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Being Well-in with the Joneses? A Lab-in-the-Field Experiment on Conspicuous Consumption among Rural Communities

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ABSTRACT *Conspicuous consumption, specialised consumption of high visibility but without apparent economic benefit, is reducing investment in productive assets and thus hindering economic development in low-income countries. In previous research, the phenomenon was commonly explained by status-seeking and herding behaviour. Our study follows a novel angle in testing the role of risk sharing, assuming that investment into social status is perceived to increase access to informal credits in times of crises. We conduct a random-effects hurdle model along a lab-in-the-field experiment along a sample of 197 wheat farmers in Uzbekistan, a country characterised by high levels of risk and uncertainty. Within our experimental setup, both risk attitude and real-life risk management decision are found to be significant determinants of conspicuous consumption. Our findings support the notion of a complex decision-making process with risk sharing as one important motivator. Providing first empirical evidence on the topic, our findings have implications beyond our narrowly defined study case: We argue that strengthening options of formal risk-sharing tools might remove one of the motivators for conspicuous consumption; thus, it could improve the economic welfare of low-income households worldwide by allowing for more productive investment of scarce financial resources.*

SUBJECT CLASSIFICATION CODES: D12; D14; I32

KEYWORDS: Conspicuous consumption; peacock effect; behavioural experiment; risk management policy; resilience; climate change mitigation

1. Introduction

Worldwide, people allocate considerable funds to luxury items and services of high visibility but no apparent economic benefit. Thorstein Veblen coined the term *conspicuous consumption* for this type of behaviour – the “specialised consumption of goods as an evidence of pecuniary strength [...]” (Veblen, 2012, p. 43). While initially targeting the upper, “leisure” class, Veblen

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later on attests that “no class of society, not even the abjectly poor, foregoes all customary conspicuous consumption” (Veblen, 2012, p. 85).

Entertaining conspicuous consumption, many individuals exceed their financial scope and, in consequence, underinvest in more productive assets like education or business assets, or even run into private debt (Dutt, 2019). This seemingly irrational behaviour has traditionally been attributed to status-seeking, the urge to signal a certain existent or non-existent income level (Veblen, 2012, p. 43). The same idea was later labelled as „Getting Ahead of the Joneses“ (Harriger-Lin et al., 2020; Ordabayeva & Chandon, 2011). In other instances, meanwhile, “living beyond one’s means” is not a choice but a social necessity, as abstaining from a certain level of conspicuous consumption may be perceived as an indicator for economic descent, a mechanism also labelled „Keeping Up with the Joneses“ (Galí, 1994; Harriger-Lin et al., 2020), herding behaviour or “bandwagon effect” (Duesenberry, 1949). Put differently, consumption decisions are met with the desire to conform with social norms (Banerjee, 1992; Bikhchandani et al., 1992).

In this paper, we test another rationale relating to the concept of social insurance: Especially in close-knit rural societies, social networks give access to various economic resources, including informal credit (Weerdt, 2004). Often, these serve as – albeit instable – substitute for more formal means of risk sharing (Coate & Ravallion, 1993). For informal credit, the quality of one’s social networks, including the relative income of its members, is of decisive importance. This is particular the case under high systemic risk, which may lead to income shocks across a whole social network. As established by Fafchamps and Gubert (2007a), forming social connections with higher (i.e. more solvent) social classes is therefore an attractive strategy for lower-income households.

We argue that two types of conspicuous consumption are employed to build social networks. One straightforward option is shared consumption: For instance in India, expenditure for social events was found to generate substantial socioeconomic benefits (Rao, 2001). Another type is status consumption, which is defined as (private) consumption for the main benefit of obtaining higher social status (Eastman et al., 1999). It has been shown that households considered “too poor” or persistently poor may be excluded from social networks (Santos & Barrett, 2011). Hence, signalling higher monetary wealth might be necessary to remain in attractive social networks – even if this status consumption may alienate one’s lower-income peers. As noted by Brown et al. (2011), conspicuous consumption as a whole might therefore be regarded as a way to cultivate social networks for informal insurance in the absence of more formal insurance arrangements, even though not necessarily a purposeful diversification of risk (Fafchamps & Gubert, 2007a).

Building on these theoretical considerations, we aim to contrast the various motivations for conspicuous consumption via a lab-in-the-field experiment eliciting preferences for conspicuous consumption under risk. Towards this aim, we employ a sample of 197 crop farmers in Uzbekistan, a transition economy characterised by high climatic and economic insecurity. We equip each participant with a random amount of game endowment, which they allocate on a limited number of choices, each influencing the final farm revenue. One of these choices is consumption spending, which is not conducive to increasing farm revenue but is rewarded with the public allocation of golden chocolate coins. The determinants for this public yet unnecessary consumption are analysed by a random-effects double-hurdle panel data model. Our assumption is that conspicuous consumption is not only driven by differences in random group allocation (which would point towards status-seeking effects) or observable average group spending (indicating herding effects), but also by an individual’s preference to control for external risks via risk management. The latter is measured by the number of risk-mitigating activities an individual undertakes in their real-life farming.

Our results support to the idea that conspicuous consumption may not only be an expression of status seeking and herding, but also root in the demand for informal insurance in traditional societies. We find a significant relationship between conspicuous consumption spending and the number of real-life risk-mitigating activities undertaken by participants. This relationship also

holds when controlling for individual risk attitudes as well as individual endowment and average group consumption, which represent conventional explanations for conspicuous consumption.

