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Visible goods, personality traits, and preferences for status. New evidence for Uruguay

Bienes visibles, rasgos de personalidad y preferencias de estatus. Nueva evidencia para Uruguay

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Abstract

The identification of positional goods is crucial for understanding how social interactions motivate consumption decisions. Drawing on micro-data from the Estudio Longitudinal del Bienestar en Uruguay (ELBU), we identify a list of visible goods and assess whether their visibility varies according to respondents' characteristics. We find that expenditure on automobiles, jewelry and watches, clothing, and personal care rank at the top of the scale. The expenditure visibility index does not significantly vary across socio-economic groups but exhibits a positive and significant association with conscientiousness. Individuals who report a higher propensity to compare themselves with others are more likely to notice third parties' expenditures on visible goods. Preferences for status and personality traits also provide complementary information about expenditure visibility, with considerably greater effects in the former case. Our findings may contribute to explaining a substantial portion of the observed heterogeneity in consumer choices.

Keywords: visible goods, positional goods, visibility index, social status, Big Five Inventory.

JEL Classification: D12, D31, D91.

Resumen

La identificación de bienes posicionales es clave para comprender cómo las interacciones sociales motivan las decisiones de consumo. En este artículo se identificaron una lista de bienes visibles usando microdatos del Estudio Longitudinal del Bienestar en Uruguay (ELBU) y se evaluó si la visibilidad varía según las características individuales. Se encontró que el gasto en automóviles, joyas y relojes, ropa y cuidado personal ocupa las primeras posiciones en la escala. El índice de visibilidad no presenta variaciones significativas según grupos socioeconómicos, pero muestra una asociación positiva y significativa con el rasgo de responsabilidad. Las personas que declaran una mayor propensión a compararse perciben con mayor frecuencia el gasto de terceros en bienes visibles. Las preferencias por el estatus (particularmente) y los rasgos de personalidad brindan información complementaria sobre la evaluación de la visibilidad de los bienes. Estos resultados podrían contribuir a explicar la heterogeneidad observada en las elecciones de consumo.

Palabras clave: bienes visibles, bienes posicionales, índice de visibilidad, *estatus social*, *Big Five Inventory*, *Uruguay*.

Clasificación JEL: D12, D31, D91.

Introduction

Compared to other developing regions, Latin American countries are extremely vulnerable to consumption boom-bust cycles and exhibit lower savings rates (Cavallo et al., 2016). Although the macroeconomic causes of these patterns have been extensively studied, little is known about other mechanisms that might be at play, such as positional concern. For instance, consumption cascades and the overconsumption of positional goods (Frank et al., 2014) driven by status-seeking behavior might have relevant consequences for a wide set of social outcomes that range from reducing expenditure on goods that enhance human development improvements in the long run, to diminished aggregate savings or increased crime rates (Charles et al., 2009; Hicks and Hicksy, 2014; Mejía and Restrepo, 2016).

A prerequisite for the design of empirical studies on consumption motivated by status-seeking behavior relies on identifying a set of positional goods. Since Chao and Schoŕ s (1998) pioneering work, many attempts have been made to define a set of such goods based on visibility surveys. Drawing on the survey instrument proposed by Heffetz (2011), we identify a list of visible goods for a sample of Uruguayan adults and assess its variability according to individuals' preferences for status and their personality traits (as measured by the Big Five Inventory, BFI).

Despite the relevance of identifying negative externalities, yielding, for example, to consumption booms, environmental degradation, or agency losses, that need to be addressed in order to promote human development and reduce multidimensional inequalities and poverty, there are no available studies on expenditure visibility and positional concerns for Latin American countries.

Ever since Veblen's seminal work, theories on the determinants of positional consumption assume that access to certain goods increases individual well-being, not only due to the intrinsic value of the goods, but also because other people recognize them as a proxy for wealth (Frank, 1985; Veblen, 1994). In the same vein, Bourdieu (1979) argues that positional consumption constitutes a key element in the distinction of higher social strata, taste formation, and the legitimization of culture. As status cannot be obtained from the market, it arises from the perceptions of others and, therefore, consumption needs to be socially visible (Falk and Knell, 2004; Heffetz and Frank, 2011; Clark, 2012; Clark and D'Ambrosio, 2015).

Thus, visibility does not result from 'objective' observability but depends on the cultural and social value that each society or socioeconomic group assigns to holding certain goods and the associated expenditure (Heffetz and Frank, 2011). In their analyses for the United States and South Africa, Charles et al. (2009) and Kaus (2013) conclude that, conditional on income, populations facing discrimination spend relatively larger amounts of money on visible goods. They also show that the consumption of visible goods reduces expenditure on health and education as well as savings, eroding medium and long-run well-being. Furthermore, Maurer and Meier (2008) show that the sociocultural visibility of goods explains a substantial proportion of the heterogeneity in household expenditure patterns in the United States.

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Observability or expenditure visibility and positional concerns might also be related to a wide set of personal characteristics such as age, gender, region of residence, intelligence, attractiveness, and personality traits (Akay and Karabulut, 2020; Postlewaite, 1998; Hillesheim and Mechtel, 2013). Moreover, recent findings by Bucciol et al. (2015) for the United States and Akay and Karabulut (2020) for Turkey indicate that personality traits, as measured by the BFI, are directly associated with self-perceived positionality. In both studies, conscientiousness and openness to experience are positively associated to status-seeking behavior.

Although the existing literature has highlighted status-seeking behavior and personality traits as key determinants of positional or visible consumption, few empirical studies identify their relative importance due to the lack of suitable data.[1]

Our empirical exercise is based on micro-data from the 2016/17 wave of the Longitudinal Study of Well-being in Uruguay (*Estudio Longitudinal del Bienestar en Uruguay*, ELBU). Unlike previous studies that gathered visibility information based on telephone surveys (Heffetz, 2011), ELBU involved face-to-face interviews, which might be associated with lower levels of social desirability responses (Holbrook et al., 2003). Since ELBU follows the principal caregiver of a child of reference, 91% of the interviewees were women. Survey instruments included questions capturing standard household survey demographic and socio-economic variables, Heffetz visibility scale and personality-trait items, and specific questions on preferences for status.

With respect to the existing literature, this research makes three main contributions. First, we provide a visibility ranking of consumption categories for a Latin American country, that exhibits scarce variability across demographic and socio-economic groups. The resulting order of goods is very similar to previous findings for the United States and South Africa. The scale is consistent and exhibits high reliability levels. Second, our findings confirm that, on average, individuals with greater preferences for status, assign higher visibility scores to all goods categories. Regarding the BFI domains, we identify a positive and significant association between conscientiousness and expenditure visibility. At the same time, openness to experience and neuroticism are also associated to the subgroup of goods with higher visibility. These findings suggest that expenditure visibility is not homogeneous across individuals as the standard consumer theory assumes. Moreover, a relevant proportion of consumer choices might be explained by differences in status concerns across individuals. Third, we show that status concerns exhibit a higher correlation to expenditure visibility than personality traits, reinforcing the idea that the sociocultural visibility of goods is highly determined by social interactions as suggested in the seminal writings by Veblen (1994) and Duesenberry (1967), among others. Taken together, our findings suggest some avenues for policy design that could help prevent consumption cascades and redirect expenditure choices to valuable human development functionings, particularly in contexts of rapid economic growth.

This article is organized as follows. First, we review the existing literature assessing the links between visibility, personality traits, and preferences for status. Then, in Section 3, we describe the main features of ELBU, the operationalization of the visibility scale, and the main variables of interest in this research. In Section 4, we present the analytical framework and the empirical strategy used in this study. Section 5 contains our main results, and Section 6 gathers some final remarks.

1 While they do not explicitly address positional consumption, a close reference to this paper, Barrera and Ponce (2020) found, for the Chilean case, that the most competitive young people are more inclined towards conspicuous consumption.

I. Visible goods, personality traits, and status preferences

One of the pioneering papers aimed at operationalizing positional goods through their visibility was written by Chao and Schor (1998). They identified consumption motivated by status by examining women's spending on cosmetics. Recently, Heffetz (2011) proposed a 31-item survey instrument designed to identify visible goods based on the time it would take neighbors to notice higher-than-expected expenditures. This instrument was implemented through a telephone survey on a representative sample of 480 adults aged 18 years or over. It was subsequently used by Charles et al. (2009), and later expanded in Heffetz (2018).[2] In all these studies, cars, watches and jewelry, personal care items, and clothing obtained the highest scores in reported visibility. To date, we have not found similar exercises available for Latin American countries.

In addition to socio-economic and demographic variables, expenditure visibility is associated to preferences for status and personality traits. Preferences for status have been theorized as a specific form of social preference. In turn, the empirical literature has found that people have heterogeneous social preferences, and that envy, altruism, pride, and status concerns operate with different levels of intensity (Clark and D'Ambrosio, 2015; Heffetz and Frank, 2011). An almost direct implication is that heterogeneous preferences may affect how the achievements of others, and, in particular, their consumption, are perceived. Although there is scarce evidence available based on survey data, experimental studies have confirmed the existence of significant differences in the extent of preferences for positionality, with significant variations by country and population sub-group (Alpizar et al., 2005; Carlsson et al., 2007, 2009; Carlsson and Qin, 2010).

The recent economic literature reveals a widespread consensus on the influence of social interactions on individual decisions and choices. However, there is less agreement on their intensity or on the determinants of group choices. When people compare themselves with others, they implicitly assign a higher weight to those individuals belonging to their reference group, which might include their friends, their work colleagues, their neighbors (Duesenberry, 1967; Luttmer, 2005), higher social classes (Veblen, 1994; Hirschman and Rothschild, 1973), or society in general (direction of comparisons) (Weiss and Fershtman, 1998).[3] However, due to data constraints, in the empirical literature, it is commonly assumed that people compare themselves with others with similar observable characteristics (Heffetz, 2012).

