

IV First Stage Coefficient

In the first stage of an Instrumental Variables (IV) estimation, the F-test is used to assess whether the instrument is weak. This test examines whether the instrument(s) significantly explain the endogenous explanatory variable. A rule of thumb is that the F-statistic should be greater than 10 to avoid weak instrument concerns (Staiger & Stock, 1997).

Regarding the coefficient on the instrument in the first stage:

- Magnitude: The absolute size of the coefficient itself is not necessarily the primary concern. What matters is whether the instrument has strong explanatory power over the endogenous regressor. Even a small coefficient can be fine if it is precisely estimated and leads to a strong first-stage relationship.
- Significance: The coefficient should be statistically significant, as an insignificant coefficient suggests that the instrument does not strongly predict the endogenous variable.
- Direction: While the sign of the coefficient is informative, it is less critical than its strength. However, it does have implications for the interpretation of the second-stage results.

In summary, while the coefficient on the instrument provides useful information about the relationship between the instrument and the endogenous regressor, the primary concern in assessing instrument strength is the F-statistic from the first-stage regression.