

# Do Relative Concerns Matter? Testing Consumption Categories

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### **Abstract**

It is well-known that relative concerns influence many economic choices, including consumption decisions of households. In this paper, we test the conspicuous consumption hypothesis. In particular, we test whether non-rich households are affected by the consumption of the rich and increase their consumption of visible items to signal high status. This is one of the few studies that investigates status signaling in a developing country setting. We use nationally representative data from the Turkish Household Budget Survey that covers the years 2003-2012, a period of high economic growth. The conspicuous consumption hypothesis is validated for highly visible non-durable consumption items that possess signaling value. In contrast, we find no evidence for a similar effect on the consumption of non-visible items by the non-rich. We interpret our findings in light of the economic experience of the country within the last decade.

**Keywords:** Reference groups; conspicuous consumption; developing country; status signaling; visible consumption.

**JEL Classifications:** D12, C21, R22.

## 1. Introduction

Consumption is an important indicator of the economic well-being of a household (see, for example, Headey, 2008); therefore, it is important to understand the factors that affect household consumption. One important determinant is relative concerns of households (Guillen-Royo, 2008; Linszen et al., 2011). People compare themselves to others and are motivated at least partly by concerns about their relative position. The observation that lower income classes seek to emulate the spending patterns of the rich was made decades ago (Smith, 1759; Veblen, 1899; Duesenberry, 1949; Leibenstein, 1950; Easterlin, 1974). When high social status generates utility, the non-rich will engage in “conspicuous consumption” (Veblen, 1989), in other words, they will spend money on certain consumption items that signal high status. Goods differ in their ability to signal status and some are more visible than others by their very nature. Therefore, non-rich households may imitate rich households in the consumption of visible items that can be used as a signal of status, but not in the consumption of other items. We may think of the visible items as things whose value depends mostly on whether others have them or not and we may call them “positional goods” (Frank, 1985a; Frank, 1985b; Hirsch, 1976).

Recent literature contains many studies that report evidence for positional spending. It has been reported that exposure to rich households induces non-rich households to increase consumption and reduce savings (see Bertrand and Morse (2016) for evidence in the US and Drechsel-Grau & Schmid, (2014) in Germany). Although the related literature has expanded tremendously in recent years, studies on household consumption decisions in developing countries are still quite rare (see, for example, Brown, Bulte, and Zhang (2011) on China; Khamis, Prakash, and Siddique (2012) on India; and Kaus (2012) on South Africa). Moreover, little evidence exists about which types of purchases households are influenced by the consumption of the rich and by relative concerns. The purpose of our paper is to examine consumption decisions of households and to test the “conspicuous consumption” hypothesis to investigate whether consumption of non-rich households is influenced by the consumption of rich households with similar characteristics. We ask whether and for which categories of consumption, the consumption of the rich in the same education or age group provides a reference point in the consumption choices of non-rich households.

We contribute to the received literature in several ways: First, we show that total consumption of rich households is not a reference point for total consumption of non-rich households. We find that peer effects are an important factor for consumption decisions; however, they are significant only for some consumption categories. Hence, the earlier result in the literature about total consumption expenditures does not necessarily hold in different settings

Secondly, we examine a wide range of consumption categories and show that for categories such as restaurants and hotels, or personal care, the consumption of rich households provides a reference point in the consumption of non-rich, whereas for some other categories there is no evidence of such relative concerns. The categories for which we detect an effect are the ones that include more visible items. Non-rich households increase their spending on some consumption categories which basically include more visible items, and not on others, in line with the

conspicuous consumption hypothesis. Finally, we show that households are influenced by rich households with the same educational background.

The setting that we choose to study is Turkey, an upper middle-income developing country with a large population that has experienced a substantial rise in income within the past two decades. As research shows, conspicuous consumption is more widespread in interdependent and hierarchical cultures that value group norms, than in individualistic cultures (Wang & Ahuvia, 1998, p. 437). Turkey has a socially connected hierarchical culture where a great deal of attention is paid to visible possessions that show a desired position in the socio-economic hierarchy. The urbanization rate in the country has exceeded 70% (The World Bank, 2015). This has increased exposure of households to the richer households in the cities. Despite the rise in total per capita income, the rise in income was higher for the top one percentile contributing to the high inequality in the country. Among OECD member countries Turkey still ranks first in terms of inequality. As research has shown inequality and peer effects are highly linked<sup>2</sup>. For these reasons we believe that Turkey, a country in which we expect strong peer effects, is an ideal setting for our study.

The rest of the paper is organized as follows: The next section discusses the related literature. Section 3 describes the dataset and presents descriptive statistics. Section 4 explains the empirical strategy and identification issues. Section 5 presents the results. The last section of the paper discusses the results and concludes.

## **2. Background**

### ***Relative concerns and consumption decisions of the non-rich***

As early as in the 1700s, Adam Smith argued that the desire for rank, and the display of wealth associated with it, are nearly universal features of human behavior (Smith, 1759). Later, Thorstein Veblen, in his book published in 1899, coined the phrase “conspicuous consumption” as spending that aims to demonstrate one’s economic position to observers (Veblen, 1899). Duesenberry (1949) claimed that an individual’s utility depends on the ratio of own consumption to a weighted average of consumption of others and the propensity to save is an increasing function of the individual’s percentile position in the income distribution. At about the same time, Leibenstein (1950) discussed various types of interdependencies in the consumption behavior of individuals. In the 1970s, Easterlin raised attention to the famous paradox that concerns about relative position could explain the observation that self-reported happiness of individuals varies directly with income at a given point in time, but average happiness tends to be highly stable over time despite tremendous income growth (Easterlin, 1974).

Evidence from econometric studies, experimental economics, social psychology, and neuroscience indicates that humans usually compare themselves with others who constitute their reference group and that the outcome of that engagement reflects on their sense of well-being. There is a consensus in the literature that well-being depends on one’s relative position. Frey and Stutzer (2002) and Layard (2006)–provide excellent discussions of this literature. People are

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<sup>2</sup> Among OECD member countries Turkey ranks third in terms of inequality after Chile and Mexico (source OECD, 2019)

disappointed when they fall behind those of others with whom they naturally compare themselves (Clark & Oswald, 1996; Bygren, 2004; Ferrer-i-Carbonell, 2005; Luttmer, 2005; Stutzer, 2004; Senik, 2009). Consequently, economic processes are affected, and economic realizations differ from what they would have been had comparisons with others been irrelevant. For example, Kuhn et al. (2011) use data from the Dutch postcode lottery in which a prize is allocated to a randomly selected postal code. The authors find a sizable increase in the probability of purchasing a car within the next six months after the lottery for people who did not win the lottery but whose next door neighbor did, indicating a substantial social effect.<sup>3</sup>

Studies in the field show that a modified utility function that depends both on own actions and actions of those in the reference group explains observed behavior much better (Clark & Oswald, 1998). An extensive literature on interdependent preferences (also called “peer effects”) emphasizes that individual decisions are affected by the preferences (and consequently the decisions) of others. Studies on status concerns also belong to this literature, since they are based on the observation that people derive utility from their status in the society, which is defined according to their relative standing. Relative standing can be based on the rank in wealth, income or other characteristics (such as educational attainment) which are regarded as symbols for belonging to the “upper class”. In many cases, the actual rank cannot be observed; hence, status is signaled visibly through the possession or consumption of luxury goods.

The non-rich may engage in conspicuous consumption. They may imitate the spending behavior of the rich and spend money on certain items to derive utility by signaling a higher social status). Some recent studies have empirically assessed the differences in spending on conspicuous consumption across races or other social classes. Charles et al. (2009) compare the visible expenditures of racial groups in the US to test whether being associated with a poorer reference group has negative informational consequences. As the average group-income increases, visible consumption should fall, since the need to signal high income is reduced. Consistent with the status argument, the authors find that after controlling for permanent income and demographics, Blacks and Hispanics spend about 30% more on visible consumption than Whites.

A few papers have studied status signaling in developing countries. For example, Kaus (2012) finds that in South Africa, Colored and Black households, whose mean income is much lower than that of White households, spend on average about 35-50% more on visible consumption than comparable White households. In India, where social identities are defined by caste and religious affiliation, spending on consumption items with signaling value in social interactions is found to be higher in disadvantaged caste groups (Khamis, Prakash, & Siddique, 2012). In rural China, socially observable spending has risen sharply in recent years and is highly sensitive to social spending by other villagers (Brown, Bulte, & Zhang, 2011). Positional concerns in consumption have also been studied in the context of some Indian states. Banerjee and Duflo (2006) show that in Udaipur, where 86% of the population lives below the poverty line, the median households spend 10% of their annual budget on festivals and 5% on tobacco and alcohol. Bloch et al. (2004)

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<sup>3</sup> The authors interpret this finding as convincing evidence that households’ consumption of visible, durable goods is affected by genuinely exogenous shocks to their neighbors’ incomes.

study spending on lavish wedding celebrations and report evidence of status signaling consumption by rural Indian households in Karnataka. In line with these results, in this paper we investigate the consumption patterns for Turkish households and find evidence that non-rich households follow rich households' consumption for some visible items, but not for non-visible items.

Our work is also related to an earlier branch of the literature that focused on the estimation of demand systems. The model by Alessie and Kapteyn (1991) incorporates demographic effects, habit formation, and preference interdependence. In their model, by construction, a household's budget shares depend on mean budget shares in the reference group of the household, where the reference group is defined as those who share the same characteristics such as education, age, and type of job. Hence in their study, preferences are influenced by the preferences of all others in the same social group and not by the rich in the social group (as in our study). Using Dutch data in which total consumption is roughly divided into six categories, the authors find that the preferences for clothing, medical care, education, entertainment, and transportation are influenced by one's past consumption or the consumption of the reference group whereas the preferences for food are quite stable. Kapteyn et al. (1997) conduct a similar exercise in the context of a Linear Expenditure System and find evidence for good-specific relative concerns. The authors use a single cross-section and model interdependence by making parameters in the system dependent on current quantities in the reference group of a household. This feature raises identification issues stemming from the 'reflection problem' formulated by Manski (1993). In our study, we choose an empirical strategy to avoid the reflection problem.