Few studies identify reference groups based on information reported by survey respondents. Using data from the *European Social Survey*, Clark and Senik (2010) find that in most cases comparison groups are co-workers and friends. Meanwhile, Knight et al. (2009) show that in China two thirds of households report that their reference groups are individuals living in the same village.

Besides, recent empirical research addresses the association among personality traits and preferences for status, as well as the selection of domains for comparison with others (Landis and Gladstone, 2017; Friehe et al., 2014). Another branch of the literature, has focused on the variation of perceived social status and the importance of relative income according to

2 Charles et al. (2009) carried out an online survey involving Chicago university students, testing 18 categories of goods. Later, they carried out a survey involving 108 students at Tubingen University which revealed the visibility of 16 categories of goods. In a later paper, also based on telephone and online surveys, Heffetz (2018) considered a broader group of dimensions. For developing countries, Kaus (2013) validated the list compiled by Heffetz (2011) for South Africa, and Khamis et al. (2012) for university students in India.

3 Moreover, the choice of comparison group might be endogenous and/or strategic or correlated with individual abilities Falk and Knell (2004). These features pose relevant problems for the empirical tractability of social interactions.

personality characteristics (Bucciol et al., 2015; Proto and Rustichini, 2015; Budría and Ferrer-i-Carbonell, 2018). Friehe et al. (2014) and Landis and Gladstone (2017), for example, conclude that extraversion is associated with positional concerns. Akay and Karabulut (2020) implemented a series of experiments with university students in Istanbul to measure the positionality of several goods. They found a positive relationship between participants' positionality perceptions and their score in the neuroticism and conscientiousness dimensions of the BFI.

Based on panel data for the United States, Bucciol et al. (2015) conclude that the BFI dimensions have a high predictive power to explain self-perceived social status.[4] This evidence clearly highlights the relevance of considering personality traits as key potential determinants of the visibility of goods. However, to the best of our knowledge, these aspects have scarcely been explored in the empirical literature on the subject.

II. Data and main variables

A. Data

This study is based on data from the ELBU's fourth wave, that were collected in 2016/17. ELBU follows a sample of households that had children attending the first year in state schools in 2004 and were located in the departmental capitals of Uruguay (85% of the cohort). Since children attending private schools were not included in the sample, the upper tail of the income distribution is under covered.[5] Although ELBU comprises four waves, only the last one gathered information on the visibility of goods, the BFI, and intensity of comparisons. Meanwhile, a question on the direction of interpersonal comparisons was included in the last two waves (2011/12 and 2016/17). In general, the responding adult was the mother of the youngster of reference who, in 2016/17, was between 18 and 20 years old.

Wave 1 included 3187 households and 1525 were recovered in wave 4 (attrition rate= 49%). Table A1 in the Annex depicts the potential biases in panel attrition. Differences are negligible in most observable characteristics considered, although there is a higher loss among households in Montevideo and those whose household heads had a lower educational attainment level. Although our analysis is entirely based on data from wave 4, in the robustness checks question, we use waves 3 and 1.

Since the previous literature and our own findings (below in this article) demonstrate that socio-economic variables are not relevant to identifying or ranking visible goods, using a data-set such as ELBU that lacks the upper tail of the income distribution is not a severe drawback in the context of this paper. However, regarding the association of the visibility index with personality traits and the direction of comparisons, if these characteristics were distributed differently among the richest strata compared to the rest of the population, our results might represent either a lower or an upper bound depending which characteristic predominates.

B. The visibility index

The visibility instrument designed by Heffetz is based on the following question: "*Imagine that you meet a new person who lives in a household similar to yours. Imagine that their household is no different from other similar households, except that they like to, and do, spend more than average*

4 Individuals with a high score in openness to experience, conscientiousness, and extraversion perceive themselves in a more favorable position than those than rank higher in the agreeableness and neuroticism dimensions. The same relation holds when considering an objective status indicator, with the exception of extraversion, that exhibits a negative association with subjective status and a positive association with objective status. The authors suggest that extravert individuals may enjoy participating in recreational activities but this might divert them from pursuing other endeavors that might improve their objective situation.

5 More information on this survey can be found at http://fcea.edu.uy/estudio-del-bienestar-multidimensional- en-uruguay/108-departamentos/departamento-de-economia/proyectosiecon/estudio-longitudinal-de-bienestar- en-uruguay/2525-informacion-del-elbu.html.

on (category of good). Would you notice this about them, and if so, for how long would you have to have known them, to notice it? Would you notice it almost immediately upon meeting them for the first time (1), a short while after (2), a while after (3), only a long while after (4), or never (5)? (category of good)?"

This question was repeated for the 31 categories of goods.[6] However, in ELBU, the original response categories corresponding to intermediate values were collapsed as follows: (1) almost immediately, (2) after a while (original values=2, 3 and 4), and (3) never.

We obtained a Cronbach's Alpha reliability coefficient of 0.9655, indicating a high internal consistency of the scale. To assess whether the 31 items converge to the same factor, we performed an exploratory factor analysis. Table A3 in the Annex indicates that all goods belong to the first factor, which explains 51.25% of the total variance, and, in all cases, factor loadings are above 0.50.

To build the visibility index (V I), we first recoded the responses as follows: zero (answer=3: no visibility), 0.5 (answer=2: medium visibility), and 1 (answer=1: maximum visibility). Following Heffetz (2011), our baseline measure is the average of the value provided for each of the 31 items. A higher value of the index implies greater visibility. The respective aggregate visibility index (*all*) computes the average of the 31 items.[7]

In addition, although ELBU interviewees were mostly women, the indices we obtained are very similar to the ones computed by Heffetz (2011) for the United States (Figure 1), with a respective Pearson or Spearman correlation coefficient higher than 0.85 and 0.81 (see Table A4 in the Annex).[8] Although both countries demonstrate significant differences in average per capita household income and consumption levels, and Uruguay is a relatively more homogeneous society, they exhibit very similar visibility rankings. These results also coincide with the findings by Kaus (2013) for South Africa, suggesting that this instrument behaves similarly in different economic and cultural contexts.

In the case of Uruguay, cars display the highest expenditure visibility score, followed by clothing, and personal care. Another feature that seems to be corroborated is that visibility transcends objective observability of the type of expenditure (where, what, and how it is consumed). This attribute seems to be present in the goods located in the first three positions. However, based on observability, it is more difficult to understand heterogeneity levels in education (12th position, V I of 0.33), laundry and dry-cleaning expenses (23rd position, V I 0.23), or medical care (24th position, V I 0.22). These differences may be related to demographic, socio-economic or cultural characteristics (Heffetz, 2012).

C. Main variables

As noted above, expenditure visibility is disaggregated by socio-economic and demographic variables, personality traits, and preferences for status.

i. In line with Heffetz (2012), the first group included demographic variables (age, sex, ethnicity, household size, and number of household members under 18); and socio-economic variables (years of schooling, per

6 The categories of goods are listed in Table A2 in the Annex.

7 Heffetz (2011) noted that this procedure implicitly assumes cardinality on individual's responses, which might be problematic in the presence of non-linearities. To overcome this drawback, the two other variants jointly consider the proportion of respondents who answer immediately and those who respond immediately and after a while. The three alternative indexes present a strong correlation, which suggests that the cardinality assumption is not a problem in our setting (see Table A4 in the Annex). The econometric analysis reported in Section 5 is based only on our baseline variable. We carried out some additional robustness checks analyses based on alternative indexes. These are not reported due to space constraints but are available at Leites et al. (2019) or upon request from the authors.

8 This relationship is almost linear for the alternative visibility indexes and there is almost no re-ranking (see Table A5 in the Annex).

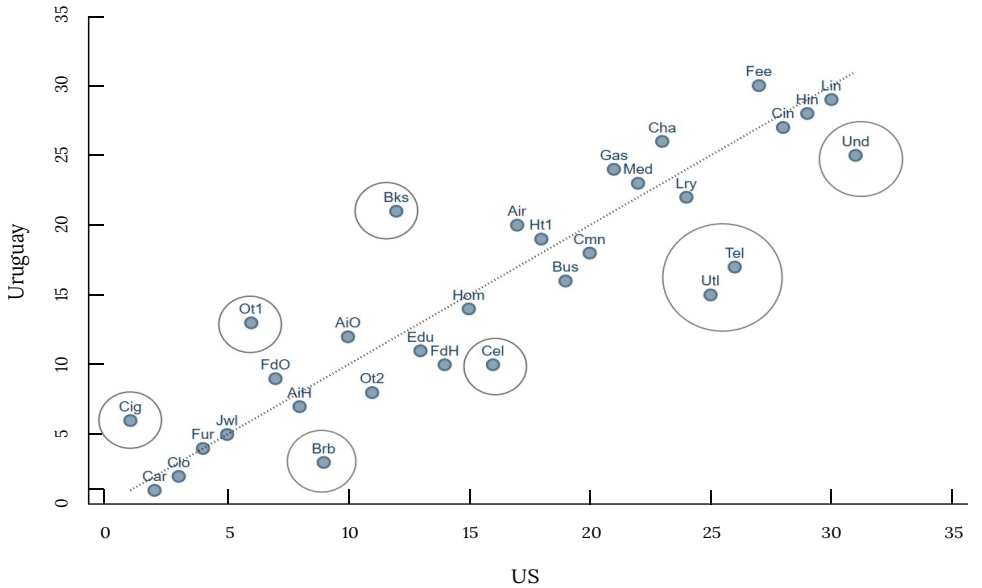

Figure 1. Visibility Ranking: the United States vs Uruguay

Note: This figure depicts the visibility ranking for Uruguay and the United States and the 31 goods categories. Estimations for Uruguay are based on ELBU and the ones for the United States are based on Heffetz (2011). The horizontal axis corresponds to the United States the visibility of goods ranking and the vertical axis to the Uruguayan one.

