Reading Note: Consumption and Habits: Evidence from Panel Data

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The paper shows the existence of habit in consumption decisions with Spanish household panel data. Habit formation—a consumer’s past consumption in the last period has a negative effect on the utility of the present period—is important for solving the puzzles of inconsistencies between empirical evidence and predictions of traditional no-habit life-cycle models. For instance, compared with empirical data, traditional life-cycle models predict excess sensitivity of consumption to permanent income shocks. By introducing habit formation in consumption, consumers react more slowly and smoothly. Some past studies have tried to test the presence of habit formation in consumption. However, most of them used aggregated data and hence did not consider the heterogeneity across households. One exception is the study done by Meghir and Weber in 1996. Meghir and Weber use U.S. household consumption panel data, in which each household was followed for four consecutive quarters, and find no evidence of the presence of habit formation in consumption. However, the paper argues that the number of periods in the data Meghir and Weber use is so small that time-invariant heterogeneity across households cannot be well-controlled, resulting in a biased result. Hence, this paper applies the same methodology that Meghir and Weber use to the Spanish Continuous Family Expenditure Survey, in which households were followed for up to eight consecutive quarters. The paper finds the existence of habit formation in consumption after using the household fixed effect to control time-invariant household characteristics. Also, the paper shows that with or without controlling those time-invariant household characteristics does affect results significantly.

The paper uses a model modified from the rational expectations-permanent income model. The paper assumes a household would maximize its present discounted value of a lifetime utility, which is the sum of each period’s present discounted value of utility. The important feature of this model is that each period’s utility is not only affected by the consumption of goods in this period but also by the consumption in the last period. The utility could also be affected by the household characteristics, allowing the model to consider heterogeneity across households. In addition, households are subject to the standard dynamic budget constraint and a function describing liquidity constraints. To be more specific, the paper only considers three kinds of non-durable goods: food at home, transport, and service. Also, the utility function is a direct transcendental logarithmic utility function with three parts: the utility from consumptions of each good, the utility from the interaction of consumptions of each two goods, and the utility from the interaction of consumptions in this period and last period of each good. Thus, the coefficients of the third part of the utility function are the main focus of the paper. While the coefficients are zero, there is no habit formation in consumption; while the coefficient related to a certain good is negative, there is habit formation in the consumption of that good. Also, to control related factors, the paper assumes that the household characteristics and the prices and quantities of other non-durable goods have a linear effect on the coefficient of each good in the first part of the utility function.

To estimate the coefficients, the paper includes two sources of randomness in the utility function. The first one is the expectational errors at each period, which by the assumption of rational expectation are independent of other variables at that period. The second is the preference shocks, which reflect the random preference change related to each good at each period. Then, by the first-order condition, the paper derives the with-in period marginal rate of substitutions (MRS) of any two goods and the Euler equations. However, the error terms of the equations would be autocorrelated and the estimated coefficients would be biased since the preference shocks may be affected by the time-invariant household characteristics. To adjust the biases, the paper “differences out” the fixed effect of household characteristics in the error terms. The paper refers to the unadjusted estimations as estimates in “levels” and the adjusted estimations as estimates in “differences.” Finally, the paper uses generalized methods of moments to estimate the coefficients. For the coefficients of the third part of the utility function, the paper finds that the estimations in levels are not significant, while the estimations in differences related to food and services are negative and significant. The above results show the existence of habit formation in food and services consumption and the importance of considering the effect of time-invariant household characteristics on the error terms.

The paper successfully improves an already existing model and gets a different result when applying it to a different data set. However, some limitations might still exist. First, omitting variable bias could still exist. Using the fixed-effect method can only control time-invariant household characteristics. Some unobservable household characteristics may change with time and also affect their preferences. Also, it is difficult to control all the prices and quantities of related goods. Omitting them would also cause biased results. Second, it is unknown whether the model specification could represent how households make their consumption choices. Households may have a very different utility function than the direct transcendental logarithmic utility function and the household characteristics and other factors can also affect the utility in a very different way. However, the above limitations could apply to the whole literature but are not specific to the paper.