Regulation Policy and Economics of Regulation
Class No. 4 (file 4): Basic Theories of Regulation

Objectives of Today's Class

(1) To understand kinds/objectives of regulations
(2) To understand a mechanism with which regulation gets formulated

Outline of Class No. 4

4-1 Typology of Economic Regulations
4-2 Roles of Economic Regulations
4-3 Theories of Regulation Formation

Economic Regulations

Regulations crafted with the purpose (excuse?) to improve economic efficiency

Ones primarily having important effect on an economic value

Social Regulations

Regulations crafted with the purpose to realize social objectives/value apart from economic efficiency

Typology of Major Economic Regulations

(1) Price regulation
(2) Quantity regulation
(3) Entry/exit regulation
(4) Quality regulation/manifestation regulation
(5) Investment regulation
(6) Requirement of quantities for production, selling, and procurement
(7) Self-imposed code of conduct, self-imposed plan of action

Major Price Regulations

（1）Maximum-price regulation →file 2, 5,10

（2）Minimum-price regulation →file 11

（3）Multiple-costing-based price regulation →file 5, 8-11

（4）Price cap →file 5, 10, 11

（5）Rate-of-pay regulation →file 7

Major Quantity Regulations

(1) Maximum-quantity regulation
(2) Minimum-quantity regulation
(3) Obligation to supply

Major Entry/Exit Regulations

(1) Licensing system
(2) Entry approval system
(3) Obligation to continue supplies (kind of exit regulation)
(4) Movement restriction

Excessive entry theorem: excessive entries in imperfectly competitive markets ～Which at a glance looks like the ground for regulations on competitive restriction

⇒Theoretical grounds for the policy to curtail the number of firms by means of competition~ file 9

Major Quality Regulations

（1）Making quality manifestation obligatory ← Controversy on unraveling

Many problems are being discussed in the fields of law and economics.（Law and Economics 2)

（2）Standardization of quality

（3）Establishment of minimum quality standards

（4）Separation of markets (to expel low-quality goods from specified markets)

Major Investment Regulations

(1) Investment in maximum production capacity

(2) Investment in maximum production capacity

(3) Licensing system for production capacity

(4) R&D investment regulation ← design for the patent system

Quite important in the context of competition policy

Are joint R&D, patent pool anti-competitive? （discussion on the latter planned in *file 7*）

Examples of Quantity Requirements for Production, Selling, and Procurement

- Requirement for the car manufacturers (distributors) to make (sell) zero emission vehicles comprising a certain rate of the total
- Requirement for the transportation business to install low-emission tracks comprising a certain rate of the total
- Requirement to employ minorities
- Requirement for the electric power business to purchase from renewable power sources comprising a certain rate of the total（RPS Law）⇒ Extension to fields of other energy

→file 9

Inefficiency in Quantity Requirements for Production, Selling, and Procurement?

With the same policy objective, taxes or subsidies are more efficient?

Subsidies or tax exemptions for installing low-emission vehicles

Taxes on cars other than low-emission types, cutbacks on subsidies

→ Firms with lower costs install a greater number of vehicles.

⇒ The installation of the same quantity of low-emission cars can be achieved with lower (social) costs.

∼Making the installation compulsory is a policy to ignore economic efficiency?

Efficiency in Quantity Requirements for Production, Selling, and Procurement

In actual regulations requiring the installation, there are many cases that take economic efficiency into account.

Buying and selling of the right

～Firms that have achieved over the quota are entitled to sell the portion to non-achieving ones.

⇒ Tradable permit in real terms

Buying/selling of the right are means to enhance efficiency, but not effective for directly increasing the quantity of the installation.

← It is possible that the quantity of the installation goes up through an indirect effect derived from the fact that a higher target becomes easier to achieve due to the cutback in installation costs. Without changing a target, no increase in the quantity of the installation can be naturally expected.

Tax/Subsidy

Taxes and subsidies can be utilized in lieu of tradable permit (which are rather more popular).

A subsidy for the installation of low-emission vehicles（close to the realm of the Pigou subsidy)

To set a target for the installation of low-emission cars, and levy a tax on firms that have failed to achieve it at the rate in proportion to non-achieving degrees (close to the realm of the Pigou tax)

In an ideal realm, both taxing/subsidizing policies and tradable permit bring about the identical policy effectiveness（the realm of tariff/quota equivalence).

Difference Between Tax and Subsidy

A marginal inducement is the same; but a burden on firms is different.

Tax is heavier on firms.

Are there only these two ways?

There's one in between: a tax prior to the quantity of the installation is X units; a subsidy beyond X units; a subsidy at X = 0, and if X is large enough, it's a tax. There can be any midway numbers.

→To be able to change a burden on firms continuously.

Hybrid of Tax and Subsidy

How to determine X？

Y% increase over the previous year‘s result

- Revision year after year causes a problem ← There is a possibility to neglect the installation in the current year in order to in increase a subsidy in and after the following year.

Necessary to fix prior to the system’s start

- An inducement to hold back on the installation having an eye on the system’s introduction so as to ensure a quota

～Necessary to fix in a year fairly before the discussion

To set X big → Industries get washed away to countries with lax regulations. ⇒ Importance of international coordination

Institutional Design of Emission Trading

- Is participation compulsory or voluntary?
- Is it a system within a country, or correlated internationally?
- Is it in the method of an auction or grandfathering?

Grandfathering: to grant the right to emit to firms free of charge based on the current amount discharged; if firms cut back emissions compared to the current amount, they are entitled to sell the balance (or, buy if they exceed).

