Assignment 3 – FIE401

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# Abstract

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# Regression table

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Table 7:

A screenshot of a computer

Description automatically generated

Table 8A:

A table of numbers with black text

Description automatically generated with medium confidence

Table 8B:

A screenshot of a computer

Description automatically generated

# Interpretation of results

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“What does financial literacy mean for stock market participation, statistically

and economically? Is there a noticeable difference between LPM and IV estimates?”

# Assessment of relevance and exogeneity of the instruments

Are they good from your point of view?

A crucial component of Instrumental Variables Regression (IVR) is checking the instrument validity. This means assessing the relevance and exogeneity of the instruments, which are the two assumptions for a valid use of the IV method.

The instruments are **exogenous** if all instruments are uncorrelated with the error term.

Let’s assess the relevance of the instruments (1):

The instruments are **relevant** if a least one instrument must enter the population counterpart of the first stage regression. Another interpretation of this is that at least one of the instruments must be related to our endogenous variable (x-variable, maybe say the name?) to be useful in addressing endogeneity. Essentially it refers to the strength of the relationship between the instruments and the endogenous variable.

1. \*\*Relevance\*\*:

Relevance refers to the strength of the relationship between the instruments and the endogenous variable(s). Instruments should be correlated with the endogenous variable(s) to be useful in addressing endogeneity.

a. \*\*F-Statistic\*\*: Calculate the first-stage F-statistic. It tests whether the instruments are jointly statistically significant in explaining the endogenous variable. A high F-statistic indicates relevance.

b. \*\*Partial F-Statistics\*\*: You can also calculate partial F-statistics for each instrument separately to assess their individual relevance.

c. \*\*Graphical Examination\*\*: Create scatter plots or partial regression plots to visually assess the relationship between each instrument and the endogenous variable.

2. \*\*Exogeneity\*\*:

Exogeneity refers to the assumption that the instruments are uncorrelated with the error term in the structural equation.

a. \*\*Over-Identification Test\*\*: Conduct an over-identification test, such as the Sargan-Hansen test. This test assesses the validity of the exogeneity assumption. A non-rejection of the null hypothesis suggests exogeneity.

b. \*\*Hausman Test\*\*: Compare the IV estimator to the OLS estimator. A non-rejection of the null hypothesis in a Hausman test indicates that the IV estimator is consistent, suggesting exogeneity.

c. \*\*Theoretical Considerations\*\*: Consider the theoretical underpinnings of your model. If the instruments are derived from variables that are exogenous by nature, it provides some evidence of exogeneity.

d. \*\*Instrumental Variable Tests\*\*: There are various diagnostic tests, such as the Durbin-Wu-Hausman test, which can be used to assess the exogeneity of specific instruments.

It's important to remember that assessing the relevance and exogeneity of instruments in IV regression can be complex and may involve several tests and considerations. In practice, you should carefully examine the specific context of your study, the nature of your instruments, and the validity of the underlying assumptions.

Additionally, it's often a good practice to report the results of these assessments in your research paper or report, along with the potential limitations and robustness checks to enhance the credibility of your IV regression results.

# Additional questions

## What reasons do the authors name for using an Instrumental Variable approach? Do you agree with these reasons?

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## After reading the authors’ explanations and assessing the results, are you convinced that both instruments are good?

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