Why do consumers keep up with the Joneses?

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Bertrand and Morse (2012) suggest that conspicuous consumption is caused by supply-driven demand channel instead of status-seeking motive as in Veblen (1899). This paper examines twelve expenditure categories of consumption in Korea and finds evidence for status-seeking motive channel, supply-driven demand channel, and trickle-down income channel which shed light on why consumers in Korea keep up with the Joneses. This paper, however, finds that conspicuous consumption exhibited by consumers in Korea is most attributable to the supply-driven demand channel, followed in order of significance by the status-seeking motive channel and the trickle-down income channel.

Key Words: Conspicuous Consumption, Keeping up with the Joneses, Supply-driven Demand Channel, Trickle-down Income

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Ⅰ. Introduction

Businessweek declared on January 11, 2011, "Conspicuous consumption is back. Rich Americans are not only shopping again. They're showing off their purchases,···" Conspicuous consumption is not a new phenomenon; in fact, it dates back to the nineteenth century. Veblen (1899) introduced the term "conspicuous consumption" to describe the behavior of the nouveau riche who gained entry into the upper class through their accumulation of capital wealth during the Second Industrial Revolution. These nouveau rich displayed their income and great wealth through lavish spending on visible goods to seek or maintain their high social status and power. This status-seeking motive is considered to be the most important reason behind conspicuous consumption. The term conspicuous consumption also described the behavior of the Joneses, a prominent New York family in the late nineteenth century, who competed with other old money New Yorkers to outdo one another by building grander and grander country villas in the Hudson Valley. Thus, conspicuous consumption is sometimes referred to as keeping up with the Joneses.

Conspicuous consumption, however, may not only apply to the consumption behavior of the rich but also of the middle class and the poor. Duesenberry (1949) argued that a person's conspicuous consumption psychologically depends not only on the actual level of spending, but also depends on his spending relative to the spending of other people. The conspicuous consumer is motivated by the importance to him of the opinion of other social and economic reference groups. According to Charles, Hurst, and Roussainov (2009), conspicuous consumption is an ambiguous signal of personal affluence. It is a sign of belonging to a relatively poor group. Visible luxury thus serves less to establish the owner's positive status as affluent than to fend off the negative perception that the owner is poor. Bertrand and Morse (2012) refer to conspicuous consumption as trickle-down consumption since rising consumption among rich households induce non-rich households to consume more without fully reducing their other consumption. Hence, they find that households exposed to more consumption by the rich face more financial difficulties such as personal

bankruptcies since consumers may not be rational.

Conspicuous consumption, however, does not necessarily indicate that consumers are irrational. As Heffetz (2011) shows it is possible for a rational consumer to engage in conspicuous consumption. Following Ireland (1994), Heffetz (2011) assumes that consumers care about others' beliefs about their utility. When there are visible goods and nonvisible goods, he shows that consumers allocate larger budget shares to visible goods in order to differentiate themselves from poorer consumers. Abel (1990) also develops a utility maximizing relative consumption model or catching up with the Joneses model.[1] Chao and Schor (1998) attribute brand buying patterns among women's cosmetic products to product visibility. Charles, Hurst, and Roussainov (2009) show that black and Hispanic households devote larger budget shares to visible expenditures than other U.S. households do. They then demonstrate that a simple conspicuous consumption model can predict these differences from observed differences in group income.

Kim (2012) shows that conspicuous consumption may be due to a trickle-down income channel rather than a status-seeking motive. According to the trickle-down income channel, if the rich have more income, they will spend more on haircuts, restaurant meals, and expensive cars, which are usually produced by non-rich workers and hence will increase the income of the non-rich workers. The non-rich workers would then increase their consumption due to their own higher income, which also makes consumption appear to trickle down. In other words, when the income of the rich household increases, it suggests that the income of the non-rich households may also increase in the future, which means that their permanent income increases. Therefore, it is possible for the higher income of the rich households to cause consumption of the rich as well as the non-rich households to increase.

Similarly conspicuous consumption can be due to a supply-driven demand channel instead of a status-seeking motive or trickle-down income channel.

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1) Abel (1990) calls the model catching up with the Joneses instead of keeping up with the Joneses since consumers care about their consumption relative to the lagged value of aggregate consumption in the economy.

Bertrand and Morse (2012) conjecture that in addition to a status-seeking motive, supply-driven demand channel may play a more prominent role in explaining conspicuous consumption. As the income of the rich increases, the supply of rich goods increases such as domestic and business services, hair salons, health clubs, and recreational services. Then the non-rich will end up consuming more of these goods or services due to the increased supply.