Several recent studies on developed countries have examined the consumption of non-rich households in comparison to the consumption of rich households. Bertrand and Morse (2016) document that, in the US, the rising consumption of the rich within a state has induced the non-rich in that state to consume more. The US is famous for the sharp increase of real income at the top of the income distribution during the last three decades, along with an almost dormant median household income (Autor, Katz, & Kearney, 2008; Goldin & Katz, 2007). Furthermore, inequality has also increased within the states of the country. Based on these observations, Bertrand and Morse (2016) argue that the exposure of a median household to very rich neighbors has increased over this time. Using data from the Consumer Expenditure Survey, they show that this increased exposure has induced non-rich households to consume a greater share of their income. A study on Germany provides additional evidence to support this "keeping up with the Joneses" behavior (Drechsel-Grau & Schmid, 2014). It reports that increases in reference consumption (defined as the consumption of all households who are perceived to be richer) lead to lower savings and increased consumption in the country. In contrast, a study on Britain (Quintana-Domeque & Wohlfart, 2016) finds no effect of consumption growth of the rich on the consumption growth of the non-rich households. Their finding is not surprising as they study food consumption. It is indeed in line with Alessie and Kapteyn (1991) who report that food consumption is rather immutable, whereas other categories of consumption are influenced by consumption of the reference group.



### *Turkey as a developing country*

The period that we study is an unusual one for Turkey. In 2001, the country experienced one of the most severe economic crises in its history. The vast overnight devaluation of the Turkish lira, the widespread increase in unemployment, the drastic shrinkage of the banking sector had tremendous effects on all sections of the population. The aftermath of the crisis saw the victory of the Justice and Development Party (the AK Party). In the year 2002 parliamentary elections, the AK party won a two-thirds majority of the seats in the national assembly, becoming the first Turkish party in 11 years to win an outright majority, ending the earlier years of coalitional governments. Following the reform package of the World Bank, the administration undertook several structural reforms to regulate the banking system, reduce the fiscal debt and privatize state enterprises. The country went through economic and social reform, with Islam increasing its visibility in everyday life and the marketplace (Sandikci, Peterson, Ekici, & Simkins, 2015). The Turkish neo-liberalization experience has been both successful and socially disruptive (Tugal, 2009). The growth rate of per capita income in the post-2002 period, especially during the first five years after 2002, was higher than in the earlier years. Per capita income increased from 12,649 dollars in 2002 to 16,546 dollars in 2007; and to 18,032 dollars in 2012<sup>4</sup>. On the other hand, the richer part of the population became even richer and a new conservative upper class appeared (Tugal, 2009; Sandikci, Peterson, Ekici, & Simkins, 2015).

Turkey has experienced one of the fastest rates of urbanization of any country worldwide. Since the 1980s, Turkey's urban population has increased by 34.3 million people. Furthermore, the share of Turkey's middle-class increased from 18 percent to 41 percent of the population between 1993 and 2010 (The World Bank, 2014). The rise of the urban middle class has influenced the lifestyle, increasing the exposure of families to different classes and various means of consumption. There has been an improvement in income distribution from 1994 till 2003, improvement continued until 2007; however, the trend has been reversed since 2007 (Filiztekin, 2015). The increase in average income and improvement in the income distribution in the first half of the 2000s has affected the spending patterns of households. There has been an increase in household spending, which is evident from the consumption and credit growth.

Urbanization and improvement in communication technology have increased the exposure among different income groups, which has been facilitated by the increased internet access and the social media revolution.<sup>5</sup> Moreover, the top one percentile saw a more considerable increase in income. Tümen (2015) reports that there has been a sharp increase in the income share of the top one percent earners after 2008. While earnings have moved up altogether, the movement is larger in the top percentile. With the changing income distribution and improvement in social media, relative concerns may have become more effective in spending decisions in this emerging economy, and a race may have begun towards consumption to signal status similar to that is the US as shown by Bertrand and Morse (2016). In that regard the period after 2002 in Turkey becomes a good setting to study peer effects.

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<sup>4</sup> All expressed in PPP, constant 2011 international \$, according to the World Data Bank

<sup>5</sup> Social media usage is common in Turkey. 96% of all internet users in Turkey are Facebook members. Active social network penetration as of January 2019 is 63%. Twitter has a Turkish market penetration of 72%. (Source: Statista)

We investigate the presence of the peer effects in household consumption on different consumption categories. Our main hypothesis is that peer effects should be stronger in consumption categories that include more visible items. Since conspicuous consumption stems from the motivation to signal higher status, we expect it to prevail in consumption categories that include visible items.

We focus in this paper on rising expenditures of Turkish people on restaurants and personal care, both of which are highly visible. According to the reports on the Turkish restaurant sector, dining out has become more common in the country. The number of restaurants rose from about 150 thousand 10 years ago to more than 600 thousand today (Şaylan, 2012). While some part of the increase can be attributed to a rise in need (because of a more hectic lifestyle of the urban working class and less time for food preparation), we argue that restaurant consumption is at least partly used by the middle class as a signal of status and that restaurants are a place to interact with the upper class. History tells us stories from other countries to support this argument. For example, back in the 1800s, restaurant emerged in Paris as a place of luxury which “... *attracted a regular group of big-spending merchants, administrators, politicians, army men, bankers, artists, industrialists, and merrymakers. Not all were gourmets, but they wanted definitely to meet with and talk to people. Probably more than any other place in those tumultuous days, the Parisian restaurant became the location for networking.*” (Scholliers, 2009, pp. 45-46). Evidently, restaurants are not solely used to consume meals; they are places used for socialization, networking, and signaling status.

Personal care products (such as fragrances, hair and skin care products, beauty products) are the second highly visible consumption category that we are interested in. According to Euromonitor International (2014), the Turkish and Middle Eastern personal care market has been the second fastest growing beauty and personal care products region in the world since 2008. A young and dynamic population, an improving economy and an increase in employment have all supported Turkey’s personal care market, driven by a perception that a higher degree of personal grooming is required (In-cosmetics, 2015). The international brands, realizing the opportunities, have been boosting demand via massive marketing campaigns and expanding their distribution channels.

The related literature recognizes that status consumption is closely related to cultural factors and that spending behavior needs to be understood in the cultural context. Countries that rely on an interpersonal (rather than an independent) construal of self, value group norms or group goals more highly (Abe, Bagozzi, & Sadarangani, 1996). For example, Western culture is associated with an independent construal of the self, where the inner self (i.e., preferences, tastes, abilities, personal values) is most significant in regulating behavior. In contrast, the Eastern culture is associated with the interdependent construal of the self, which is based on the fundamental connectedness of human beings to each other (Wang & Ahuvia, 1998). Since in hierarchical and newly industrialized societies economic status is a central social concern, “... *publicly visible markers are needed to concretize and communicate financial achievement*” (Wang & Ahuvia, 1998, p. 437). Turkey is a country where status is essential and a great deal of attention is paid to possessions that are public and visible; therefore, we expect the cultural factors in the country to strengthen the effects of relative concerns in consumption decisions.

While the importance of peer group effects has been well documented in the literature, to our knowledge, there are no papers that analyze peer group effects for the Turkish households. Hence we intend to fill this gap by exploiting a large dataset on the consumption behavior of Turkish households.

### **3. Data and Descriptive Statistics**

The data we use in this study is based on the nationally representative Turkish Household Budget Survey (HBS). The survey, conducted by the Turkish Statistical Institute (TurkStat) according to international standards, is a major source of information on consumption expenditure patterns by socio-economic groups and rural-urban settlements.<sup>6</sup> The HBS asks households detailed questions about expenditures on goods and services for current consumption. It also collects information on disposable household income as well as labor market and demographic characteristics of the household reference person (the person who is listed first in the household record). We use pooled cross-sectional data from the 2003-2012 waves of the survey. In each wave, more than 8,000 households were interviewed. (See the Appendix for more information on the dataset and the variables used in the study.)

In this paper, we are interested in two major highly visible and non-durable consumption categories; namely, the expenditures on restaurants and hotels, and personal care. We also test whether our findings on the visible items can be replicated for other categories that are also non-durable but not as visible as the two chosen categories by their nature. For this purpose, we use two other consumption categories as control categories. These are food and non-alcoholic beverages; and housing and rent.<sup>7</sup>

Our choice of visible consumption categories is partly guided by data availability. We avoid studying durable visible goods (such as cars, furniture, and jewelry) and semi-durable visible goods (such as glassware, tableware, and household textiles), since such items may not be purchased frequently enough to be correctly measured in the survey data. In other words, the reference period of one year may be too short to capture the purchases of such goods. Since we expect the survey to underestimate durable and semi-durable consumption, in our estimations we use only non-durable consumption expenditures.

### **4. Empirical Method and Identification Issues**

Our main purpose is to test whether the consumption decision of the households is influenced by the consumption of the rich households in their reference group, i.e. by their reference consumption.

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<sup>6</sup> Urban settlements have a population of 20.001 or more; suburban settlements have a population of 20.000 or less.

<sup>7</sup> Heffetz (2004) constructs visibility indices based on a ranking of different categories of consumption according to their conspicuousness. In his study, cigarettes, clothing, cars, jewelry, furniture, sports equipment, and wine rank at the top of the visibility scale (similar to Frank (1999, p. 160)). On the contrary, underwear, insurance, legal fees, and home utilities rank at the bottom. Our choice of visible consumption items is guided by data availability. We focus on non-durables. As in Heffetz's list, we take home utilities as non-visible consumption. In our analysis, food consumption at home is not visible, whereas restaurant consumption and personal care is assumed to be visible.

We estimate regression equations of the following form:

$$C_{it} = b_0 + b_1 Y_{it} + b_2 Y_{it}^2 + b_3 C_{it}^R + B_3 X_{it} + B_4 T_t + \epsilon_{it}. \quad (1)$$

In equation (1), household consumption ( $C_{it}$ ) for household  $i$  in year  $t$  is expressed as a function of household income ( $Y_{it}$ ) and its square ( $Y_{it}^2$ ), and reference consumption ( $C_{it}^R$ ). A wide set of variables to control for household characteristics that are theoretically expected to influence  $C_{it}$  are summarized in the  $X_{it}$  matrix. The characteristics include demographic characteristics of the reference person in the household (gender, age category, marital status, educational status, and labor market status) and family structure characteristics (the number of children and elderly in the household and dummy variables for large families and single adult families). Dummy variables for urban residence and homeownership status are also included. To control for calendar year effects, time dummies ( $T_t$ ) are added to regressions. Price adjustment (of household consumption expenditures and disposable household income) is made by the consumer price index in December of each year (obtained from the Turkish Central Bank).

To identify the coefficients in equation (1), we assume that the error term  $\epsilon_{it}$  is uncorrelated with the independent variables. Relying on the observation that zero expenditures rarely occur, we decide that estimation by Tobit is not needed and use ordinary least squares (OLS) to estimate equation (1).

