Instrumental Variables and 2SLS

Econ 140, Section 9

Jonathan Old

Roadmap

1. Time for your questions
2. Recap: IV
3. Time for your questions
4. Group work
5. Time for your questions
6. Coding

Any questions?

… Remember – Every question is useful!

Recap: IV

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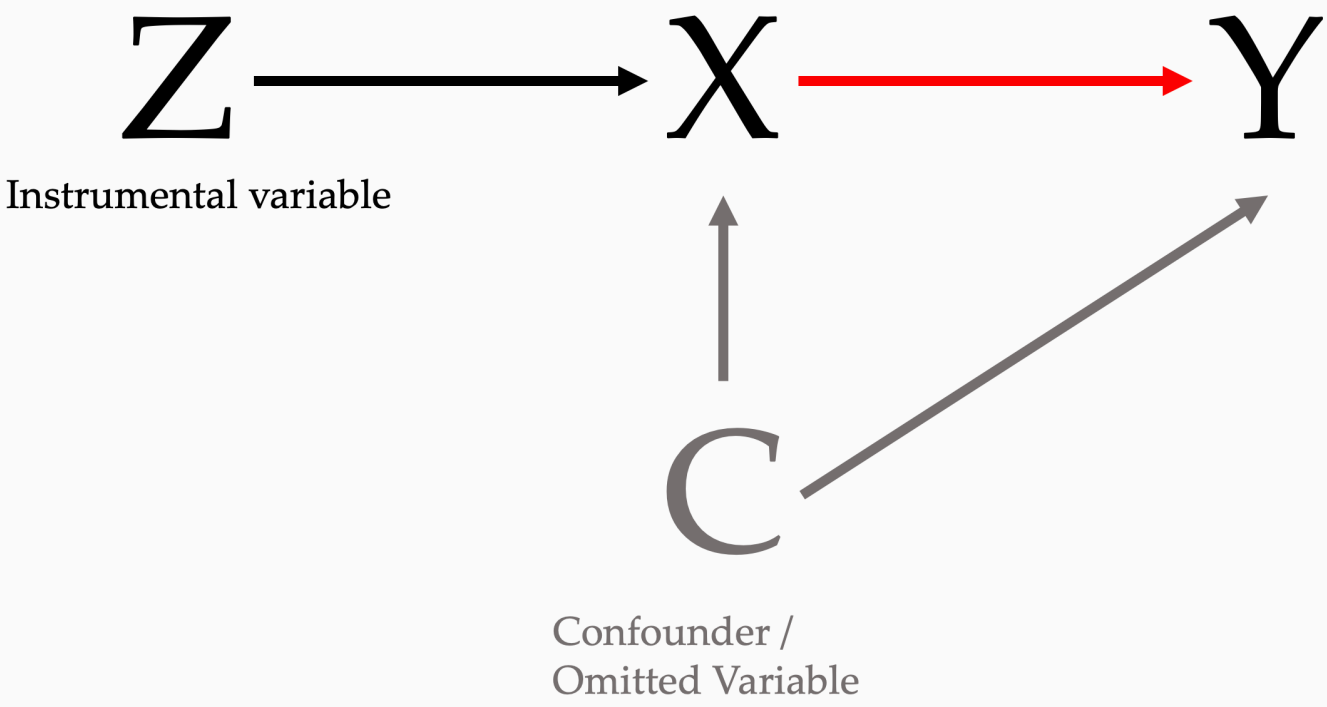
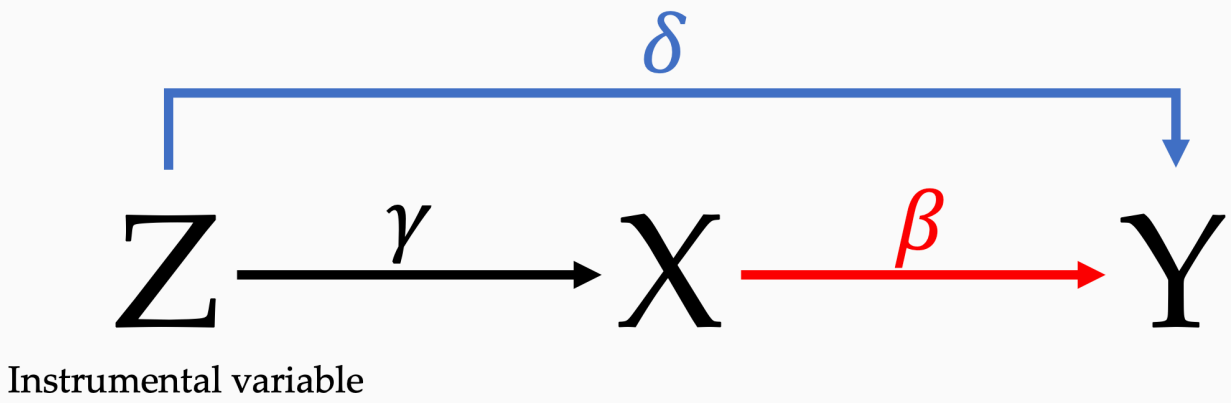