By examining twelve expenditure categories of consumption, this paper examines which of the channels - the status-seeking motive channel, the supply-driven demand channel, or the trickle-down income channel – play a more significant role in explaining why consumers in Korea keep up with the Joneses. If the supply-driven demand channel is more dominant in explaining why consumers in Korea keep up with the Joneses, the consumption of a particular expenditure category, instead of total consumption, will be more pivotal in helping to predict other income groups' consumption of the same expenditure category. For example, increased supply of hair salons will induce other consumers to frequent them more and increased number of restaurants will induce other consumers to eat out more. Furthermore, if the supply-driven demand channel is more dominant, the consumption of a particular expenditure category should not be affected by the change in the consumption of other expenditure categories or total consumption[2] since the supply of goods in the expenditure category has not changed. If a status-seeking motive is more dominant, on the other hand, an increase in consumption of a particular expenditure category does not matter, but rather the increase in consumption of any one of the expenditure categories matters. If a consumer's neighbor buys an expensive car, he can instead go on an expensive vacation to maintain his social status. As long as consumption increases in any of the expenditure categories, that will induce other consumers to increase their consumption in some of the expenditure categories in order to keep up with

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2) Strictly speaking, we need to test if total consumption minus the consumption of a particular expenditure category helps to predict the consumption of the same expenditure category. Yet, this test is equivalent to the test where total consumption helps to predict the consumption of the same expenditure category since our regression always include past values of the consumption of a particular expenditure category.

the Joneses. Therefore, if the consumption of a particular expenditure category is affected by a change in the consumption of other expenditure categories, it implies that the status-seeking motive channel plays a more dominant role in conspicuous consumption than the supply-driven demand channel.

First, this paper examines if consumers in Korea keep up with the Joneses by testing whether total consumption of one group is useful in predicting consumption of other income groups among twelve expenditure categories of consumption. Second, this paper examines whether a particular expenditure category of consumption of one group helps to predict other income groups' consumption of the same expenditure category. Third, this paper examines whether income of one group helps to predict other income groups' consumption of expenditure categories. Fourth, this paper examines which is more useful in predicting the consumption of an expenditure category: total consumption, consumption of the same expenditure category, or income of the other income groups. This paper finds that total consumption, consumption of an expenditure category, and income all help to predict other income groups' consumption of the same expenditure category. In other words, this paper finds that consumers in Korea keep up with the Joneses because of a status-seeking motive, supply-driven demand channel, and trickle-down income channel. Although the dominant explanation for keeping up with the Joneses may be different among the twelve expenditure categories of consumption, this paper finds that the supply-driven demand channel plays a more dominant role than the status-seeking motive channel, followed by the trickle-down income channel.

Ⅱ. Data

We use the Household Income and Expenditure Survey from the Korean Statistical Information Services, http://kosis.kr/. Specifically, we use the quarterly urban household data in the Household Trends Survey with new classification for the period from 1990:Q1 to 2012:Q2. The survey presents the household data in various forms. We use the household data which are

divided into ten groups by their household income: the top 10% household income (Group 10), the second top 10% household income (Group 9),···, the tenth top 10% household income (Group 1).[3] We use consumption expenditures, income, current taxes, non-regular taxes, public pension payments, and social insurance payments for all households in the survey. Total consumption is comprised of the following twelve expenditure categories: (1) food and soft drinks (denoted as food in this paper), (2) alcoholic beverages and cigarette (denoted as alcohol in this paper), (3) clothing and footwear (denoted as clothing in this paper), (4) housing, water, electricity, gas, and other fuels (denoted as housing in this paper), (5) household equipment and housekeeping services (denoted as household equipment in this paper), (6) health, (7) transportation, (8) communication, (9) entertainment and culture (denoted as entertainment in this paper), (10) education, (11) restaurants and hotels (denoted as restaurant in this paper), and (12) other miscellaneous goods and services[4] (denoted as other goods in this paper). The data is all in nominal variables and hence are deflated to 2010 using Consumer Price Index, which are also obtained from the Korean Statistical Information Services, http://kosis.kr/. We compute disposal income as income minus current taxes, non-regular taxes, public pension payments, and social insurance payments.

Table 1 shows the summary statistics of the average consumption in the twelve expenditure categories and disposable income for each income group. For all income groups, the biggest expenditure turns out to be food. For income groups in the top half, the next biggest expenditures are either transportation or education. For income groups in the bottom 30% the next biggest expenditures are housing, followed by either education or restaurant. Since Korean parents emphasize education, it is not surprising to see education as one of the top three expenditures in Korea. If we examine three years of the most recent data (2009:3-2012:2), education expenditure turns out to be even more paramount[5]: it was the largest expenditure for

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3) We also examine the data set grouped into five by household income, but it does not affect our results qualitatively, and hence is omitted here.