We estimate equation (1), first, by taking ( $C_{it}$ ) as the total consumption of household  $i$ . Then, to study the same behavior for different categories of consumption, we estimate equation (1) by taking ( $C_{it}$ ) as the value of consumption in a particular category. The 12 categories of total consumption are described in the Appendix. We estimate equation (1) for all the 12 categories, but present the results for the following four categories: Restaurants and hotels; Personal care (part of miscellaneous goods and services); Food and non-alcoholic beverages (consumed at home); Housing, including rent, water, electricity, gas, and other fuels. The first two categories are selected to represent highly visible non-durable consumption and the latter two to represent non-visible consumption. Our choice is guided both by the nature of the category and data availability. We had to disregard some visible categories for which positive consumption is observed only for a small fraction of households (such as entertainment and culture). We expect to observe significant peer effects in highly visible consumption and not for non-visible consumption.

We ask whether the consumption of the “rich” influences the consumption of “non-rich” households. We define the “rich” households in a reference group as those in the top 10% of the income distribution of the previous year. Top 10% is chosen because it is commonly used in the literature (for example, Bertrand and Morse (2016)). A more restrictive definition of the rich (such as the top 1% or top 2%) is not preferred, because we need a decent number of observations to generate meaningful estimates of the consumption of the rich. Sample size is especially important when studying the categories of total consumption. Also there is the limitation of household surveys that incomes at both ends of the distribution are underreported (i.e. “selective under-sampling” (Deaton, 2005); Vermeulen (2016); Kennickell & Woodburn (1997)) Therefore, we

consider the top 10% rather than %2 in the income distribution for the rich.<sup>8</sup> We exclude the poorest 20 percentiles of the households in the income distribution as they may display different behavior than the majority.

We experiment with different definitions of “non-rich”. In our first set of estimates, we restrict attention to households in the 20<sup>th</sup>-90<sup>th</sup> percentiles. Then, in order to study the behavior of the households in the upper echelons of the income distribution, we restrict the sample to those in the 70<sup>th</sup>-90<sup>th</sup> percentiles and later to those in the 50<sup>th</sup>-90<sup>th</sup> percentiles. Finally, to study the behavior of the households in the lower half of the income distribution, we restrict the sample to those in the 10<sup>th</sup>-50<sup>th</sup> percentiles.

### ***Selection of the reference groups:***

There is a consensus in the literature on the notion that well-being depends on one’s relative position (Clark & Oswald, 1996; Luttmer, 2005; Kingdon & Knight, 2007). Typically, a modified utility function in which one’s utility depends on the gap between actual income and reference group income has been used to model relative concerns. The main question that arises is how to define the reference group. Reference group theory argues that individuals compare themselves not to just anyone, but to people who are similar in many respects, for example, who come from the same social group, have similar beliefs, values, income, or aspirations. The reference group is used as a standard against which to evaluate one’s self. Models of social preferences and inequality aversion (see, for example, Mui (1995), Fehr and Schmidt (1999), Bolton and Ockenfels (2000), and Charness and Rabin (2002)) predict that the poor envy the rich in the same social group or class.

Some studies rely on the controlled environment of the laboratory to define the reference group (Falk & Ichino, 2006; McBride, 2010; Clark, A.E., Masclet, & Villeval, 2010). Other studies define the reference group empirically, relying on whatever information is available in the data. Two approaches stand out in the empirical literature. The first one relies on *proximity*. The assumption is that the person’s reference group consists of people whom he lives closest to, in other words, people who are in his regional proximity. For example, Luttmer (2005) finds that controlling for an individual’s income, higher earnings of neighbors are associated with lower levels of self-reported happiness. Knight and Song (2006) report that two-thirds of Chinese households define their main comparison group as the individuals in their village. Persky and Tam (1990) assume that the reference group is all individuals living in the same region. Other examples include Blanchflower and Oswald (2004), Ravina (2007), and Alvarez-Cuadrado et al. (2012). In the second approach, that relies on *similarity*, one’s socio-demographic characteristics are considered. The assumption is that one compares self to those who have similar characteristics. In most empirical studies, data availability guides the choice of the reference group. In Bygren (2004), the reference group is others with the same education and work experience either in the same occupation or in the entire labor market. Easterlin (1995) implicitly assumes that individuals compare themselves with all the other citizens of the same country. In McBride (2001), the

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<sup>8</sup> There is substantial evidence that richer households have higher non-response rates (Kennickell & Woodburn, 1997)

reference group is all people in the USA who are in the age range of 5 years younger to 5 years older. Van de Stadt et al. (1985) define the reference group according to education level, age, and employment status. In some studies, gender is also considered a relevant variable in defining a reference group. In Ferrer-i-Carbonell (2005), the reference group contains all the individuals with a similar education level, inside the same age bracket, and living in the same region. Clark and Oswald (1996) take a slightly different approach and define reference income (which they call “comparison income”) as the predicted value of income (from an earnings regression) for someone with the same characteristics. Maurer and Meier (2008) define reference groups based on demographics and proximity: groups are based on different subsets of age cohort, race, gender, the presence of children, educational attainment, occupational status and the size of the nearest city as a measure for urbanity.

In our study, we follow a comprehensive approach and define the reference groups based on both similarity in educational attainment and geographic proximity. In other words, we conjecture that households form a reference group from people who share the same education level and who belong to the same urban-rural residence classification. We also experiment with reference groups based on age (combined with geography). This approach is similar to Woittiez and Kapteyn (1998), who assume that people socially contact others at about the same age and education. According to Bourdieu (1984), the level of education is one of the most important factors that distinguish people’s tastes and lifestyles from each other. Inspired by this work, Aydin (2006) finds that education is a major determinant of consumption patterns and lifestyle in Turkey. In our paper, regional proximity is inevitably measured only roughly at the rural-urban level, since HBS does not provide a more detailed geographical classification than the dichotomous rural-urban classification. Regardless, we believe that even the rough rural-urban division captures important differences in consumption patterns between the two groups.

In this study, we define the reference group of household  $i$  as the “richest” households that have similar characteristics with household  $i$ . Psychological research and behavioral studies have shown that people display asymmetry in comparisons and that the disutility of a loss is weighted larger than the utility of a gain (i.e. loss aversion). The literature refers to Duesenberry, who is known to have assumed that people are upward-looking in making social comparisons because their perceived needs and aspirations are typically above what they have (Duesenberry, 1949; Holländer, 2001; Ferrer-i-Carbonell, 2005). In this approach, poorer individuals are negatively influenced by the income of their richer peers, but the opposite is not true (i.e., richer individuals are not elated by the discovery that they are richer than others). In our study, we take this asymmetry into account.

To build reference groups according to education and rural-urban status, we divide the sample into 16 groups based on 8 education levels and rural-urban residence (please see the Appendix more for information). Then, within each group, we calculate income percentiles according to household disposable income. The reference group consumption for household  $i$  is the average consumption of households that are in the top 10 percentiles and in the same group as household  $i$ . We consider both total consumption and consumption in the category of interest. To build reference groups according to age and geography, we repeat the same, replacing 16 education-

geography groups with 20 age-geography groups based on 10 age categories and rural-urban residence.

***Concerns for possible endogeneity:***

A problem well-known in the literature occurs when one takes a single cross-section and tries to explain the behavior of a household by the average behavior in the group that the household belongs to (the “reflection problem” a la Manski (1993)). We define reference groups to avoid that problem. In particular, we make use of multiple cross-sections to eliminate the concerns for possible endogeneity between one’s own consumption ( $C_{it}$ ) and the reference group consumption ( $C_{it}^R$ ). In each survey year, we select the reference group as the richest households in the previous survey year. The reference group consumption in the previous survey year is predetermined; therefore, it is in the information set of the household at the time of making consumption decisions. Our identification assumption is that the consumption of the rich in the previous year is uncorrelated with the unobserved characteristics of the non-rich household (that remain in the error term in equation (1)) that might influence their consumption decision in the current year. We think that the assumption is a plausible one. Besides, any population-level shocks to consumption that affect all households in a particular year are already accounted for via year fixed effects.

Even after defining reference group consumption based on previous year’s consumption, the endogeneity problem may continue to be present if consumption shocks to different income groups are correlated and persistent over time. For example, a preference shock that promotes dining at fancy restaurants may raise restaurant consumption in all income groups, and the shock may persist for several years. To address the concerns that the co-movement of all income groups generate a correlation between the consumption of the rich and the consumption of the non-rich, we replace  $C_{it}^R$  in equation (1) with the consumption of the poor households (defined as the bottom 10% of the income distribution) and show that the results are not driven by a persistent consumption shock. To address further concerns of endogeneity, we test whether an income shock common to all income groups generates a positive correlation between the consumption of different income groups. We estimate regressions where the income of the rich is used as  $C_{it}^R$ . Finally, to avoid any potential endogeneity we introduce gaps that separate the rich households and the rest of the population. Specifically, we exclude the 20 percent households directly below the top 10<sup>th</sup> percentile and carry the estimations for the remaining sample that is restricted to those below the 70<sup>th</sup> percentile for every reference group. This removes the association between the rich and non-rich households that may result from some non-observable factors (such as income or taste shocks) that are common to the neighbor ?? groups, other than peer effects, that may create some co-movement between their consumption. This way by introducing a separating “gap” we increase ?? the independence between ( $C_{it}$ ) and ( $C_{it}^R$ ).

***Control variables:***

We include an extensive set of control variables in the  $X_{it}$  matrix. We include current income and its square as control variables (consistent with the Keynesian framework where savings and consumption decisions depend on current income). As indicators of permanent income of the

household, we include the education and labor market status of the reference person. To account for life-cycle factors and the effect of household demographics, we include dummy variables that indicate the age group of the household reference person. The  $X_{it}$  matrix also includes marital status, homeownership status, and rural-urban residence of the reference person. Such characteristics are included in order to control for their possible influence on some types of expenditures such as housing, food consumption at home, and food consumption in restaurants.

## 5. Results

### *Regressions with total consumption:*

First, we estimate equation (1), taking  $C_{it}$  as the total consumption of the household. Here, we aim to test whether non-rich households follow the consumption of rich households. Table 2 presents the OLS coefficient estimates of the variables  $Y_{it}$ ,  $Y_{it}^2$ , and  $C_{it}^R$ . For each of the four percentile groups (each shown in different quadrants of the table), five different regressions are estimated (shown in different columns). Three of these regressions take the richest households (the top 10%) in the same education-geography group as the reference group (columns a, b, c). In the other two regressions, the reference group is the richest households (the top 10%) in the same age-geography group (columns d, e).

Table 2 shows that when the reference group is based on same education-geography group, total consumption of non-rich households in the 20<sup>th</sup> - 90<sup>th</sup> percentiles is positively correlated (at 10% significance level) with the average consumption in the richest 10% in the reference group.

