Chapter 14
Regulation

CHAPTER SUMMARY

The marginal benefit of an item may diverge from the marginal cost for three basic reasons: market power, asymmetric information, and externalities and public goods. This divergence results in economic efficiency. Government regulation may help where private action fails to resolve the economic inefficiency.

Generally, the government can regulate the conduct, information, and structure of an industry. Specifically, the conduct of a franchised monopoly may be regulated directly through price or indirectly through the rate of return. Competition law regulates the conduct and structure of businesses in general. In situations of asymmetric information, mandatory disclosure is one form of regulation.

Externalities may be regulated through fees or standards. The efficient degree of an externality depends on location and time. The government can help to resolve inefficiency in accidents and public goods by providing an appropriate legal framework. The laws regarding copyrights and patents must balance the incentive for new research against inefficient use of existing knowledge.

KEY CONCEPTS

natural monopoly
privatization
managerial cost-pricing
average cost pricing
rate base
self-regulation
law of torts
liability

GENERAL CHAPTER OBJECTIVES

1. Analyze how government regulation can resolve the economic inefficiency arising from monopoly and monospony.
2. Distinguish a natural monopoly from a potentially competitive market.
3. Analyze how government regulation can resolve the economic inefficiency arising from asymmetric information.

4. Analyze how government regulation can resolve the economic inefficiency arising from externalities.
5. Analyze the legal framework for resolution of the economic inefficiency in the provision of public goods.

NOTES

1. **Economic inefficiency and government regulation**.
   - (a) Divergence of marginal benefit and marginal cost.
     - i. Market power.
     - ii. Asymmetric information.
     - iii. Externalities and public goods.
   - (b) Government regulation.
     - i. Conduct.
     - ii. Information.
     - iii. Structure.

2. **Natural monopoly**.
   - (a) Natural monopoly is a market where:
     - i. The average cost is minimized with a single supplier, e.g., distribution of electricity and water.
     - ii. A market is a natural monopoly when economies of scale or scope are large relative to market demand.
   - (b) Two philosophies for management of a natural monopoly.
     - i. *Government ownership/provision*. A government-owned enterprise tends to be relatively inefficient.
       - (1). More prone to be beholden to employees, high wages and over staffing, resulting in higher costs.
       - (2). Dependence on the government for investment funds.
     - ii. *Privatization*: Privatization is the transfer of ownership from the government to the private sector. A private exclusive franchise awarded to a commercial enterprise, subject to government regulation. A government enterprise may be privatized and remain a monopoly, so that there is no competition on the seller side.
       - (1). **Price regulation** – the regulated price is fixed.
         - a. *Marginal cost* pricing is the policy where the provider is required to set price equal to marginal cost and supply the quantity demanded.
           - i. Production at *economic efficient* level: marginal benefit equals marginal cost.
           - ii. Government subsidy may be required.

b. *Average cost* pricing is the policy where the provider is required to set price equal to average cost and supply the quantity demanded.
    i. With economies of scale, average cost curve is higher than marginal cost curve.
    ii. Lower level of provision than marginal cost pricing. Economically *inefficient* level: marginal benefit equals price equals average cost.
c. A provider subject to price regulation will exaggerate its reported costs to attempt to set a higher price.

(2). **Rate of return regulation** – franchise holder can set prices freely, provided it does not exceed the maximum allowed rate of return (**profit**) on the value of the rate case.
a. Rate base is the assets to which the rate of return regulation applies.
b. The franchise holder's prices are required to be reduced if its rate of return exceeds the specified maximum.
c. Three difficulties.
    i. Disputes over appropriate rate of return – few comparable investments.
    ii. Disputes over assets constituting the rate base required to provide the service.
    iii. A provider subject to rate of return regulation will invest *beyond* the economically efficient level, obtain a larger rate base and profit.

3. **Potentially competitive market**.
(a) With changes in technology or market demand, a market may shift from being a natural monopoly to potentially competitive market, and vice versa.
(b) A potentially competitive market is one where economies of scale or scope are small relative to market demand.
    i. Government protection such as exclusive franchises or restrictions against imports are anti-competitive.
    ii. These markets should be open to competition.

4. **Competition laws**.
(a) If perfect competition prevails over a potentially competitive market, the invisible hand ensures economic efficiency.
(b) **Regulated** industries are subject to laws specific to the industry.
(c) **Unregulated** industries are subject to general competition law.
    i. Antitrust law or competition laws aim to prohibit collusion, limit mergers, and deter other anti-competitive business practices (e.g., control over resale prices and exclusive agreements).
    ii. Enforcement involves prosecution by competition agency.

iii. Enforcement also involves review of merger and acquisition proposals.