4) Other goods include salon services, salon equipments, cosmetics, watches, jewelry, bags, social services, insurance payments, financial service fees, and real estate transaction fees.

5) This table is omitted in this paper but is available upon request.

income groups in the top 40%. Since housing in the survey includes only rents paid, the data ignore the implicit housing expenditures paid by home owners and Jeonse contractors, who post Jeonse deposits for the duration of the rental contract period. Therefore, the data on housing for the upper income groups who are more likely to own houses or have Jeonse contracts would be underestimated. That is why housing expenditures for the upper income households are rather modest.

Table 2 shows the measures of rich and visible expenditures. Ratio A measures the ratio of the expenditure of the income group in the top 10% to that of the income group in the bottom 10% in each expenditure category. Higher ratios imply that rich households spend more on a particular expenditure category than poor households, implying it is an expenditure more for the rich. Ratio B measures the ratio of the budget share of the income group in the top 10% to that of the income group in the bottom 10% in each expenditure category which is how Bertrand and Morse (2012) define rich goods. Once again, higher ratios imply that rich households spend more on a particular expenditure category than poor households, implying it is an expenditure more for the rich. Vindex is computed for Korean consumption expenditures using Heffetz's (2011) Vindex. Heffetz (2011) conducted a national telephone survey from May 2004 to February 2005 in the U.S., and constructed a visibility index. Since the consumption expenditure categories in the U.S. and Korea are different, we construct a modified visibility index based on Heffetz's (2011) Vindex. Since this is a visibility measure constructed in the U.S., however, we have to be careful in our interpretation of Vindex since it may be different in Korea. Table 2 suggests that other goods, transportation, household equipment, education, entertainment, clothing, and restaurant are expenditures more for the rich according to ratio A and ratio B while alcohol, entertainment, education, restaurant, household equipment, and food are more visible expenditures according to Vindex. This paper will examine if consumption on these rich and visible goods is more likely to predict consumption of other income groups.[6]

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6) Since dividing consumption into only twelve expenditure categories may be too broad to accurately distinguish rich or visible goods from non-rich or less visible goods, we plan to

Table 2 also shows that Ratio A of total consumption is 3.8 while that of disposable income is 9.8. In other words, the income group in the top 10% consumes 3.8 times more than the income group in the bottom 10% while the income of the income group in the top 10% is 9.8 times larger than that of the income group in the bottom 10%. The income gap is a significantly larger than the consumption gap between the rich and the poor in Korea which is consistent with Krueger and Perri (2006) who argue that the increase in income inequality has not been mirrored in consumption inequality.

Ⅲ. Empirical tests

1. Keeping up with the Joneses

We start by examining if consumers in Korea try to keep up with the Joneses. We examine if total consumption of one income group will help to predict other income groups' consumption of a particular expenditure category. We test if c_t^j Granger-causes $c_t^{i,k}$ by regressing $c_t^{i,k}$ on its past values and past values of c_t^j where c_t^j denotes total consumption of household group j at time t and $c_t^{i,k}$ denotes consumption of category k of household group i at time t :

$$c_t^{i,k} = \beta_0 + \beta_1 c_{t-1}^{i,k} + \cdots + \beta_8 c_{t-8}^{i,k} + \beta_9 c_{t-1}^{j} + \cdots + \beta_{16} c_{t-8}^{j} + \varepsilon_t \quad (1)$$

We then test the following null hypothesis: $H_0 : \beta_9 = ... = \beta_{16} = 0$. The left hand side of Table 3 shows the number of cases where p-values for $H_0 : \beta_9 = ... = \beta_{16} = 0$ are less than 0.10.[7],[8] With ten income groups,

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examine more detailed categories of expenditures in our future research.

7) We also use the number of lags equal to 4 or 12, which does not affect our results qualitatively, and hence is omitted here.

8) Since consumption is a random walk under the permanent income hypothesis, regressing consumption onto another consumption may cause spurious regression. Using first differences

there exist ninety cases to consider since this paper examines if one income group affects other income groups. As Table 3 shows, there exists a wide range of number of significant cases: out of 90 possible cases, there are 70 significant cases for food and 5 significant cases for communication. The last row also shows the case in which only total consumption is examined: in 43 out of 90 cases, the total consumption in one income group helps to predict other income groups' total consumption. The table shows that some part of conspicuous consumption will be lost by examining only total consumption instead of examining twelve expenditure categories of consumption. The table also divides the number of significant cases into trickle-up cases where lower income groups affect higher income groups and trickle-down cases where higher income groups affect lower income groups. There seem to be more trickle-down cases than trickle-up cases: on average, there are 16 significant trickle-up cases and 25 significant trickle-down cases.

