1056-62-931 **Eun-Joo Lee*** (elee@millikin.edu), 1184 W.Main st., Decatur, IL 62522, and **Frits Ruymgaart**. *Improving an existing estimator of the unknown input function.*

We consider the usual estimator of a linear functional of the unknown input function in indirect nonparametric regression models. The unknown regression function which is the parameter of interest, is infinite dimensional. Since the function in a separable Hilbert space has a Fourier expansion in an orthonormal basis, the Fourier coefficients will be estimated. It is surprising to see that the traditional estimator of the Fourier coefficients is not asymptotically efficient according to Hajek-LeCam convolution theorem. Since this estimator, however, is $\sqrt{(n)}$ - consistent, it can be improved in an asymptotic sense. The possible improvement of this estimator will be discussed. We will also compare the improved estimator with the traditional estimator through simulation studies. (Received September 18, 2009)