The Cambridge-MIT Institute Electricity Project

14.23 Government Regulation of Industry

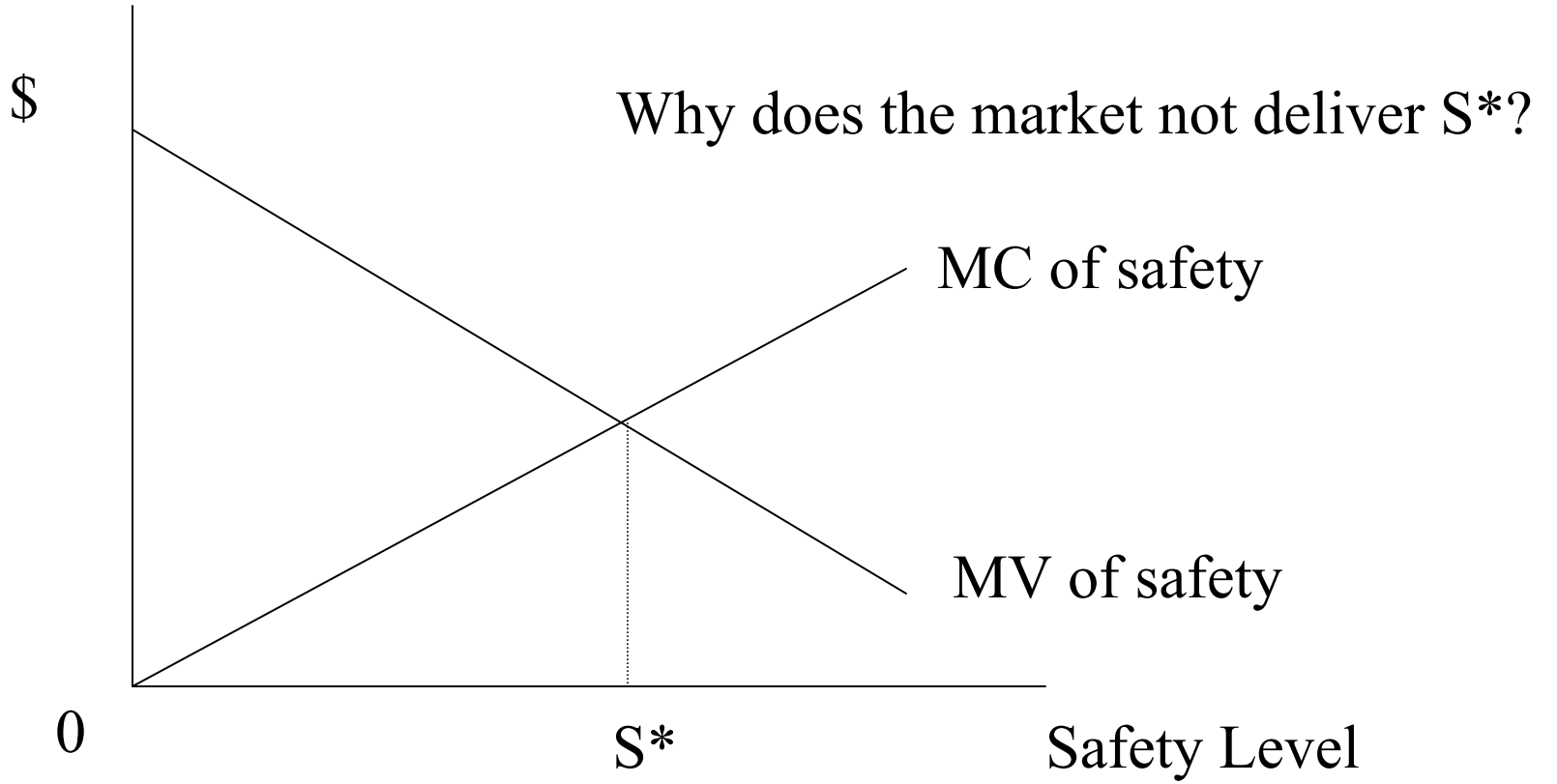
Class 22: Regulation of Workplace Safety

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 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?

Fraction of cars	Safety	Consumer value with perfect information	Group-based valuation	Gain or loss
0.2	High	30000	23500	+6500
0.3	Medium	25000	23500	+1500
0.5	Low	20000	23500	-3500

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).