Although consumption is a random walk under the permanent income hypothesis as Hall (1978) shows, many researchers such as Flavin (1981) and Campbell and Mankiw (1989, 1990, 1991) have shown that income helps to predict consumption. Hence, we modify equation (1) by including past incomes of income group i where y_t^i denotes disposable income of income group i at time t:

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\begin{aligned}
c_t^{i,k} = {} & \beta_0 + \beta_1 c_{t-1}^{i,k} + \cdots + \beta_8 c_{t-8}^{i,k} + \beta_9 c_{t-1}^j + \cdots \\
& + \beta_{16} c_{t-8}^j + \gamma_1 y_{t-1}^i + \cdots + \gamma_8 y_{t-8}^i + \varepsilon_t
\end{aligned}
\tag{2}
$$

The right hand side of Table 3 shows that including the past incomes significantly reduces the number of significant cases where the total consumption of one income group helps to predict other income groups' consumption of an expenditure category. But on average we still find trickle-down consumption in 16 out of 45 cases and trickle-up consumption

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of the data, however, does not affect our results qualitatively, and hence is omitted here. As Bertrand and Morse (2012) use the data in levels, we also report the results using the data in levels.

in 6 out of 45 cases. Total consumption of other income group seems more likely to predict consumption of the following expenditure categories: food, housing, household equipment, and restaurant. In all consumption expenditure categories, there exists total consumption of some other income groups which helps to predict its future consumption of the expenditure category. We find that consumers keep up with the Joneses and that consumption seems to trickle down more than trickle up. Furthermore, if supply-driven demand channel is the only dominant explanation for keeping up with the Joneses, changes in consumption of the other expenditure categories or total consumption should not affect the consumption of a particular expenditure category since the supply of that particular expenditure category has not changed. Therefore, Table 3 suggests that the status-seeking motive channel may play an important role in many expenditure categories of consumption in inducing consumers to keep up with the Joneses

2. The trickle-down income channel

Kim (2012) finds that income significantly trickles down as well as up. Although not discussed as often, income trickles not only down, but it is equally possible that income trickles up. When middle class households have more income, they buy more goods or services and hence firms will make more profits, which are more likely to be distributed to the rich. Hence, it is likely that the income of one income group will influence the income of other income groups regardless of whether the other income groups are richer or poorer.

Since Kim (2012) finds that the income of one income group helps to predict the income of other income groups and the total consumption of one income group helps to predict the total consumption of other income groups, this paper needs to test if income is the driving force behind all these predictions. Since income, which helps to predict the consumption of its earners, helps to predict the income of other income groups, which in turn helps to predict the consumption of other income groups, it could be income which causes consumption to appear to predict the consumption of

other income groups. Therefore, we test if y_t^j Granger-causes $c_t^{i,k}$ by regressing $c_t^{i,k}$ on its past values and past values of y_t^j:

$$c_t^{i,k} = \beta_0 + \beta_1 c_{t-1}^{i,k} + \cdots + \beta_8 c_{t-8}^{i,k} + \beta_9 y_{t-1}^j + \cdots + \beta_{16} y_{t-8}^j + \varepsilon_t \quad (3)$$

The left hand side of Table 4 shows the number of cases where p-values for $H_0 : \beta_9 = ... = \beta_{16} = 0$ are less than 0.10. The table finds that on average the income in one income group helps to predict other income groups' consumption of an expenditure category in 44 cases, which are less than 77 cases for total consumption as shown in Kim (2012).

Also, we modify equation (3) by including its own past incomes since the permanent income hypothesis is known to fail and income is useful in predicting the consumption of its earners:

$$c_t^{i,k} = \beta_0 + \beta_1 c_{t-1}^{i,k} + \cdots + \beta_8 c_{t-8}^{i,k} + \beta_9 y_{t-1}^j + \cdots$$
$$+ \beta_{16} y_{t-8}^j + \gamma_1 y_{t-1}^i + \cdots + \gamma_8 y_{t-8}^i + \varepsilon_t \quad (4)$$

The right hand side of Table 4 shows that the number of cases where p-values for $H_0 : \beta_9 = ... = \beta_{16} = 0$ are less than 0.10. Table 4 shows that there exist on average 24 cases where the income in one income group helps to predict other income groups' consumption of an expenditure category even after controlling for its own past incomes. Once again, this is less than the number of significant cases for total consumption, which is 35. We expect that income is more useful in predicting total consumption than the consumption of an expenditure category since each expenditure category of consumption depends more on consumers' tastes and preferences than their income. The table, however, still finds that significant trickle-down and trickle-up income effects exist behind trickle-down and trickle-up consumption. We find that the income from higher income groups helps to predict the consumption of an expenditure category of the lower income group in 15 out of 45 cases and the income from lower income groups helps to predict the consumption of an expenditure category of the

higher income groups in 9 out of 45 cases. In other words, income seems to trickle down more than trickle up.