5. **A natural monopoly with upstream or downstream markets that are potentially competitive**.
   (a) Monopoly and potentially competitive market occupy successive stages of production and monopoly franchise holder also participates in the potentially competitive market (e.g., franchiser over distribution of water is vertically integrated upstream into the production of water).
   (b) **Structural** regulation is a way to separate a natural monopoly from upstream or downstream markets that are potentially competitive, e.g., compulsory divestment of one of the businesses.

6. **Information asymmetry**.
   (a) Information asymmetry may be resolved through government regulations:
      i. Regulations on **conduct** (of the better informed party), e.g., restrictions against high pressure sales tactics, agreements in writing, waiting periods, recommending second opinions be obtained.
      ii. Better-informed party being required by the government to **disclose** the information. Note: Information should be objectively verifiable.
      iii. **Structural** regulations (on the better informed party). Government mandatory specialization in medical advice vis a vis service, mandatory separate representation in real estate transactions.
   (b) **Self-regulation**: the regulation of practitioners by a professional organization.
      i. Rules of conduct, regulations of business structures.
      ii. Exclusive right to license practitioners may be a cover to limit competition.

7. **Externalities**.
   (a) Private action may fail to resolve widespread externalities involving large numbers of parties.
   (b) The *economically efficient* quantity of emissions is the level that balances the social marginal benefit with social marginal cost (sum of marginal costs to individual victims), taking into account both private and external benefits and costs.
      i. Major benefit: avoiding costs of technologies that generate fewer emissions.
      ii. Major cost: damage to health and crops.
      iii. The efficient degree of an externality varies with location and time.
   (c) Two approaches to regulate emissions.
      i. **User fee**: allow all sources to emit as much as they like provided that they pay a user fee.
         (1). The user fee is set for all sources of pollution at the **social marginal cost** of emissions.

(2). It balances social marginal benefit of emissions with social marginal cost, and achieves the economically *efficient* level of emissions.

ii. Regulate directly through **standard**.

(1). A standard is set at the economically *efficient* **level** of pollution.

(2). The standard may be implemented through:

a. *If the cost of monitoring is low*, a licensing scheme: Sale of fixed number of user licenses through public auction to all sources. At equilibrium price, the price of each license equals the **social marginal cost** of emissions, same as a user fee determined by a competitive market.

i. The demand of each source of pollution for the licenses will be the same as its marginal benefit from emissions.

ii. The market demand equals the horizontal sum of the individual demand; the market demand curve is the social marginal benefit curve.

iii. Each source's and the total emissions will be economically efficient.

b. *If the cost of monitoring is high* for certain sources, cost-efficient to directly specify the standard.

(d) Random externalities (**accidents**).

i. The economically *efficient* level of care balances the social marginal benefit of care (in terms of reduced damage from accidents) with the marginal cost of care to the driver.

ii. The **law of torts** governs interaction between parties that have no contractual relationship, specifies the liability of the parties to an accident (set of conditions under which one party must pay damages to another) and the damages, and guides potential injurers to choose the economically efficient level of care.

8. **Public goods**.

(a) A public good provides nonrival consumption or use. It may be provided: on a commercial basis (privately), by charity or the government.

(b) Economic efficient level of provision: marginal benefit equals marginal cost (zero).

(c) **Private provision**.

i. A public good can be provided commercially only if it is excludable. Excludability depends on **legal framework** and technology.

ii. Regulators must balance the trade-off in between excludability (e.g., the length of a patent or copyright as the financial incentive to the inventor/creator) and economically efficient use of the public good.

iii. During the life of a patent or copyright, the owner has an exclusive right. The user's marginal benefit equals the price but is higher than the marginal cost, and society bears the cost of less than efficient usage.
iv. Upon expiration of the patent or copyright, usage extends to the point where marginal benefit equals zero, which is economically efficient.

(d) **Public provision of public goods and provision of public goods by charities**.
i. Provision of public goods that are not excludable or are difficult to exclude.
ii. If no price is charged, the good will be used up to the quantity where marginal benefit equals zero, and is economically efficient.

(e) Public provision of private goods.
i. Such as food, education, housing, and medical services.
ii. To equalize wealth distribution and provide equal opportunity.

(f) Public provision of **congestible facilities** (e.g., tunnels, roads, subways).
i. User fees for congestible facilities (e.g., tolls) should be set equal to the marginal cost of use, where the cost includes the negative **externalities** imposed on other users.
ii. User fees should be set according to demand for the facility: as marginal cost varies during the day, so should the fees.

ANSWERS TO PROGRESS CHECKS

14A. See Figure 14A on page 550 of the text.

