I. THE REGULATION OF INFRASTRUCTURE FACILITIES AND SERVICES: THE PRINCIPLES

A. Introduction

Regulation is a key concern of the infrastructure industries, their consumers, citizens and governments alike. It is important to recognize that regulation is a multidisciplinary activity that embraces law, political science and social administration as well as business and economics. Regulatory processes generally comprise three stages: the enactment of enabling legislation, the creation of regulatory administrations and rules, and the bringing to bear of those rules on individuals or organizations whose behaviour is to be influenced or controlled.

This chapter reviews the fundamentals and commences with a definition of regulation and enumerates why governments might regulate the provision of infrastructure facilities and services. Alternative regulatory strategies, the kinds of institution involved in regulation, methods of enforcing regulation, and criteria for determining sound regulatory practice are then identified.

B. What is regulation?

Regulation is the sustained and focused control, normally exercised by a public agency, over activities that are valued by a community. In addition, regulation can either prevent undesirable behaviour, actions and activities or enable and facilitate desirable ones. In practice, regulation can be effected in different ways. One form of regulation involves establishing specific rules or commands which have to be complied with, for example in the area of health and safety legislation. However, regulation also embraces those actions designed to affect the social behaviour and activities of companies, organizations or individuals which includes taxation, subsidization, contractual requirements, licensing and franchising.

C. Why regulate the infrastructure industries?

Owing to the existence of significant economies of scale and demand externalities, it has traditionally been felt that competitive markets cannot adequately provide infrastructure facilities and services. This often led to the direct state provision of infrastructure facilities and services or the nationalization of infrastructure companies. In recent years, the privatization of many infrastructure providers has created the potential for the emergence of private monopolies and this has necessitated their regulation by government.

In practice, governments may regulate the provision of infrastructure facilities and services for a number of reasons, including:

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Monopolies and natural monopolies

The main aim of regulating monopolies is to counter the tendency of monopolists to set prices above, and output below, the levels that would prevail under competitive market conditions. One response to potential monopolies is to use competition (or anti-trust laws) so as to create a business environment conducive to competition. Where a ‘natural monopoly’ exists, however, the use of competition law may be undesirable. Natural monopolies arise in industries where economies of scale are so great that production at least cost to society can only be achieved by having a single producer. For example, it is usually too expensive to have more than one rail network or track serving a particular route and therefore it is best supplied by a single firm subject to regulation on price, quality and access to the network by train operators. The regulator will usually seek to set prices near to incremental or marginal cost in order to encourage the natural monopolist to expand its output to the level that competition would have induced.

Typically, natural monopolies occur in industries characterized by large distribution networks with substantial fixed costs, such as gas, electricity, water and railways. In practice, however, it is as rare to find examples of industry-wide natural monopoly as it is examples of perfect competition. Even if some parts of an industry have natural monopoly characteristics others may be potentially competitive. For example, electricity supply consists of natural monopoly in transmission, but potential competition in the generation and the supply of user equipment. Telecommunications was for a long time considered to be a natural monopoly at least for the basic telephone service, whereas value added services and the equipment market are competitive. The creation of new networks for voice transmission has even eroded the monopoly of the basic service.

Windfall profits

A firm with access to a low cost source of supply, which is not available to other firms, will earn a ‘windfall’ or ‘excess’ profit or ‘economic rent’. It may be necessary to regulate such an industry in order to transfer profits to taxpayers or to allow consumers and the public to benefit from the windfall. The case for regulation is more compelling where the access to the source of supply has not resulted from previous investment from the firm concerned. In the water and gas supply industries the pipeline provider is potentially able to earn a windfall profit on their investment basic infrastructure.

Externalities

Externalities or ‘spill-overs’ arise when the price of a good or service does not reflect the true cost to society. Examples of externalities are common in the infrastructure sectors and include road congestion, industrial pollution and traffic noise. The rationale for the regulation of externalities is to promote their internalization and reduce social costs.

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2 M. Waterson, Regulation of the Firm and Natural Monopoly (Oxford University Press, 1988).

3 Internalization involves the firm or individual generating an external cost to bear the costs involved, or receive compensation where an external benefit is generated.
Information inadequacies

Competitive markets can only function properly if consumers receive sufficient information in order to evaluate alternative products. Information maybe withheld by producers or it may be inaccurate, incomplete or misleading. Examples are common in the infrastructure industries where consumers may not possess adequate information of telephone call charges, energy prices or water quality. Regulation may be needed to make information more accessible, more accurate and affordable.

Continuity and availability of services

In some circumstances the market may not provide the socially desired levels of continuity and availability of service. For example, in rural areas commercial firms, without government intervention, would not provide public transport or public telephone services. Regulation may be used to sustain services during areas or periods of low demand by setting prices, in high demand areas or periods, sufficient to cover total fixed costs. Subsidization of this type, on grounds of social policy, may lead to a degree of economic inefficiency and also raise issues of equity.