3. The supply-driven demand channel

As discussed in the introduction, the consumption of an expenditure category rather than total consumption will help to predict other income groups' consumption of the same expenditure category if the supply-driven demand channel is more dominant. Hence, we now examine if the consumption of an expenditure category is important in predicting other income groups' consumption of the same expenditure category.

We start by examining if consumption of an expenditure category of one income group will help to predict other income groups' consumption of the same expenditure category. We test if $c_t^{j,k}$ Granger-causes $c_t^{i,k}$ by regressing $c_t^{i,k}$ on its past values and past values of $c_t^{j,k}$:

$$c_t^{i,k} = \beta_0 + \beta_1 c_{t-1}^{i,k} + \cdots + \beta_8 c_{t-8}^{i,k} + \beta_9 c_{t-1}^{j,k} + \cdots + \beta_{16} c_{t-8}^{j,k} + \varepsilon_t \quad (5)$$

The left hand side of Table 5 shows the number of cases where p-values for $H_0 : \beta_9 = ... = \beta_{16} = 0$ are less than 0.10. The right hand side of Table 5 modifies equation (5) by including their own past incomes and shows the number of cases where p-values for $H_0 : \beta_9 = ... = \beta_{16} = 0$ are less than 0.10 in the following regression:

$$c_t^{i,k} = \beta_0 + \beta_1 c_{t-1}^{i,k} + \cdots + \beta_8 c_{t-8}^{i,k} + \beta_9 c_{t-1}^{j,k} + \cdots$$
$$+ \beta_{16} c_{t-8}^{j,k} + \gamma_1 y_{t-1}^i + \cdots + \gamma_8 y_{t-8}^i + \varepsilon_t \quad (6)$$

As Table 5 shows, even after including their own past incomes, there exist many cases in which one income group's consumption of an expenditure category helps to predict other income groups' consumption of the same expenditure category. Once income is included in the regression,

on average the consumption of a particular expenditure category seems to predict other income groups' consumption of the same expenditure category more than total consumption does. Table 5 shows 34 cases for the consumption of an expenditure category compared to 21 cases for total consumption in Table 3. This suggests that the supply-driven demand channel may play a dominant role in keeping up with the Joneses although the status-seeking motive channel may still be an important factor even in these cases. Communication has the highest number of significant cases, 67 or 68 cases out of 90. A supply of new smart phones would seem to strongly induce other consumers to buy them. Consumption of clothing, housing, and entertainment also seem to be predicted more by other income groups' consumption of an expenditure category. The table shows that there exists a significant number of trickle-up as well as trickle-down cases. In contrast to Bertrand and Morse (2012), supply-driven demand can be caused by the non-rich as well as the rich. As the non-rich enjoy more movies, more theaters will be built, which may induce the rich to watch more movies.

Table 3 shows that when total consumption of one income group increases, consumption on clothing of other income groups does not increase very much: only 12 cases out of 90 cases. In other words, clothing may not be the expenditure category of choice if consumers want to show off their social status. But Table 5 shows that when one group's consumption of clothing increases, consumption of clothing of other income groups often increases: 38 cases out of 90 cases. Consumers are not likely to choose clothing in order to show off their social status. When other consumers consume more clothing, however, more clothing shops open up, which induces other consumers to increase their consumption of clothing. Namely, the supply-driven demand channel may be important in clothing. This is also true for health and entertainment. In other words, consumers do not seem to increase their consumption of clothing, health, and entertainment to show off their social status, but they seem to increase their consumption because there are more supplies.

4. Why do consumers keep up with the Joneses?

Lastly, we examine whether the status-seeking motive channel, the supply-driven demand channel, or the trickle-down income channel is more important in causing consumers to keep up with the Joneses. Namely, we compare consumption of the same expenditure category, total consumption, and income of the other income groups to see which variable is most useful in predicting the consumption of an expenditure category. If the status-seeking motive channel is important, total consumption should be more useful; if the supply-driven demand channel is important, the consumption of an expenditure category should be more useful; if the trickle-down income channel is important, income should be more useful. We regress $c_t^{i,k}$ on its past values, its past values of y_t^i, as well as past values of $c_t^{j,k}$, c_t^j and y_t^j:

$$
\begin{aligned}
c_t^{i,k} =\ & \beta_0 + \beta_1 c_{t-1}^{i,k} + \cdots + \beta_8 c_{t-8}^{i,k} + \beta_9 c_{t-1}^{j,k} + \cdots \\
& + \beta_{16} c_{t-8}^{j,k} + \beta_{17} c_{t-1}^j + \cdots + \beta_{24} c_{t-8}^j \\
& + \gamma_1 y_{t-1}^i + \cdots + \gamma_8 y_{t-8}^i + \gamma_9 y_{t-1}^j + \cdots + \gamma_{16} y_{t-8}^j + \varepsilon_t \quad (7)
\end{aligned}
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The left third of Table 6 shows the number of cases where the null hypothesis, $H_0 : \beta_9 = ... = \beta_{16} = 0$, is rejected at the 10% significant level, the middle third shows the number of cases where the null hypothesis, $H_0 : \beta_{17} = ... = \beta_{24} = 0$, is rejected at the 10% significant level, and the right third shows the number of cases where the null hypothesis, $H_0 : \gamma_9 = ... = \gamma_{16} = 0$, is rejected at the 10% significant level.

Table 6 shows that on average the consumption of an expenditure category of one income group helps to predict the consumption of the same expenditure category of other income groups in 27 out of 90 cases; on average total consumption of one income group helps to predict the consumption of an expenditure category of other income groups in 17 out of 90 cases; and income of one income group helps to predict the consumption of an expenditure category of other income groups in 14 out

of 90 cases. Although the table finds all three variables help to predict the consumption of an expenditure category, the consumption of an expenditure category turns out to be more useful than total consumption in predicting the consumption of the same expenditure category of the other income groups, which is in turn more useful than income. This table implies that the supply-driven demand channel may play a more important role in keeping up with the Joneses than the status-seeking motive channel, which may be more important than the trickle-down income channel.

Among the consumption of an expenditure category, total consumption, and income, the consumption of an expenditure category has the highest number of significant cases in eight expenditure categories: food, alcohol, clothing, housing, health, communication, education, and other goods, where the supply-driven demand channel may play a more significant role in keeping up with the Jones. Total consumption has the highest number of significant cases in three categories: transportation, entertainment, and restaurant, where the status-seeking motive channel may be more important. Income has the highest number of significant cases in only one category: household equipment, where the trickle-down income channel may be more important.

According to Table 6, food, communication, and other goods have more than twice the number of significant cases for the consumption of an expenditure category than those for total consumption: 35 vs 10 for food, 56 vs 15 for communication, and 28 vs 13 for other goods. In these expenditure categories, total consumption is not very useful in predicting the consumption of an expenditure category while the consumption of the same expenditure category is useful, which suggests that the supply-driven demand channel may be more important than the status-seeking motive channel in these expenditure categories. In these expenditure categories, higher total consumption does not induce other consumers to consume more of these goods very much because they may not be the expenditure category of choice if consumers want to show off their social status. But higher consumption of an expenditure category induces consumers to consume more of the same expenditure category because the supply-driven demand channel may be important in these expenditure categories.

   Although we need to present the regression coefficients in order to quantify the economic impact, there are too many cases to report. Hence, we simply present one case to provide a sense of the magnitude.[9] For communication expenditures, income group 9 affects income group 6 in the following way[10]:

Communication expenditures for income group 6

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= \frac{0.22}{(0.28)} \times \text{past communication expenditures for income group 6}
$$

$$
+ \frac{0.58^{**}}{(0.24)} \times \text{past communication expenditures for income group 9}
$$

$$
+ \frac{0.04^{***}}{(0.01)} \times \text{past total expenditures for income group 9}
$$

$$
- \frac{0.01}{(0.02)} \times \text{past incomes for income group 6}
$$

$$
- \frac{0.01}{(0.01)} \times \text{past incomes for income group 9} \tag{8}
$$

Standard errors are in parentheses. *** and ** represent 1% and 5% significance respectively. Both communication expenditures and total expenditures for income group 9 significantly help to predict the future communication expenditure for income group 6. When the communication expenditure for income group 9 increases by 100 won, for example, the communication expenditure for income group 6 increases by 58 won. When the total expenditure for income group 9 increases by 100 won, the communication expenditure for income group 6 increases by 4 won. In other words, communication expenditures are influenced by the communication expenditures of other income groups quantitatively much more than by total expenditures of other income groups. Since communication expenditures are not rich goods nor visible goods according to Table 2, they are more likely to be influenced by the supply-driven

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9) Since the estimates vary widely among different cases, the estimates here should be taken as an example.

10) We report the sums of coefficients to save space here.

demand channel rather than by the status-seeking motive channel. This result is slightly different from Bertrand and Morse (2012) where they find that total expenditures of rich do not significantly affect phone expenditures.[11] They argue that phone expenditures which are non-rich goods with low visibility should not be affected much by the total expenditures of rich households. We find that communication expenditures are also significantly affected by the total expenditures of rich households although their quantitative effect may be small.

