Chapter 2. Minimum Wages
Minimum Wages: What are We Talking About?

- Unlike other institutions, MW acts on minima. It sets a wage floor.
- The first minimum wage was introduced in the United States in 1938 and paid 25 cents per hour. In 2007 the federal minimum wage was $5.85, in nominal terms 23 times larger, but, in real terms, only 1.4 times larger than 70 years ago.
Minimum wages – What are we talking about?

**Types of minimum wages:**

1. National, government-legislated (possible consultation with trade unions and employers associations).
2. National, outcome of collective bargaining agreements and extended to all workers.
3. Industry-level minimum resulting from industry-level collective bargaining and extended to all workers in that industry.
Within-country variation

1. Not easy to collect info - not always a unique minimum wage
2. Cross-industry when set at the industry level - cross regional when large differences in cost-of-living
3. Age dependent: different minimum for youngsters
4. Some countries: acknowledging on the job training, returns to experience & family status

Tito Boeri and Jan van Ours (2008), The Economics of Imperfect Labor Markets, Princeton University Press.
Measures

- Ratio of the Minimum Wage to the Median (or average) Wage
- Coverage of the minimum wage: share of workers occupying jobs eligible for the MW
- Kaitz Index: minimum wage as a proportion of the average wage adjusted by the industry-level coverage of the MW
### Minimum Wages in OECD Countries (2005)

<table>
<thead>
<tr>
<th>Country</th>
<th>Minimum to Average Wage Ratio (%)</th>
<th>Minimum Wage (€/hour)</th>
<th>Minimum Wage (€/month)</th>
<th>Determination Setting</th>
<th>Coverage Level</th>
<th>Coverage (4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Denmark</td>
<td>52</td>
<td>7.51</td>
<td>1322</td>
<td>CB</td>
<td>-</td>
<td>80</td>
</tr>
<tr>
<td>France</td>
<td>52</td>
<td>7.51</td>
<td>1322</td>
<td>L</td>
<td>N</td>
<td>100</td>
</tr>
<tr>
<td>Germany</td>
<td>52</td>
<td>7.51</td>
<td>1322</td>
<td>CB</td>
<td>-</td>
<td>68</td>
</tr>
<tr>
<td>Italy</td>
<td>52</td>
<td>7.51</td>
<td>1322</td>
<td>CB</td>
<td>N</td>
<td>80</td>
</tr>
<tr>
<td>Netherlands</td>
<td>39</td>
<td>7.30</td>
<td>1284</td>
<td>L</td>
<td>N</td>
<td>100 (c)</td>
</tr>
<tr>
<td>Spain</td>
<td>39</td>
<td>6.40</td>
<td>1127</td>
<td>L</td>
<td>N</td>
<td>100 (d)</td>
</tr>
<tr>
<td>UK</td>
<td>39</td>
<td>6.40</td>
<td>1127</td>
<td>L</td>
<td>N</td>
<td>100</td>
</tr>
<tr>
<td>US</td>
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<td>6.40</td>
<td>1127</td>
<td>L</td>
<td>N</td>
<td>100</td>
</tr>
</tbody>
</table>

CB = Collective Bargaining  
L = Set by Law  
N = National  

Problems with these Measures

- **Spillover effects**: Increase of the minimum wage may raise the average wage leaving the MW/AveWa ratio unchanged. Also increase of MW may reduce wages in the uncovered segment (absorbing more low-skill workers).

- Gross measure, but taxation is progressive

- Earnings should not include bonuses and overtime premiums (measurement issue)
Minimum Wages

Figure 2.1 Ratio of Minimum to Median Wage
Source: OECD Minimum Wage Database.
Minimum Wage Setting Regime and Level

Minimum wage to average wage ratio

Tito Boeri and Jan van Ours (2008), The Economics of Imperfect Labor Markets, Princeton University Press.
A Competitive Labor Market
Pure monopsonist
Market power – monopsony

- Classical example: mining company in remote area
- Another example: couple of which the spouse is a “tied stayer”
- Modern monopsony: many employers, but few vacancies to apply for
MW may increases productivity

- Supply side: productivity of a worker depends on the investment in human capital.
- A minimum wage induces workers to acquire education in order not to be crowded out.
- Similar effect may arise on the demand side: minimum wage increases the number of vacancies for high-productivity jobs issued by employers.

Tito Boeri and Jan van Ours (2008), The Economics of Imperfect Labor Markets, Princeton University Press.
Dual Labor Markets

Formal Sector

Informal Sector

Tito Boeri and Jan van Ours (2008), The Economics of Imperfect Labor Markets, Princeton University Press.
Seminal study: Card & Krueger (1994)

“Natural experiment”

- Impact of increases in the minimum wage in New Jersey (treatment group) in April 1992 from $4.25 to $5.05: increase by 80 dollar-cents.