We thus provide first empirical evidence of a connection between conspicuous consumption, informal insurance, and risk sharing. While the informal insurance function of social networks is undisputed (Weerdt, 2004), quantitative research on the risk-sharing function of conspicuous consumption is very limited: Weerdt and Dercon (2006) provide descriptive evidence that Tanzanian villagers' most frequent risk-sharing instrument in preparation for external shocks is gift-giving. Chen (2014) finds a significant correlation between gift-giving and other forms of informal risk sharing in rural China. Hampson et al. (2021) discover a mediating effect of financial insecurity in the relationship between consumer confidence and conspicuous consumption in Brazil. Another novelty lies in the experimental nature of our study: The vast majority of existing studies are only *ex-post* analyses of revealed consumption behaviour, making it difficult to control for external influences. With various measures controlling for hypothetical bias within our experimental approach, we contribute to methodological debates on external validity of lab-in-the-field experiments (Eckel & Candeló Londono, 2021; Gneezy & Imas, 2017). With a specialised gender perspective on status seeking, we also contribute to literature at the intersection of economics and biology arguing for a sexual signalling function of conspicuous consumption among men (Fraja, 2009; Iredale et al., 2008; Sundie et al., 2011).

On a broader perspective, our findings help to understand seemingly irrational behaviour in a world of growing risk. In many world regions, both state and private business yet fail to provide formal means of risk management, forcing individuals into inefficient means of informal risk-sharing via social networks (Barrett, 2007). Previous literature has shown that these inefficiencies disadvantage poor households in particular (Larson & Plessmann, 2009). Our contribution offers a fresh perspective, explaining observed economic behaviour among experimental data in developing countries.

2. Materials and methods

Stated preference techniques, also known as 'contingent valuation' (Carson & Hanemann, 2005) offer a go-around for challenges of demarketing and observing conspicuous consumption 'in the wild'. In general, these techniques use statements of respondents about their preferences for a particular (expenditure) choice to estimate utility functions (Kroes & Sheldon, 1988). One shortcoming is the so-called hypothetical bias, where the stated willingness to pay for certain goods or choices is much higher in hypothetical settings than in reality (Norwood, 2005). While the existence of the hypothetical bias is supported by ample empirical evidence (e.g. Aadland & Caplan, 2003), the extent of it seems to be subject to the individual experimental setting: in several studies, contingent valuation of participants turned out to be very close to actual decision making (Champ & Bishop, 2001; Sinden, 1988).

In order to reveal expenditure choices for a non-standard group of subjects (farmers from rural communities) robust to potential hypothetical bias, we chose a lab-in-the-field experiment, following the taxonomy of Gneezy and Imas (2017). This type of experiment introduces a relatively controlled setting, which limits excessive uncontrolled noise that arises from establishing experiments outside laboratory conditions, but offers sufficient field context to decrease the hypothetical bias (Camerer, 2015; Gneezy & Imas, 2017; Karlan, 2005). Lab-in-the-field experiments, or framed field experiments as of the taxonomy by Harrison and List (2004) have been found to be a good approximation of actual consumer behaviour despite a tendency for more moral or social behaviour (Lusk et al., 2006). Also, they are found to elicit realistic choice-making processes in agriculture and rural development (Janvry & Sadoulet, 2020).

2.1. Experimental setup

Different from many previous studies in the field, we implemented experiments with the relevant target group, farmers in transition economies, in their local environment, instead of for instance students in an academic lab (Carroll & Samek, 2018). Participants were seated in up to three rows of our meeting room on the premises of the local Agricultural Office; seating order was based on their time of arrival and registration. The seating arrangements allowed for casual communication and visual contact between participants. After an introduction of the team and our study purpose, we briefed the participants on the basics of agricultural risk and risk management. Finally, the general idea of the experiment was communicated: Each participant was asked to mimic actual farm management decision making over five hypothetical seasons. Farmers with the most economically efficient experimental farm performance were promised a small prize for their achievements.

Each participant was to play with one hypothetical hectare of wheat land, seven household members and was allocated a random endowment of game money in Uzbek Soum (UZS). Closed envelopes with three levels of monetary endowment (1,235,000 UZS/1,320,000 UZS/1,415,000 UZS) had been prepared in advance and were drawn randomly by participants without replacement. In addition, we handed each participant a game sheet summarising the available choice sets for each growing season (see Figure A1), accompanied by another verbal explanation. In the beginning of each growing season, participants who wished to remain in the game had to first cover a lump sum of fixed costs for minimum business investment (410,000 UZS). Further, they had to pay a lump sum for household consumption, which was explained as a minimum level of expenditure for their household (790,000 UZS). Beyond these two obligatory minimum expenses, participants had five non-exclusive choices of action, which are summarised in Table 1.

The main choice of interest was to spend a self-chosen sum on “consumption”. Any sum beyond the obligatory level of 790,000 UZS (equivalent to basic livelihood expenses at that time) yielded zero game return but was rewarded in the form of golden chocolate coins at a given exchange rate, which were publicly handed over and placed on the table in front of the participants. Other, non-exclusive game choices included the following: First, spending a lump sum on fertiliser input, which would increase the hypothetical yield under a given weather condition. Second, the purchase of drought insurance as a formal risk management option. The insurance product would result in a pay-out under unfavourable weather conditions (unknown to farmers at the point of decision-making), but zero pay-out under favourable weather conditions. Third, spending a variable sum on “savings” under a local annual deposit rate of 14%. Fourth, the option to take on additional funds on low interest to decrease crowding-out effects of competing game choices. The limitation for fresh credit was the initial game endowment, reflecting certain credit constraints in the region.