Recap: IV ”rescales” the effect



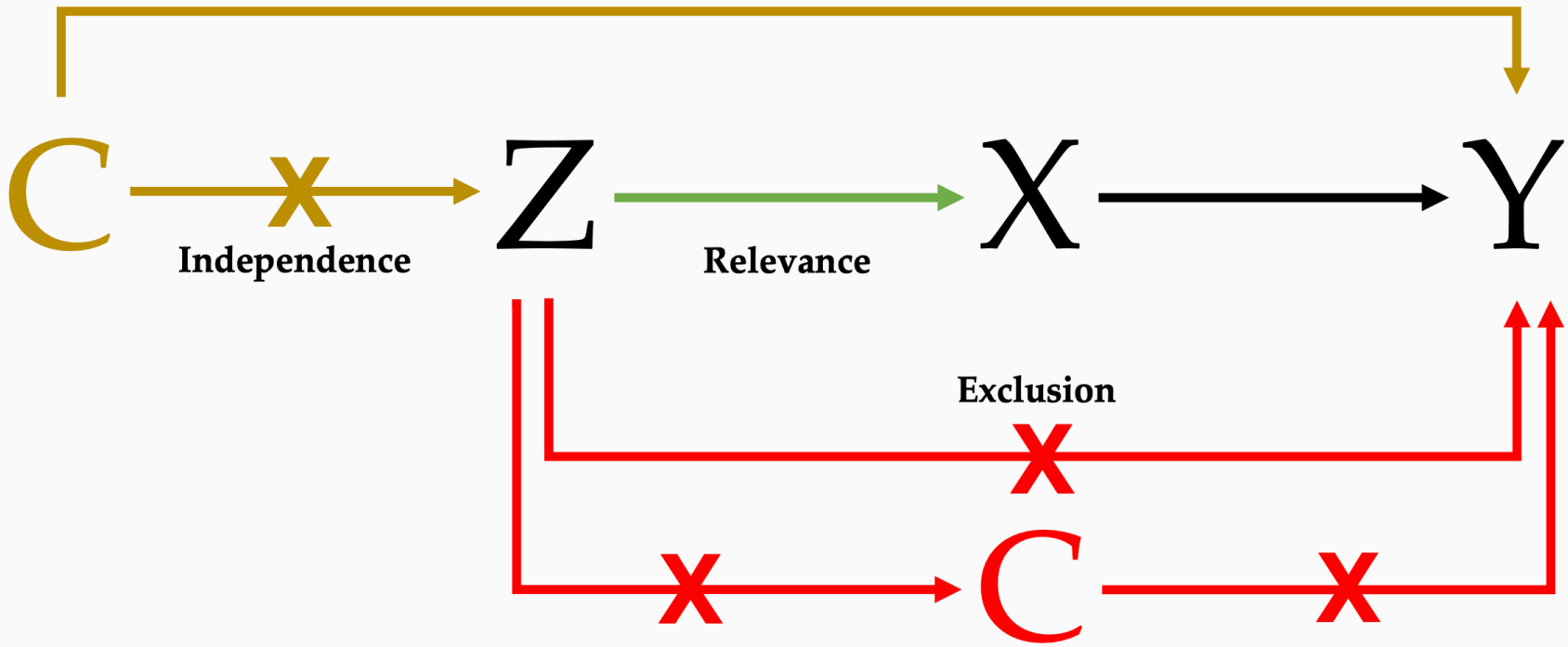
A simple example:

- We want to know the effect of chocolate (X) on happiness (Y), using a randomized voucher as instrument (Z).
- We find: people with voucher were 3 points more happy ($\delta = 3$), and ate 0.5 more chocolates ($\gamma = 0.5$).
- Then, the effect of eating one more chocolate is $\beta = \delta/\gamma = 3/0.5 = 6$.

Recap: IV summary

We need the following three assumptions for IV to work:

1. **Relevance**: *Z* must truly affect *X*
2. **Independence**: *Z* is as good as randomly assigned
3. **Exclusion Restriction**: The **only** way that *Z* affects *Y* is via *X*.



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Group work

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Group 1: We are interested in the effect of being in the army on crime. We instrument being in the army with a lottery (paper)

Group 2: We are interested in the effect of protestant religion on economic growth. We instrument protestantism in a region with the distance to Wittenberg (paper)

Group 3: We are interested in the effect of air pollution on mortality. We instrument local air pollution with wind direction (paper)

1. Relevance: Z must truly affect X
2. Independence: Z is as good as randomly assigned
3. Exclusion restriction: The **only** way that Z affects Y is via X

Your job: Discuss whether these assumptions hold!

Any questions?

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Coding

See you in datahub!

We will meet here.