- Control group: Pennsylvania, where the minimum wage remained at $4.25 throughout this period.

- New Jersey and Pennsylvania are bordering states with similar economic structures.

- Data on employment in 410 fast-foods in the two states in March 1992 (before the MW hike) and in December (after).
### Employment effects – a simple approach

Number of full-time equivalents working in a full-time restaurant

<table>
<thead>
<tr>
<th></th>
<th>NJ</th>
<th>PA</th>
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<tbody>
<tr>
<td>Before</td>
<td>20.4</td>
<td>23.3</td>
</tr>
<tr>
<td>After</td>
<td>21.0</td>
<td>21.2</td>
</tr>
<tr>
<td>∆</td>
<td>+0.6</td>
<td>-2.1</td>
</tr>
<tr>
<td>∆∆</td>
<td>2.7</td>
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Monopsony effects – what about prices?

Price of a full meal ($)

<table>
<thead>
<tr>
<th></th>
<th>NJ</th>
<th>PA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before</td>
<td>3.35</td>
<td>3.04</td>
</tr>
<tr>
<td>After</td>
<td>3.41</td>
<td>3.03</td>
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<tr>
<td>Δ</td>
<td>0.06</td>
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</tr>
<tr>
<td>ΔΔ</td>
<td>0.07</td>
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</table>
Minimum wages – Empirical Evidence

Difference-in-Difference estimators

- If the employment $L$ in state $i$ is determined by an equation of this type:

$$L_i = \alpha w_i + X_i \gamma$$

where $w_i$ is the level of the minimum wage and $X_i$ contains all the other variables which influence $L_i$.

- If we have two observations which refer to two dates for the same State, so:

$$\Delta L_i = L_{i2} - L_{i1} = \alpha (w_{i2} - w_{i1}) + (X_{i2} - X_{i1}) \gamma$$

Tito Boeri and Jan van Ours (2008), The Economics of Imperfect Labor Markets, Princeton University Press.
Difference-in-Difference estimators (2)

If we also have data for another state $j$ which is identical to $i$ in each characteristic except for $w$, which is not changed, so:

$$\Delta L_j = (X_{j2} - X_{j1}) \gamma$$

then:

$$\Delta L_i - \Delta L_j = \alpha (w_{i2} - w_{i1})$$

In our case, if we think that New Jersey and Pennsylvania are similar enough, we can obtain an estimation of $\alpha$ by simply calculating the difference of the difference.
Diff-Diff estimation: results

\[
\Delta L_{NJ} - \Delta L_{PA} = 0.29 - (-2.01) = 2.30
\]

\[
\frac{\Delta L_{NJ} - \Delta L_{PA}}{\Delta w_{NJ}} = \frac{2.30}{0.8} = 2.875
\]

An increase of the minimum wage leads to an increase of the number of employees.

⇒ An increase of \(w\) of $1 creates 2.875 more employees per fastfood restaurant.
Other studies

- Another “natural experiment”
  - Effect of the introduction of a MW in the UK April 1999
  - Comparison of employment outcomes of individuals just below the MW and higher up the wage distribution (1st difference) before and after (2nd difference) the introduction of the minimum wage.
  - No adverse effects (adult and youth, men and women)

- Other studies: generally negative effects on employment, notably among youngsters.
Studies based on workers histories

- Since the late 1990s, work combining data on workers and firms (matched employee-employer micro data)
- Focus on the economy as a whole and on the effects on employment and hours
- Increase in MW by 1% in France reduces probability of men (women) keeping a job at the MW by 1% (1.3%)
- Increase by 50% of MW in Portugal reduced hirings but increased job retention
The Lighthouse Effect

Kernel Density Plot Formal Workers
1995

Kernel Density Plot Informal Workers
1995
Policy issues

- Who should set the MW?
  - Fine tuning
- Does a minimum wage increase or reduce poverty?
Why Does a MW exist?

1. Efficiency: remedies market failures, e.g. deriving from excessive monopsonistic power
2. Equity: reduces earnings inequality by supporting incomes of low-earning, workers, for example, low-skilled workers.
Review Questions

1. Why are there so few workers earning the minimum wage?
2. Why are minimum wages age dependent?
3. When does a minimum wage increase employment?
4. When does a minimum wage increase welfare, although not necessarily employment?
5. How does a minimum wage affect poverty?