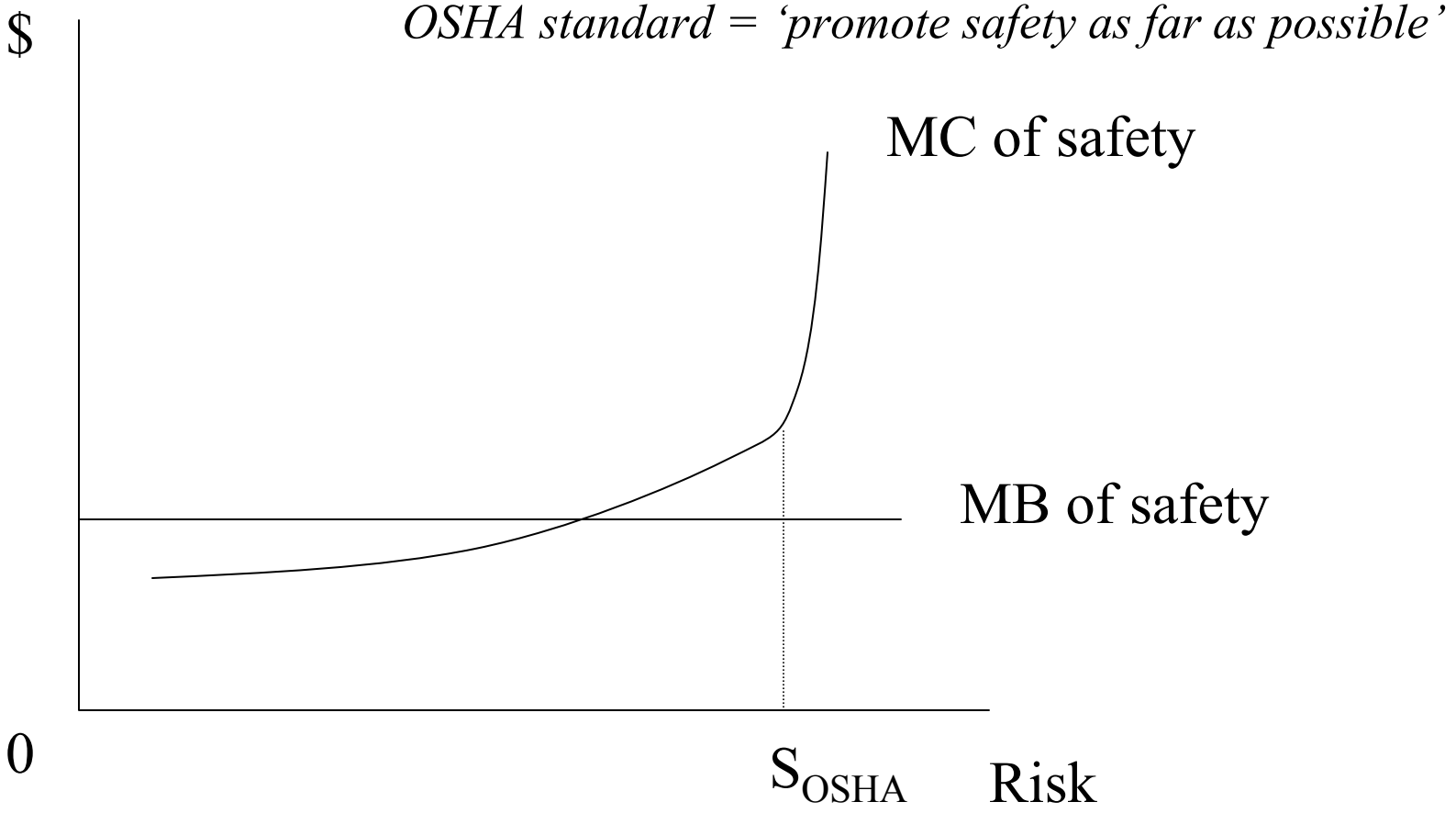
Information Regulation

- 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 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 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

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

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?

$$Risk_t = \alpha + \beta_1 Risk_{t-1} + \beta_2 Cyclical\,effects_t$$
$$+ \beta_3 IndustryCharacteristics_t + \beta_4 WorkerCharacteristics_t$$
$$+ \beta_5 \sum_{t=0}^{n} OSHA_{t-1} + \varepsilon_i$$

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*