The Effect of Occupational Licensing on the Labor Market: Evidence from Nurse Licensure Compact

Ling Li

ECN 821 Dissertation Workshop II
Syracuse University

Sep 9th, 2015
Occupational Licensing

- A process that entry into an occupation requires the demonstration of a minimum degree of qualification (Kleiner, 2000).

- 29% of the US workforce worked in positions required a government-issued license in 2008 (Kleiner and Krueger, 2013).
  - Minimum wage affects less than 4 percent of workers; unions 12 percent (Bureau of Labor Statistics).

- Examples of licensed occupations
  - Physicians, dentists, lawyers, accountants, etc.
Licenses and Labor Market

- Asymmetric information and occupational licensing
  - Labor supply and wages
- Licensing and human capital investment
- State level licensing and interstate mobility
Asymmetric Information and Occupational Licensing
Asymmetric Information: Theory

- Asymmetric information
  - Consumers are not able to determine the quality of services (Arrow, 1963)
  - Leland (1979)
- A market with asymmetric information on service quality.
  - Sellers know the quality of the service while buyers do not.
- A range of suppliers with exogenous distribution of quality.
- **Market failure**: quality is under-provided relative to social optimal level.
Licensing and Labor Market: Theory

- Licensing
  - Introduce a minimum quality standard

- In equilibrium
  - The social welfare increases under certain circumstances
  - The average quality increases
  - The labor supply decreases

- Licensed by the profession itself
  - The profession maximize the suppliers’ surplus rather than the social welfare.
  - The minimum quality standard exceeds the socially optimal level.
  - The labor supply decreases.
Licensing and Labor Market: Empirical Literature

- Compare the labor supply/wage between
  - States with licenses and states without licenses;
  - States with more restrictive requirements and those less restrictive;
  - Occupations required licenses and similar occupations do not require licenses.

- Licenses lead to **restricted labor supply** and **wage premiums**.
  - Thornton and Timmons (2013) find licensing reduces the number of massage therapists.
  - White (1978) finds clinical laboratory personnel in states required licenses earn 17 percent higher.
Instrumental variables

- Concern of selection on unobservables between states
- Kugler and Sauer (2005)
- Licensing process of physician emigrating to Israel from the Soviet Union: 20-years rule
- The return of licenses ranges from 180% to 340%.
Licensing and Human Capital Investment
Licensing and Human Capital Investment: Theory

Shapiro (1986)

- Endogenous decision of human capital investment.
- Human capital reduces the marginal cost of producing quality.
- A more rigid licensing requirement will
  - Increase the average human capital investment in equilibrium
  - Raise the price of the lower quality services
  - Reduce the price of higher quality services
  - Raise average quality

- Certification versus licenses
  - Certification as a signal of human capital investment
  - Certification is not required to practice
  - Certification leads to over-investment of human capital.
Licensing and Interstate Mobility
Licensing and Interstate Mobility

Borjas (1987)

- Individuals choose consumption and location to maximize utility giving the wage level of each location.
- State licenses increase the cost of moving.
  - 89 percent of licensed workers have licenses at the state level (Kleiner and Krueger, 2013)

Wage distribution

- Home state: \( \ln w_0 = \mu_0 + \epsilon_0 \)
- Remote state: \( \ln w_1 = \mu_1 + \epsilon_1 \)

Probability of Migration

- \( p = Pr(\ln(w_1/(w_0 + C)) > 0) \)
- The probability of moving between states decreases with the increasing of re-licensing costs.
Mobility

- **Cross-sectional**
  - Migration of occupations that are more difficult to re-license has lower interstate migration rate (Holen, 1965).
  - States with less restrictive licensing and easier endorsement from other states have higher rates of in-migration (Kleiner et al., 1982).

