development economists are comfortable with physical relationships between inputs and outputs, but are unwilling to commit themselves to a neoclassical or "capitalist" view of agriculture in LDCs. Although it is easy to make fun of such "engineering" as opposed to "economic" approaches, there are many cases where misgivings have a real basis. Some markets are not well-developed, and farm inputs are sometimes allocated in ways other than through competitive markets with parametric prices. Second, and consistent with these views, it my impression that it is much more difficult to estimate satisfactory relationships in which inputs and outputs are functions of *prices,* rather than of each other, where the omitted heterogeneity will often guarantee a good if entirely spurious fit. This practical problem will be exacerbated in those cases where there is relatively little price variation across farms. Certainly, it is rare for researchers to report first-stage regressions of inputs on input prices.

When panel data are available, the heterogeneity can be addressed by assuming that it takes the form of additive fixed effects in (29). Consistent estimates of the parameters can then *be* obtained by OLS applied to differences across periods, or to deviations from individual means. Hence, if (29) is rewritten in standard regression form with i denoting the farm, $i = 1, \ldots, n$, and t the time period, $t = 1, \ldots, \boldsymbol{T}$, we have for the differenced estimator

$$AYil \qquad 1111— \tag{30}$$

for t 1, . . , $\boldsymbol{T}$—1, while for the within-estimator, we have $y_{,,} y_{1.} = 13'(x_{,,} x_{i.}) + u_{,,}$

$$— u_{i.} \tag{31}$$

where the suffix {i.} indicates the time mean for farm *i.* Mundlak's (1961) original application of (31) to Israeli farms was designed to remove the effect of "management bias", the heterogeneity that arises from some farmers being better farmers than others.

The ability to deal with heterogeneity does not come without cost, and indeed many of the most important difficulties are recognized in Mundlak's paper. First, the technique depends on the specific functional form for the heterogeneity, that it take the form of an additive fixed effect. There are often good theoretical reasons why this will not be the cast, and there is no straightforward way of dealing with fixed effects in nonlinear models. Second, the differencing or demeaning loses n observations, so that if $\boldsymbol{T}$ is small, as is often the case, there will be a substantial loss in precision. Third, when the x's are positively correlated over time, differencing or demeaning reduces variation, so that once again precision is lost. In the extreme case when some of the x's are constant, there is zero precision, and the parameters are not identified. In the agricultural production case, farm size will usually change