Three issues may cast doubt on the finding of a positive correlation between the consumption of the rich and the non-rich: first, the generality of the result to different samples, second, the generality of the results to a different definition of reference groups, and, third, the possible endogeneity between the two consumption variables. To address the first issue, we re-estimate the equation restricting the sample to different percentiles of the income distribution. We find that the result is not robust to changes in the sample. It disappears when the sample is restricted to top (70<sup>th</sup>-90<sup>th</sup> or 50<sup>th</sup>-90<sup>th</sup>) percentiles or the bottom (10<sup>th</sup>-50<sup>th</sup>) percentiles. To address the second issue, we experiment with reference groups based on age-geography groups. We find that the result applies to age-geography groups only in the upper half of the income distribution. Consumption of the households in the 50<sup>th</sup>-90<sup>th</sup> percentiles is correlated with the consumption of the richest 10% in their age-geography group. To deal with the endogeneity problem, we test whether consumption of the non-rich is correlated with the consumption of the poor (for example, the lowest 10% of the income distribution). We find that consumption of the non-rich is not positively correlated with the consumption of the poorest 10% and thereby rule out the possibility that the consumption of households in different income percentiles move up altogether. We also estimate regressions where the income of the rich is used instead of  $C_{it}^R$ , as explained in the empirical method section. We find that the income of the rich is generally statistically insignificant in the regression (except when the sample is restricted to households in the 10<sup>th</sup>-50<sup>th</sup> percentiles of income).

Therefore, we have weak evidence that the total consumption of the rich and the non-rich households are positively correlated. This is unlike the pattern in the US and German data, reported by Bertrand and Morse (2016) and Drechsel-Grau and Schmid (2014), respectively, who



discover a positive association between the total consumption of the rich and the total consumption of the non-rich.

***Regressions with consumption categories:***

Next, we estimate equation (1), separately over different consumption categories. We expect to see a positive correlation between the visible consumption categories of the rich and non-rich households. We do not expect any correlation for non-visible consumption categories.

We consider four consumption categories: Personal care (which includes hairdressing salons and personal grooming establishments; electrical appliances for personal care; other appliance, articles and products for personal care); restaurants, cafés and bars; housing; and food and non-alcoholic beverages.

Regression results are presented in Tables 3-6. In the tables, three different definitions are used for reference consumption  $C_{it}^R$ : average total consumption (shown as “Total C” in the tables), the average consumption on the consumption category of interest (“Item C”), and average income (“Income”) of the reference group. These results are reported in columns a, b and c respectively. For example, in Table 3a, which reports the results for personal care expenditures,  $C_{it}^R$  corresponds to total consumption expenditures of the rich in the “Total C” column (column a) and to personal care expenditures of the rich in the “Item C” column (column b). Consumption of the poor is added to the regressions to address the concerns for endogeneity discussed above. As before, reference groups are determined based on both education-geography groups and age-geography groups.

Since personal care spending is mostly visible and can be used to signal status, we expect a positive correlation between the consumption of the rich and the non-rich. Furthermore, we expect this relation to hold especially for the households that are closer to the rich in the income distribution. As shown in Table 3a, a positive correlation is observed for the households in the 20<sup>th</sup>-90<sup>th</sup>, 70<sup>th</sup>-90<sup>th</sup>, and 50<sup>th</sup>-90<sup>th</sup> percentiles of the income distribution when reference groups are defined according to education and geography. Using the estimates for  $Y_{it}$  as the benchmark, the magnitudes of the estimates for the reference group effect are sizable; therefore, it is clear that the correlation between the consumption of the rich and the non-rich is non-negligible. The effect is especially strong when  $C_{it}^R$  is taken as the average personal care spending of the rich (columns b) compared to average total spending of the rich (columns a). In other words, higher personal care spending by the richest 10% is associated with a rise in the personal care spending of the households in the lower percentiles. We can be assured that the result is not generated by an upward shift of the entire distribution, since consumption of the poorest 10% is not significant in the regressions. With reference groups defined according to age and geography (columns d and e), the results are weaker: the only cases in which we detect a positive correlation are the item correlations (“Item C”) in the 70<sup>th</sup>-90<sup>th</sup> and 50<sup>th</sup>-90<sup>th</sup> percentiles. Another finding is that the income of the richest 10% is positively correlated with personal care spending of those in the 70<sup>th</sup>-90<sup>th</sup> and 50<sup>th</sup>-90<sup>th</sup> percentiles.

Table 3b presents the results for robustness checks for personal care expenditures. In these regressions, we drop the households for which the consumption in one of the consumption categories is greater than or equal to fifty percent of their total consumption as in Bertrand and Morse (2016)<sup>9</sup>. For brevity, we only present the results for education-geography reference groups. With the new and smaller sample, the main result of a positive correlation between the households in the top 10% and those in the 20<sup>th</sup>-90<sup>th</sup>, 70<sup>th</sup>-90<sup>th</sup>, and 50<sup>th</sup>-90<sup>th</sup> percentiles is still valid. Unlike the findings in Table 3a, the effect of the income of the rich disappears in the robustness check. The estimate in the “Income” column for the 20<sup>th</sup>-90<sup>th</sup> percentiles, although statistically significant, is economically small. The finding that income of the rich is not positively correlated with the consumption of the non-rich supports our conjecture that the interaction channel is indeed from the consumption of the rich to the consumption of the non-rich. There is no evidence that an economy-wide and long-lasting shock to income causes the personal care consumption of the two groups to be correlated. These provide evidence for the presence of peer effects in consumption decisions for personal care items that is dominantly observed in above average income groups.

Tables 4a and 4b present the results for expenditures on restaurants, cafés, and bars. Qualitatively, the results are strikingly similar to those that we obtained for personal care expenditures. Consumption of the rich is strongly and positively correlated with the consumption of the non-rich, for all four alternative groups of non-rich households (columns b). This means that households in a particular education and geography category emulate the spending of the richest households on restaurants, cafés, and bars in their reference group. The income of the rich is not correlated with the consumption of the non-rich (columns c). The only exception is the 70<sup>th</sup>-90<sup>th</sup> percentiles of the income distribution. This would indicate that a positive income shock to the top percentiles raised the restaurant consumption of all of those above the 70<sup>th</sup> percentile. However, we do not find evidence to support this argument, as the effect is weakened in the robustness checks (Table 4b). The unexpected finding is that when age-based reference groups are used, a negative correlation is observed between the consumption of the rich and the non-rich (columns d). This happens if people in a particular age group do not take the restaurant consumption of the richest people in the same age group as their reference point; they regard them as people in different walks of life. Evidently, when it comes to restaurant spending, it is the richest people in the same education group, not the richest in the same age group, that we consider.

Next, we present the results for expenditures on housing in Tables 5a and 5b. Housing expenditures include rent and imputed rent; maintenance and repair of the dwelling; water supply and miscellaneous services relating to the dwelling; electricity, gas, and other fuels. Items such as water, electricity, and gas are necessities and non-visible expenditures. However, housing consumption category can be regarded at least partly visible since it includes rent and a choice for living in a fancier neighborhood or house usually leads to a higher rent or imputed rent. For this category of consumption, we do not find strong evidence that the non-rich emulate the housing expenditures of the rich compared to those presented in Tables 3-4. The consumption of the rich is not correlated with the consumption the non-rich in either of the four alternative income percentiles of households (Table 5a columns a and b). only in the robustness checks in Table

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<sup>9</sup> A total of 19,677 such households are excluded from the sample evenly distributed throughout the years.

5bThe finding that the income of the rich is positively correlated with the consumption of the non-rich in the 70<sup>th</sup>-90<sup>th</sup>, and 50<sup>th</sup>-90<sup>th</sup> percentiles suggests that the link between the rich and the non-rich households' housing expenditures could be through shared income shocks.

Finally, we test whether our main finding on visible consumption holds for non-visible consumption expenditures. For this purpose, we use expenditures on non-visible non-durable consumption as a counterfactual to test the link between the consumption of the rich and the non-rich in the absence of any motivation for *status signaling*. We use expenditures on food and non-alcoholic beverages consumption at home. This category includes all kinds of food items and non-alcoholic beverages. We exclude items that are seen as luxury consumption in Turkey (fresh, chilled or frozen meat of bovine animals, swine, sheep and goat; dried, salted or smoked meat and edible meat offal; other preserved or processed meat and meat preparations; other fresh, chilled or frozen edible meat). In that regard this category includes mostly consumption items that are necessities. Tables 6a-6b present results. For these categories of consumption, we observe no positive correlation between the consumption of the rich and the non-rich households. The results can be regarded to support that status signaling motive is not observed for this category of consumption and is in line with the findings of Quintana-Domeque & Wohlfart, 2016 and Alessie and Kapteyn (1991).

Finally, Table 7 present the results for all the four consumption categories that are restricted to the 20<sup>th</sup>-70<sup>th</sup> percentiles. These estimations are used as robustness checks were we force endogeneity by introducing a separating gap between the rich households and the rest of the population. The results are similar to the previous findings. Reference consumption is significant for the visible consumption categories, i.e. for personal care and on restaurants, cafés, and bars. For food or housing expenditures that constitute the non-visible consumption categories reference consumption is not significant.

## **6. Discussion and Conclusions**

In this paper, we test the conspicuous consumption hypothesis in Turkey and, in line with the previous literature, we validate that peer effects are an important factor that affects consumption decisions. However, our findings show that peer effects play a role in consumption decisions only in some consumption categories. Our main contribution is that we provide evidence for the surmise that households use visible consumption to signal status.

First, we examine total household consumption and ask whether higher consumption by the rich households motivates other households in the income distribution to consume more. We find only some evidence: Total consumption of households in the 20<sup>th</sup>-90<sup>th</sup> percentiles is positively correlated (at 10% significance level) with the consumption of the richest 10% in the same education-geography group. We would expect a positive correlation to be valid also in the upper half of the distribution, but it is not the case. In the estimations with reference groups based on age and geography, we find evidence that the consumption of the rich influences only those in the upper half of the distribution. In overall, evidence for status signaling is weak at best, when total consumption expenditures are considered. In summary, total consumption of rich households is not a reference point for total consumption of non-rich households in Turkey. This result is fairly

robust to changes in the definition of rich and non-rich household and the reference groups. Hence, we conclude that the earlier result in the literature about total consumption expenditures does not necessarily hold in different settings.

To continue, we repeat the analysis separately for different consumption categories. In doing so, we aim to test whether the influence of rich households' consumption on consumption of households in other income percentiles differs by the consumption category. Specifically, we test whether the effect of reference consumption is consumption category specific.

Our findings using different consumption categories provide support to the status signaling hypothesis, and there is stronger evidence for visible consumption categories. We find that consumption of the rich is influential on non-rich households' consumption on visible items such as personal care and on restaurants, cafés, and bars; but not for non-visible items such as food or housing.