Table 1. Choice sets

Choice	Cost	Financial return
Consumption	variable	None, not available for reinvestment in the next round
Fertilizer input	100,000 UZS	+370,000 UZS under good weather +169,000 UZS under medium weather +93,000 UZS under bad weather
Drought insurance	110,000 UZS	0 UZS under good weather 350,000 UZS under medium weather 651,000 UZS under bad weather
Savings	14% annual rate	Varies on the way savings are invested
Credit	16% annual rate	Varies on the way credit sum is invested

Source: Own illustration of choice sets.

As per the experimental setup, participants had to make their choices under risk, which manifested as variations in the amount of rainfall. While outcomes of actions under a particular weather condition were communicated, the respective weather condition itself was unknown to the farmer at the time of decision making. Thus, participants had to refer to subjective probabilities, thus inducing a level of uncertainty comparable to local decision-making environments (see also Hardaker et al. (2015) on risky choices and subjective probabilities in agriculture).

Farmers had to indicate their choices by placing the respective game money on each participant's game sheet. For the whole session, each row was allocated to a gamemaster, who recorded each participant's decisions on an electronic device. Once all choices were made and recorded, the current game round's accumulated rainfall (normal, little or very little rainfall) was revealed. While the rainfall probability was ex-ante unknown to participants, it mirrored drought probabilities of the five seasons preceding the experiment. Depending on previous individual investment behaviour and the season's experimental weather, the participants received baseline revenues (1,372,000 UZS/892,000UZS/549,000 UZS), which could be further increased by individual investment returns from fertiliser, index insurance, and savings. All values on revenues and costs of choices presented above were pre-tested and adjusted to local real values. The insurance option was a marketable product developed in cooperation with local insurance agencies. Together with potential savings or new credit, this revenue constituted the endowment for the next round. Overall, five rounds ("seasons") were played within one game session. By assigning an incentive-compatible reward at the end of the game – assuming that farmers' dominant strategy is maximising profit – we prescribed value to the hypothetical decision making within the game, following induced value theory (Smith, 1976).¹

To reduce the hypothetical bias, we followed the framework and suggestions by Beshears et al. (2008). First, we made sure that participants decided only on those managerial decisions that are, in practice, a matter of *active decisions*: Passive choices like "staying in the game" by investing a fixed lump-sum for basic livelihood needs were not assessed. All other choices had to be made actively by physically putting the required amount of game money on the indicated spot in the game sheet. Second, experiments with too *complex choice sets* are likely to result in revealed preferences that are not according to the normative preferences, as participants simply do not comprehend the attributes of the offered choices. In order to reduce complexity, we offered a very simplified scenario and set of choices. To limit the divergence to real-life conditions, we chose a country (Uzbekistan) and farming sector (rainfed wheat) in which the range of available choices is relatively small per se. Also, we identified the most important local farm management decision in our baseline survey. Third, individuals with limited *own experience* in the subject matter are not likely to yield insights into realistic decision-making processes: Therefore, we made sure to invite only active farm managers. Fourth, *third-party marketing* can easily influence farmers' choices for risk management. None of the farmers had had any experience with index-based agricultural insurance, which has not yet been formally introduced in the country. Fifth, we followed Beshear et al.'s (2008) recommendation to include some level of *self-reporting* by asking our participants to read out their choices to the enumerators walking the rows and logging decisions. Sixth, we made sure to elicit choices from informed subjects by completely communicating the rules of the game and consequences of actions by a verbal introduction, by a poster, and the game sheet. All communication took place in the farmers' native language.²

2.2. Sampling

Our experiment was conducted among a sample of wheat farmers in Uzbekistan, which is a prime example for the challenges towards economic development motivating this paper: After the collapse of the Soviet Union, the country experienced a breakdown of public infrastructure and national economy, coinciding with extreme price fluctuations and high inflation rates.

Under a general absence of consistent and stable agricultural policy, limited validity of formal agreements, and high inflation rates, formal risk management like savings accounts or formal insurance were not rational choices (Turaeva & Adambussinova, 2022). As in other transition economies, investment in social networks is a popular method of informal risk management, particularly for farmers, whose economic activities are highly susceptible to production and market risks (Moschini & Hennessy, 2001). Furthermore, conspicuous consumption is widespread in the country. For instance, while annual average incomes are located at around \$PPP 5382,³ the minimum standard of an “acceptable” wedding, a rather obvious form of conspicuous consumption, was found to be (deflated) \$3600⁴ in the countryside (Trevisani, 2016). Finally, rural areas in Uzbekistan are closely-knit communities with high levels of interaction between household members, thus making them a good representation for many rural communities worldwide. The study region was located in the province of Jizzakh, a province dominated by agriculture and situated close to the average in terms of regional GDP among Uzbekistan’s provinces.

Rainfed farmers were chosen as the target population due to high production uncertainties connected to formal credit and insurance markets and their relatively narrow set of farm management decision. We obtained a recent list of all farmers for rainfed wheat production within the province. This sampling frame was first checked for accuracy by contacting each farm head within the sampling frame for a small baseline survey. From among the 697 farmers, we aimed to sample 25%. Farm heads were randomly invited for participation in one of our 12 separate experimental sessions. All farmers had the same probability to be invited. We did not offer any financial incentives for participation in order to avoid a biased sample composition (Harrison et al., 2009). Due to the cooperation with the local agricultural offices, the overall participation rate among invited farmers was 85%. From among the 199 participants that attended the session, 197 successfully completed the game setup and answered an additional survey. As our experiment ran over five rounds, our pooled dataset comprises a total of 988 observations (one person dropped out after two rounds due to an external event).

