

Q&A Chat Webinar 8 - Propensity Score Matching (Application) - May 30

#	Question	Answer
1	I am from Central Asia	Welcome!
2	Suggested topics for future programmes:	
3	Non-linear time series analysis; frequency-domain approach to time series modelling; Dynamic stochastic general equilibrium analysis	Thanks for this suggestion! We'll make sure it goes to Prof. Handa for his consideration.
4	To remove redundancy, you can streamline your sentence as follows: "In our last session, we discussed power tests. My question is: how do we handle sample size reduction due to matching in Propensity Score Matching (PSM)? When should we conduct power analysis for PSM?"	Thanks for your feedback, Magashi
5	kindly be magnanimously to release the recording for me to listen over and over. thanks for the opportunity	The recording will be available on the website here: https://www.airp3-africa.org/applied-quantitative-analysis-webinar-series
6	Please, I want to know if PSM can be appropriate for a case where agricultural technology, say an improved crop variety, has been introduced in some specific rural areas and some years later, we want to assess the effect of using the variety on certain outcomes such as yield, farm income and food security. Thanks.	You need think more carefully about how the treatment (in your case agriculture technology) was assigned. You could ask yourself, for example, did farmers self-select to adopt the new technology? If so, how does that affect the PSM conditional independence assumption? For example, is it reasonable to assume that farmers adopted the new technology based only on observable characteristics that you are controlling for? Or did farmers who adopted the program differ from those who didn't because of some unobservable characteristics that you did not control for? Slide #11 is a good reference point
7	thanks for the quick response. kindly allow access to the previous ones also as we have power issues to charge my device in addition to epileptic internet access. thanks greatly	All previous recordings are also on that webpage. You are able to download the recordings from there, if needed.
9	I have three questions: 1. What are the key assumptions behind the use of matching techniques in impact evaluation, and how can these assumptions influence the validity of the estimated treatment effects? 2. How can different matching methods, such as propensity score matching (PSM) and coarsened exact matching (CEM), impact the robustness and reliability of impact evaluation results? 3. What are the main challenges associated with implementing matching techniques in impact evaluation, and what strategies can be employed to address issues such as selection bias and balance between treated and control groups?	Thank you for your great questions. The key assumption in PSM is the conditional independence assumption. Meaning conditional on your observable X characteristics that you are controlling for, treatment assignment is as good as random. This is a BIG assumption that you must justify in your paper. The robustness of PSM hinges on CIA. In terms of the exact matching method, we suggest you try a range of approaches starting with the simplest (NN with and w/o replacement). No fancy matching technique can overcome a violation of the key underlying assumption of selection on observables.
10	Why matching using data before treatment. But matching compares similarities between treated and untreated?	This a great question. You always wants to match your treatment and control group using the pre-intervention data. We are creating comparable group before the program begins and we claim that these two groups would have been similar if one of the groups hadn't received the program. Note that if you only have one cross-section then you match on exogenous variables, that is, variables that are NOT affected or influenced by the intervention.
11	Please put the stata syntax to run the model	live answered
12	can the dependent or outcome variable can be categorical variable ? like poor vs non poor?	Yes
13	please how do we identify and drop the observations considered unsuitable for the matching?	psmatch2 command has a built-in feature for that. In the do file: line 1690-176 shows how to drop the observations you do not need
14	what do i need to open the file kind of challenged on my side. i only have evies?	Hi, looks like you're having trouble opening the zip file, is that right? We should have it up on the website soon if you aren't able to access through the zip file today. https://www.airp3-africa.org/applied-quantitative-analysis-webinar-series
16	how i get this data to practice	You can find the data files in the zip file that was just uploaded to the chat. Files are also available (unzipped) on the website.
17	What's the recommendation number that a household can be used for matching	It depends. But generally a big sample of comparison group is preferred (at least 2x and preferably 3x the size of the T group). You want to have a big sample of comparison households to choose the best matches from. But if you do not have a big sample, you can choose to use inverse probability weighting technical to re-weight your regression coefficients
19	How do we link the matched sample and the power calculation analysis? Do we have to ensure the minimum sample that is matching is atleast equal to the outcome of the power calculation?	Yes exactly
20	what is our null hypothesis in the t test?	the means of Treatment and Comparison groups are equal
25	What can you do if data on treated and control group are uncomparable or not matched to give a good result?	If you have exhausted all interactions and higher order polynomials and still can accurately predict treatment assignment (using a logit/probit model) based on your observable characteristics, you should not use matching.
26	what is the difference between propensity score and exogeneous swithing regression in impact test	Exogenous switching is completely different. It means that the regression model is different ('switches') based on some exogenous variable (such as sex or being above a certain age).
27	endogeneous	Endogenous switching is when the model changes based on an endogenous variable (like labour force participation for example).
28	Sorry but we do not have the commands on the doubly robust estimator	It is not a command. Simply speaking, you will just be re-weighting your regression coefficients using the IPW you calculated--lines 243-248 in the do file
33	Is it always the case that matching doesn't provide more information	Not always. You have to remember the key assumption of PSM--selection on observables. If r unobservable drive the treatment assignmet, then you are better off using other techniques such as FEs
35	So, what we can say about the impact ? no impact or ?	
36	what about the other algorithm such as kernel, radius and others	Yes you can try those and see if they give beter matches, those are just mathematical formulas to try and identify better matches. But rememabr that first the assumption must hold (selection on observables) and the doubly robust estimator (NN + IPW) is very robust to alternative types of matching procedures.