Counterfactuals and the Potential Outcome Model

Lorenzo Lagos
January 22, 2017

In this response I'll lay out how my project setup can be expressed in the language of the potential outcomes model. **Population of Interest:** Newly generated employer-employee matches under open-ended contracts in the private-formal sector of Brazil. My sample essentially contains the universe of such matches from 1995 to 2014 because firms are fined when they fail to send their annual reports to the Ministry of Labor, as well as when these reports are incomplete. **Defining the Causal States:** Employment contract with probationary period length ranging from 0 to 90 days, with possibility of a one-time renewal as long as the total number of days under probation does not exceed 90. This set of causal states assumes firms follow Brazil's Labor Laws. Since I will use collective bargaining agreements to identify probationary period length, the causal states that I will have in my data may be limited, e.g., non-renewable probationary periods of 0, 30, 60, and 90 days. Importantly, the constitutive feature of these states that grant them the power to generate different outcomes is that they manipulate the tenure-based firing cost schedule that firms face. **Outcome of Interest:** The histogram of match separations by duration (or tenure). Duration is measured as the difference between the firing and hiring date. Three concerns must be clarified. First, firms must give a one-month advanced notice to non-probationary workers. In practice, many firms simply dismiss workers on the spot and pay them an additional month as part of their severance. My model will assume that matches are terminated during the same period in which firms decide to dismiss a worker. This implies that the reported firing date does not include the month of advanced notice. Second, workers are eligible for unemployment insurance benefits after 6 months of employment at a firm. This institution can affect match duration and must be accounted for. Finally, there are other outcomes that are affected by a change in probationary period length (causal states). These include hiring/recruitment practices, wage negotiations, employee monitoring, and the pool of applicants willing to take a job with the employer. Since these are unobserved variables, all my causal estimates will be contingent on such factors remaining constant. **ATE:** On average, what would be the change in separations at the end of the probationary period had none been in place? **SUTVA:** Assumes that firing behaviors of other firms offering different probationary periods does not affect a firm's firing decisions nor the quality of the worker pool from which a firm draws a match. **Selection Mechanism:** Region-industry specific unions bargain with firms on choosing a probationary period regime for all employees. Firms then fill job vacancies by taking a random draw from the pool of applicants, which is characterized by a known distribution in quality. **Superpopulation Model:** A population machine spawns matches forever. Each match is born with two vectors indicating the likelihood of being terminated at any given tenure: one under no probationary

period and another for a probationary period of length j. Nature only gives us the tenure at separation for each match under the probationary period regime of the firm of employment.