We find that personal care expenditures of the households above the 20<sup>th</sup> income percentile is positively correlated with both total consumption and personal care expenditures of the households in the top 10%, when reference groups are defined according to education and geography. When reference groups are defined according to age and geography, a positive correlation is detected only with personal care expenditures in the 70<sup>th</sup>-90<sup>th</sup> and 50<sup>th</sup>-90<sup>th</sup> percentiles. Further analysis reveals that the interaction channel is indeed from the consumption of the rich to the consumption of the non-rich, and not via an economy-wide and long-lasting income shock that causes the personal care consumption of the two groups to be correlated.

We also find that households spending is affected by the spending of rich households in another highly visible category of consumption: Expenditures on restaurants, cafés, and bars. The results are, qualitatively speaking, strikingly similar to those that we obtained for personal care expenditures. Households emulate the richest households in the same education and geography category. The findings do not persist when age-based reference groups are used. It appears that restaurant spending is influenced by the richest people in the same education group, but not by the richest people in the same age group.

Another category that we study, housing, includes expenditures on items such as water, electricity, and gas that are necessities and non-visible. While, housing can be regarded as partly visible since it includes rent (a fancier home usually has a higher rent or imputed rent) we do not find strong evidence that households are affected by the spending of the rich households in this consumption category. The results for this partly visible category of consumption are weaker compared to those found for the visible items, i.e., personal care and restaurants. This finding can be regarded as evidence that housing is not a category where we observe a significant conspicuous consumption.

We use expenditures on food and non-alcoholic beverages consumption at home as a counterfactual to test whether the same results are obtained in the absence of any motivation for status signaling. Since we excluded items that are seen as luxury food consumption in Turkey this category is composed of food items that are both non-visible and can be regarded as necessity

items. In this consumption category, we observe no positive correlation between the consumption of the rich and the non-rich households. Clearly, the positive correlation observed is a result that is specific to visible consumption and cannot be generalized to all categories of consumption.

Overall, we find supporting evidence that higher consumption of the rich increases the consumption of the other income percentiles, which can be regarded as support for the conspicuous consumption hypothesis. Specifically, people are affected by the consumption of the richest 10% of those with whom they share the same education level and geographic status. However, this motive is not uniform across all consumption categories and is evident for items that are more visible and have a higher ability to signal status. In that regard our results on total consumption contrast with Bertrand and Morse (2016) and Drechsel-Grau and Schmid (2013), who document that, in the US, the rising consumption of the rich within a state has induced the non-rich in the state to consume more. One reason for the difference between the US and Turkish spending patterns can be that Turkish households are more selective in their spending decisions and when exposed to higher spending by the rich they prefer to increase spending on visible items. This can be a result for the higher status signaling motive which is expected as Turkey is a more hierarchical culture compared to the US. Also Turkish households' relatively lower purchasing power compared to the US households can be a reason for their selective spending increase that relies more on visible items.

This paper is the first to examine many different consumption categories separately and to document evidence for peer group effects in consumption decisions for Turkey, a developing economy that has gone through a rapid liberalization period since the 1980s. Specifically, we have shown that households are affected by the consumption decisions of the richest households with the same education level, and that this effect is evident in visible consumption categories such as personal care, dining-out; while we do not find this effect on necessities or non-visible consumption categories.

Our study belongs to the literature that seeks to uncover the role of peer group effects in consumption decisions for different consumption categories. Further research would be to analyze the peer effect for a narrower classification of consumption categories, specifically how the spending on individual items are affected.

We have used the nationally representative dataset from Turkey. Turkey is an ideal setting to this study, for several reasons: It has a socially connected hierarchical culture where a great deal of attention is paid to visible possessions that signal a desired position in the socio-economic hierarchy. A steady migration to urban areas over time has increased the exposure of households to the richer households in the cities. Moreover, among OECD member countries, Turkey still has the highest rate of inequality.

Other venues of research could be to test the effect of interpersonal comparisons in consumption decisions across various countries. Especially how cultural and other country-specific factors affect the conspicuous consumption motive are topics that need further exploration. To test the presence and strength of peer effects across different countries is important for the design of

macroeconomic policy and predicting the results of policy alternatives. We believe our study and findings will make important contribution to the literature by providing new insight and will raise questions for further research into the analysis of peer effects in consumption decisions for Turkey.

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## Appendix

Table 1 shows the sample sizes in each wave of the Household Budget Survey (HBS) and the number of households represented by the samples (estimated based on household weights).

**Table 1. Sample sizes in different waves of the Household Budget Survey (HBS)**

Year	Sample size	Percent	Households represented
2003	25,764	23.74	16,744,495
2004	8,544	7.87	17,096,537
2005	8,551	7.88	17,549,020
2006	8,556	7.88	17,689,552
2007	8,543	7.87	17,337,894
2008	8,549	7.88	17,794,238
2009	10,046	9.26	18,427,322
2010	10,082	9.29	18,808,172
2011	9,918	9.14	19,311,637
2012	9,987	9.20	20,051,454
Total	108,540	100	

Source: Authors' calculations using HBS data.

The HBS asks households detailed questions on consumption expenditures, income, employment status, and demographic characteristics. Consumption expenditures are coded in the survey using 5-digit COICOP (Classification of Individual Consumption by Purpose) codes. They include expenditures on goods and services for current consumption. Under COICOP consumption expenditures are classified under the following 12 main categories: (1) Food and non-alcoholic beverages; (2) Alcoholic beverages, cigarettes and tobacco; (3) Clothing and footwear; (4) Housing, including rent, water, electricity, gas and other fuels; (5) Furniture, home appliances and home care services; (6) Health; (7) Transportation; (8) Communication; (9) Entertainment and culture; (10) Educational services; (11) Restaurants and hotels; (12) Miscellaneous goods and services.

*Consumption expenditures:* include market purchases as well as the consumption of own production, consumption of the stocks of own production, consumption of goods and services brought home from work, cash and non-cash gifts received from organizations or other households, and voluntary contributions to insurance (health, life, motor vehicles and other types of insurance). They exclude transfers to organizations or other households (e.g., cash contributions and gifts), expenditures for saving purposes, and debt repayments. The reference period is the survey month for non-durable consumption and the previous year for durable consumption. As the survey is conducted throughout the year, the value of consumption is adjusted by a monthly price index to account for price changes during the year.

*Household disposable income:* is the sum of disposable incomes of individuals in a household, less the taxes and fees paid by the household and the unilateral transfers to other households. It includes imputed rent. Disposable income of an individual is the sum of the actual payments made to the factors of production (wage, interest, profit, rent), the unilateral transfers from public and private enterprises and from abroad, less indirect taxes and unilateral transfers of the household to the government (such as deductions for social security). Both cash and non-cash income are

included. The reference period for income is the previous calendar year; therefore, the income figures actually represent income in the years 2002-2011. We omitted the households with zero or negative disposable income (9 households) and households with missing consumption data (10 households).<sup>10</sup>

Several questions are asked in the survey to collect information on the demographic characteristics of the household: For each household, data on household type, the number of children, rural versus urban residence and homeownership status are collected. For each individual in the household, data on sex, age and education category, marital status, and labor market status are collected. A description of the variables that represent demographic characteristics is provided below.

### ***Description of the variables used in the study***

For categorical variables, dummy variables are created for each category, as described below:

#### 1) Age categories: Ages

1. 20-24;
2. 25-29;
3. 30-34;
4. 35-39;
5. 40-44;
6. 45-49;
7. 50-54;
8. 55-59;
9. 60-64;
10. 65+.

#### 2) Education categories:

1. Illiterate; literate but no completed education;
2. Elementary school graduate (5 years);
3. Junior high school graduate (8 years);
4. High school graduate;
5. Vocational college graduate;
6. College graduate; more than a college education.

#### 3) Marital status: Never married; Married; Widow/widower; Divorced.

#### 4) Labor market status: Employed; Student; Housewife; Retired; Elderly; Disabled;

#### 5) Homeownership status: Homeowner; Renter; Public housing or employer-provided housing; Other (housing provided by parents, relatives, etc.)

#### 6) Rural versus urban residence: Determined according to population (Settlement areas with a population of 20,001 or more are urban, others are rural)

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<sup>10</sup> These omitted 19 excluded households are dispersed quite evenly across survey years: 2 in 2003, 8 in 2005, 2 in 2006, 5 in 2007, 1 in 2008 and 1 in 2011.

**Table 2. Total consumption**

Income percentiles in the sample:	20 <sup>th</sup> -90 <sup>th</sup> percentiles						70 <sup>th</sup> -90 <sup>th</sup> percentiles					
	Education			Age			Education			Age		
	(a) total c	(b) item c	(c) income	(d) total c	(e) item c	(f) income	(a) total c	(b) item c	(c) income	(d) total c	(e) item c	(f) income
Real household income (Y)	0.701*** (0.0312)	0.698*** (0.0327)	0.674*** (0.0276)	0.709*** (0.0424)	0.709*** (0.0425)	0.709*** (0.0426)	0.530*** (0.0646)	0.502*** (0.0744)	0.503*** (0.0707)	0.379** (0.116)	0.343** (0.110)	0.362** (0.115)
Real household income squared	-1.72e-07 (9.35e-07)	-6.19e-08 (9.86e-07)	3.29e-07 (8.88e-07)	-9.32e-07 (1.49e-06)	-9.24e-07 (1.49e-06)	-9.09e-07 (1.49e-06)	3.18e-06** (1.16e-06)	3.86e-06** (1.45e-06)	3.69e-06** (1.27e-06)	6.26e-06* (3.35e-06)	7.45e-06** (3.15e-06)	6.76e-06* (3.31e-06)
Consumption of the richest 10%	0.0313* (0.0135)			0.0158 (0.0125)			0.0460 (0.0405)			0.0772** (0.0302)		
Consumption of the poorest 10%		-0.0456 (0.0626)			0.0151 (0.0576)			-0.273** (0.111)			-0.283* (0.130)	
Income of the richest 10%			0.0114 (0.00821)			-0.00160 (0.0149)			0.0115 (0.0299)			-0.0102 (0.0287)
Number of observations	57,553	57,553	57,553	58,044	58,044	58,044	15,791	15,791	15,791	16,295	16,295	16,295
R-squared	0.432	0.432	0.434	0.359	0.359	0.359	0.357	0.357	0.358	0.220	0.220	0.219
<b>Income percentiles in the sample:</b>	<b>50<sup>th</sup>-90<sup>th</sup> percentiles</b>						<b>10<sup>th</sup>-50<sup>th</sup> percentiles</b>					
Reference group:	Education			Age			Education			Age		
	(a) total c	(b) item c	(c) income	(d) total c	(e) item c	(f) income	(a) total c	(b) item c	(c) income	(d) total c	(e) item c	(f) income
Real household income (Y)	0.594*** (0.0352)	0.586*** (0.0383)	0.570*** (0.0327)	0.574*** (0.0566)	0.566*** (0.0571)	0.825*** (0.0596)	0.807*** (0.0646)	0.794*** (0.0568)	0.780*** (0.0611)	0.823*** (0.0613)	0.844*** (0.0554)	0.825*** (0.0596)
Real household income squared	2.19e-06** (8.93e-07)	2.41e-06** (9.85e-07)	2.61e-06** (8.74e-07)	2.37e-06 (1.84e-06)	2.68e-06 (1.85e-06)	-3.64e-06 (3.95e-06)	4.60e-08 (3.49e-06)	8.09e-07 (3.01e-06)	1.05e-06 (3.29e-06)	-3.48e-06 (4.08e-06)	-5.30e-06 (3.76e-06)	-3.64e-06 (3.95e-06)
Consumption of the richest 10%	0.0361 (0.0200)			0.0382* (0.0203)			0.0232 (0.0128)			-0.00788 (0.0177)		
Consumption of the poorest 10%		-0.0890 (0.0708)			-0.129 (0.0884)			-0.0216 (0.0603)			0.205** (0.0691)	
Income of the richest 10%			0.0132 (0.0122)			0.00262 (0.0117)			0.0102* (0.00485)			0.00262 (0.0117)
Number of observations	32,081	32,081	32,081	32,935	32,935	33,450	34,338	34,338	34,338	33,450	33,450	33,450
R-squared	0.382	0.382	0.383	0.273	0.273	0.270	0.382	0.382	0.385	0.270	0.270	0.270