Anti-competitive behaviour and predatory pricing

Regulation may be necessary where infrastructure providers act in a manner harmful to open competition. A common example of such actions is ‘predatory pricing’ whereby dominant firms deliberately set their prices at unprofitable levels, for a period, in order to eliminate existing and potential competitors.

Public goods and public hazard

Some services are ‘public goods’ in the sense that their consumption bring about shared benefits. Typical examples of such activities are security and defence services. Transport services are sometimes regulated in order that they can be commissioned for defence purposes at a time of need. Similarly, potential safety risks abound in transport activities and, therefore, they may be regulated in order to reduce potential hazards faced by the public.

Rationalization and coordination

Regulation may be desirable to ensure that services are efficiently rationalized and coordinated. For example, a competitive market for public transport services might not provide the necessary incentives for operators of different modes and routes to ensure efficient connectivity between their services, that is with connecting timetables, through tickets, and shared termini.

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5 S. Breyer, Regulation and its Reform (Cambridge, Massachusetts, 1982).
Planning

Regulation may be required to ensure that infrastructure firms, operating in a competitive market, make adequate provision in their business plans for future generations. An example of such a requirement is in the use of non-renewable fuels where taxes or standards may be necessary to prevent the over-exploitation of energy resources.

Unequal bargaining power

An efficient market requires an equality of bargaining power among consumers and suppliers. In consequence, regulation may be required in labour markets where high unemployment exists and where it is possible that workers could be forced to accept poor or unsafe working conditions.

Scarcity and rationing

If commodities such as fuel are temporarily in short supply, for example, because of conflict, then it may be in the public interest to physically regulate its supply rather than rely on the market mechanism.

Distribution and social justice

If the market produces an allocation of resources which is distributed in a manner which is politically unacceptable or lacks social justice, it may be necessary to regulate. Examples of such regulation are laws designed to prevent race, sex or age discrimination.

Fair competition and investor confidence

Where there are both public and private sector operators in an industry, there is a need for regulation in order to ensure a level playing field with fair competition. In addition, an effective regulatory framework may reassure potential private investors in a particular sector especially as part of a privatization or private participation programmes.

Historically, to correct for market failures and to ensure that domestic production both survived and developed, governments intervened to regulate and “nurture” key industries providing infrastructure facilities and services. Such policies often involved the nationalization of public utilities or the provision of subsidies and protection to infrastructure industries. However, over the last two decades, there has been a growing perception that public enterprises were performing badly. Further, as Klein argues, effective competition usually requires that firms can fail which, in turn, usually requires private ownership. Numerous studies have demonstrated that state ownership and over-regulation contribute to poor performance by providing insufficient incentives to firms and their managers. For instance, the basis for the market failure may have been incorrectly diagnosed or the steps taken to rectify the problem may have proven to be inadequate or disproportionate to the problem. Regulators may have been disadvantaged

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by the fact they were not close enough to the commercial operation to effectively meet changing market conditions or were faced with conflicting commercial and social goals with inadequate guidelines. (For example, a regulator may have problems establishing a price mechanism, that is flexible enough to respond adequately to changes in demand and costs). This is particularly so if the market is expanding or changing rapidly. In addition, the costs of administering the regulatory system in some cases were seen to outweigh the benefits to consumers.

Technological change has had an important influence on regulatory reform, sometimes transforming industries that appeared to be “natural” monopolies into competitive ones. For example, the telecommunications sector has undergone considerable changes brought about in part by changes in technology, such as the introduction of satellite, microwave, cellular radio and cable and computer networks. These alternatives have partly eroded the natural monopoly of the traditional communications network.

Growing government budget deficits have been a further that has hastened the removal of much unnecessary regulation and the privatization of many state enterprises and industries. In response, governments have becoming increasingly concerned with reducing unnecessary regulation and subsidization for purely budgetary reasons. For example, it may be possible to improve performance by introducing market-type solutions in particular segments of a monopoly industry by contracting out particular activities to the private sector or by withdrawing the government monopoly granted to a particular enterprise and allowing in new entrants.

In sectors that demonstrate a mixture of monopoly and contestable market features, the policy challenge is to find the right combination of regulation and openness to possible competition. This may involve restructuring the enterprise into separate entities so that competitive activities are separated from those of the monopoly to avoid the danger of cross-subsidization. Once the separation occurs, it is easier to identify those activities for which public financing is justified while leaving other activities to the play of market forces, subject to the application of competition law to safeguard competition. Other industries such as airlines, energy, transport, broadcasting, banking and insurance have also, for various historic reasons, become regulated or state controlled although they manifest many of the features of contestable markets.

The trend in many countries has been to reassess the rationale for the regulation of these industries and in many cases open them up to some degree of competition through liberalization. Once a government is satisfied that free competition exists, the case for regulation diminishes or becomes more limited in scope. Where economic reforms lead to a continuation of monopoly in a market, there is a case for continuing regulation.