Table 6 also computes correlations of total number of significance cases with measures of rich and visible expenditures. Table 6 shows that the correlations of the number of significant cases for total consumption with Ratio A, Ratio B, and Vindex are 0.19, 0.19 and 0.18 respectively. In other words, rich and visible goods tend to have higher number of significant cases, which is consistent with our argument that when total consumption is useful in predicting the consumption of an expenditure category of other income groups, the categories are more likely to be rich and visible expenditure categories and hence the status-seeking motive channel may be important. On the other hand, the correlations of the number of significant cases for the consumption of an expenditure category with Ratio A, Ratio B and Vindex are -0.45, -0.46 and -0.54 respectively. In other words, one income group's consumption of rich and visible goods tends not to be important in predicting other income groups' consumption of the same expenditure category, suggesting that a status-seeking motive channel is not very important in these cases. Instead, the supply-driven demand channel may be more important. The correlations of the number of significant cases for income with Ratio A, Ratio B and Vindex are -0.27, -0.28 and 0.01 respectively. Since income trickles up as well as trickles down, we do not expect higher number of significant cases for rich and visible goods.

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11) Communication expenditures in this paper are similar to phone expenditures in Bertrand and Morse (2012)

Ⅳ. Conclusion

This paper finds that there exists a keeping up with the Joneses effect in Korea. This paper also finds some evidence for the status-seeking motive channel, the supply-driven demand channel, and the trickle-down income channel although the explanation for keeping up with the Joneses may be different among the twelve categories of expenditure consumption. Further, this paper finds that the supply-driven demand channel is more important in keeping up with the Joneses than the status-seeking motive channel, which is more important than the trickle-down income channel. Our desire to show off our status may not be as strong as we think. Instead, we keep up with the Joneses in Korea because our neighbors induce higher supply of goods which in turn induces us to consume more of these goods.

According to Bank of Korea, consumption increased only 1% in the third quarter of 2012 from the third quarter of 2011 while disposable income grew 6.3% in the same period. This is the lowest consumption growth since the Lehman Brothers bankruptcy crisis in the first quarter of 2009, when consumption grew -3.6%. It is generally agreed that we need strong consumption growth to recover from the current recession. This paper suggests one way to stimulate consumption. An increase in consumption of some expenditure categories, such as food, clothing, health, communication, and restaurant, seems to strongly induce households of the other income groups to consume more of the same. Hence, the government may want to stimulate consumption of particular expenditure categories to stimulate more consumption and ultimately the economy. For example, the government may want to encourage Samsung to develop new smart phones quickly since the trickle down and trickle up effect on consumers are strong in the communications expenditure category.

Although this paper examines twelve expenditure categories of consumption, it is still an aggregate data set, and it is possible that trickle-down consumption and trickle-down income are lost in the aggregation. Hence, we plan to examine a panel data set for our next research.

<Table 1> Summary Statistics

Average consumption expenditures and disposable income of each income group for 1990:1 - 2012:2 (2010 Won)

	1-10%	11-20%	21-30%	31-40%	41-50%	51-60%	61-70%	71-80%	81-90%	91-100%
Food	268222	303038	331405	352420	373396	393547	414368	438074	469979	554738
Alcohol	18438	22258	25285	26869	27819	28322	28756	29499	30117	32035
Clothing	50172	69737	86502	100759	115387	132241	148227	168295	198752	285296
Housing	146553	162951	168870	172689	181741	189303	198208	208327	226532	281272
Household equipment	28572	35310	41533	48237	55750	61791	70685	84392	100831	173618
Health	81941	84712	90155	96582	104620	110065	119522	131173	147022	189463
Transportation	84808	114364	151972	181989	207988	234472	271063	307637	382705	540411
Communication	40445	55367	65120	71332	76881	81154	85066	89079	94636	103751
Entertainment	35709	45564	56260	67394	78138	88242	100231	115767	134832	204578
Education	85152	118744	157979	192019	227536	261414	302240	346370	395252	504159
Restaurant	80408	129684	166801	196250	222948	248463	271907	300842	343169	446488
Other goods	63682	87349	109434	128538	145877	163936	183262	210335	251565	449227
Total consumption	971074	1215074	1434261	1616167	1797320	1968954	2165758	2398014	2737551	3723968
Disposable income	696125	1376154	1792835	2151103	2492310	2853026	3257753	3762033	4516252	6816578

<Table 2> Measures of rich or visible expenditures

	Ratio A	Ratio B	Vindex
Food	2.1	0.54	0.51
Alcohol	1.7	0.45	0.69
Clothing	5.7	1.48	0.42
Housing	1.9	0.50	0.41
Household equipment	6.1	1.58	0.51
Health	2.3	0.60	0.36
Transportation	6.4	1.66	0.49
Communication	2.6	0.67	0.40
Entertainment	5.7	1.49	0.60
Education	5.9	1.54	0.56
Restaurant	5.6	1.45	0.56
Other goods	7.1	1.84	0.35
Total consumption	3.8		
Disposable income	9.8		

Ratio A measures the ratio of the expenditure of the income group in the top 10% to that of the income group in the bottom 10%. Ratio B measures the ratio of the budget share of the income group in the top 10% to that of the income group in the bottom 10%. Vindex is computed for Korean consumption expenditures using Heffetz's (2011) Vindex.