Notes: “Total consumption” includes all consumption items. OLS estimates are reported. All regressions include a constant, survey year fixed effects, the number of children, and dummy variables for large families and single adult families. In addition, dummy variables for age category, education category, marital and labor market status of the household reference person are included. Dummy variables for rural versus urban residence and homeownership status are also included. \*\*\* 1%, \*\* 5%, \*10% statistical significance.

**Table 3a. Personal care consumption**

Reference group:	20th-90th percentiles					70th-90th percentiles				
	Education			Age		Education			Age	
	(a) Total C	(b) Item C	(c) Income	(d) Total C	(e) Item C	(a) Total C	(b) Item C	(c) Income	(d) Total C	(e) Item C
Real household income (Y)	0.00780*** (0.00119)	0.00792*** (0.00116)	0.00771*** (0.00114)	0.00783*** (0.00208)	0.00782*** (0.00207)	0.000217 (0.00357)	0.000393 (0.00329)	-0.000790 (0.00334)	-0.00377 (0.00663)	-0.00431 (0.00658)
Y squared	1.37e-07*** (2.80e-08)	1.34e-07*** (2.71e-08)	1.41e-07*** (2.70e-08)	1.29e-07 (7.40e-08)	1.30e-07 (7.38e-08)	2.67e-07*** (6.05e-08)	2.62e-07*** (5.59e-08)	2.93e-07*** (5.51e-08)	3.86e-07* (1.84e-07)	4.03e-07* (1.84e-07)
Richest 10%	0.00131*** (0.000340)	0.0695*** (0.0136)	7.85e-05 (0.000117)	-0.000157 (0.000790)	0.0358 (0.0195)	0.00299** (0.000982)	0.122** (0.0357)	0.000402** (0.000154)	0.00101 (0.00111)	0.107*** (0.0207)
Poorest 10%	0.00169 (0.00208)	-0.108** (0.0441)	-0.00405 (0.00418)	0.00160 (0.00188)	0.0573 (0.0861)	0.00482 (0.00470)	-0.112 (0.0704)	-0.00493 (0.0105)	0.00439 (0.00470)	0.128 (0.139)
Observations	50,633	50,633	50,633	51,451	51,451	14,533	14,533	14,533	15,145	15,145
R-squared	0.160	0.161	0.160	0.107	0.107	0.149	0.149	0.149	0.078	0.078

  

Reference group:	10th-50th percentiles					50th-90th percentiles				
	Education			Age		Education			Age	
	(a) Total C	(b) Item C	(c) Income	(d) Total C	(e) Item C	(a) Total C	(b) Item C	(c) Income	(d) Total C	(e) Item C
Real household income (Y)	0.00649* (0.00292)	0.00734* (0.00311)	0.00686** (0.00287)	0.0144*** (0.00386)	0.0141*** (0.00388)	0.00602** (0.00190)	0.00618*** (0.00175)	0.00566** (0.00177)	0.00407 (0.00289)	0.00415 (0.00289)
Y squared	3.44e-07* (1.66e-07)	2.97e-07 (1.71e-07)	3.22e-07* (1.63e-07)	-2.16e-07 (2.68e-07)	-1.92e-07 (2.67e-07)	1.61e-07*** (4.05e-08)	1.58e-07*** (3.73e-08)	1.72e-07*** (3.77e-08)	2.11e-07* (9.57e-08)	2.09e-07* (9.56e-08)
Richest 10%	-0.000161 (0.000656)	0.0229 (0.0233)	7.97e-07 (0.000221)	-0.000508 (0.000669)	-0.0359 (0.0273)	0.00221** (0.000792)	0.101** (0.0297)	0.000239** (9.66e-05)	-8.64e-07 (0.00111)	0.0829*** (0.0227)
Poorest 10%	-0.00448** (0.00162)	-0.0260 (0.0594)	0.000513 (0.00622)	0.00371 (0.00236)	-0.00795 (0.0406)	0.00512 (0.00391)	-0.167** (0.0500)	-0.00554 (0.00362)	0.000154 (0.00208)	0.0747 (0.107)
Observations	28,773	28,773	28,773	25,211	25,211	28,998	28,998	28,998	30,156	30,156
R-squared	0.134	0.134	0.134	0.083	0.083	0.154	0.155	0.154	0.086	0.087

Notes: “Personal care” category includes hairdressing salons and personal grooming establishments; electrical appliances for personal care; other appliance, articles and products for personal care. These expenditures are part of “miscellaneous goods and services”. OLS estimates are reported. All regressions include a constant, survey year fixed effects, the number of children, and dummy variables for large families and single adult families. In addition, dummy variables for age category, education category, marital and labor market status of the household reference person are included. Dummy variables for rural versus urban residence and homeownership status are also included. \*\*\* 1%, \*\* 5%, \*10% statistical significance.

**Table 3b. Personal care consumption (Robustness check of Table 3a)**

Reference group:	20th-90th percentiles			70th-90th percentiles		
	Education			Education		
	(a) Total C	(b) Item C	(c) Income	(a) Total C	(b) Item C	(c) Income
Real household income (Y)	0.00834*** (0.00131)	0.00850*** (0.00129)	0.00837*** (0.00126)	0.00147 (0.00361)	0.00143 (0.00330)	0.000746 (0.00328)
Y squared	1.38e-07*** (3.17e-08)	1.35e-07*** (3.10e-08)	1.37e-07*** (3.09e-08)	2.48e-07*** (6.53e-08)	2.52e-07*** (5.95e-08)	2.69e-07*** (5.85e-08)
Richest 10%	0.00151*** (0.000234)	0.0526*** (0.0138)	0.000621* (0.000264)	0.00363** (0.00134)	0.0925** (0.0349)	0.00102 (0.00103)
Poorest 10%	0.00201 (0.00210)	-0.0770 (0.0457)	-0.0142*** (0.00355)	0.00881 (0.00485)	-0.0559 (0.0837)	-0.00769 (0.00709)
Observations	40,479	40,416	40,479	12,187	12,161	12,187
R-squared	0.156	0.156	0.156	0.152	0.151	0.151

  

Reference group:	10th-50th percentiles			50th-90th percentiles		
	Education			Education		
	(a) Total C	(b) Item C	(c) Income	(a) Total C	(b) Item C	(c) Income
Real household income (Y)	0.00611* (0.00281)	0.00662* (0.00292)	0.00743** (0.00286)	0.00631** (0.00208)	0.00648** (0.00195)	0.00618** (0.00195)
Y squared	4.20e-07** (1.41e-07)	3.85e-07** (1.43e-07)	3.48e-07** (1.37e-07)	1.67e-07*** (4.56e-08)	1.65e-07*** (4.24e-08)	1.72e-07*** (4.28e-08)
Richest 10%	-0.000133 (0.000785)	0.0171 (0.0253)	0.000179 (0.000661)	0.00241** (0.000869)	0.0785* (0.0348)	0.00108 (0.000578)
Poorest 10%	-0.00580 (0.00310)	0.00779 (0.0613)	-0.0117* (0.00553)	0.00472 (0.00490)	-0.154** (0.0454)	-0.0124*** (0.00188)
Observations	21,911	21,890	21,911	23,910	23,865	23,910
R-squared	0.130	0.130	0.130	0.152	0.152	0.152

Notes: See Notes to Table 3a.

**Table 4a. Restaurants, cafés and bars**

Reference group:	20th-90th percentiles					70th-90th percentiles				
	Education			Age		Education			Age	
	(a) Total C	(b) Item C	(c) Income	(d) Total C	(e) Item C	(a) Total C	(b) Item C	(c) Income	(d) Total C	(e) Item C
Real household income (Y)	0.0172*** (0.00284)	0.0174*** (0.00291)	0.0171*** (0.00284)	0.0174*** (0.00479)	0.0175*** (0.00484)	0.00921 (0.00761)	0.00943 (0.00779)	0.00864 (0.00725)	0.00599 (0.0177)	0.00880 (0.0185)
Y squared	2.33e-07** (8.91e-08)	2.28e-07** (9.04e-08)	2.34e-07** (9.03e-08)	1.99e-07 (1.62e-07)	1.96e-07 (1.64e-07)	3.00e-07 (1.89e-07)	3.03e-07 (1.95e-07)	3.17e-07 (1.89e-07)	4.96e-07 (4.54e-07)	4.12e-07 (4.69e-07)
Richest 10%	0.00396** (0.00163)	0.0455*** (0.0130)	0.00164 (0.00115)	-0.00762** (0.00261)	-0.0254 (0.0174)	0.00959* (0.00429)	0.101*** (0.0245)	0.00527** (0.00220)	-0.0120** (0.00373)	0.0325 (0.0532)
Poorest 10%	0.00711 (0.00709)	0.176 (0.124)	-0.0477** (0.0159)	0.0121* (0.00533)	0.0130 (0.0943)	-0.0191 (0.0179)	0.0758 (0.140)	-0.0480 (0.0331)	-0.0146 (0.0225)	-0.425* (0.201)
Observations	35,783	35,783	35,783	36,311	36,311	11,189	11,189	11,189	11,918	11,918
R-squared	0.099	0.099	0.099	0.065	0.064	0.094	0.094	0.094	0.052	0.052

