Further, the issue of regularizattion is discussed.

2 The identification result

Assumption 1. The generalized functions g, f, w_1 and w_{2k}, $k = 1, ..., d$, are in the generalized function space S' and are related by (6).

Any generalized density functions are generalized derivatives of the distribution function and belong to S', convolution equations are defined. For a ordinary function, b, e.g. a regression function of example 2 to belong to S' it is sufficient that it belong to some class of functions on R^d, $\Phi(m, V)$ (with m a vector of integers, V a positive constant) where $b \in \Phi(m, V)$ if

$$\int \Pi \left((1 + t_i^2)^{-1}\right)^{m_i} |b(t)|\, dt < V < \infty. \tag{7}$$

Thus if e.g. b grows no faster than a polynomial, it is in S', so that the analysis here applies to binary choice and polynomial regression. Convolutions with generalized functions from some classes are defined for such functions (as discussed in Zinde-Walsh, 2010). For conditional density of Example 3 some extra assumptions on the joint density of the regressors are required.

Consider now Fourier transforms (Ft) : $\gamma = Ft(g); \phi = Ft(f); \varepsilon_. = Ft(w_.)$.

Assumption 2. Either ϕ or γ is a continuous function such that it satisfies (7).