Source: Column 1 in Table A5 and Heffetz (2011).

capita income quintiles, and labor force status). Descriptive statistics are presented in Table 1. Note that 91% of the respondents are women.

Table 1. Descriptive Statistics. Demographic and Socio-economic Variables

	Mean	S.D.	Max.	Min.
Age	46.42	8.20	89.0	30.0
Household size	4.21	1.64	14.0	1.0
Children aged 0-18 (1=Yes)	1.17	1.27	11.0	0.0
Sex (1=Female)	0.91	0.28	1.0	0.0
Ethnicity (1=Afro-Uruguayan)	0.19	0.39	1.0	0.0
Marital status (1=Married/cohabiting)	0.66	0.47	1.0	0.0
Per capita income quintile	3.05	1.41	5.0	1.0
Years of education				
< 7	0.33	0.47	1.0	0.0
7-9 years	0.30	0.46	1.0	0.0
10-12 years	0.23	0.42	1.0	0.0
12> years	0.14	0.35	1.0	0.0

(*Continued*)

	Mean	S.D.	Max.	Min.
Labor force status				
Employed	0.71	0.45	1.0	0.0
Unemployed	0.16	0.37	1.0	0.0
Retired	0.04	0.20	1.0	0.0
Student	0.05	0.21	1.0	0.0

Note: This table depicts descriptive statistics of the main characteristics of ELBU respondents.

Source: Authors, based on ELBU

ii As previously noted, personality traits were assessed using the BFI. This instrument identifies five dimensions (John and Srivastava, 1999): (i) extraversion (sociability, activity, assertiveness, and positive emotionality); (ii) agreeableness (altruism, tenderness, confidence, and modesty); (iii) conscientiousness (impulse control, such as thinking before acting, delaying gratification, following rules and regulations, and planning, organizing, and prioritizing tasks); (iv) neuroticism (implies feeling anxious, nervous, sad, or tense); and (v) openness to experience (breadth, depth, originality, and complexity of mental life and experiences).[9] Although the BFI has been widely used and can be easily included in a survey questionnaire, it is not exempt of criticism. Besides the caveats of being a self-reported measure (Dang et al., 2020), in their assessment of 23 middle- and low-income countries, Laajaj et al. (2019) conclude that in some economic and cultural contexts that differ from rich and educated populations, the validity of BFI is lowered. Moreover, to date we lack validation of the Spanish version of the instrument based on a representative sample of the whole population. Table 2 shows that the lowest score is observed in neuroticism (0.22), while the highest corresponded to agreeableness (0.36).

iii Preferences for status were approximated in two different dimensions: intensity (a) and direction (b) of comparisons to others. In the first case, we used two alternative indicators. Our preferred option is based the following survey question: *Imagine that you get an offer for a permanent full-time job that you like. Your potential employer asks you to indicate the wage you are willing to receive. For each of the following items, please indicate on a scale from 1 to 10 (where 1 is very little and 10 is a lot) how true it is that you would consider in your proposal: 1. your friends' earnings; 2. earnings from people who have the same experience and qualification as you; 3. your neighbors earnings; 4. your earnings in a previous job; 5. the earnings of a relative that does not live in your household; 6. the wage bargained by the corresponding union; 7. you would not compare yourself to anyone*. We created a variable reflecting the maximum value of the answers of each respondent to those options that entail comparisons with other individuals (1, 2, 3, 5 and 6) and included it in the regression analysis as a continuous variable or as a binary one indicating answers lower than 5 (0) or equal to 5 or

9 The Big Five Inventory is an instrument consisting of 44 items (short phrases) divided into five sub-scales or dimensions to capture the respondent's personality traits. Each item is scored on a five points rating scale (1: strongly disagrees to 5: strongly agrees). Two of the traits included in this test are constructed with eight items (extraversion and neuroticism), two other traits use nine items (conscientiousness and agreeableness), and one trait consists of ten items (openness to experience). The scores of the items corresponding to the same sub-scale are added, and this totals the score assigned to each trait. Therefore, the maximum score that can be obtained in openness to experience is 0.5 (50/100) and in neuroticism is 0.4 (40/100).

above (1). An alternative option was based on the following survey question: *How important is it for you to compare your income to others?* Answers range on a scale from 1 (not important at all) to 5 (very important). Options 4 and 5 were labelled as high intensity comparisons.

To measure the direction of comparisons, we drew on a question that resembles the one previously analyzed by Clark and Senik (2010): *Which persons are you more likely to compare your income to?* The following response options were offered: coworkers, family members, friends, someone else, I do not compare my income to anyone's. We grouped the answers into three categories: 'coworkers or others"; 2 "family or friends"; and 3 "do not compare." This question was also included in wave 3 and it is used in our robustness checks.

Descriptive statistics on intensity and direction of comparisons are presented in Table 2. More than two thirds of the interviewees indicate that they do not consider it relevant to compare themselves with other people, and the average of the variable reflecting the maximum in the 1 to 10 scale is around 5 (intensity of comparisons). Regarding the direction of comparisons, 50% of the respondents indicate that they do not compare themselves with anyone, whereas 13% compare themselves with coworkers, and 10% with family and friends. Notice the large percentage of non-responses (26%).

Table 2. Descriptive Statistics. Personality Traits and Preferences for Status

	Mean	S.D.	Max.	Min.
a) Big Five Inventory				
Extraversion (/100)	0.28	0.06	0.40	0.10
Agreeableness (/100)	0.36	0.05	0.45	0.13
Conscientiousness(/100)	0.35	0.06	0.45	0.11
Neuroticism (/100)	0.22	0.06	0.39	0.08
Openness to Experience (/100)	0.34	0.07	0.50	0.10
b) Intensity of comparisons				
Job offer (continuous)	5.19	3.84	10.00	1.00
Job offer (1=above 5)	0.47	0.50	1.00	0.00
Likelihood of comparisons with others (1=high)	0.25	0.43	1.00	0.00
c) Direction of comparisons				
Do not compare	0.50	0.50	1.00	0.00
Coworkers	0.14	0.35	1.00	0.00
Family and friends	0.09	0.29	1.00	0.00
Missing	0.27	0.44	1.00	0.00

Note: This table includes descriptive statistics of the two groups of variables of interest in this study: personality traits and preferences for status.

Source: Authors, based on ELBU.

III. Conceptual framework and empirical strategy

Based on Heffetz (2011), we present a basic model reflecting the determinants of the socio-cultural visibility of goods. Subsequently, additional aspects related to social interactions and personality traits are added. In the original model, visibility depends on the type of good consumed, the characteristics of the respondent, and the person whose consumption is observed:

$$V_{ik}^{j} = r(x_i, x^{j}, k) \qquad (1)$$

where $r(\cdot)$ is a function describing how fast individual i recognizes expenditure of a third party j in k and vector x is a set of personal and household characteristics. As previously indicated, the visibility scale is based on perceptions of the consumption of other individuals j with similar characteristics to the survey respondent i, termed j^{ref}. In this way, we impose an additional assumption on the type of visibility we are capturing ($xj = s(xi)$) in the survey questionnaire, which restricts the r function to the domain in which respondent, i believes she is similar to j^{ref}. Thus, the sociocultural expenditure visibility can be modelled on the basis of an adapted response function:

$$V_{ik} = r\left(x_i, s(x_i), k\right) = \tilde{r}\left(x_i, k\right) \qquad (2)$$

Equation 2 explicitly shows a limitation of the Heffetz (2012) instrument, since it does not allow us to distinguish whether variations in the degree of visibility result from differences in the characteristics of individuals i, differences in the people whose consumption is observed i^{ref}, or a combination of both.[10]

To allow for additional sources of individual heterogeneity, we incorporate personality traits into the individual characteristics i vector, and preferences for status, both in terms of intensity and direction of individual comparisons. These additions have not been considered in the previous empirical literature on expenditure visibility and might provide a better understanding of signaling models. Thus, we rewrite Equation 2 as follows:

$$V_{ik} = r\left(x_i, s(x_i), k\right) = \tilde{\tilde{r}}\left(x_i, p_i, z_i, k\right) \qquad (3)$$

where $\tilde{x}_i$ represent the socio-demographic characteristics of individual i, pi are her personality traits, and zi indicates her preferences for status. zi incorporates the intensity of interpersonal comparisons (z^{int}) and $s = s\left(\tilde{x}_i, z_i^{ref}\right)$ reflects reference group variability z^{ref}. Consequently, the expanded equation can be written as:

$$V_{ik} = r\left(x_i, s\left(\tilde{x}_i, z_i^{ref},\right)\ k\right) = \tilde{\tilde{r}}\left(\tilde{x}_i, z_i^{ref(j)},\ z_i^{int},\ p_i, k\right) \qquad (4)$$

Based on the preceding definitions, it is possible to formulate an empirical specification to estimate the parameters of interest, that, compared to the previous literature, reduces the bias of potentially omitted variables. The socio-demographic characteristics vector, x_i, can be opened into a set of observable $\chi\iota$ and unobservable $\eta\iota$ variables:

$$V_{ik} = \alpha_k + X'_i \beta_k + \rho'_i \gamma_k + z_i^{int'\lambda_k} + z_i^{ref(j)'} \rho_k + \hat{\epsilon}_{ik} \qquad (5)$$

This linear relationship is directly derived from the extended model and can be estimated upon different dependent variables k, such as the composite index or the 31 goods categories. $\alpha\kappa$ is a constant term, while $\hat{\epsilon}_{ik} = h$ is an error term that has two main components. The first one is a function of the omitted socio-demographic variables ($\eta\iota$), and the second one ($\xi\iota\kappa$) reflects differences in individual tastes not captured by BFI or other sources of measurement error. Besides, pi reflects personality traits BFI, z^{int} represents

10 Note that the visibility instrument does not take into account the frequency with which i and i^{ref} interact. This argument is also not considered in Equation 2.

the intensity of comparisons, and z^{ref} identifies the relevant comparison group. The model estimated by Heffetz assumes that the latter parameters take value 0, and alter the definition of the error term $\hat{\epsilon}_{ik}$. Without additional assumptions on the behavior of these errors conditioned on the demographic variables observed, the estimated parameters $\beta\kappa$ cannot be interpreted as representing a causal relationship. However, given $\chi\iota$, the estimated coefficients represent the best linear prediction of V_{ik} for the index k.