Our game participants were similar to non-participants in terms of education of the farm manager, years of farming experience and our most important non-game variables of interest – risk attitude, risk management portfolio and previous shock experience. Only landholdings were statistically significantly larger among participants (54 ha as compared to average 44 ha among non-participants). Also, participants were on average three years older than non-participants, most likely due to the fact that these individuals had stronger ties with the inviting agricultural office and therefore were more likely to accept our invitation. Meanwhile, we have no indication to assume self-selection related to the content of our experiment.

2.3. Estimation strategy

We applied a basic random-effects double-hurdle model developed by Cragg (1971). This two-step model accounts for the interaction between the decision to participate in conspicuous consumption (0/1) and the intensity of conspicuous consumption (>0). The double-hurdle model has been applied to similar research questions on food consumption (Lin & Milon, 1993), food expenditure (Liu et al., 2015) or conservation practices (Thompson et al., 2021). Based on the results of a Hausman test ($\chi^2(3) = 3.75$, $\text{Prob} > \chi^2 = 0.2903$), the random-effects model was chosen over a fixed-effects model or a pooled model.

In the first stage, we conduct a probit regression on whether an individual spent any funds beyond the required minimum on the category “consumption” ($y_{1ij} = 1$) or not ($y_{1ij} = 0$):

$$y_{1ij} = \mu_1 + \beta_1 R_{1i} + \gamma_1 C_{1ij} + \alpha_i + \epsilon_{1ij} \quad (1)$$

y_{1ij} expresses an individual’s i binary participation for conspicuous consumption in season j . $y_{1ij} = 1$ if $\mu_1 + \beta_1 R_{1i} + \gamma_1 C_{1ij} + \alpha_i + \epsilon_{1ij} \geq 0$ and zero otherwise. R_{1i} represents a vector of risk

attitude, risk management constant over rounds and C_{1ij} is a vector of variables controlling for status seeking, herding, peacock behaviour and individual participants' characteristics. α_i is the random effect and ϵ_{1ij} is the normally distributed error term.

For the second stage we employ a lognormal OLS regression, as proposed by Cragg (1971). The lognormal transformation allows for a better interpretation of the consumption values, and is written as:

$$y_{2ij} = \exp(\mu_2 + \beta_2 R_{2i} + \gamma_2 C_{2ij} + z_i + \epsilon_{2ij}) \quad \text{if } y_{1ij} = 1. \quad (2)$$

A Pearson correlation tests gives no rise to assumptions of multicollinearity in the explanatory variables. To account for heteroscedasticity, we cluster standard errors on the individual level for all estimations. Hence, we estimate robust standard errors adjusted for the 197 clusters in our unique identifier of game participants (household id).

2.4. Measures

2.4.1. Conspicuous consumption. The primary attributes of conspicuous consumption are the “unproductive” nature of consumption (Veblen, 2012) as well as its high visibility to peers. Therefore, our chosen representation of conspicuous consumption has to be both unnecessary, i.e. uncondusive to the proclaimed aim of the allocation game, as well as be clearly tangible and visible to the peer group (Clingingsmith & Sheremeta, 2018). To satisfy the first requirement, we define conspicuous consumption as consumption spending beyond the required 790,000 UZS, being detrimental to farm revenue, as well as winning the game and the announced prize. As a visible and tangible representation for conspicuous consumption we chose golden chocolate coins, which were handed out at a fixed exchange rate for excess consumption spending. In this, we followed Clingingsmith and Sheremeta (2018), who used gourmet chocolate truffles within their experimental setup.

This choice was done for various reasons: First, we agree with Clingingsmith and Sheremeta (2018), who postulate that rival and excludable consumption goods are better suited as representation of conspicuous consumption and easier to interpret than the demand for common goods. Second, our physical representation has to be attractive to individual's peers. While handing over status objects of high material value would be too expensive in the experimental setup (Banuri & Nguyen, 2020), their mere visualisation might not be attractive enough. Our choice aimed at bestowing desirability beyond individual consumption preferences for chocolate by the wrapping and by pointing out the foreign origin of the chocolates, as foreign, high-quality chocolate is scarce in Central Asia. To make sure that gold coins were not purchased for short-term consumption benefits, ultimately turning the decision for or against conspicuous consumption into a delayed-gratification test, participants were catered with snacks throughout the game. Only very few participants chose to consume any chocolates on site. Also, we did not encourage participants to take the coins back home and only few did so.

Third, a connection between status and endowment is vital in increasing the demand for conspicuous consumption (Clingingsmith & Sheremeta, 2018). The introduction of IQ tests to determine initial endowment, as suggested by the previous papers, might however introduce a bias through the endogeneity of game endowment. Therefore, the initial game endowment was randomly assigned. Meanwhile, differences in initial endowment could very well be neutralised by skilful decisions in the game, making revenue and endowment a status object. Tests against a potential remaining bias are included within [section 3.2](#) of this paper.

Finally, by public handover of the purchased “luxury item”, we aimed at maximising the visibility of consumption spending. The gold coins were placed on top of the table, remaining visible and accumulating until the end of the game.

2.4.2. Status-seeking and herding. As of theory, one driver for status-seeking and herding is conspicuous consumption by one's peers. Peer behaviour in this case is measured by the average of consumption spending within the session group. Based on previous research (Duesenberry, 1949; Galí, 1994; Harriger-Lin et al., 2020), we expected a positive impact of peer consumption on individuals' conspicuous consumption.

