

The Own and Social Effects of an Unexpected Income Shock: Evidence from the Dutch Postcode Lottery - Peter Kuhn, Peter Kooreman, Adriaan R. Soetevent and Arie Kapteyn

Economic theory offers a rich set of predictions concerning the effects of exogenous income shocks on households' consumption behavior. These include the permanent income hypothesis (PIH; liquidity-unconstrained households should save the lion's share of an income shock); the Easterlin hypothesis (positive shocks to neighbors' incomes can reduce one's happiness); Veblen effects (shocks to neighbors' incomes might generate conspicuous changes in consumption); and the theory of in-kind transfers, which asserts that households who receive an in-kind transfer (such as food stamps) should in most cases convert it into cash.

In this study, we contribute to all the above research questions using data from the Dutch Postcode Lottery (PCL). Each week, this lottery allocates a prize to participants in a randomly chosen postcode (containing 19 households on average). About one third of the Dutch population participates in the lottery. A participant wins €2,500 per ticket. In addition, one household receives a significant part of their transfer in the form of a new BMW. From an experimental design perspective, the lottery provides participants in the winning code with an unexpected temporary income shock equal, while leaving all other households' incomes unchanged.

We identify the own and social effects of income shocks by comparing household consumption patterns in winning versus non-winning postcodes. Among non-participants, this provides a test for the presence of social effects. Among lottery participants, the comparison between winning and non-winning codes estimates a direct treatment effect that is a combination of own and social effects; additional assumptions allow us to separate out the own effect. We complement these simple comparisons between winning and nonwinning codes with estimates from a regression-based approach that accounts for differences in treatment intensity (i.e.

amounts won, both in the household and in its vicinity).

We sent out written surveys to all addresses in PCL-winning postcodes and to one or more neighboring postcodes, six months after the prize was won. The survey contains questions on household composition, demographic variables, education, labor supply, happiness, car ownership, large expenditures, income, and lottery participation. Our sample contains 2011 observations. The average participant held about 1.8 tickets and 11.2 percent of ticket owners in winning codes won a BMW. After the 25% lottery tax and adding in the expected value of this BMW (we value the BMW at €25,000), the average amount won by a household was €16,047, or about eight months of income for an average family in our sample. The PCL exposes nonparticipants who live in winning codes to income shocks totaling an average of €201,628 *among their neighbors.*

The study contains four main results. First, we do not detect any own effect of winning the postcode lottery on most components of households' expenditures, including food at home, transportation, and total monthly outlays. Participants in winning codes spend about €186 more on monthly items 6 months after the win than participants in nonwinning codes; while this is a 19 percent increase in expenditures on nondurables, €186 is only one percent of the average amount won by participants. Own effects are, however, detected for car consumption and other durable expenditures. Simple comparisons between winning and nonwinning postcodes show that participants in winning codes were four times as likely (4.5 versus 1.0 percent) to initiate major exterior home renovations during the six-month period between the lottery and survey date. They spent over €500 more on noncar durables than participants in nonwinning codes. Significant differences in car ownership occur between winning and non-winning codes six months after the lottery date. In a

sample that excludes all BMW winners, the main car of participating households in winning codes is on average thirteen months newer, compared to participants in non-winning codes. It thus seems that households who won only cash increase their car consumption after a lottery win.

Estimates from the regression-based approach further quantify these findings. Winning €10,000 is estimated to raise expenditures on non-car durables expenditures by €308, or 38 percent. Winning €10,000 appears to reduce the average age of a household's main car by about 0.4 years six months after the lottery date. Since the average age of a main car is about 7 years, this is about a six percent decline. Such large responses are consistent with liquidity-constrained versions of the life cycle consumption model, or with 'mental accounting' models with self-imposed borrowing constraints.

Second, turning to social effects, a comparison of non-participants in winning and non-winning codes does not show significant differences in consumption for any of the monthly or non-car durable expenditures. However, our regression estimates suggest the presence of social effects for two aspects of consumption that are arguably most visible to one's neighbors: exterior home renovations and cars. While the evidence for the former is confined to one regression specification, the evidence for cars is more robust. We consider four different indicators of a household's car consumption and find statistically significant effects for all four. These estimates of social effects on car consumption are substantial in size. For example, having an immediate neighbor win the PCL raises the probability that a household will buy a car in the next six months by close to 5 percentage points and reduces the mean age of its main car at the survey date by about half a year (about a 7 percent decline). For two indicators, the estimated effects of an immediate neighbor winning the PCL are very

similar in size to the estimated own effects of winning €10,000; for the incidence of car purchases in the past six months it is actually greater than the own effect.

A more detailed analysis of social effects of lottery winnings on car consumption uncovers two patterns. First, none of the indicators of neighbors' winnings based on Euclidean distance have statistically significant effects on any measure of car consumption. Second, while we detect a number of effects at the level of the entire postcode, statistically significant social effects are most consistently observed for measures of neighbors' winnings based on a household's two or four nearest neighbors. This suggests that social effects on car consumption are highly localized. A comparison of the means of the indicators of car consumption for three subgroups (those who live in non-winning codes, those who live in winning codes but do not live next door to a winner, and those who do live next door to a winner) supports this view: All indicators are largest for households living next door to winners.

Third, we find that the vast majority of BMW winners convert their BMW into cash. Six months after the lottery, participating households in winning codes are statistically no more likely to own a BMW than participating households in non-winning codes. Thus it appears that most BMW winners either elected to receive the cash prize in lieu of the BMW (thereby incurring a substantial tax penalty) or sold their BMWs shortly after they received them. Of the 25 BMW winners who responded to our survey, only 16 percent still owned a BMW at the survey date. Overall, the behavior of the BMW winners in our sample is remarkably consistent with simple models of in-kind transfers: whenever a gift in kind would induce a suboptimal consumption mix, that gift should, if possible, be converted into its cash equivalent and spent on other items or saved.

Finally, we look at happiness. Winning the PCL has no effect on a household's reported happiness six months after the event; with 95% confidence, we can rule out declines in happiness of more than 0.12 units and increases of more than 0.08 units on a scale of 1 to 10. Respectively, these limits correspond to 0.07 and 0.05 of the cross-sectional standard deviation of happiness (1.75) in our sample. Witnessing one's postcode-mates win the PCL does not make non-winning households any less happy six months after the fact; with 95% confidence, living in a winning postcode (but not winning oneself) reduces happiness by no more than 0.11 of a standard deviation, and it raises happiness by no more than 0.07 of a standard deviation. A comparison of the effects of lottery and nonlottery income reveals that, in contrast to lottery income, higher total income is very strongly associated with happiness in a cross-section of households.

Interpretations of our estimates other than a psychological need to "keep up with the Joneses" are possible. For example, social spillovers in car consumption could be driven by information-sharing about cars; by something as simple as households passing money to immediate neighbors; or by households selling their used car (though not the BMW awarded in the PCL) to neighbors.

Despite the lack of detectable own spending responses for most consumption items, our results contain some encouraging news for fiscal policies such as unexpected tax rebates designed to stimulate consumer spending in developed economies: To the extent that such 'stimulus' policies aim specifically at "big-ticket" items (mostly durables) – where consumer spending is most cyclically sensitive to begin with – our results suggest that they may have substantial own effects, as well as significant social multiplier effects. These social multipliers are distinct from, and would presumably operate in addition to the usual Keynesian multipliers.