14.23 Government Regulation of Industry

Class 22: Regulation of Workplace Safety

MIT & University of Cambridge
Outline

• Markets for health and safety
• Health and safety and information
• OSHA approach
• Effects of OSHA policies
• Reform of OSHA
The Market for Health and Safety

Why does the market not deliver $S^*$?

MC of safety

MV of safety

$S^*$ Safety Level

0
Why does the labour market help enforce health and safety?

- $70 bn dollar p.a. premium because of risk at work.
- Premia do reflect risks associated with job (values of life recovered from this type of analysis).
- Workers and consumers well informed about product and hence enforce standards via reputation effects.
Can we rely on the market to enforce health and safety?

• Adam Smith observed that workers demand higher pay for more risky or unpleasant jobs.
• This depends on: awareness of risk and preference for safety/health.
• Evidence is that some people are prepared to take more health and safety risks (and these are positively correlated).
• Hersch and Viscusi (1990) find that smokers and those who don’t wear seatbelts much more willing to take hazardous jobs.
• What does the above mean for incentives facing firms to lower safety risk? health risk?
Can we rely on the market to enforce health and safety?

- Workers must be aware of the risks they face for the differential wage theory to fully reflect true preferences for risk.
- It does appear to be the case that perceptions about safety risk do match actual risks (U of Mich Survey of Working Conditions).
- However the evidence is that workers are not perfectly informed.
- Wage Premia: 3-5% for chemicals and allied products to 12-15% for lumber and wood products.
Can we rely on the market to enforce health and safety?

- If workers can only observe riskiness imperfectly at time of taking a job then they find out more after starting working. They may reassess risk and quit.
- 1/3 of all manufacturing quits are due to risk.
- Higher job turnover in risky jobs, length of tenure much lower in risky jobs.
- What sort of incentives face firms in this situation: where would they locate, what sort of people might they hire, how much training would they offer workers?
Can we rely on the market to enforce health and safety?

- Workers’ compensation claims for damages in the US were $15bn in 1984, $26.2bn in the late 1990s.
- If workers’ know they can get compensation, what effect might this have on their behaviour?
- For fatalities Moore and Viscusi (1990) estimate that fatalities are 1/3 lower because of liability for workers’ compensation.
- Offering compensation may have offsetting benefits in the labour market through lower wages (Viscusi and Moore (1987), why?
- Problems may exist in the extent of liability being too great.
Information Problems

- Markets may fail as a result of asymmetric information e.g. about the riskiness of a job or community or about product quality.
- Workers or consumers only know the average risk associated with a job or product. You get market for lemons problem (Akerlof, 1970). What happens?

<table>
<thead>
<tr>
<th>Fraction of cars</th>
<th>Safety</th>
<th>Consumer value with perfect information 30000</th>
<th>Group-based valuation 23500</th>
<th>Gain or loss</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.2</td>
<td>High</td>
<td>30000</td>
<td>23500</td>
<td>+6500</td>
</tr>
<tr>
<td>0.3</td>
<td>Medium</td>
<td>25000</td>
<td>23500</td>
<td>+1500</td>
</tr>
<tr>
<td>0.5</td>
<td>Low</td>
<td>20000</td>
<td>23500</td>
<td>-3500</td>
</tr>
</tbody>
</table>
Information Problems

• In the labour market the firm that offers high safety has to offer higher wages than it should have to and this will make it uncompetitive.

• Solving the lemons problem:
  – Self-certification by warrantees or guarantees.
  – Government determination of safety level.
  – Voluntary programs (e.g. associations of responsible firms).
Information Regulation

• Don’t want to ban activity because of uncertainty.
• Individuals differ in valuation of risk.
• Regulation of use is expensive to enforce.
• Information regulation can be very effective:
  – Drain opener labels: wear rubber gloves, store in child proof location (63% to 82%; 54% to 68%). More do right thing in response to having labels.
  – Nutritional Labelling and Education Act (NLEA) mandated labelling. Fat level of salad dressing varies even though self-labelled ‘low fat’, after NLEA high fat dressings experienced significant sales decline.
OSHA

• Mandate to set health and safety standards for workers from 1970. However Act did not say how to achieve goal.

• 2200 staff at Federal level (second to EPA in social regulation), $435m budget, 37493 inspections at Federal level, 26 states run their own programs.

• Traditional approach was adopting a technology based standard whose stringency was limited by their affordability. Fines for violation. What other approaches might exist?
OSHA Analytical Approach

$OSHA \text{ standard} = ‘promote \text{ safety as far as possible’}$

\[ \text{MC of safety} \]

\[ \text{MB of safety} \]

\[ S_{OSHA} \quad \text{Risk} \]
OSHA Analytical Approach

• Did not use CBA, only had to worry about firm shutting down as a result of standard.
• US Supreme Court 1981 ruled out CBA, cotton dust standard was ok as long as technically feasible.
• CBA is done via OMB rules.
• Standards setting ridiculed: specifying height of handrail, spacing of posts etc., what should the standards specify.
• Change in analytical approach in Carter administration with move to harnessing market forces in chemical labelling regulation.
Worker response to chemical labelling

<table>
<thead>
<tr>
<th></th>
<th>Sodium Bicarbonate</th>
<th>Chloroaceto-phenone</th>
<th>TNT</th>
<th>Asbestos</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change in fraction who consider job average risk (after labelling)</td>
<td>-35%</td>
<td>45%</td>
<td>63%</td>
<td>58%</td>
</tr>
<tr>
<td>Annual wage increase demanded</td>
<td>$0</td>
<td>$1900</td>
<td>$3000</td>
<td>$5200</td>
</tr>
<tr>
<td>Changes in fraction very likely or somewhat likely to quit (if no change in wage rate)</td>
<td>-23%</td>
<td>13%</td>
<td>52%</td>
<td>63%</td>
</tr>
</tbody>
</table>

Source: Viscusi and O’Connor (1984)
Is OSHA effective?

- Inspections around 90,000 a year (including states). Penalties more like $30m per year. This is very small given the number of workplace locations in the US. Mostly focus is on safety not health.

- A rational firm will calculate:
  - Compliance cost < (probability of inspection) x (no of violations per inspection) x (average fine per violation). Why?
  - Compare this with impact of labelling on wage demands. Which is more effective in forcing change?
Is OSHA effective?

\[ Risk_t = \alpha + \beta_1 Risk_{t-1} + \beta_2 \text{Cyclical effects}_t + \beta_3 \text{IndustryCharacteristics}_t + \beta_4 \text{WorkerCharacteristics}_t \]

\[ + \beta_5 \sum_{t=0}^{n} OSHA_{t-1} + \varepsilon_t \]

Example: Ruser and Smith (1988) find that OSHA Inspections in the early 1980s decreased injuries by 5-14%.

Does this analysis address the issue of optimality?
Conclusions on OSHA

• Should shift to health market as this is where the more severe market failure is (some evidence that OSHA is doing this).
• Concentrate on high impact inspections (site specific targeting plan since 1999).
• Shift to performance not technology standard.
• Need to reconsider lack of focus on CBA.
• No obvious need for deregulation of health and safety regulation.
Conclusions

• Zero safety and health effects in the workplace not achievable.

• Regulatory agency is not the dominant effect on safety and health in the workplace.
  – compensation claims and wages are much more important than OSHA penalties.

• Regulation should make better use of market based incentives (e.g. via labelling to induce a market reaction).
Next

- Regulation of Inventions

- Read VVH Chapter 24