A second factor is group inequality, which drives individuals to increase conspicuous consumption to signal upward social mobility rather than "falling behind" (Chai et al., 2019; Christen & Morgan, 2005; Glazer & Konrad, 1996; Roychowdhury, 2017; Sun & Wang, 2013). As individual game endowment was only observable for direct seating neighbours, our inequality measure was chosen to be the relative difference in individual endowments as compared to the mean of the direct neighbours within the (random) game seating arrangement.

Inequality may also decrease conspicuous consumption if resulting from sudden income shocks that force individuals into poverty and necessitate to cut spending, in particular luxury or discretionary spending (Brown et al., 2011; Chai et al., 2019; Glazer & Konrad, 1996; Gupta & Kishore, 2022; Roychowdhury, 2017). We therefore also included a measure for poverty within the game, a binary variable that captured membership of the lowest initial endowment group.

2.4.3. Peacock behaviour. Gender may play a role for conspicuous consumption of the peacock variety, the desire to impress the opposite sex by costly display of some sort of status symbol. Systematically higher conspicuous consumption has been confirmed for male individuals across various cultural backgrounds (Aldashev, 2019; Brown et al., 2011). Empirical evidence beyond mere correlations is rare: Griskevicius et al. (2007) conducted a series of experiments, finding that spending among men was significantly increased by introducing a romantic connotation, an effect which could not be observed among women. Sundie et al. (2011) confirmed these findings in their experiments. Meanwhile, more recent studies have failed to reproduce evidence for 'romantic primes' triggering risk-taking behaviour or conspicuous consumption among young men (Shanks et al., 2015).

In the few existing experimental approaches connecting conspicuous consumption with sexual motivations, a "romantic context" is elicited in various ways. Sundie et al. (2011) suggested a romantic context via the revealed study purpose: Participants were informed that researchers were looking for feedback on dating services and were shown pictures of attractive opposite-sex individuals, as was also the case in a study by Shanks et al. (2015). In other setups, participants were made to read a romantic short story (Griskevicius et al., 2007, 2019). In our experiment, we followed Iredale et al. (2008) who observe altruistic behaviour ('generosity') conditional on the presence of an opposite-sex observer. In our experiment, each row of participants was supervised by an enumerator, either male or female, whose task was to note the individual decision-making of each round.

2.4.4. Risk management. According to theory, risk management typically entails positive risk control costs or at least to give up potential risk premiums. This decision is warranted only by presence of high perceived risk or high risk aversion, which leads to a positive expected utility of the selected management portfolio (Hardaker et al., 2015). In our model, we therefore represent the latent risk management motivation with two variables, the individual risk attitude as well as the chosen risk management portfolio in real life. The latter is considered to be a function of risk attitude and subjectively perceived risk.

Risk attitude is measured via self-stated risk preferences on a five-point Likert scale, ranging from 1 = "like to avoid risk" to 5 = "like to take risk". On the one hand, conspicuous consumption is expected to have a risk-smoothing function for farmers, as of our theoretical framework. Hence, risk averse individuals are expected to invest more funds into improving social networks via displaying social status through conspicuous consumption. On the other

hand, investment into social networks via conspicuous consumption can be considered a risky option, as benefits from social networks in times of crisis are in reality rather uncertain (Clarke, 2016). The formal risk management strategies within the game, savings and insurance, are less risky but more costly: High inflation rates, which are typical for many developing countries, are reducing the purchasing power of savings over time; the cost of insurance is determined by insurance premiums, which typically also include operating costs and profits of the insurer. Overall, we therefore expect a positive correlation between risk attitude and conspicuous consumption.

The second variable, real-life risk management portfolio, is measured by counting the number of risk management options chosen by farmers in their real production environment (i.e. outside the game). This choice was made as the formal risk management portfolio within the game might financially crowd out informal risk management choices (Chen, 2014; Lin et al., 2014). Real-life risk management outside the game however indicates the perceived need to control for subjective risk and is independent of formal risk management options within the game. As elaborated on in our theoretical framework, we expect conspicuous consumption to be positively correlated with perceived risk, which is captured by the real-life risk management portfolio. Therefore, we argue that a positive sign for risk management portfolio represents a positive correlation between perceived risk and conspicuous consumption, hence supports the notion of the risk-sharing motivation for conspicuous consumption.

The set of chosen model variables is presented in [Table 2](#):

3. Results

3.1. Regression results

The level of conspicuous consumption among our experimental sample of farmers was surprisingly high. In 751 of 988 game observations, i.e. in 76% of cases, our participants chose to consume beyond the required minimum level. In those observed cases of conspicuous consumption, participants spent on average 5% of the initial endowment. Participants in the upper decile chose to spend quite substantial shares of their endowment for excess consumption, namely 16–57% of their endowment.

In the first-stage regression, we analyse the determinants of the decision for any excess consumption. [Table 3](#) presents the average marginal effects of the probit regression. Within the baseline model in column (1), the average consumption within the relative session was significantly contributing to the consumption decision of an individual within the group, supporting the ‘herding’ approach on conspicuous consumption. For a twofold in average group consumption (the variable was log transformed by base 2 for easier interpretation), the probability of conspicuous consumption increased by 9.6 percentage points from the baseline probability for conspicuous consumption of 76% ($p \leq 0.001$).

