group FEs)</u>								
<i>Income Tertile 1</i>								
Effect/Gradient (\$10K)	0.023	0.194	0.082	0.210	0.184	0.328	0.034	0.160
SE	(0.056)	(0.037)	(0.054)	(0.037)	(0.052)	(0.038)	(0.054)	(0.039)
<i>p</i> (analytical)	[0.683]	[0.000]	[0.128]	[0.000]	[0.000]	[0.000]	[0.525]	[0.000]
<i>p</i> equal effects		[0.007]		[0.041]		[0.024]		[0.045]
<i>Income Tertile 2</i>								
Effect/Gradient (\$10K)	0.044	0.051	0.054	0.069	0.146	0.078	0.013	0.063
SE	(0.044)	(0.033)	(0.043)	(0.033)	(0.034)	(0.033)	(0.055)	(0.033)
<i>p</i> (analytical)	[0.314]	[0.118]	[0.211]	[0.035]	[0.000]	[0.017]	[0.807]	[0.060]
<i>p</i> equal effects		[0.894]		[0.764]		[0.119]		[0.398]
<i>Income Tertile 3</i>								
Effect/Gradient (\$10K)	0.011	0.036	0.048	0.037	0.061	0.102	0.002	0.032
SE	(0.040)	(0.018)	(0.041)	(0.018)	(0.030)	(0.018)	(0.044)	(0.018)
<i>p</i> (analytical)	[0.788]	[0.044]	[0.247]	[0.040]	[0.039]	[0.000]	[0.963]	[0.078]
<i>p</i> equal effects		[0.525]		[0.787]		[0.157]		[0.480]
<i>N</i>	3,326	2,104	3,330	2,107	3,215	2,038	3,146	1,999
<u>Lin-Log Approximation</u>								
Effect/Gradient	0.165	0.417	0.377	0.477	0.683	0.769	0.129	0.387
SE	(0.138)	(0.047)	(0.137)	(0.046)	(0.114)	(0.047)	(0.153)	(0.048)
<i>p</i> (analytical)	[0.233]	[0.000]	[0.006]	[0.000]	[0.000]	[0.000]	[0.399]	[0.000]
<i>p</i> equal effects		[0.084]		[0.489]		[0.478]		[0.106]
<i>N</i>	3,326	2,104	3,330	2,107	3,215	2,038	3,146	1,999

This table compares the effect of lottery wealth to income-well-being gradients estimated in the restricted *Respondents Sample*. Gradients are estimated using the respondent’s average annual household disposable income between 2004 and 2014 (left censored at \$6K). The top panel reproduces the linear gradients from Table A9 alongside rescaled effect-size estimates using lottery prizes annuitized over 20 years at a 2% real interest rate. The middle panel reports effect size estimated separately by income tertile, again assuming that the prize is annuitized over 20 years, alongside gradients estimated assuming linear splines with knots at each tertile of the income distribution. The bottom panel shows gradients from a log-linear specification. Effect size estimates in the bottom panel were obtained by using the lottery prize as an instrument for the logarithm of the average of annual household income ten years prior to winning plus the annuity value of the lottery prize. “*p* equal effects” is the *p*-value obtained from a Wald test that the rescaled causal estimate and the gradient estimate are equal. Standard errors are clustered at the level of the individual.