Reference group:	10th-50th percentiles					50th-90th percentiles				
	Education			Age		Education			Age	
	(a) Total C	(b) Item C	(c) Income	(d) Total C	(e) Item C	(a) Total C	(b) Item C	(c) Income	(d) Total C	(e) Item C
Real household income (Y)	0.00246 (0.00505)	0.00392 (0.00431)	0.00388 (0.00500)	0.00647 (0.0156)	0.00406 (0.0155)	0.0157** (0.00558)	0.0158** (0.00579)	0.0156** (0.00545)	0.0165* (0.00824)	0.0171* (0.00845)
Y squared	7.39e-07** (2.43e-07)	6.77e-07*** (1.86e-07)	6.83e-07** (2.40e-07)	6.87e-07 (9.80e-07)	8.68e-07 (9.49e-07)	2.78e-07* (1.25e-07)	2.77e-07* (1.32e-07)	2.81e-07* (1.27e-07)	2.42e-07 (2.46e-07)	2.19e-07 (2.52e-07)
Richest 10%	0.00238* (0.00110)	0.0381** (0.0129)	0.000103 (0.000717)	-0.00400 (0.00303)	-0.00897 (0.0337)	0.00464 (0.00262)	0.0397** (0.0153)	0.00223 (0.00163)	-0.00964** (0.00339)	-0.0169 (0.0310)
Poorest 10%	0.0102 (0.00791)	0.188 (0.119)	-0.0441*** (0.0124)	0.0262** (0.00926)	0.0869 (0.108)	0.00216 (0.00997)	0.134 (0.136)	-0.0451 (0.0267)	-8.49e-05 (0.00960)	-0.105 (0.116)
Observations	18,423	18,423	18,423	17,313	17,313	21,640	21,640	21,640	22,683	22,683
R-squared	0.084	0.084	0.084	0.035	0.034	0.092	0.092	0.092	0.059	0.059

Notes: “Restaurants, cafés and bars” category is a sub-category of the “restaurants and hotels” category and it only includes expenditures on restaurants, cafés and bars. It excludes catering services, canteens, and accommodation services. OLS estimates are reported. All regressions include a constant, survey year fixed effects, the number of children, and dummy variables for large families and single adult families. In addition, dummy variables for age category, education category, marital and labor market status of the household reference person are included. Dummy variables for rural versus urban residence and homeownership status are also included. \*\*\* 1%, \*\* 5%, \*10% statistical significance.



**Table 4b. Restaurants, cafés and bars (Robustness check of Table 4a)**

	20th-90th percentiles			70th-90th percentiles		
	Education			Education		
	(a) Total C	(b) Item C	(c) Income	(a) Total C	(b) Item C	(c) Income
Real household income (Y)	0.0152*** (0.00276)	0.0153*** (0.00280)	0.0152*** (0.00281)	0.00738 (0.00728)	0.00757 (0.00713)	0.00682 (0.00713)
Y squared	2.80e-07** (8.32e-08)	2.80e-07** (8.48e-08)	2.81e-07** (8.63e-08)	3.47e-07* (1.69e-07)	3.53e-07* (1.66e-07)	3.68e-07* (1.73e-07)
Richest 10%	0.00478** (0.00168)	0.0462** (0.0144)	0.00177 (0.00124)	0.0124** (0.00413)	0.115*** (0.0250)	0.00605* (0.00261)
Poorest 10%	0.00314 (0.00969)	0.108 (0.0947)	-0.0428** (0.0147)	-0.0357 (0.0243)	0.0115 (0.0952)	-0.0382 (0.0284)
Observations	31,934	31,875	31,934	10,175	10,150	10,175
R-squared	0.107	0.107	0.107	0.111	0.110	0.110

  

	10th-50th percentiles			50th-90th percentiles		
	Education			Education		
	(a) Total C	(b) Item C	(c) Income	(a) Total C	(b) Item C	(c) Income
Real household income (Y)	0.00107 (0.00458)	0.00210 (0.00438)	0.00227 (0.00494)	0.0138* (0.00593)	0.0137* (0.00599)	0.0139** (0.00584)
Y squared	8.44e-07*** (1.82e-07)	8.04e-07*** (1.56e-07)	8.01e-07*** (2.03e-07)	3.29e-07** (1.21e-07)	3.34e-07** (1.24e-07)	3.28e-07** (1.23e-07)
Richest 10%	0.00244* (0.00110)	0.0309* (0.0160)	-0.000184 (0.000846)	0.00595* (0.00263)	0.0409** (0.0169)	0.00261 (0.00178)
Poorest 10%	0.00937 (0.00913)	0.164 (0.0933)	-0.0338** (0.0137)	-0.00617 (0.0137)	0.0499 (0.106)	-0.0429 (0.0259)
Observations	16,035	16,012	16,035	19,596	19,556	19,596
R-squared	0.084	0.084	0.084	0.103	0.103	0.103

Notes: See Notes to Table 4a.

**Table 5a. Housing**

	20th-90th percentiles					70th-90th percentiles				
	Education			Age		Education			Age	
	(a) Total C	(b) Item C	(c) Income	(d) Total C	(e) Item C	(a) Total C	(b) Item C	(c) Income	(d) Total C	(e) Item C
Real household income (Y)	0.158*** (0.0174)	0.158*** (0.0174)	0.156*** (0.0170)	0.218*** (0.0234)	0.219*** (0.0226)	0.0564* (0.0240)	0.0588** (0.0236)	0.0533* (0.0234)	0.215*** (0.0547)	0.214*** (0.0504)
Y squared	-6.69e-07 (6.50e-07)	-6.83e-07 (6.57e-07)	-6.07e-07 (6.40e-07)	-2.92e-06*** (6.75e-07)	-2.96e-06*** (6.47e-07)	1.27e-06 (7.53e-07)	1.24e-06 (7.32e-07)	1.32e-06 (7.46e-07)	-2.73e-06* (1.40e-06)	-2.74e-06* (1.27e-06)
Richest 10%	0.00560 (0.00352)	0.0105 (0.0102)	0.00800* (0.00360)	-0.00817 (0.00745)	0.000656 (0.0295)	0.0187 (0.0138)	0.0597 (0.0492)	0.0275* (0.0131)	-0.00227 (0.0106)	0.0176 (0.0487)
Poorest 10%	-0.0414 (0.0343)	0.0623 (0.108)	0.183** (0.0542)	0.0178 (0.0220)	0.105*** (0.0225)	-0.146 (0.0868)	-0.265 (0.202)	0.152 (0.0998)	-0.0839 (0.0457)	-0.124 (0.103)
Observations	57,553	57,553	57,553	58,043	58,043	15,791	15,791	15,791	16,295	16,295
R-squared	0.372	0.372	0.373	0.326	0.326	0.318	0.318	0.319	0.255	0.255

	10th -50th percentiles					50th-90th percentiles				
	Education			Age		Education			Age	
	(a) Total C	(b) Item C	(c) Income	(d) Total C	(e) Item C	(a) Total C	(b) Item C	(c) Income	(d) Total C	(e) Item C
Real household income (Y)	0.299*** (0.0123)	0.303*** (0.0130)	0.283*** (0.0134)	0.288*** (0.0525)	0.295*** (0.0534)	0.106*** (0.0181)	0.107*** (0.0178)	0.104*** (0.0180)	0.189*** (0.0339)	0.190*** (0.0321)
Y squared	-4.92e-06*** (5.96e-07)	-5.23e-06*** (5.84e-07)	-4.06e-06*** (7.20e-07)	-5.43e-06 (2.99e-06)	-5.98e-06* (3.06e-06)	4.42e-07 (6.17e-07)	4.34e-07 (6.14e-07)	4.79e-07 (6.12e-07)	-2.11e-06** (8.87e-07)	-2.16e-06** (8.27e-07)
Richest 10%	0.00135 (0.00307)	0.00595 (0.0126)	-0.000245 (0.00333)	-0.00582 (0.00597)	-0.0125 (0.0182)	0.00960 (0.00797)	0.0150 (0.0211)	0.0156* (0.00744)	-0.0105 (0.00872)	0.00557 (0.0381)
Poorest 10%	0.0327 (0.0270)	0.326*** (0.0693)	0.181** (0.0531)	0.0949*** (0.0176)	0.311*** (0.0345)	-0.101 (0.0563)	-0.146 (0.147)	0.129 (0.0740)	-0.0507* (0.0263)	-0.0613 (0.0565)
Observations	34,337	34,337	34,337	33,448	33,448	32,081	32,081	32,081	32,935	32,935
R-squared	0.380	0.381	0.381	0.334	0.334	0.343	0.343	0.344	0.282	0.282

Notes: “Housing” category includes rent and imputed rent; maintenance and repair of the dwelling; water supply and miscellaneous services relating to the dwelling; electricity, gas and other fuels. OLS estimates are reported. All regressions include a constant, survey year fixed effects, the number of children, and dummy variables for large families and single adult families. In addition, dummy variables for age category, education category, marital and labor market status of the household reference person are included. Dummy variables for rural versus urban residence and homeownership status are also included. \*\*\* 1%, \*\* 5%, \*10% statistical significance.

**Table 5b. Housing (Robustness check of Table 5a)**

Reference group:	20th-90th percentiles			70th-90th percentiles		
	Education			Education		
	(a) Total C	(b) Item C	(c) Income	(a) Total C	(b) Item C	(c) Income
Real household income (Y)	0.141*** (0.0149)	0.141*** (0.0150)	0.139*** (0.0144)	0.0487* (0.0253)	0.0465 (0.0251)	0.0437 (0.0242)
Y squared	-4.11e-07 (5.24e-07)	-4.09e-07 (5.30e-07)	-3.44e-07 (5.10e-07)	1.39e-06* (6.78e-07)	1.45e-06* (6.78e-07)	1.50e-06** (6.33e-07)
Richest 10%	0.00758 (0.00436)	0.0137 (0.0182)	0.00493* (0.00237)	0.0175** (0.00709)	0.0313 (0.0264)	0.0157* (0.00792)
Poorest 10%	-0.0439** (0.0181)	-0.0253 (0.0801)	0.157** (0.0645)	-0.128** (0.0489)	-0.258 (0.178)	0.148 (0.0990)
Observations	48,663	48,663	48,663	14,009	14,009	14,009
R-squared	0.462	0.462	0.463	0.432	0.432	0.433

  

Reference group:	10th-50th percentiles			50th-90th percentiles		
	Education			Education		
	(a) Total C	(b) Item C	(c) Income	(a) Total C	(b) Item C	(c) Income
Real household income (Y)	0.272*** (0.0129)	0.276*** (0.0125)	0.258*** (0.0142)	0.0927*** (0.0181)	0.0920*** (0.0182)	0.0904*** (0.0171)
Y squared	-3.92e-06*** (7.11e-07)	-4.15e-06*** (6.71e-07)	-3.13e-06*** (8.14e-07)	5.95e-07 (5.48e-07)	6.17e-07 (5.51e-07)	6.59e-07 (5.16e-07)
Richest 10%	0.00258 (0.00291)	0.0118 (0.0162)	-0.000158 (0.00334)	0.0120* (0.00579)	0.0219 (0.0192)	0.0101** (0.00398)
Poorest 10%	0.0382* (0.0164)	0.242** (0.0713)	0.148** (0.0477)	-0.102** (0.0332)	-0.202 (0.115)	0.129 (0.0805)
Observations	27,602	27,602	27,602	27,990	27,990	27,990
R-squared	0.454	0.455	0.455	0.439	0.438	0.439

Notes: See Notes to Table 5a.