<Table 3> Is total consumption useful?

	Is total consumption useful?			Is total consumption useful given income?		
	Total	Trickle-up	Trickle-down	Total	Trickle-up	Trickle-down
Food	70	28	42	28	8	20
Alcohol	24	14	10	22	7	15
Clothing	42	17	25	12	2	10
Housing	44	15	29	31	9	22
Household equipment	55	22	33	30	6	24
Health	15	4	11	10	6	4
Transportation	29	11	18	8	2	6
Communication	5	2	3	28	9	19
Entertainment	54	20	34	16	2	14
Education	53	17	36	21	4	17
Restaurant	57	21	36	32	6	26
Other goods	47	23	24	18	7	11
Average	41.3	16.2	25.1	21.3	5.7	15.7
Total consumption	43	18	25	16	6	10

The table examines if total consumption is useful in predicting other income groups' consumption of an expenditure category. The table reports the number of cases where p-values are less than 0.1.

<Table 4> Is income useful?

	Is income useful?			Is income useful given its own income?		
	Total	Trickle-up	Trickle-down	Total	Trickle-up	Trickle-down
Food	76	39	37	8	4	4
Alcohol	27	10	17	22	7	15
Clothing	82	41	41	29	13	16
Housing	29	10	19	45	21	24
Household equipment	59	30	29	28	13	15
Health	16	0	16	11	4	7
Transportation	24	9	15	7	1	6
Communication	4	0	4	19	6	13
Entertainment	56	23	33	28	10	18
Education	46	21	25	40	14	26
Restaurant	58	21	37	41	14	27
Other goods	55	30	25	13	3	10
Average	44.3	19.5	24.8	24.3	9.2	15.1
Total consumption	77	45	32	35	25	10

The table examines if income is useful in predicting other income groups' consumption of an expenditure category. The table reports the number of cases where p-values are less than 0.1.

<Table 5> Is the consumption of an expenditure category useful?

	Is consumption useful?			Is consumption useful given income?		
	Total	Trickle-up	Trickle-down	Total	Trickle-up	Trickle-down
Food	15	4	11	31	11	20
Alcohol	35	21	14	22	12	10
Clothing	61	23	38	38	13	25
Housing	47	22	25	45	21	24
Household equipment	41	21	20	24	6	18
Health	37	13	24	35	10	25
Transportation	23	12	11	12	10	2
Communication	67	23	44	68	25	43
Entertainment	48	16	32	36	11	25
Education	41	14	27	28	8	20
Restaurant	40	24	16	41	23	18
Other goods	38	19	19	30	19	11
Average	41.1	17.7	23.4	34.2	14.1	20.1
Total consumption	43	18	25	16	6	10

The table examines if the consumption of an expenditure category is useful in predicting other income groups' consumption of an expenditure category. The table reports the number of cases where p-values are less than 0.1.

<Table 6> Which is more useful?

	Consumption in the same expenditure category			Total consumption			Income		
	Total	Trickle-up	Trickle-down	Total	Trickle-up	Trickle-down	Total	Trickle-up	Trickle-down
Food	35	17	18	10	5	5	28	14	14
Alcohol	19	9	10	14	5	9	12	5	7
Clothing	30	16	14	17	11	6	4	2	2
Housing	24	10	14	17	10	7	8	5	3
Household equipment	19	4	15	15	9	6	20	5	15
Health	36	11	25	21	9	12	21	11	10
Transportation	11	10	1	14	8	6	8	5	3
Communication	56	18	38	15	9	6	12	2	10
Entertainment	16	11	5	22	14	8	7	4	3
Education	23	7	16	18	8	10	10	5	5
Restaurant	25	10	15	32	21	11	22	13	9
Other goods	28	20	8	13	5	8	13	7	6
Average	26.8	11.9	14.9	17.3	9.5	7.8	13.8	6.5	7.3
Corr. with Ratio A	-0.45			0.19			-0.27		
Corr. with Ratio B	-0.46			0.19			-0.28		
Corr. with Vindex	-0.54			0.18			0.01		

The table examines which is more useful in predicting other income groups' consumption of an expenditure category: consumption of the same expenditure category, total consumption, or income. The table reports the number of cases where p-values are less than 0.1.

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