14B. A single operator should be given a monopoly franchise for distribution of gas. It should be either not allowed to produce natural gas or required to separate its distribution and production businesses.

14C. See Figure 14C on page 550 of the text. With a $25 per ton user fee, sources of emissions will emit 13,000 tons a year. Social benefit would be area *0agn*, under the marginal benefit curve up to 13,000 tons a year. Social cost would be area *0dfn*, under the marginal cost curve up to 13,000 tons a year. There would be a net social gain of area *aed* less area *efg*.

With a $45 per ton user fee, there would be a net social gain of area *abcd*. Neither the $25 nor the $45 fee is optimal. Which is preferable depends on the balance between area *bec* and area *efg*.

14D. See Figure 14D on page 551 of the text. The new care would exceed the economically efficient level.

14E. Reduce.

14F. Assuming that demand varies over the day, the marginal cost of usage will also vary. Economically efficient usage requires the price to vary with the marginal cost.

ANSWERS TO REVIEW QUESTIONS

1. [omitted].

2. [omitted].

3. Price regulation targets the provider's cost and gives it an incentive to exaggerate its reported costs. Rate of return regulation targets the provider's rate base and gives it an incentive to invest beyond the economically efficient level.

4. Monopolies restrict provision to raise the price, while monopsonies restrict purchases to reduce the price. In both cases, the outcome is not economically efficient.

5. Privatization means transferring ownership from the public to the private sector. Allowing competition means removing an exclusive (monopoly) right. A government-owned monopoly may be privatized without allowing competition.

6. [omitted].

7. (a) A movie producer that owns a theater is vertically integrated into the downstream stage of production. (b) The law that prohibited movie producers from owning theaters was a structural regulation to separate the movie production and exhibition businesses.

8. False.

9. Regulation of conduct and structure may prevent the party with superior information from exploiting that advantage, and so resolve the information asymmetry.

10. (a) The regulator could charge a user fee for noise generated by the construction equipment. (b) The regulator could set a standard and make it illegal for construction equipment noise exceeding the standard.

11. False.

12. They give the owner the legal power to exclude others from usage.

13. (a) Not an externality because all the parties belong to the market for production workers. (b) This an externality.

14. No.

15. Private good provides rival consumption/usage; public good provides nonrival consumption/usage; congestible facility provides usage that is rival when usage reaches capacity.

WORKED ANSWER TO SAMPLE DISCUSSION QUESTION

A major public-health accomplishment in developed countries has been the almost complete eradication of infectious diseases such as measles and polio. While measles merely causes discomfort among children, it is much more harmful to adults. By contrast, polio is very harmful to both children and adults. A person can gain immunity by either becoming infected or being inoculated. Even if they are offered free of charge, inoculations impose private costs. In particular, there is always the risk of contracting the disease from the inoculation.

a. Compare the private vis-a-vis social benefit(s) from one person's inoculation against an infectious disease.
b. Absent government intervention, will too many or too few people obtain inoculations? Is this under/over-inoculation problem likely to be better or worse for polio as compared with measles?
c. Should the Government subsidize inoculations and, if so, to what extent?
d. In many developed countries, the law requires all children to be inoculated. Is it socially efficient to require 100% inoculation?

Answer

(a) The private benefit of inoculation is that once a person is inoculated, he/she will not be infected. The social benefit is the private benefit plus the reduction in the probability that other people will be infected (since the person being inoculated is less likely to infect others). Therefore, one person's inoculation generates a positive externality to society.

(b) Absent government intervention, each person will be inoculated if the private benefit exceeds the private cost of inoculation. Now the private benefit of inoculation is less than the social benefit. Assuming that the marginal private cost of inoculation is the same as the marginal social cost, there will be too few people obtaining inoculations. Since polio is a more serious disease than measles, the marginal private benefit of inoculation is higher. The marginal private cost (including risk of infection

from the inoculation), however, is also higher---in particular, the marginal private cost of inoculation against measles is very low when the inoculation is taken as a child. On balance, the under-inoculation problem is probably more serious for polio.

(c) Since one individual's inoculation generates positive externalities, the government should subsidize inoculations until the marginal social benefit equals the marginal social cost.

(d) In general, it is not socially efficient to require 100% inoculation. For example, suppose all but one person are inoculated. In this case it is almost impossible for the last person to get that disease. Therefore, the benefit (both social and private) of inoculation is very small. It is very possible this benefit is less than the cost (the cost of inoculation, and the risk of getting the disease from inoculation). Therefore, 100% inoculation requirement is not efficient. In practice, 100% inoculation is difficult to enforce.