Auction: to purchase the whole from the government, without any initial quota

Institutional Design of Emission Trading

Grandfathering: the realm of the Pigou subsidy

Auction: the realm of the Pigou tax

Just like there is a midway between the Pigou tax and subsidy, there can be a combination.

To narrow down an initial quota, and the remainder to be put up for an auction

How to handle an initial quota? ~ The same question as determining X in the case of the hybrid of Pigou tax and subsidy

Institutional Design of Emission Trading and Tax/Subsidy

The realm of grandfathering/subsidy

There will be lobbying activities over the initial quota.

→Scramble for emissions quota～Rent seeking

To fix when setting standards, no change of the quota →Huge amount of profits for firms having reduced emissions by a large margin ⇒ Unable to be sustained politically (the problem having the same root with the price cap regulation)

This type of problem does not happen with an auction or tax.

Institutional Design of Emission Trading and Tax/Subsidy

With an auction or tax, rent seeking over the initial quota and subsidy can be controlled.

Revenues from the taxation and sellout of the right (whose flow value) to be set aside for tax reductions

⇒To reduce an extra tax burden and additionally improve economic welfare～Double dividends; rent seeking over tax reductions

～Going round in circles

Too much a burden on firms → To distort firms' inducement to overseas transfer ← The tax cut ought to be applied to corporate tax: difficult to realize

Tradable Permit vs. Tax/Subsidy

Which is better, tradable Permit or tax/subsidy?

The question repeatedly comes up with respect to policies on trade and environment.

There is no difference between the two if competition is perfect and information is complete

～Tariff/quota equivalence

Not necessarily equivalent if there is a problem with information

Tradable Permit vs. Tax/Subsidy

While the size of external diseconomies is understood, the optimum amount discharged is not known. →Tax being superior

While the optimum amount discharged is understood, its costs and/or demand conditions are not known. → Tradable permit being superior

A firm implements an emission-reducing investment.

→ Its price goes down in case of tradable permit.

→ And which brings down the rival's marginal cost. ~ to reduce an inducement for investing

Hybrid of Emission Trading and Tax/Subsidy

Emission trading can be combined with tax/subsidy.

To impose a surcharge/tax on the portion exceeding the amount of emissions acquired as the right to emit ~ To set up the virtual upper limit on the price for the right to emit

A country buys out the right to emit at an established price. ~ To set up the virtual lowest limit on the price for the right to emit

An effect also expected to prevent a bubble economy in the emission trading market

Leading Runner Approach

To tailor regulations/taxation to the most superior technology and firm

→ Regulations to become strict when a particular firm succeeds in technological innovation

～Firms to conspire together to slow down the pace of development (when a market is not so competitive)

～To invest more aggressively in the wake of strategic effect (when a market is competitive)

Emission Tax in Perfectly Competitive Market

Perfect competition in a product market

Emission of each firm e per the single production quantity: Social loss of d per the single emission.

Question: What is a specific tax rate (tax rate per the single production quantity) that maximizes a surplus?

d （higher than, lower than, or the same with）?

Emission Tax in Imperfectly Competitive Market

Symmetric Cournot duopoly in a product market

Marginal cost being constant: Linear demand function

Emission of each firm at $e_1=e_2=e$ per the single production quantity: Social loss of d per the single emission.

In the Pigou tax, taxation of d per the single emission

There is no policy device apart from emission tax.

Question: Is a specific tax rate that maximizes a surplus higher or lower than d?

Emission Tax in Imperfectly Competitive Market

Cournot duopoly: Marginal cost (regarding production) being constant and common to the 2 firms: Linear demand function

Emission of each firm at $e_1=e-\varepsilon, e_2=e+\varepsilon$ per the single production quantity: Social loss of d per the single emission

There is no policy device apart from emission tax.

Question: Regarding a specific tax rate that maximizes a surplus, comparing the state of $\varepsilon=0$ with the one of a plus number, is the rate higher in the latter case than in the former, or lower?

- Market failure accompanying imperfect competition: underproduction
- It is ideal to increase the share of Firm 1 and decrease that of Firm 2.

History of Regulations

(1) Free economy in the prewar period

(2) Regulatory/controlled economy from the period between the wars to the early postwar years

(3) Period of the preservation of regulations under the economic growth

(4) Deregulation period

(5) Regulatory Reform period

Theories of Regulation Formation

What kind of industry is likely to be a target of regulation?

(1) Efficient regulation models

(1a) Independent bureaucrat model

(1b) Natural selection model

(2) Model in conspiracy with industrial circles

(3) Model for maximizing political backing

(4) Pressure group's competition model

Natural Selection Model

The regulation is formed so as to maximize economic welfare (aggregate surplus).

The regulation is formed with priority to areas where the level of market failure is greater, and is reformed toward improving economic welfare.

→file 5, 8-11

Model in Conspiracy with Industrial Circles

- To form the regulation so as to maximize profits of the industrial world (producers); many of such regulations restrict competition.
- The target of a regulation is prioritized in proportion to the likelihood of markets where a profit level becomes low under a fierce competition without a regulation.→file 11

Model for Maximizing Political Backing

The regulatory authorities form the regulation so as to maximize political support.

Such a regulation does not lower returns unnecessarily, but also takes consumer benefit into account.

→ It is a regulation to promote competition for a market where losses incurred by noncompetition are significant, and another to control competition for a furiously competitive market.

～Aimed at gaining support of both consumers and industrial circles

Pressure Group's Competition Model

Pressure groups make approaches to the regulatory authorities.

The bigger the effect of transfers of income that is derived from a regulation, the more likely that such a market gets regulated.

A regulation that awards big gains to a small number of people is more likely to be adopted (as compared to one that awards small gains to a large number of people).