We first assess the statistical significance of $\lambda\kappa$ by incorporating a dichotomous variable that identifies individuals who assign little importance to interpersonal comparisons, which can be interpreted as having low preferences for status. If socio-cultural visibility is related to interpersonal comparisons and the search for status, a negative coefficient ($\lambda\kappa < 0$) would be expected. In addition, the absolute value of this coefficient should be greater for those categories of goods that occupy higher positions in the visibility ranking. In a second test, we analyze the statistical significance of alternative operationalizations of the direction of comparisons. In this case, for each category of goods, $\rho\kappa$ should be significantly different from zero. In this case, there is no a priori expected sign.

While the model's predictive capacity may be enhanced, it is important to note that measurement error and endogeneity biases may persist. This is because the factors that explain visibility could also determine preferences for status, even after controlling for personality traits. Although we lack a proper instrumental variable to address these concerns, we carried out a set of robustness checks substituting variables from wave 4 for their lagged value in wave 3. In a first step, we estimated similar equations including past and present income quintiles. We also substituted the direction of comparison variables in wave 4 for the same variables in wave 3. Finally, we substituted the intensity of comparisons variable for an indicator that was equal to 1 if the individual responded that she compared herself to others in waves 3 and 4, based on the direction of the comparisons question. As they were not available in wave 3, we were not able to carry out the same test for the personality traits variables.

IV. The visibility of goods: descriptive statistics and main determinants

We first display some general descriptive statistics showing the main features of the visibility index (Section 5.1). Following this, we present the econometric analysis (Section 5.2).

A. Descriptive analysis

Table 3 shows V *I* averages disaggregated by the variables of interest in this paper. We also carry out the same analysis grouping the 31 categories of goods into three groups according to their visibility index (low, intermediate, and high). Visibility levels in the US are higher than those we obtained for Uruguay.[11] Differences can also arise from the fact that ELBU interviewees were mainly women, although the subjects of reference (who were around 18 years at the time of the fourth wave fieldwork and 51% were males) were also asked to respond the visibility questionnaire and differences in V *I* by gender were negligible (Leites et al., 2019).

Expenditure visibility is very similar across socio-economic categories, such as income and education. However, there is a clear association regarding ethnic-racial ancestry, with higher levels of visibility responses in the Afro-Uruguayan population. Preferences for status also show a significant correlation. For instance, visibility

11 As mentioned in the methodological section, the visibility categories used in this paper are slightly different. While in the US high visibility arises from reporting that the speed of identifying the goods in question is just after or immediately, in ELBU the options are reduced (three versus five), and only immediately is included as a way of approximating high visibility.

levels are higher among those who declare that they compare themselves with family and friends or colleagues, and among those who report a greater intensity of comparisons (under the two alternatives considered). These results suggest that there is an association between relative concern and expenditure visibility that will be reexamined in the econometric analysis. Finally, we classified each BFI dimension in low or high, according to the score obtained by the respondent relative to the respective median. No statistically significant differences were found in any of the cases.[12]

Table 3. Visibility Index by Demographic and Socio-economic Variables, and Preferences for Status

		All		High visibility		Intermediate visibility		Low visibility	
		Mean	**SD**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**
		0.39	m.d.	m.d.	m.d.	m.d.	m.d.	m.d.	m.d.
US (Heffetz, 2011)		0.30	0.29	0.42	0.34	0.30	0.31	0.19	0.27
Uruguay (ELBU)	Male	0.28	0.30	0.36	0.35	0.29	0.32	0.19	0.29
Sex	Female	0.31	0.29	0.42	0.34	0.30	0.31	0.19	0.27
	p-value	0.40	.	0.09	.	0.66	.	0.94	.
Marital status	Single/widowed/ divorced	0.29	0.28	0.40	0.34	0.28	0.29	0.18	0.26
	Married or cohabiting	0.31	0.29	0.42	0.34	0.31	0.32	0.19	0.28
	p-value	0.17	.	0.22	.	0.13	.	0.28	.
Education (in years)	< 7	0.32	0.30	0.44	0.35	0.31	0.32	0.21	0.28
	7 - 9 years	0.31	0.31	0.41	0.35	0.31	0.32	0.20	0.30
	10 - 12 years	0.27	0.27	0.38	0.34	0.27	0.29	0.15	0.23
	12> years	0.30	0.25	0.43	0.31	0.31	0.29	0.15	0.22
	p-value (1 vs. 4)	0.40	.	0.82	.	0.95	.	0.02	.
Per capita income quintile	1st	0.29	0.28	0.39	0.34	0.29	0.30	0.19	0.26
	2nd	0.31	0.29	0.43	0.35	0.30	0.31	0.20	0.28
	3rd	0.31	0.31	0.42	0.35	0.30	0.33	0.20	0.29
	4th	0.32	0.29	0.44	0.34	0.31	0.32	0.19	0.27
	5th	0.29	0.27	0.39	0.32	0.29	0.29	0.17	0.25
	p-value (1 vs. 5)	0.90	.	0.84	.	0.88	.	0.60	.
Ethnicity	White	0.29	0.29	0.40	0.34	0.29	0.31	0.18	0.26
	Afro-Uruguayan	0.35	0.30	0.48	0.34	0.32	0.31	0.22	0.29
	p-value	0.02	.	0.00	.	0.24	.	0.04	.

(*Continued*)

12 The corresponding averages are not reported in the table due to space constraints, but they are available upon request from the authors.

		All		High visibility		Intermediate visibility		Low visibility	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD
Intensity of comparisons (Job offer)	Low	0.27	0.28	0.38	0.34	0.26	0.30	0.16	0.26
	High	0.34	0.30	0.46	0.34	0.34	0.32	0.22	0.28
	p-value	0.00	.	0.00	.	0.00	.	0.00	.
Intensity of comparisons (Likelihood of comparisons w/ others)	Low	0.27	0.27	0.38	0.33	0.26	0.29	0.16	0.25
	High	0.40	0.32	0.52	0.35	0.40	0.34	0.28	0.31
	p-value	0.00	.	0.00	.	0.00	.	0.00	.
Direction of comparisons	Do not compare	0.24	0.26	0.35	0.33	0.23	0.29	0.13	0.23
	Coworkers	0.34	0.28	0.46	0.33	0.34	0.30	0.20	0.26
	Family and friends	0.39	0.33	0.50	0.37	0.38	0.34	0.28	0.31
	Missing	0.37	0.30	0.49	0.33	0.37	0.32	0.26	0.30
	p-value (1 vs. 2)	0.00	.	0.00	.	0.00	.	0.00	.
	p-value (1 vs. 3)	0.00	.	0.00	.	0.00	.	0.00	.

Note: This table depicts visibility index averages and standard deviations disaggregated by socioeconomic, demographic, personality traits and preferences for status variables. The 31 items included in the scale were grouped into three categories (low, intermediate, and high) according to their visibility. The high visibility group includes the first 11 items in the ranking, the intermediate visibility group includes items in positions 12 to 21, the low visibility group includes items in positions 22 to 31.

Source: Authors, based on ELBU.

Consistently with Table 3, Figure A1 depicts a positive association between individual preferences for status, the direction of comparisons and the visibility index. Although individuals with a greater preference for status rank similarly for the 31 categories of goods, in general, they report higher scores.[13] This descriptive analysis suggests that those survey respondents who consider interpersonal comparisons to be relevant, or who report a comparison group tend to more quickly identify whether a person like them increases their consumption of any of the 31 goods. This result might be consistent with the hypothesis that Heffetz index reflects the socio-cultural visibility of consumption. We return to these points in the econometric analysis.

B. Determinants of the aggregate expenditure visibility index

Our econometric analysis is based on the 1,181 observations with no missing information for all the variables of interest. We run OLS regressions on the aggregate visibility index (V I). Results are presented in Table 4, columns 1 to 5. We also built three groups of goods according to their visibility index value: high (first 11 items in the ranking), intermediate (positions 12 to 21), and low visibility (positions 22 to 31). Results for the high visibility group are presented in Table 4.[14]

Econometric estimations confirm the hints provided by the descriptive analysis. At the individual level, household size, labor force status, and

13 Table A6 shows that differences are statistically significant.

14 Estimations for the remaining two groups are not included due to space constraints, but they are available upon request from the authors.

living in the capital city (Montevideo) were the variables with a higher and statistically significant positive association to expenditure visibility. The latter result is consistent with previous findings indicating that in large urban centers, status concerns are higher.[15]

Regarding the BFI dimensions, we find that after controlling for preferences for status variables, conscientiousness is positively and significantly associated with the aggregate visibility indicator. However, the economic relevance of this effect is relatively small. For example, when compared to household size, the effect of adding a new member is equivalent to a 7-point increase in the conscientiousness score. Similarly, ceasing to be unemployed is equivalent to a rise of 18 points in the conscientiousness score (40% of the entire range of this variable). When we restrict the analysis to the subset of high visibility goods, the magnitude of this effect is slightly higher, but neuroticism and openness to experience also yield positive but imprecise effects. These results are different from the ones obtained for the overall index. In the case of openness to experience, this might reflect that, on average, these individuals are more open and receptive to new aesthetic, cultural, and intellectual experiences. They are also more curious, imaginative, and open to broader-ranging interests. Meanwhile, neuroticism has been interpreted as a symptom of emotional instability and a propensity for psychological disorder. It has been related to other social preferences, such as decreased interpersonal trust, negative reciprocity, greater risk aversion, and higher positionality concern (Almlund et al., 2011).

