Consumption and Habits: Evidence from Panel Data

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Allowing for habit formation is important because it may partially solve the equity premium puzzle. But due to limited information on the consumption of data, empirical evidence of habit formation is lacking. This paper chooses three goods: Food, Transport, and Service, and uses a Spanish panel data set, which contains eight consecutive quarters. The time intervals allow the authors to consider time invariant unobserved heterogeneity across households, thus exploring the habit formation of consumption. Their results verify the importance of considering fixed effects during analyzing intertemporal consumption decisions. Before adding fixed effects, there is evidence that preferences are intertemporally separable. But when considering time-invariant unobserved heterogeneity, the authors can confirm the existence of habit formation. Specifically, according to the results of the MRS, Food and Services have significant habit formation, but Transport does not. And the results of the Euler Equation only provide evidence of habit formation in Food.

For the theoretical model, the authors assume that the household maximizes the present discounted value of a lifetime utility. From the first-order conditions of the lifetime utility function, they can obtain the MRS between two goods. In their model, habit persistent implies that the partial derivative of the utility in period $t + 1$ with respect to the consumption of j goods in period t is negative. The authors also use the Euler equation because comparing the MRC and the Euler equation can distinguish between liquidity constraints and intertemporal dependence (habit formation) in preferences. Preferences in this paper are affected by demographic and labor supply variables and other non-durable goods. Moreover, considering fixed effects (time invariant unobserved heterogeneity component) in the model, the authors use the choice variables dated $t - 2$ and earlier as valid instruments to eliminate the endogenous problem. They name the model under the

absence of time invariant component as "levels" and the existence of time invariant component as "differences". Both of them can be estimated by GMM. And each of them has two equations to be estimated - the food versus services and the transport versus services.

For the empirical results, the authors first estimate the model in "levels". The MRC and the Euler equation results show that preferences are intertemporally separable. Thereby there is no habit formation. Also, the Euler equation results can be compatible with those obtained from the MRC, which shows no evidence for liquidity constraints. Subsequently, the authors estimate the model in "differences" to see whether the correlated fixed effects impact the results derived from the model in "levels". The results from the MRS provide evidence of habit formation in food and service, while the results from the Euler equation offer evidence of habit formation in food. Thus, unobserved heterogeneity hides true state dependence, and it is important to consider it in the model. Also, comparing the MRS and the Euler equation results, there is no evidence for liquidity constraints due to adding labour market variables. Finally, the authors calculate the within period elasticity (price elasticity and income elasticity), the intertemporal elasticity of substitution, and the degree of habit formation.

In conclusion, this paper confirms that it is important to consider time invariant unobserved heterogeneity when researchers analyze the existence of habit formation in consumption. The authors use the Spanish data set to find that preferences are intertemporally separable without considering fixed effects. But once fixed effects are added to the model, the results show evidence of habit formation for Food and Services. Also, the coefficients obtained from the MRC and the Euler equations are compatible, implying no liquidity constraints.

In my opinion, the paper also has two limitations. One is that this model cannot compare three goods simultaneously. The authors only compare Food versus Services and Transport versus Services. The other is that the authors may be able to set different values of discounted factor β rather than only one value (0.99) to see whether the results can be impacted.