Quantiles and Averages: Another Look on Nonseparable Models with an Application to Demand

In this talk we discuss regression models where the error variable is not additively separable. The regresion model is of the form $Y = \mu(X, \varepsilon)$, where Y is the response variable, X is a covariable and ε is an unobserved error variable. For the unknown function μ no structural assumptions are made. In particular, it is not assumed that $\mu(x, e)$ can be additively decomposed into $\mu_1(x)+\mu_2(e)$ for two functions μ_1 and μ_2. We are interested in characteristics of the function μ that are identifiable. The problem is motivated by an application in economics. In a nonparametric model for a demand system μ is the individual budget share, i.e. the share of total expenditure of an individuum that is spent by him for one good. The theoretical question is if this choice is according to the theory of utility maximization. Then the random functions $\mu(\cdot, \varepsilon)$ must fulfill certain qualitative constraints.