regarding the decisions of the firm under uncertainty that the *ex post* observations on prices and quantities do embody information regarding the parameters of the demand and cost curves as well as endogenous randomness. For simplicity of exposition reconsider a price fixing firm. Given p^* , the price which the firm fixes *a priori*, the actual level of production by a price fixing firm would be equal to the realized demand. That is,

$$X = (-p^* + \alpha + u)/\beta.$$

If *u* is assumed to be normally distributed with mean 0 and variance σ_u^2 the distribution of *X* is also normal. The expected value of *X* will be $E(X) = (-p^* + \alpha)/\beta$.

Similarly, for a given value of X, the cost C is normally distributed with mean F + mX and variance σ_v^2 . Consequently a risk neutral firm chooses p^* to maximize expected profits $E(\pi)$, where $\pi =$ profit. This results in

expected revenue = $p * (\alpha - p *)/\beta$, and

expected cost = $F + m (\alpha - p^*)/\beta$.

Clearly $(\alpha - p^*)/\beta$ represents the expected market demand at the price chosen by the firm. From these expressions the choice of p^* implied by the expected profit maximization can be written as

$$p^* = (\alpha + m)/2.$$

That is, in general, the decision making process of the management results in p * being chosen as a function of the parameters α , β , F, and m. Hence, the observed values of p *, X, and C contain the requisite information regarding the parameters of the model.

The relevant price-cost margin is $p^* - m = (\alpha - m)/2$. The value of this as well as the factors which explain it depend on some specific parameters of the demand and cost curves. Hence, estimating the reduced form equation representing the price fixation process cannot provide the requisite information appropriately. This suggests that a detailed estimation of the different equations of the model is warranted.

From an econometric viewpoint this creates two related problems. Firstly, the process of price fixation will depend on the parameters of the cost function as well. The observed prices therefore contain some information about the cost curve of the firm. Even this information should be utilized efficiently. For this a simultaneous estimation of the demand and cost curves is warranted. Secondly, the choice of p * implies a deterministic constraint on the parameter space. However, unlike the existing econometric literature, this constraint is data based. The currently available tech-