Game inequality, measured as the relative difference between an individual’s endowment and the average income of its direct seating neighbours at this level, had no significant impact on decision-making ($p = 0.111$). A low initial endowment, meanwhile, clearly influenced individual decision. On average, being in the lowest endowment group reduced the probability of conspicuous consumption by 9.4 percentage points ($p = 0.009$).

Thirdly, an increase by one level in risk attitude (1–5 Likert scale) increased the probability of conspicuous consumption by 4.5 percentage points ($p = 0.007$), even when controlling for real-life risk portfolio. Splitting up detailed effects for the factor variable in column (2) revealed that these effects were pertinent to an increased consumption among the most risk-friendly group. In other words, more risk-friendly individuals were more prone to higher consumption spending.

Table 2. Summary statistics

	Mean	SD	Min	Max	N
<i>Round observations</i>					
Conspicuous consumption	54,461	86,754	0.00	710,000	985
Conspicuous consumption	0.76	0.43	0	1	985
Av. session consumption	54,461	39,033	1,250	212,125	985
Low endowment group	0.31	0.46	0	1	985
Relative round endowment	1.01	0.15	0.51	2.13	985
Game round	3	1.41	1	5	985
<i>Individual observations</i>					
Female gamemaster	0.84	0.37	0	1	197
Age	46.15	10.95	19	84	197
Education level	3.94	0.75	2	5	197
Risk management portfolio	3.80	1.69	0	8	197
Risk attitude (self-assessed)	3.98	0.80	1	5	197

in UZS
 Binary variable
 in UZS
 Initial endowment = 1,235,000 UZS
 Endowment / average endowment of seating neighbours
 1 = Round 1, 2 = Round 2, 3 = Round 3, 4 = Round 4, 5 = Round 5
 Gender of gamemaster
 Age in years
 1 = Primary school, 2 = junior high school, 3 = technical school, 4 = university degree
 Number of implemented risk management techniques out of eight given options
 (1 = very much avoid risk, 2 = avoid risk, 3 = neutral, 4 = like risk, 5 = very much like risk)

Table 3. Probit regression panel estimation, average marginal effects (AMEs)

	(1) AME (SE)	(2) AME (SE)
Av. session consumption spending (log base 2)	0.0964*** (0.0079)	0.0959*** (0.0080)
Relative round endowment (in UZS)	0.1338 (0.0839)	0.1386* (0.0839)
Low endowment group (0/1)	-0.0942*** (0.0362)	-0.0880** (0.0358)
Female game master (0/1)	-0.0706 (0.0490)	-0.0805* (0.0481)
Age group (1–5)	-0.0012 (0.0151)	
Age group:		
30–39 years		0.0579 (0.0825)
40–49 years		0.0857 (0.0770)
50–59 years		0.0476 (0.0778)
>59 years		0.0329 (0.0920)
Highest education (1–4)	-0.0152 (0.0201)	
Highest education:		
Senior high school		-0.1117 (0.0901)
Technical school		-0.1219 (0.0891)
University degree		-0.1260 (0.0924)
Risk management portfolio (0–8)	-0.0030 (0.0096)	-0.0015 (0.0101)
Risk attitude (1–5)	0.0452*** (0.0167)	
Risk attitude:		
Somewhat risk-averse		0.0345 (0.0940)
Risk neutral		0.0485 (0.0761)
Somewhat risk-friendly		0.0902 (0.0685)
Risk-friendly		0.1468** (0.0706)
Game round (1–5)	0.0018 (0.0102)	0.0022 (0.0103)
Observations	985	985
Farmers	197	197

Note: Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 4 displays the estimates of the second stage, a random-effects lognormal OLS model, on the level of conspicuous consumption. It is zero-truncated and hence drops all observations with zero spending. As the results reveal, peer effects were also responsible for a large share of variation in the level of conspicuous consumption. For each UZS that was allocated to conspicuous consumption by neighbours, an individual likewise invested 0,61 UZS on consumption as well ($p < 0.001$). While relative poverty had no influence on the level of consumption, inequality had the expected positive effect on conspicuous consumption. With an increase of relative income by 100% (i.e. doubling the endowment with respect to one's peers) conspicuous

Table 4. Random-effects lognormal OLS regression, AMEs

	AME (SE)
Av. session consumption spending (log base 2)	0.6061*** (0.0522)
Relative round endowment (in UZS)	1.6470*** (0.4305)
Low endowment group (0/1)	-0.1688 (0.1235)
Female gamemaster (0/1)	-0.1789 (0.1340)
Age group:	
30–39 years	-0.0755 (0.2196)
40–49 years	-0.1217 (0.2225)
50–59 years	-0.0330 (0.2143)
>59 years	-0.1482 (0.2726)
Education (1–4)	0.0231 (0.0780)
Risk management portfolio (0–8)	0.0887*** (0.0337)
Risk attitude:	
Somewhat risk-averse	0.2651 (0.3280)
Risk-neutral	0.2636 (0.2396)
Somewhat risk-friendly	0.1873 (0.2042)
Risk-friendly	0.2060 (0.2127)
Game round (1–5)	0.0164 (0.0414)
Observations	751
Farmers	193

Note: Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

consumption was increased by 165%. This time, risk attitude had no influence on conspicuous consumption levels. However, we found a statistically significant influence of real-life risk management portfolio on conspicuous consumption. For each additional risk management practice farmers used in practice, we found their conspicuous consumption increased by 8.9% ($p < 0.001$). In other words, farmers with preference for a well-established risk management system in real life were also found to allocate more funds on unproductive consumption, even when controlling for their risk attitude.