- **Changes of regulations within states over time**
  - State with strict residency training requirements for immigrant physicians have fewer in-migration physicians (Peterson et al., 2014).
  - State level licenses lead to longer commuting time (DePasquale and Stange, 2014)
Registered Nurse and Nurse Licensure Compact
Registered Nurses

- Registered nurses (RNs)
  - Provide and coordinate patient care
  - Educate patients and the public about various health conditions
  - Provide advice and support to patients and their family members
- 3 million active registered nurse in 2015
  - Second largest occupation that requires licenses to practice
- 60% of registered nurses work in hospital settings.
Licensing of Registered Nurses

- Administered by State Board of Nursing
  - Graduate from a nursing program approved by state board
  - Pass the exam: National Council Licensure Examination-Registered Nurse (NCLEX-RN)
  - State requirement: training, background check, etc.
  - Application fees: ranges from $35 to $190

- Practice in a different state
  - License by endorsement
  - Verification of active registered nurse license
  - State requirements: training in specific areas
Nurse Licensure Compact (NLC)

- Initiated by the National Council of State Boards of Nursing in 2000.
- Registered nurses can practice in the home state and any compact state with one multistate license.
- Eligible nurses:
  - Hold an active RN license
  - Legally reside in a NLC state and declare the NLC state as the primary state of residence
- 25 states participate by 2015.
Data

National Sample Survey of Registered Nurses (NSSRN)

- A randomly selected sample of individuals holding active registered nurses licenses.
- Conduct every four years from 1980 to 2008
- Approximately 30,000 observations in each round of survey
- Information on employment, nursing education, and licenses
<table>
<thead>
<tr>
<th></th>
<th>Non Compact State</th>
<th>Compact State</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>45.48</td>
<td>44.87</td>
<td>45.21</td>
</tr>
<tr>
<td></td>
<td>(10.68)</td>
<td>(10.82)</td>
<td>(10.74)</td>
</tr>
<tr>
<td>Gender</td>
<td>0.94</td>
<td>0.94</td>
<td>0.94</td>
</tr>
<tr>
<td></td>
<td>(0.25)</td>
<td>(0.25)</td>
<td>(0.25)</td>
</tr>
<tr>
<td>Diploma Program</td>
<td>0.24</td>
<td>0.23</td>
<td>0.24</td>
</tr>
<tr>
<td></td>
<td>(0.43)</td>
<td>(0.42)</td>
<td>(0.42)</td>
</tr>
<tr>
<td>Associate Degree</td>
<td>0.46</td>
<td>0.47</td>
<td>0.46</td>
</tr>
<tr>
<td></td>
<td>(0.50)</td>
<td>(0.50)</td>
<td>(0.50)</td>
</tr>
<tr>
<td>Bachelor Degree</td>
<td>0.30</td>
<td>0.30</td>
<td>0.30</td>
</tr>
<tr>
<td></td>
<td>(0.46)</td>
<td>(0.46)</td>
<td>(0.46)</td>
</tr>
<tr>
<td>Work in Nursing</td>
<td>0.83</td>
<td>0.86</td>
<td>0.84</td>
</tr>
<tr>
<td></td>
<td>(0.38)</td>
<td>(0.34)</td>
<td>(0.36)</td>
</tr>
<tr>
<td>Work in Hospital</td>
<td>0.60</td>
<td>0.60</td>
<td>0.60</td>
</tr>
<tr>
<td></td>
<td>(0.49)</td>
<td>(0.49)</td>
<td>(0.49)</td>
</tr>
<tr>
<td>Work in a Different State</td>
<td>0.95</td>
<td>0.93</td>
<td>0.94</td>
</tr>
<tr>
<td></td>
<td>(0.23)</td>
<td>(0.25)</td>
<td>(0.24)</td>
</tr>
<tr>
<td>Salary ($1,000)</td>
<td>43.97</td>
<td>41.16</td>
<td>42.74</td>
</tr>
<tr>
<td></td>
<td>(23.52)</td>
<td>(21.55)</td>
<td>(22.72)</td>
</tr>
<tr>
<td>Nursing Hours per Week</td>
<td>36.55</td>
<td>36.83</td>
<td>36.67</td>
</tr>
<tr>
<td></td>
<td>(12.47)</td>
<td>(12.32)</td>
<td>(12.40)</td>
</tr>
<tr>
<td>N</td>
<td>56,628</td>
<td>44,005</td>
<td>100,633</td>
</tr>
</tbody>
</table>

Note: Data are from National Sample Survey of Registered Nurses (NSSRN), work in hospital, work in a different state, salary, nursing hours are conditional employed in nursing.
Questions

- **Labor supply**
  - 15% of individuals holding an active registered nurse license do not work in nursing.

- **Mobility**
  - Reduce the re-licensing cost
  - Practice of nursing over distance

- **Human capital investment**
  - State specific training requirements: continuing education, training in specific specialties.