**Table 6a. Food and non-alcoholic beverages**

Reference group:	20th-90th percentiles					70th-90th percentiles				
	Education			Age		Education			Age	
	(a) Total C	(b) Item C	(c) Income	(d) Total C	(e) Item C	(a) Total C	(b) Item C	(c) Income	(d) Total C	(e) Item C
Real household income (Y)	0.105*** (0.00808)	0.105*** (0.00826)	0.105*** (0.00830)	0.120*** (0.0126)	0.120*** (0.0124)	0.0908*** (0.00942)	0.0932*** (0.00959)	0.0913*** (0.00946)	0.0497* (0.0230)	0.0586* (0.0260)
Y squared	-1.47e-06*** (1.92e-07)	-1.48e-06*** (2.00e-07)	-1.48e-06*** (2.02e-07)	-2.08e-06*** (4.20e-07)	-2.07e-06*** (4.16e-07)	-1.05e-06*** (1.94e-07)	-1.12e-06*** (1.92e-07)	-1.07e-06*** (1.87e-07)	-2.02e-07 (6.25e-07)	-4.54e-07 (6.81e-07)
Richest 10%	-0.00308 (0.00298)	0.0184 (0.0264)	-0.000160 (0.000981)	-0.00538 (0.00495)	-0.0494 (0.0346)	-0.00433 (0.00442)	0.0376 (0.0606)	-0.00142 (0.00130)	0.00362 (0.00529)	-0.0463 (0.0623)
Poorest 10%	-0.00576 (0.00892)	0.00164 (0.0371)	-0.00311 (0.0142)	-7.27e-05 (0.00591)	0.0944*** (0.0241)	-0.00569 (0.0326)	-0.152 (0.147)	0.0356 (0.0197)	-0.0477** (0.0180)	-0.125 (0.0815)
Observations	57,525	57,525	57,525	58,027	58,027	15,791	15,791	15,791	16,293	16,293
R-squared	0.186	0.186	0.186	0.197	0.197	0.109	0.109	0.109	0.147	0.147

  

Reference group:	10th-50th percentiles					50th-90th percentiles				
	Education			Age		Education			Age	
	(a) Total C	(b) Item C	(c) Income	(d) Total C	(e) Item C	(a) Total C	(b) Item C	(c) Income	(d) Total C	(e) Item C
Real household income (Y)	0.159*** (0.0139)	0.161*** (0.0144)	0.162*** (0.0146)	0.210*** (0.0416)	0.198*** (0.0334)	0.0886*** (0.00980)	0.0893*** (0.00983)	0.0888*** (0.00976)	0.0830*** (0.0155)	0.0849*** (0.0156)
Y squared	-3.66e-06*** (6.12e-07)	-3.74e-06*** (6.33e-07)	-3.82e-06*** (6.33e-07)	-7.11e-06** (2.48e-06)	-6.35e-06** (1.97e-06)	-1.09e-06*** (1.85e-07)	-1.12e-06*** (1.89e-07)	-1.10e-06*** (1.86e-07)	-1.04e-06** (4.40e-07)	-1.11e-06** (4.43e-07)
Richest 10%	0.000677 (0.00305)	0.0416 (0.0410)	0.00175 (0.00137)	-0.00956 (0.00576)	-0.0114 (0.0746)	-0.00587 (0.00312)	-0.00714 (0.0325)	-0.00130 (0.00100)	-0.00106 (0.00496)	-0.0626 (0.0462)
Poorest 10%	-0.0155** (0.00556)	0.0229 (0.0570)	-0.0344 (0.0212)	0.0374** (0.0112)	0.274*** (0.0471)	0.00294 (0.0155)	-0.0237 (0.0661)	0.0296 (0.0189)	-0.0265* (0.0133)	-0.0266 (0.0456)
Observations	34,301	34,301	34,301	33,418	33,418	32,074	32,074	32,074	32,933	32,933
R-squared	0.179	0.179	0.179	0.175	0.176	0.134	0.133	0.133	0.154	0.154

Notes: “Food” category includes all kinds of food items but excludes fresh, chilled or frozen meat of bovine animals, swine, sheep and goat; dried, salted or smoked meat and edible meat offal; other preserved or processed meat and meat preparations; other fresh, chilled or frozen edible meat. OLS estimates are reported. All regressions include a constant, survey year fixed effects, the number of children, and dummy variables for large families and single adult families. In addition, dummy variables for age category, education category, marital and labor market status of the household reference person are included. Dummy variables for rural versus urban residence and homeownership status are also included. \*\*\* 1%, \*\* 5%, \*10% statistical significance.

**Table 6b. Food and non-alcoholic beverages (Robustness check of Table 6a)**

Reference group:	20th-90th percentiles			70th-90th percentiles		
	Education			Education		
	(a) Total C	(b) Item C	(c) Income	(a) Total C	(b) Item C	(c) Income
Real household income (Y)	0.108*** (0.00934)	0.108*** (0.00939)	0.108*** (0.00948)	0.0962*** (0.0114)	0.0992*** (0.0123)	0.0979*** (0.0117)
Y squared	-1.55e-06*** (2.26e-07)	-1.56e-06*** (2.29e-07)	-1.57e-06*** (2.34e-07)	-1.10e-06*** (2.12e-07)	-1.18e-06*** (2.28e-07)	-1.15e-06*** (2.18e-07)
Richest 10%	-0.00400 (0.00258)	0.00910 (0.0291)	7.83e-05 (0.000569)	-0.00542* (0.00230)	0.0360 (0.0437)	-0.00244* (0.00116)
Poorest 10%	-0.0309*** (0.00860)	0.0549 (0.0317)	-0.00262 (0.0221)	-0.0508** (0.0208)	-0.0459 (0.108)	0.0339 (0.0213)
Observations	48,660	48,660	48,660	14,009	14,009	14,009
R-squared	0.187	0.187	0.186	0.111	0.111	0.111

  

Reference group:	10th-50th percentiles			50th-90th percentiles		
	Education			Education		
	(a) Total C	(b) Item C	(c) Income	(a) Total C	(b) Item C	(c) Income
Real household income (Y)	0.178*** (0.0150)	0.179*** (0.0149)	0.181*** (0.0151)	0.0910*** (0.0108)	0.0916*** (0.0109)	0.0917*** (0.0108)
Y squared	-4.37e-06*** (7.24e-07)	-4.45e-06*** (7.16e-07)	-4.56e-06*** (7.16e-07)	-1.15e-06*** (1.95e-07)	-1.17e-06*** (2.03e-07)	-1.17e-06*** (2.02e-07)
Richest 10%	-0.000475 (0.00252)	0.0490 (0.0372)	0.00158 (0.00135)	-0.00637* (0.00301)	-0.0202 (0.0283)	-0.000922 (0.000752)
Poorest 10%	-0.0305* (0.0144)	0.0430 (0.0597)	-0.0259 (0.0234)	-0.0265*** (0.00435)	0.0510 (0.0450)	0.0194 (0.0191)
Observations	27,602	27,602	27,602	27,988	27,988	27,988
R-squared	0.181	0.181	0.181	0.135	0.135	0.135

Notes: See Notes to Table Table 6a.

**Table 7. Robustness check of Tables 3,4,5,6**

20th-90th percentiles						
Reference group:	Restaurants, cafés and bars			Personal care		
	(a) Total C	(b) Item C	(c) Income	(a) Total C	(b) Item C	(c) Income
Real household income (Y)	0.0144** (0.00478)	0.0159** (0.00536)	0.0160** (0.00489)	0.00680*** (0.00122)	0.00719*** (0.00124)	0.00721*** (0.00117)
Y squared	1.38e-07 (1.45e-07)	8.74e-08 (1.72e-07)	8.58e-08 (1.49e-07)	2.25e-07*** (4.94e-08)	2.09e-07*** (4.97e-08)	2.08e-07*** (5.05e-08)
Richest 10%	0.00220* (0.00104)	0.0319* (0.0144)	0.000497 (0.000985)	0.000452* (0.000219)	0.0415*** (0.00919)	0.000387 (0.000297)
Poorest 10%	0.0133** (0.00545)	0.204 (0.151)	-0.0506** (0.0146)	-0.000717 (0.00140)	-0.101* (0.0523)	-0.0125** (0.00438)
Observations	19,279	19,279	19,279	36,100	36,100	36,100
R-squared	0.083	0.084	0.084	0.147	0.147	0.147

  

Reference group:	Housing			Food and non-alcoholic beverages		
	(a) Total C	(b) Item C	(c) Income	(a) Total C	(b) Item C	(c) Income
Real household income (Y)	0.265*** (0.00856)	0.268*** (0.00849)	0.257*** (0.00647)	0.136*** (0.00835)	0.136*** (0.00875)	0.138*** (0.00962)
Y squared	-4.14e-06*** (3.87e-07)	-4.25e-06*** (4.17e-07)	-3.81e-06*** (3.05e-07)	-2.57e-06*** (3.15e-07)	-2.60e-06*** (3.36e-07)	-2.66e-06*** (3.74e-07)
Richest 10%	4.62e-05 (0.00327)	-0.00913 (0.0236)	-0.000980 (0.00380)	-0.00242 (0.00279)	0.0114 (0.0277)	9.49e-05 (0.00104)
Poorest 10%	0.00348 (0.0228)	0.202** (0.0785)	0.179*** (0.0488)	-0.00351 (0.00713)	0.0450 (0.0273)	-0.0302 (0.0243)
Observations	41,762	41,762	41,762	41,734	41,734	41,734
R-squared	0.382	0.382	0.383	0.168	0.168	0.168

Notes: The table reports OLS estimates for four categories: Restaurants, cafés and bars; Personal care; Housing; Food and non-alcoholic beverages. All regressions include a constant, survey year fixed effects, the number of children, and dummy variables for large families and single adult families. In addition, dummy variables for age category, education category, marital and labor market status of the household reference person are included. Dummy variables for rural versus urban residence and homeownership status are also included. \*\*\* 1%, \*\* 5%, \*10% statistical significance