

Trade liberalization and per capita income convergence: a difference-in-differences analysis by Matthew J. Slaughter

I decided to analyze D-i-D method used in trade liberalization and income convergence paper by Slaughter. Slaughter, in his paper, used D-i-D method to compare the convergence of incomes between liberalizing countries and already liberalized countries (control group) before and after liberalization decision (pre and post liberalization periods) using the data from 1950s to 1972s. The decision of control groups is based on 3 methods: use of broad geographical information; use of actual country-by-country trade flows and incomes; and finally random country picks. According to the author, his main contribution to the literature is using D-i-D methods in income convergence context. Earlier work on income convergence and trade liberalization employed single comparison of countries of at most two countries. By using D-i-D method, author claims to overcome ambiguities of single comparison of countries.

The important question is how trade liberalization affects the income convergence. It is through the determinants of national income such that factor prices, factor quantities, and production technology. However earlier literature has mixed results about the effect of liberalization on income convergence. Some of the earlier work suggests that trade liberalization has significant effect on income convergence; on the other hand some of them suggest income divergence. However the crucial limitation of some of these works are that they only compare these countries during the period that they are classified as liberalized (open economy) or not liberalized (closed economy) but overlooked the fact that the behavior of each group may have changed over time. D-i-D method is very useful to account for this potential change of behavior over time.

D-i-D method is very useful when an impact of a treatment is investigated before and after the treatment for the treatment group and control group where control group is used to observe the treatment group in absence of treatment. In the context of trade liberalization and income convergence, one compare the income convergence of treatment group before and after liberalization with convergence of control group at the same period of time. The role of trade liberalization is estimated as the difference in differences of convergence rates pre and post liberalization. If liberalization causes

convergence then liberalization should accelerate convergence of incomes when compared to what the convergence rate should be in absence of liberalization.

How do we estimate D-i-D is another issue. One can estimate the model using a dummy for the treatment where dummy is used to capture the effect of treatment so become one after treatment and zero before the treatment. This single difference model has a drawback of violating the identifying assumption where dummy variable is independent of the error term. In other words, when this single difference model estimated, the outcome of interest (dependent variable) might be affected by other factors than the treatment dummy variable between the pre and post treatment period. To account for these other factors one may use difference in difference models where one variable captures the factors that affect both treatment and control groups while another variable captures any time invariant difference in outcomes between treatment and control groups.