Up to this point, we found indications for herding, social status and a connection with risk management/risk attitude motives, yet no trace of our fourth explanation, the peacock effect. However, the addition of interaction terms (Table 5) changes the picture. First of all, we found that the presence of a female gamemaster was in fact related to significantly higher conspicuous consumption among our game participants, however only for the highest age group, men aged 60 or above. Participants in this age group spent 1.6 times more on conspicuous consumption, but only when managed by a female gamemaster ($p \leq 0.001$). On average, being in the highest age group was associated with a significant lower level of conspicuous consumption ($p \leq 0.001$). For the remaining effects, the model was robust for the introduction of the interaction term.

Table 5. Random-effect lognormal OLS regression (including interaction term)

	AME (SE)
Av. Session consumption spending (log base 2)	0.6135*** (0.0523)
Relative round endowment (in UZS)	1.6383*** (0.4278)
Low endowment group (0/1)	-0.1865 (0.1198)
Female gamemaster (0/1)	-0.5455 (0.3322)
Age group:	
30–39 years	-0.3056 (0.3108)
40–49 years	-0.5185 (0.3593)
50–59 years	-0.0995 (0.2629)
>59 years	-1.5614*** (0.2733)
1.female gamemaster#30-39 years	0.2863 (0.4088)
1.female gamemaster#40-49 years	0.4914 (0.4295)
1.female gamemaster#50–59 years	0.1143 (0.3547)
1.female gamemaster#>59 years	1.6387*** (0.3720)
Education (1–4)	0.0245 (0.0771)
Risk management portfolio (0-8)	0.0861*** (0.0331)
Risk attitude (1–5)	-0.0184 (0.0689)
Game round (1–5)	0.0142 (0.0415)
Observations	751
Farmers	193

Note: Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$. * $p < 0.1$.

3.2. Robustness tests

Firstly, to test for the robustness of our results against the exclusion of the endogenous group session spending, we re-ran our baseline models without the variable “average consumption spending”. These new estimations, which only included randomly assigned variables and predetermined background characteristics, confirmed our main results. We found slightly lowered significance levels for relative round endowment and gamemaster gender, but higher significance levels for risk attitude and round effects (see Tables 1–3 in the Supplementary Materials).

Second, the treatment in terms of enumerator gender was randomly assigned at group level. Whereas in the baseline model clustered standard errors are calculated at individual level, Table 4 in the Supplementary Materials features the results with standard errors clustered at group level. In short, the adjusted standard errors confirm our initial results on the significant correlation of conspicuous consumption with gender of enumerator/gamemaster in interaction with age group.

Thirdly, we tested the assumption that the weak budget constraint, which was introduced by allowing external borrowing (credits) in the game, prevented a crowding-out effect.

Including the three main alternative choices (savings, fertiliser, and insurance) had no impact on our main research findings. Only insurance was related to consumption spending, albeit only in the probit model and at a very low significance level (see Table 5 in the Supplementary Materials).

Fourth, our study aim requires that conspicuous consumption reflects social status by rooting endowment in managerial prowess. While round endowment is generally related to managerial decision-making, endowment in the first round is determined by a random allocation of a starting endowment. In Table 6 of the Supplementary Materials, we tested the effect of excluding this first round from the estimations. Our main research findings prove robust to reducing our estimations to rounds 2–5.

Fifth, we had chosen the absolute value of conspicuous consumption as dependent variable for better interpretability of resulting regression coefficients. In a further robustness test, we replaced the absolute dependent variable with a relative term, putting conspicuous consumption in relation to round game endowment. However, our main results are robust to this change of the dependent variable (see Table 7 in the Supplementary Materials).

While our experimental setup aimed at preventing the “purchase” of gold coins to turn into a delayed-gratification test, we nevertheless conducted robustness tests in this direction by studying separate round effects. If gold coins were truly perceived as consumption good by participants, the novelty and marginal return of consumption value of chocolate coins should decrease over the game rounds; participants should consume less with each round and particular not in the last round. However, upon disaggregating time effects, we could not find significant round effects (see Table 8 in the Supplementary Materials).

4. Discussion

Our study aimed for an experimental approach to analysing the determinants of conspicuous consumption. Within our lab-in-the-field experiment among 197 farmers, we found confirmation of a strong relationship of conspicuous consumption with peers’ spending behaviour. This finding is confirming the “herding” or “bandwagon” theory of conspicuous consumption, which is closely related to the reference dependence of individual decision-making (Kahneman & Tversky, 1979). Inequality and poverty, meanwhile, had a negative effect on conspicuous consumption. While the relatively poor are likely to spend more funds on status seeking, a too serious budget constraint will naturally lead to lower spending. As inequality in our sample was an indicator for serious budget constraints, our findings are thus in line with previous literature (Chai et al., 2019; Glazer & Konrad, 1996; Roychowdhury, 2017; Sun & Wang, 2013).

On a more novel note, the positive relationship with age and female gamemasters supports the “peacock” theory, which argues for a sexual signalling function of conspicuous consumption among men (Fraja, 2009; Iredale et al., 2008; Sundie et al., 2011). The limitation of this effect for men of the highest age group, meanwhile, is unprecedented in economic literature. Here, biological research provides a potential explanation: Proulx et al. (2002), for instance, postulate that with higher age, “higher-quality” males exhibit higher levels of signalling as primary mating strategy in a female selection environment. Within this concept, conspicuous consumption could be interpreted as an age-dependent trait, traits that are accumulated over a lifetime, like antlers on deer or body size in primates. One primary characteristic of age-dependent traits are their high cost: And indeed, both the growth of antlers and conspicuous consumption come at considerable energetic and financial welfare losses, respectively. Under weak selection, age-dependent signals would naturally rather be employed by older men (Adamson, 2013). If we regard conspicuous consumption as an age-dependent trait (as wealth accumulates over time), we would expect older men to favour conspicuous consumption as mating strategy. Clearly, this hypothesis warrants some more detailed analysis, which would require a more specific experimental setup beyond the options available in the scope of this study.