It is worth noting that incorporating preferences for status in the regression model enhances the statistical significance and increases coefficient size. In turn, agreeableness and extraversion do not exhibit statistical significance across specifications. Interestingly, despite the inclusion of this set of variables, the predictive power of the regression remains almost unchanged (Adj. R^2 =0.07 and 0.08).

Table 4. Extended model. Estimated Coefficients. Aggregate Visibility Index

	All					High visibility group	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Household size	0.022** (0.009)	0.022** (0.009)	0.023*** (0.009)	0.024*** (0.009)	0.025*** (0.009)	0.024** (0.010)	0.027*** (0.010)
Ethnicity (1=Afro-Uruguayan)	0,029 (0.022)	0,024 (0.022)	0,028 (0.022)	0,03 (0.022)	0,032 (0.022)	0.061** (0.025)	0.060** (0.025)
Marital Status (1=Married/couple)	0.036* (0.019)	0.037* (0.019)	0.027 (0.019)	0.030 (0.019)	0.029 (0.019)	0.037 (0.023)	0.030 (0.023)
Unemployed	0.064** (0.026)	0.061** (0.026)	0.050* (0.026)	0.049* (0.025)	0.049* (0.025)	0.067** (0.031)	0.051* (0.031)

(*Continued*)

15 Meanwhile, Afro-Uruguayan descent is not significant when considering the full set of items, but exhibits a statistically significant positive effect for the subset of high visibility items. This result is also consistent with previous findings stating that the more deprived or discriminated-against population groups have more stimuli to base their consumption choices on a desire for status.

	All					High visibility group	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Student	0.110*** (0.040)	0.109*** (0.040)	0.109*** (0.041)	0.109*** (0.040)	0.106*** (0.040)	0.107** (0.045)	0.102** (0.046)
Montevideo	0.127*** (0.017)	0.126*** (0.018)	0.102*** (0.021)	0.110*** (0.021)	0.111*** (0.021)	0.122*** (0.021)	0.106*** (0.025)
Personality traits							
Extraversion		-0.048 (0.159)	-0.002 (0.158)	-0.012 (0.157)	-0.015 (0.157)		0.086 (0.188)
Agreeableness		0.014 (0.182)	0.001 (0.178)	-0.003 (0.178)	-0.013 (0.178)		0.097 (0.212)
Conscientiousness		0.282* (0.146)	0.328** (0.143)	0.313** (0.142)	0.299** (0.142)		0.328** (0.167)
Neuroticism		0.194 (0.143)	0.213 (0.141)	0.239* (0.141)	0.242* (0.141)		0.307* (0.168)
Openness		0.244* (0.130)	0.213 (0.130)	0.215* (0.130)	0.217* (0.129)		0.306** (0.155)
Preference for status:							
Direction (ref.: Do not compare)							
Coworkers			0.074*** (0.026)	0.094*** (0.024)	0.088*** (0.024)		0.108*** (0.029)
Family and friends			0.091** (0.036)	0.119*** (0.033)	0.112*** (0.033)		0.124*** (0.038)
Missing			0.048* (0.025)	0.053** (0.025)	0.051** (0.025)		0.054* (0.029)
Intensity of preferences:							
Likelihood of comparisons with others (1=High)			0.078*** (0.023)				
Job offer (1=High)				0.054*** (0.017)			0.057*** (0.02)
Job offer (continuous)					0.009*** (0.002)		

(*Continued*)

	All					High visibility group	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Constant	0,085 (0.075)	-0,111 (0.112)	-0,172 (0.111)	-0,18 (0.110)	-0.193* (0.110)	0,097 (0.090)	-0.276** (0.134)
Obs.	1181	1181	1181	1181	1181	1181	1181
Adj. R2	0,07	0,08	0,11	0,11	0,12	0,06	0,1

Note: This table depicts OLS estimates for five model specifications. In columns 1 to 5, the dependent variable is the aggregate visibility index (*VI*). In columns 6 and 7 the visibility index is computed for the subgroup of high visibility goods (first 11 items in the ranking). Other control variables included in the estimation whose coefficients were not statistically significant in any specification were age, sex, presence of children, years of education, income quintile (four binary variables), employed, and retired. Standard errors in parentheses. *p<0.1, **p<0.05, ***p<0.01.

Source: Authors, based on ELBU.

In line with previous findings from the experimental literature, our analysis reveals a positive association between expenditure visibility and intensity of interpersonal comparisons for the three variables under consideration. Regarding the direction of comparisons, we confirm that those respondents who report comparing themselves with others (coworkers, family, or friends) exhibit positive and significant coefficients compared to those who report not comparing themselves with any of the aforementioned groups. However, it is noteworthy that the coefficients are very similar across the two groups.[16]

The coefficients of the preferences for status variables maintain their magnitude and significance across specifications. This suggests that both the intensity and direction of comparisons seem to be two relevant and complementary aspects in comprehending expenditure visibility. These findings imply that the visibility being measured transcends mere objective observability.

It is worth noting that including preferences for status significantly improves the predictive capacity of the model (Adj. *R*2 rises to 0.12), while not substantially affecting the remaining coefficients. These effects are greater than those associated to personality traits. Notably, in specification (5), a one standard deviation increase in the intensity of comparisons corresponds to a 12% increase in expenditure visibility, with a similar outcome for the direction of comparisons (10 and 11% respectively). In contrast, a one standard deviation increase in conscientiousness leads to approximately a 5 to 6% standard deviation increase in V *I*. When focusing the analysis solely on high visibility goods, the effects remain very similar, although the coefficients increase notably for the intensity of comparisons and the reference group of coworkers.

To conclude this subsection, we carried out a set of robustness checks substituting contemporary variables by their lagged values in previous waves. We first replaced present by past income quintiles (of 2011/12 and 2004), controlling for the same covariates included in the specification of Column 4 in Table 4. Table A7 of the Annex depicts the corresponding regression outputs for the aggregate visibility index (columns 1 to 3) and the subset of high visibility goods (columns 4 to 6). Results were consistent across these specifications, with the coefficients for the lagged value of income quintiles not being statistically significant.

16 We included a variable that identifies item non-response on the direction of the comparisons. Although the magnitude of the coefficient is smaller, this variable is statistically significant.

Secondly, the variables reflecting preferences for status were substituted by their lagged values or a transformation, maintaining the covariables included in Column 4, Table 4. Table A8 in the Annex depicts the estimated coefficients for the variables of interest. Alternatively, we include the lagged value of the "Likelihood of comparisons with others" variable (Cols. 1 and 4) and a binary variable identifying those individuals responding that they compare themselves to others both in 2011/12 and 2016/17 (Cols. 2 and 5). Results were similar across these specifications, although the intensity of comparisons coefficients were not statistically significant. We finally substituted the current direction of comparisons by their lagged value (Cols. 3 and 6), and results remained unchanged, in terms of magnitude and statistical significance. Although we cannot rule out an endogeneity problem, these tests reinforce our conclusion that preferences for status positively affect the visibility of goods. We also carried out separate estimations for each BFI component divided into two sub-samples restricted to responses below and above the specific dimension's median score. Similar results were found in all cases.[17]

V. Final remarks

In this research, we identified a set of visible goods for Uruguay, computed an aggregate visibility ranking and assessed its variability by population sub-groups using a rich set of covariates. Regarding the ranking of the different categories of goods, our results very much resemble previous findings for South Africa and the United States, suggesting that Heffetz (2012) survey instrument can be used in different cultural and socioeconomic contexts.

In terms of demographic and sociocultural heterogeneity, we identified no substantial differences in aggregate visibility levels or in the ranking for the 31 goods according to demographic variables or socio-economic status. These findings indicate high homogeneity levels in visibility valuations in Uruguay, a fact that might be related to emulative phenomena *à la* Veblen or Duesenberry, either within or between countries. In the case of racial ethnic ancestry, being Afro-descendant is associated with higher levels of expenditure visibility of goods within the group of high visibility goods.

In contrast to previous studies, our results suggest that the degree of visibility is associated with personality traits and the direction of the comparisons (who are the people whose consumption is observed). Regarding personality traits, in line with the previous literature, we found a positive and significant association between conscientiousness and visibility for all goods categories. Meanwhile, in the case of openness to experience and neuroticism, a similar relationship is identified for the subset of high visibility goods. These effects are independent from the ones related to interpersonal comparisons and could indicate a limitation of the visibility instrument, since some answers might also be reflecting personal characteristics not directly linked to positionality.

In addition to the above, a remarkable correlation was found regarding preferences for status: individuals with a higher propensity to compare themselves with others perceive visible goods expenditure more quickly, even after controlling for personality traits. At the same time, visibility levels vary for individuals with different reference groups (direction of comparisons). This finding opens up new research questions on how individuals choose their reference groups and which are the best ways to capture this information.

Even when potential endogeneity problems might be at play, preferences for status seem to have a greater impact on expenditure visibility than personality traits. In fact, one standard deviation increase in positional concern

17 Regression outputs are not included due to space constraints but are available upon request from the authors.

constitutes approximately a 10-12% standard deviation increase in the visibility of goods, whereas personality traits account for only half of this (5-6%).

While this investigation focused on assessing expenditure visibility, the aspect of positionality was not directly observed. Further research is needed to better understand the reasons underlying the higher visibility scores given to all goods categories by the group of individuals with a higher level of positional concern. Additionally, our findings raise questions regarding the relationship between visibility and positionality, suggesting the potential need for novel survey instruments and scales not strictly based on visibility.

