

# Problems with instrumental variables estimation when the correlation between the ...

[Science](#), [Statistics](#)



Task: Problems with instrumental variable estimation Introduction This work presents the summary of an analysis of the problems that instrumental variable estimation poses when the correlation between the instruments and the endogenous explanatory variable is weak. The analysis is simply a summary of an article written by John Bound, David A. Jaeger and Regina M. Baker, on the same topic.

When conducting a research on any issue, variables that influence the main problem must be determined. Different problems have different number of variables. The number of variables is dependent on the scope and the nature of the problem being researched about. To be able to understand the dynamics of a problem it is important to begin with determining the number of variables involved and the relationship between each variable and the problem. It is also important to understand how the involved variables affect each other or one another. The attempt of various researchers to understand the existing relationship has been unsuccessful under non-experimental scenery (Bound, Jaeger & Baker 443).

The reason for the failure is the fact that some of the variables are endogenous. In other words, the variables are subject to the same factors that influence the research problem. The endogeneity trait of variables makes the ordinary least square biased and inconsistent therefore, making the research conclusion unreliable. Fortunately, there is a method of reducing the influence of variable endogeneity on research outcome has been determined. The method involves the use of an instrumental variable estimation. However, the method also experiences some problems. First,

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insufficient explanation of the variation of the endogenous explanatory variables. This could increase the error standard thus invalidates the research outcome. Secondly, the approximated limited samples are biased in the same magnitude as OLS when the coefficient of determination, ( $R^2$ ), between the instrument and the variables diminishes (Bound, Jaeger & Baker 443)

To conclude, the problems with instrumental variable estimation are insufficient explanation in the deviation of the endogenous variables and the biases of finite samples when the  $R^2$  between the instrument and the variables decreases to zero.

#### Works Cited

Bound, John, David A. Jaeger and Regina M. Baker. "Problems with Instrumental Variables Estimation when the Correlation between the Instruments and the Endogenous." *Journal of The American Statistical Association* 90. 430 (1995): 443. Print.