Abstract

This dissertation studies the consumer demand system by focusing on its functional form. The theoretical part investigates the regularity property of a type of flexible consumer demand systems characterized by its normalized quadratic functional form. The regularity conditions of monotonicity and curvature are two of the axioms of the neoclassical economic theory of the utility maximizing agent under a budget constraint. While other axioms are maintained by construction, these two conditions are only attained in the limited price-income space. We display the regular regions of the model using parameter values estimated from known underlying preferences. The model is estimated using different methods of imposing curvature: global imposition, local imposition, and no imposition. We find that the model often violates the monotonicity condition regardless of the way curvature is imposed. We find a case where imposition of local and global curvature achieves a global regularity within a very large space without causing any biases in estimating the true underlying preference while the unconstrained model produces a non-regular region reflected by the violation of curvature. We also find a case where the globally concave model makes substitute goods more substitute and complement goods more complement.

In the empirical part, functional forms of the consumer demand system which are flexible in the total expenditure are used to estimate the cost of a child using Japanese household expenditure data. The consumer demand system which can describe complicated shapes of Engel curves is necessary to model household behaviors which can vary substantially in the total expenditure level as well as in demographic characteristics. We estimate the equivalence scales for types of households which differ in the number of children as well as in other demographic characteristics. We employ the expenditure-dependent equivalence scales rather than the constant-equivalence scales usually used in the household welfare literature. Moreover, we limit our attention to equivalence scales which are identifiable by demand data alone. A mechanism of identifiably is also discussed. A large number of observations with zero expenditures on some goods are addressed by using Amemiya-Tobit type estimation method to correct potential biases in the parameter estimation. The results show that the Japanese household equivalence scales are decreasing in the total expenditure as well as increasing in number of children. This suggests the intuitively straightforward policy design that the child-support benefits, if any, should depend on household income to preserve equality in welfare levels, which the nature of welfare programs is usually designed to achieve. It also indicates that the new child-support program proposed by the current Japanese government may need to be reevaluated since it does not consider limiting income level for the entitlement.