At the same time, further exploration is needed to understand the connections among visibility, positionality, and status concern. These aspects are particularly relevant for less developed countries and those contexts in which institutions are weaker. In these cases, the pursuit of status could profoundly impact the distribution of economic results, consumption patterns, and aggregate efficiency (Weiss and Fershtman, 1998).

Finally, another area for further research involves investigating the relationship between our findings and actual consumption patterns. Providing evidence on this point requires the incorporation of visibility and positional scales into household expenditure surveys. The two existing studies that integrate this information for the United States, demonstrate that the socio-cultural visibility of goods is associated to substantial heterogeneity levels in household expenditure patterns (Maurer and Meier, 2008; Heffetz, 2018). To comprehensively analyze the potential policy implications of differences in expenditure visibility/positionality levels, more research is warranted to determine whether higher valuations lead to increased consumption of visible/positional goods and a decrease in expenditures on less visible goods.

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VI. Annex

Table A1. ELBU: attrition analysis. Probability of being interviewed in 2016/17

Sex (1=Female)	0.005 (0.003)
Household size	0.009 (0.005)
Education of the household head	0.008** (0.004)
Household income (per capita) (/1000)	0.002 (0.004)
Montevideo	-0.056*** (0.027)
Constant	0.368*** (0.034)
Obs.	2778
R2	0.006

Notes: This table presents the marginal effects obtained from probit estimation on the probability of an ELBU household of being found in wave 4 (0=not found; 1=found). Covariates correspond to Wave 1 values. Standard errors in parentheses. *p<0.1, **p<0.05, ***p<0.01.

Source: Authors, based on ELBU.

Table A2. Consumption Categories

	Cod.
The purchase of new and used motor vehicles such as cars, trucks, and vans.	Car
Clothing and shoes, not including underwear, undergarments and nightwear.	Clo
Barbershops, beaty parlors, hair dressers, health clubs, etc.	Brb
Home furnishings and household items, like furniture, appliances, tools and linen.	Fur
Jewerly and watches.	Jwl
Tobacco products like cigarettes, cigars, and pipe tobacco.	Cig
Alcoholic beverages for home use.	AiH
Dining out at restaurants, drive-throughs, etc, excluding alcohol; including food at school.	FdO
Cable TV, pets and veterinarians, sports, country clubs, movies and concerts.	Ot2
Food and nonalcoholic beverages at grocery, specialty, and convenience stores.	FdH
Mobile phone services	Cel
Education, from nursery to college, like tuition and other school expenses	Edu
Alcoholic beverages at restaurants, bars, cafeterias, cafes, etc.	AlO
Computers, games, Tvs, video, audio, musical and sports equipment, tapes, Cds	Ot1
Rent, or morgage, or purchase, of their housing	Hom
Home utilities such as electricity, gas, and water, garbage collection	Utl
Public transportation, both local and long distance, like buses and trains	Bus
Home telephone services, not including mobile phones	Tel
Vehicle maintenance, mechanical and electrial repair and replacement.	CMn
Lodging away from home on trips and housing for someone away at school	Ht1
Airline fares for out of town trips	Air
Books, including school books, newspapers and magazines, toys, games, and hobbies.	Bks
Laundry and dry cleaning	Lry
Medical, care, including health insurance, drugs, dentists, doctors, hospitals, etc.	Med
Gasoline and diesel fuel for motor vehicles	Gas
Underwear, undergarments, nightwear, and sleeping garments	Und
Contributions to churches or other religious organitzations, and other charities.	Cha
Vehicle insurance, like insurance for cars, trucks, and vans.	Cin
Homeowner's insurance, fire insurance, and property insurance	Hin
Life insurance, endowment, annuities, and other death benefits insurance.	Lin
Legal fees, accounting fees, and occupational expenses like tools and licenses.	Fee

Notes: This table presents the 31 items composing the visibility of goods survey instrument used in this research.

Source: Heffetz (2011)

Table A3. Factor analysis/correlation. Method: principal-component

Observations	1135
Retained factors	4
Number of parameters	118

Factor	Eigenvalue	Difference	Proportion	Cumulative
Factor1	15.889	13.764	0.513	0.513
Factor2	2.125	0.768	0.069	0.581
Factor3	1.357	0.139	0.044	0.625
Factor4	1.218	0.362	0.039	0.664

Variable	Factor1	Factor2	Factor3	Factor4	Uniqueness
Car	0.532	-0.214	0.287	0.297	0.501
Clo	0.722	-0.452	0.073	-0.105	0.258
Brb	0.731	-0.333	0.242	0.030	0.296
Fur	0.732	-0.194	-0.036	0.263	0.356
Jwl	0.705	-0.312	0.343	-0.070	0.284
Cig	0.7155	-0.355	-0.253	-0.243	0.239
AiH	0.760	-0.323	-0.233	-0.266	0.193
FdO	0.746	-0.287	0.025	-0.295	0.274
Ot1	0.746	-0.100	-0.095	0.336	0.356
FdH	0.715	-0.264	-0.271	-0.183	0.312
Cel	0.736	-0.175	-0.285	0.219	0.299
Edu	0.743	-0.011	0.180	0.193	0.379
AiO	0.762	-0.244	-0.061	-0.294	0.270
Ot1	0.756	-0.108	-0.006	0.289	0.334
Hom	0.673	0.085	0.326	0.013	0.433
Utl	0.719	0.000	-0.328	0.255	0.311
Bus	0.715	0.062	0.061	0.147	0.460
Tel	0.757	-0.008	-0.381	0.250	0.220
Cmn	0.715	0.148	0.099	0.015	0.457
Ht1	0.716	0.081	0.351	-0.048	0.356
Air	0.682	0.165	0.415	0.011	0.336

(*Continued*)

Bks	0.719	0.059	0.021	0.219	0.432
Lry	0.673	0.060	0.236	-0.301	0.397
Med	0.733	0.273	-0.076	-0.047	0.381
Gas	0.745	0.247	0.010	0.001	0.384
Und	0.704	0.142	-0.122	-0.299	0.380
Cha	0.664	0.277	-0.039	0.046	0.478
Cin	0.741	0.405	-0.047	-0.033	0.283
Hin	0.724	0.425	-0.126	-0.092	0.271
Lin	0.710	0.483	-0.066	-0.140	0.240
Fee	0.699	0.501	-0.075	-0.114	0.243

Note: This table presents a principal components analysis applied to the 31 items.

Source: Authors, based on ELBU.

Table A4. Correlation matrix between visibility indices and ranking. Uruguay and US

		VI		VI-a		VI-b	
		US	**UY**	**US**	**UY**	**US**	**UY**
(a) Pearson correlation coefficients							
VI	US	1					
	UY	0.86	1				
VI-a	US	0.98	0.9	1			
	UY	0.84	0.99	0.89	1		
VI-b	US	0.99	0.83	0.95	0.81	1	
	UY	0.87	1	0.9	0.98	0.85	1
(b) Spearman correlation coefficient (ranking)							
VI	US	1					
	UY	0.89	1				
VI-a	US	0.99	0.9	1			
	UY	0.88	1	0.89	1		
VI-b	US	0.99	0.86	0.98	0.85	1	
	UY	0.9	1	0.9	0.99	0.88	1

Note: This table depicts the correlation coefficients among the visibility indices and their ranking computed for Uruguay and the US, under the three methods described in section 3. UY refer to Uruguay. *V I* (baseline index) is the average of the responses to the 31 items; VI-a is the proportion of respondents who answered "immediately"; VI-b is the proportion of participants who responded "immediately and after a while."

Source: Authors, based on ELBU and Heffetz (2012)

Table A5. Ranking and visibility index by consumption category

Consumption	VI			VI-a			VI-b		
Categories	Rank	Mean	SD	Rank	Mean	SD	Rank	Mean	SD
Car	1	0.59	0.45	1	0.51	0.5	1	0.67	0.47
Clo	2	0.47	0.45	3	0.38	0.48	2	0.56	0.5
Brb	3	0.47	0.45	2	0.38	0.48	3	0.56	0.5
Fur	4	0.42	0.45	5	0.33	0.47	4	0.51	0.5
Jwl	5	0.41	0.45	4	0.33	0.47	5	0.48	0.5
Cig	6	0.4	0.45	4	0.33	0.47	6	0.47	0.5
AiH	7	0.37	0.45	6	0.3	0.46	9	0.45	0.5
Ot2	8	0.37	0.43	7	0.28	0.45	7	0.46	0.5
FdO	9	0.36	0.43	9	0.27	0.45	8	0.45	0.5
FdH	10	0.35	0.43	8	0.28	0.45	12	0.43	0.5
Cel	10	0.35	0.43	10	0.27	0.44	10	0.44	0.5
Edu	11	0.34	0.42	13	0.24	0.43	11	0.44	0.5
AiO	12	0.33	0.43	11	0.26	0.44	14	0.41	0.49
Ot1	13	0.33	0.43	12	0.25	0.43	13	0.41	0.49
Hom	14	0.3	0.41	15	0.22	0.42	15	0.39	0.49
Utl	15	0.3	0.42	14	0.23	0.42	17	0.37	0.48
Bus	16	0.29	0.41	17	0.21	0.41	16	0.38	0.48
Tel	17	0.29	0.41	16	0.22	0.41	18	0.36	0.48
Cmn	18	0.27	0.41	18	0.21	0.4	19	0.34	0.47
Ht1	19	0.27	0.41	19	0.2	0.4	19	0.34	0.47
Air	20	0.25	0.4	20	0.19	0.39	21	0.32	0.47
Bks	21	0.24	0.38	21	0.17	0.37	20	0.33	0.47
Lry	22	0.23	0.38	22	0.16	0.37	22	0.3	0.46
Med	23	0.22	0.37	24	0.16	0.36	23	0.29	0.46
Gas	24	0.21	0.37	23	0.16	0.36	24	0.27	0.45
Und	25	0.19	0.36	25	0.14	0.35	25	0.24	0.43
Cha	26	0.18	0.35	26	0.13	0.33	26	0.23	0.42
Cin	27	0.17	0.34	27	0.13	0.33	27	0.22	0.41
Hin	28	0.15	0.33	28	0.11	0.31	28	0.2	0.4
Lin	29	0.14	0.31	29	0.1	0.3	29	0.17	0.38
Fee	30	0.13	0.31	30	0.1	0.29	30	0.17	0.38
Obs.	1181			1181			1181		

Note: This table presents the visibility index and ranking of the 31 consumption categories, built on the basis on the three methodologies presented in section 3. Source: Authors, based on ELBU. *VI* (baseline index) is the average of the responses to the 31 items; VI-a is the proportion of respondents who answered "immediately"; VI-b is the proportion of participants who responded "immediately and after a while."

