

單一性別學習環境對高中女生選組行為的影響：  
基於「台灣教育長期追蹤資料庫」的反事實分析  
The Effect of Single-Sex Schooling on High School Girls' Curriculum  
Tracking Selection:  
A Counterfactual Analysis of Taiwan Educational Panel Survey

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## 中文摘要

本研究使用「臺灣教育長期追蹤資料庫」第二波（2003）國三與第三波（2005）高二的 CP 追蹤數據，採用反事實模型框架下的傾向分數配對法估計單一性別環境對臺灣高中女生選組行為（自然組／社會組）的因果效應。使用學生進入高中前的國三資料，本研究在學生因素，家庭因素和學校、班級因素三個方面充分平衡處置組（進入女校）和控制組（進入男女合校）的樣本，使配對樣本之間除了進入女校或進入男女合校之外，在以上三個方面儘可能相等，嘗試克服觀察性數據因選擇性偏誤問題對因果效應的估計帶來的阻礙。結果顯示，在進行傾向分數配對後，處置組和控制組之間達到了較好的平衡，進入女校的女生與進入男女合班的男女合校中的女生相比，女校顯著地促進了高中女生選自然組的機率，然而該效應在數學成績水平不同的女生中存在異質性，女校顯著地促進了數學成績處於高水平的女生的選擇自然組的行為。作為教育分流的重要組成部分，臺灣高中生選組行為的性別隔離長期存在，選組行為與學生未來大學科系選擇和職業選擇關係密切，自然組中低比例的女生組成顯現出隱藏的教育機會不平等。該現象長期存在的背後因素，除了學生個人因素和學生家庭背景因素帶來的影響，本研究關注學校這一角色對高中女生選組行為的影響。

關鍵詞：單一性別環境、傾向分數配對、反事實分析、教育分流、台灣教育長期追蹤資料庫

## ABSTRACT

Based on the Taiwan Educational Panel Survey's core panel data from wave 2 (junior high school/9th grade) and wave 3 (high school/11th grade), researcher applies the propensity score analysis in counterfactual framework to study the causal effect of single-sex schooling on high school girls' curriculum tracking (science track or humanity track) selection. Observational data always be the obstacles of making the causal analysis because it's lacking random assignment and being under threat of selection bias and unobserved variables. Using the pretreatment variables from students in 9th grade, students in the treatment group were matched with those in control groups by the individual factors, family factors and school, classroom environment factors. After matching, students come from different groups are supposed to be relatively equivalent on all the matching variables except for attending single-sex school or not. The researcher can make suitable comparison and prediction between well-matched samples. The result shows that more girls in single-sex high schools tend to choose science track. Effect of single-sex schooling is not the same among girls with different level of math scores. It benefits girls with top math performance significantly. As an important part of the educational tracking system, alternative curriculum tracking selection in Taiwan high school is worth noteworthy. The long lasting gender segregation is closely associated with students college major as well as occupation selection and it reveals the hidden educational inequality between gender. Other than focusing on the individual and family background effect on high school girls' curriculum tracking selection, this study highlights the school effect on it.

Keywords: Single-sex Schooling, Propensity Score Matching (PSM) ,  
Counterfactual Analysis, Educational Tracking, Taiwan Educational Panel Survey  
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