Most importantly, our results provide unique insights into the role of risk and risk management for conspicuous consumption. The significant coefficient of real-life risk management portfolio indicates that conspicuous consumption is entertained by individuals that are facing uncertainty and have a high preference for risk sharing in real life. The correlation between risk attitude and conspicuous consumption implies that these individuals are at the same time risk friendly enough to invest in a form of informal risk management whose payoff is uncertain. This finding is in line with the general idea that informal insurance via social networks is not the most efficient and reliable tool for risk sharing (Coate & Ravallion, 1993): While group size is generally detrimental to risk-sharing efficiency (Fitzsimons et al., 2018), another common challenge is imperfect commitment to financial obligations (Foster & Rosenzweig, 2001). Especially poor households are apparently often unsuccessful in forming social networks that would maximise risk pooling, leading to potential inefficiencies under systemic risks like a drought (Fafchamps & Gubert, 2007a, 2007b; Fafchamps & Lund, 2003).

The experiment is successful at eliciting preferences for conspicuous consumption under risk. After establishing a theoretical framework for a potential risk-sharing function of conspicuous consumption, we provide empirical evidence for a relationship between the real-life preferences for risk sharing and conspicuous consumption within the game. The presented study is yet subject to certain limitations: Firstly, the composition in the sample is representative of the local farm community. Nevertheless, the female side of decision making is missing, as decision-making is in fact not necessarily monopolised by male farm heads. Second, we plan to support further evidence with another round of experiments that will allow us to study more specialised treatment effects across participants, for instance introducing differences in perceived risk levels across participants.

Nevertheless, our results provide more than an adjustment of the theoretical concept of conspicuous consumption. They further our understanding of the potential economic utility of conspicuous consumption, which is necessary to discuss need and scope of interventions. In cases where conspicuous consumption is indeed driven by the desire of social risk-sharing, mere taxes or sanctions – for instance caps on wedding party size like in Uzbekistan – are hardly advisable. Instead, policy makers should focus on providing alternatives in terms of risk management. Basic requirements are social safety nets against human or personal risk, or improved regulatory safeguards against institutional risk. More advanced options include providing the framework for introducing modern insurance markets against production and price risk. More low-risk options of risk sharing would also contribute to closing the gender gap in innovation adoption in rural areas, which is partially driven by difference in risk-preferences between the genders (Kebede, 2022). Second, the strong peer or herding effect for conspicuous consumption implied that information interventions on the harmful effect of conspicuous consumption should involve local opinion leaders (Keys et al., 2010). Ultimately, both aspects could have the highest effect when combined: As shown, participatory, peer-oriented processes that support social learning can help to build trust especially in the onset of innovation adoption, including innovative insurance markets (Krishnan & Patnam, 2014; Moritz et al., 2023; Patt et al., 2009).

Notes

1. As the experiment included human subject, the experimental setup underwent screening by an ethical committee. The ethics committee confirmed compliance with the institution's Code of Research Ethics and the absence of ethical concerns about the publication of the results of the study. Documentation can be provided upon request.
2. Information on the game calibration and codes can be made available upon request.
3. All local currency units have been converted by World Bank PPP (purchasing power parity) conversion units of the closest reference year, which can be retrieved at <https://data.worldbank.org/indicator/PA.NUS.PPP?locations=UZ>.
4. Deflated to 2021 level based on World Bank GDP inflator, which can be retrieved here <https://data.worldbank.org/indicator/NY.GDP.DEFL.KD.ZG.AD?end=2021&locations=UZ&start=2013>.

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No potential conflict of interest was reported by the authors.

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Appendix A

Farmopoly

ID:

Mandatory costs
 Costs: 410,000 UZS
Revenue:
 Normal rainfall: 1,372,000 UZS
 Few rainfall: 892,000 UZS
 Very few rainfall: 549,000 UZS

Household consumption
 Costs: min. 790,000 UZS

Round 1	
Round 2	
Round 3	
Round 4	
Round 5	

Fertilizer
 Costs: 100,000 UZS
Make:
 Normal rainfall: +370,000 UZS
 Few rainfall: +169,000 UZS
 Very few rainfall: +93,000 UZS

Index insurance
 Costs: 110,000 UZS
Indemnity payments:
 Normal rainfall: +0 UZS
 Few rainfall: +350,000 UZS
 Very few rainfall: +651,000 UZS

Mandatory
costs

Household
consumption

Fertilizer

Index insurance

Savings account
 (Interest rate: +14% p.a.)

Credit (max. 2,300,000 UZS; interest rate: 16% p.a.)

Round	Choice (in UZS)	Pay back credit?
1		<input type="checkbox"/> yes <input type="checkbox"/> not yet
2		<input type="checkbox"/> yes <input type="checkbox"/> not yet
3		<input type="checkbox"/> yes <input type="checkbox"/> not yet
4		<input type="checkbox"/> yes <input type="checkbox"/> not yet
5		

Figure A1. Translated game sheet.