Source: Authors, based on ELBU

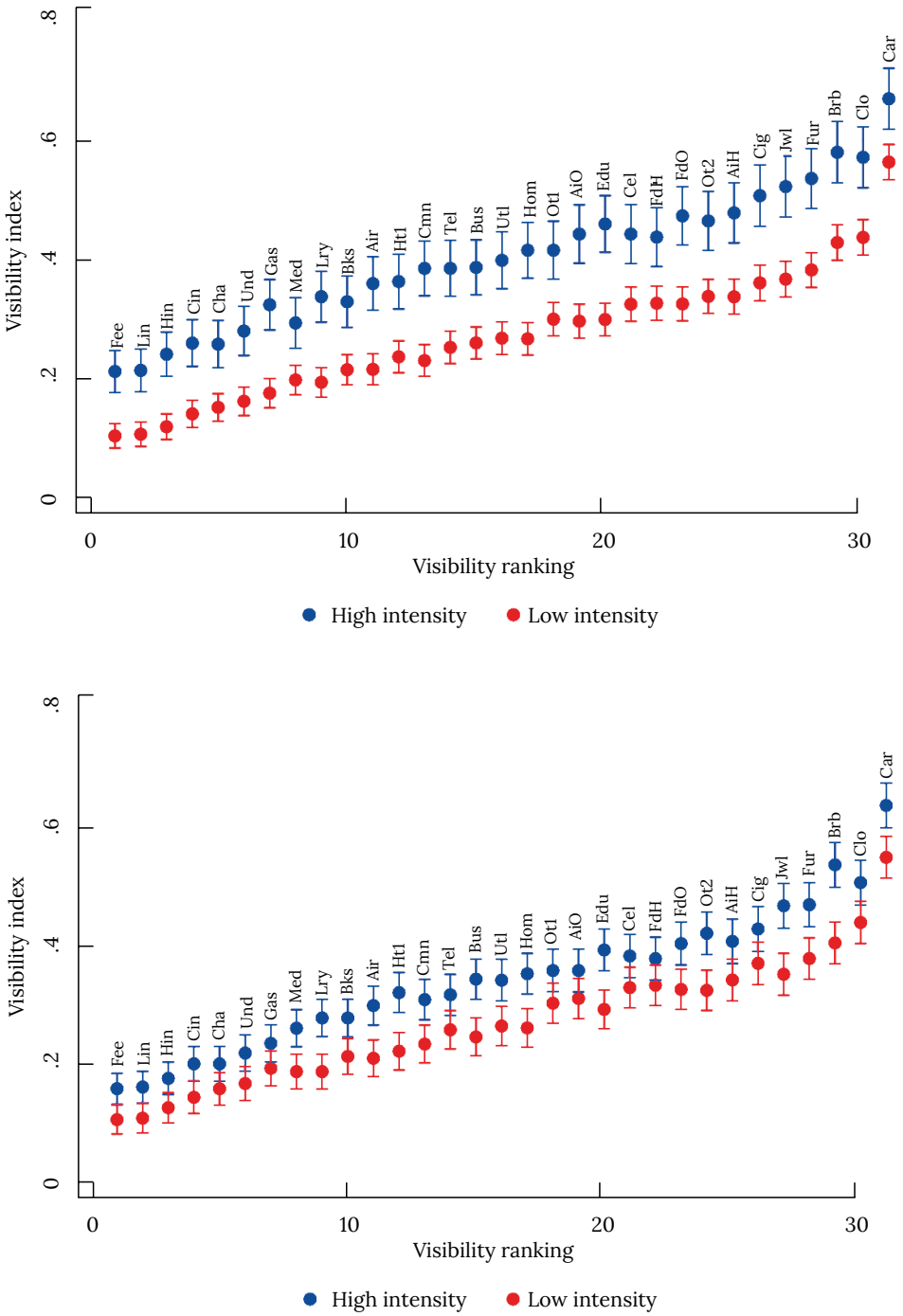
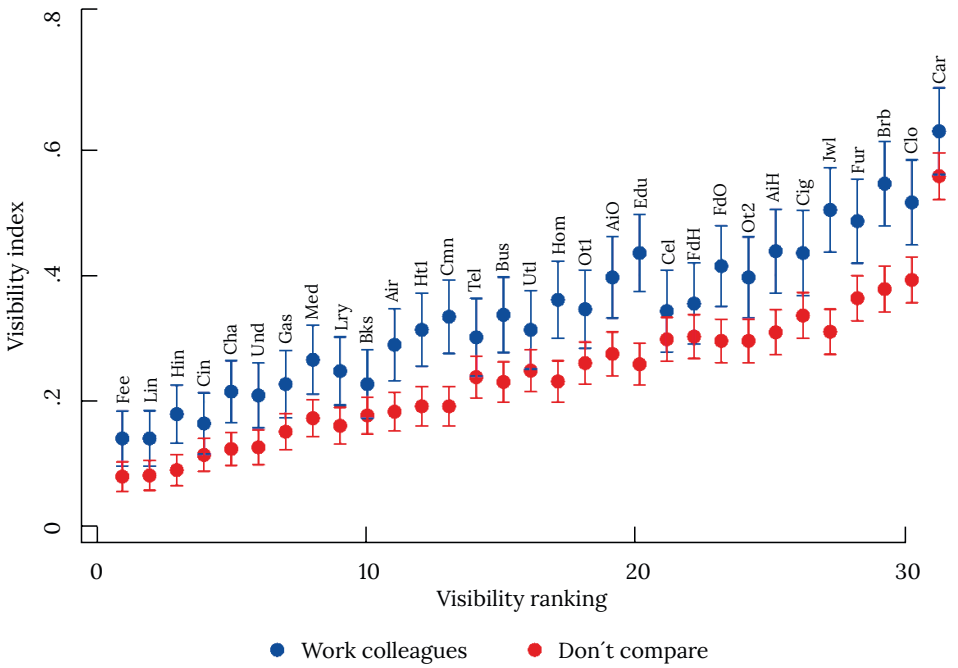
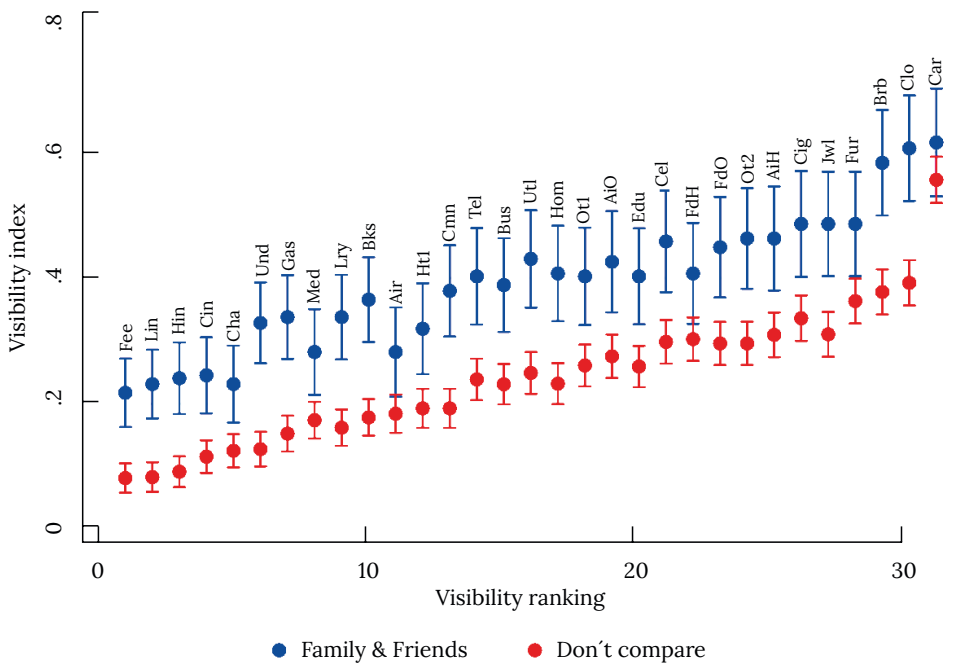


Figure A1. Visibility Index. Consumption Categories by Intensity and Direction of Comparison Variables

(a) Likelihood of comparisons with others (b) Job offer





(c) Coworkers vs Do not compare (d) Family/Friends vs Do not compare

Note: the panels depict visibility indices for the 31 consumption categories disaggregated by different variables reflecting intensity and direction of comparisons.

Source: Authors, based on ELBU

Table A6. Preferences for status and expenditure visibility. Descriptive statistics by good category

	Intensity								Direction								
	Likelihood of comparisons with others				Job Offer				Mean								
	Mean		Difference	p-value	Mean		Difference	p-value	Friends and family (1)	Do not compare (2)	Coworkers (3)	Dif. (1) vs (2)	p-value	Dif. (3) vs (2)	p-value	Dif. (1) vs (2)	p-value
	Low	High	Low vs High		Low	High	Low vs High										
All	0.27	0.40	-0.13	0.00	0.27	0.34	-0.07	0.00	0.39	0.24	0.34	0.15	0.00	0.10	0.00	-0.05	0.15
Car	0.56	0.67	-0.11	0.00	0.55	0.64	-0.09	0.00	0.62	0.56	0.63	0.06	0.22	0.07	0.07	0.01	0.83
Brb	0.44	0.57	-0.13	0.00	0.44	0.51	-0.07	0.01	0.61	0.39	0.51	0.21	0.00	0.12	0.00	-0.09	0.09
Clo	0.43	0.58	-0.15	0.00	0.41	0.54	-0.13	0.00	0.58	0.38	0.54	0.21	0.00	0.17	0.00	-0.04	0.48
Fur	0.38	0.54	-0.15	0.00	0.38	0.47	-0.09	0.00	0.49	0.36	0.49	0.12	0.01	0.12	0.00	0,00	0.99
Jwl	0.37	0.52	-0.15	0.00	0.35	0.47	-0.11	0.00	0.49	0.31	0.50	0.18	0.00	0.19	0.00	0.02	0.77
Cig	0.36	0.51	-0.15	0.00	0.37	0.43	-0.06	0.03	0.49	0.34	0.43	0.15	0.00	0.1	0.01	-0.05	0.36
AiH	0.34	0.48	-0.14	0.00	0.34	0.41	-0.06	0.01	0.46	0.31	0.44	0.15	0.00	0.13	0.00	-0.03	0.65
Ot2	0.34	0.46	-0.13	0.00	0.33	0.42	-0.1	0.00	0.46	0.30	0.40	0.17	0.00	0.10	0.01	-0.07	0.22
FdO	0.33	0.47	-0.15	0.00	0.33	0.40	-0.08	0.00	0.45	0.30	0.41	0.15	0.00	0.12	0.00	-0.03	0.52
FdH	0.33	0.44	-0.12	0.00	0.33	0.38	-0.05	0.04	0.46	0.30	0.34	0.16	0.00	0.04	0.23	-0.12	0.03
Cel	0.33	0.44	-0.11	0.00	0.33	0.38	-0.04	0.08	0.41	0.30	0.36	0.10	0.02	0.05	0.16	-0.05	0.33
Edu	0.3	0.46	-0.16	0.00	0.29	0.39	-0.1	0.00	0.40	0.26	0.43	0.14	0.00	0.18	0.00	0.03	0.55
AiO	0.3	0.44	-0.15	0.00	0.31	0.36	-0.05	0.06	0.43	0.28	0.40	0.15	0.00	0.12	0.00	-0.03	0.60
Ot1	0.3	0.42	-0.11	0.00	0.30	0.36	-0.05	0.03	0.40	0.26	0.35	0.14	0.00	0.09	0.02	-0.06	0.28
Hom	0.27	0.42	-0.15	0.00	0.26	0.35	-0.09	0.00	0.41	0.23	0.36	0.18	0.00	0.13	0.00	-0.05	0.38
Utl	0.27	0.4	-0.13	0.00	0.27	0.34	-0.08	0.00	0.43	0.25	0.31	0.18	0.00	0.06	0.07	-0.12	0.03

(*Continued*)

	Intensity								Direction								
	Likelihood of comparisons with others				Job Offer				Mean								
	Mean		Difference	*p*-value	Mean		Difference	*p*-value	Friends and family (1)	Do not compare (2)	Coworkers (3)	Dif. (1) vs (2)	*p*-value	Dif. (3) vs (2)	*p*-value	Dif. (1) vs (2)	*p*-value
	Low	High	Low vs High		Low	High	Low vs High										
Bus	0.26	0.39	-0.13	0.00	0.25	0.34	-0.1	0.00	0.39	0.23	0.34	0.16	0.00	0.11	0.00	-0.05	0.32
Tel	0.25	0.39	-0.13	0.00	0.26	0.32	-0.06	0.01	0.40	0.24	0.30	0.16	0.00	0.06	0.07	-0.1	0.05
Cmn	0.23	0.39	-0.15	0.00	0.24	0.31	-0.07	0.00	0.38	0.19	0.33	0.19	0.00	0.14	0.00	-0.05	0.38
Ht1	0.24	0.36	-0.13	0.00	0.22	0.32	-0.1	0.00	0.32	0.19	0.31	0.13	0.00	0.12	0.00	-0.01	0.91
Air	0.22	0.36	-0.14	0.00	0.21	0.30	-0.09	0.00	0.28	0.18	0.29	0.10	0.01	0.11	0.00	0.01	0.88
Bks	0.22	0.33	-0.11	0.00	0.21	0.28	-0.06	0.00	0.37	0.18	0.23	0.19	0.00	0.05	0.10	-0.14	0,00
Lry	0.2	0.34	-0.14	0.00	0.19	0.28	-0.09	0.00	0.34	0.16	0.25	0.18	0.00	0.09	0.00	-0.09	0.07
Med	0.2	0.29	-0.09	0.00	0.19	0.26	-0.07	0.00	0.28	0.17	0.27	0.11	0.00	0.09	0.00	-0.02	0.74
Gas	0.18	0.32	-0.15	0.00	0.20	0.24	-0.04	0.06	0.34	0.15	0.23	0.19	0.00	0.08	0.01	-0.11	0.02
Und	0.16	0.28	-0.12	0.00	0.17	0.22	-0.05	0.02	0.33	0.13	0.21	0.20	0.00	0.08	0.00	-0.12	0.01
Cha	0.15	0.26	-0.11	0.00	0.16	0.20	-0.04	0.04	0.23	0.13	0.22	0.11	0.00	0.09	0.00	-0.02	0.73
Cin	0.14	0.26	-0.12	0.00	0.15	0.20	-0.06	0.01	0.25	0.12	0.17	0.13	0.00	0.05	0.06	-0.08	0.07
Hin	0.12	0.24	-0.12	0.00	0.13	0.18	-0.05	0.01	0.24	0.09	0.18	0.15	0.00	0.09	0.00	-0.06	0.18
Lin	0.11	0.22	-0.11	0.00	0.11	0.16	-0.05	0.00	0.23	0.08	0.14	0.15	0.00	0.06	0.01	-0.09	0.04
Fee	0.11	0.21	-0.11	0.00	0.11	0.16	-0.05	0.00	0.22	0.08	0.14	0.14	0.00	0.06	0.01	-0.08	0.07

Note: this table depicts descriptive statistics on the visibility of goods indices for the 31 consumption categories disaggregated by variables reflecting preferences for status (intensity and direction of comparisons).

Source: Authors, based on ELBU

Table A7. Extended model estimations. Robustness analysis. Covariable included: lagged income quintile

	All			High visibility		
	(1)	(2)	(3)	(4)	(5)	(6)
Income quintile 2011/12 (ref.: 1st)						
2nd	0.036 (0.027)		0.035 (0.028)	0.061* (0.033)		0.061* (0.033)
3rd	0.035 (0.026)		0.037 (0.027)	0.058* (0.032)		0.062* (0.033)
4th	-0.001 (0.028)		-0.004 (0.029)	0.022 (0.033)		0.018 (0.034)
5th	-0.013 (0.028)		-0.011 (0.029)	-0.007 (0.033)		-0.006 (0.035)
Income quintile 2004 (re: 1st)						
2nd		0.016 (0.026)	0.014 (0.027)		0.040 (0.031)	0.036 (0.033)
3rd		-0.011 (0.027)	-0.015 (0.028)		0.001 (0.032)	0.004 (0.034)
4th		0.046* (0.027)	0.047 (0.029)		0.055* (0.032)	0.057* (0.034)
5th		-0.028 (0.027)	-0.001 (0.029)		-0.029 (0.033)	-0.004 (0.036)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	1.083	1.141	1.063	1.083	1.141	1.063
R2	0.13	0.13	0.13	0.12	0.11	0.12

Note: This table depicts OLS estimates for 4 model specifications including lagged variables. The dependent variable is the aggregate (All) visibility index (VI) and the high visibility groups (first 11 items in the ranking). The covariates include socio- economic, demographic, personality traits variables and lagged variables for income and preferences for status. Standard errors in parentheses. *p<0.1, **p<0.05, ***p<0.01.

Source: Authors, based on ELBU.

Table A8. Extended model estimation. Robustness checks. Covariable included: lagged preferences for status

	All			High visibility		
	(1)	(2)	(3	(4)	(5)	(6)
	Direction (2011/12) (ref.: Do not compare)					
Coworkers	0.113*** (0.025)	0.107*** (0.025)		0.127*** (0.030)	0.122*** (0.030)	
Family and friends	0.122*** (0.036)	0.112*** (0.036)		0.135*** (0.041)	0.127*** (0.042)	
Missing	0.062** (0.026)	0.060** (0.026)		0.065** (0.029)	0.064** (0.030)	
Likelihood of comparisons with others with others (1=High in 2011/12)	-0.009 (0.021)			-0.015 (0.025)		
Likelihood of comparisons with others (1=High in 2016/17 and 2011/12)		0.051 (0.036)			0.038 (0.041)	
Job offer (1=High in 2016/17)			0.059*** (0.017)			0.064*** (0.020)
	Direction (2011/12) (ref.: Do not compare)					
Coworkers			0.082** (0.038)			0.085** (0.043)
Family and friends			0.100*** (0.035)			0.087** (0.039)
Missing			0.080** (0.020)			0.091*** (0.023)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Obs	1077	1077	1181	1077	1077	1181
R^2	0.10	0.12	0.12	0.11	0.11	0.11

Note: This table depicts OLS estimates for 4 model specifications including lagged variables. Dependent variable are the aggregate (All) visibility index (*V I*) for the 31 items in the scale and the subset of high visibility goods (first 11 items in the ranking). The covariates include socio-economic, demographic, personality traits, and lagged income and preferences for status. Standard errors in parentheses. *p<0.1, **p<0.05, ***p<0.01.

Source: Authors, based on ELBU.