The arguments in favour of removing regulation where it is inefficient applies only to the regulation of prices, output, levels of service and entry and exit (economic regulation) and does not imply that all forms of regulation are unnecessary. There is a range of non-economic and social regulations in areas such as health, safety and environmental protection that affect competition in all sectors. These forms of regulation are not the instruments of policies aimed at improving efficiency, though even in these areas there is frequently scope for more competitive solutions to be adopted. In considering whether to regulate it is important to balance the market and its failings with regulation and its failings.
D. Regulatory strategies for infrastructure

If the state wants to control an infrastructure provider that possesses a natural monopoly, it may use a number of different strategies. It may tax the excess profits that are earned by the monopolist, it may sell licences or rights to operate the natural monopoly, or it may control the prices set by the monopolist. If the state wants to limit river pollution, it may set environmental standards, prohibit dumping, tax polluters, or inform the public of the benefits from reducing pollution in an attempt to change behaviour. Governments must choose the regulatory methods or system that provides the most cost-effective way of achieving its objectives. In principle, a government has available to it the following regulatory techniques:\(^7\)

- **Harnessing markets**

  This involves the state channelling competitive forces to particular ends by the use of one or more of the following:

  (a) **Competition laws**: these are a direct method of regulating by harnessing market forces which involves influencing competition in an area. Competition laws can be used instead of, or in conjunction with, regulation in order to sustain levels of competition and the competitive behaviour necessary to provide adequate services to consumers and the public.

  Competition laws can also be used to prevent anti-competitive behaviour, such as predatory pricing by dominant firms or cross-subsidization from monopolistic to competitive activities.

  Such laws have the advantage that they can be applied uniformly across all sectors of the economy and with less intrusion into the decision-making of firms than some other forms of regulation. They can be relatively inexpensive for government since they are implemented through the courts and not through publicly funded regulatory agencies.

  Competition laws do however have the disadvantage that they might not be good at accounting for the technical and commercial circumstances faced in particular industry.

  (b) **Franchising**: this is a system of control that can be applied to natural monopolies. In principle, franchising replaces ‘competition in the market’ with ‘competition for the market’. The underlying idea is that potential operators will bid to provide a service, with a degree of exclusivity or market protection, on the basis of offering the lowest cost or price. Since franchises are usually offered for a fixed period of time, the idea is that franchisees will behave as if they are in competition.

  (c) **Regulation by contract**: this is used by government departments or agencies to ensure its suppliers of infrastructure facilities or services act commercially. In addition, it provides an opportunity to establish specified

service standards and can be used as a prelude to ‘self-regulation’ or the imposition of consensual forms of regulation.8

(d) **Tradeable permits**: this involves a public agency issuing a given number of permits which may possibly be sold by auction. The permits are usually used to control the harmful effects created by infrastructure firms, such as pollution or other externalities. The permits enable the government to regulate the total level of such external costs and once issued firms would be able to sell their permits, or excess allowances, as they switch to cleaner fuels.

➢ **Command and control**

This involves the exercise of influence by the government imposing standards backed by criminal sanctions. For example, authorities responsible for health and safety in many countries can prosecute those deemed to be in breach of the regulations.

The advantages of such methods of regulation are that they fix standards and acceptable types of behaviour, they can be used to screen entry by firms to a market, and adverse behaviour can be stopped immediately. The main disadvantages, however, are that they intervene directly in company management and operations, are prone to capture, can lead to high costs of compliance, enforcement and administration, can be anti-competitive, and may not provide an incentive to improve on standards.

➢ **Incentives**

Governments can regulate the behaviour of firms providing infrastructure facilities and service by the use of contracts, grants, taxes, loans, subsidies and other incentives. An example of this form of regulation is the tax differential between leaded and unleaded petrol used by many governments to encourage the use of cleaner fuels.

The advantages of such incentives are that they are inexpensive to implement, there is low regulator discretion, and there is little intervention in the operation of firms. The main problems with regulation by incentive are that it is often difficult to predict the outcome of a particular measure, they can lead to a regulatory time lag, and they can be rather inflexible.

➢ **Informing**

This involves using information strategically to inform consumers through mandatory disclosure requirements. Such methods require minimal intervention and are useful in low-risk areas. However, the policing of the accuracy of the information disclosed may be difficult.

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Acting directly

Governments can regulate activities by taking direct action, for example, by taking public ownership of infrastructure and leasing out or franchising the operations. In London, for example, the bus transport network is publicly owned, but routes are franchised. Direct action can be used to assure the public of acceptable levels of provision and allows the state to undertake long-term investment planning. The disadvantages of direct action are that it may require public funding, there may be a lack of market-driven innovation, and public sector involvement in infrastructure provision might be politically contentious.

Self-regulation

Self-regulation usually involves an organization of producers or a trade association developing a system of rules that it monitors and enforces against its own members. It can also be ‘enforced’ when it is subject to governmental supervision or structuring. Self-regulation is discussed further below.

In deciding whether to regulate or to leave matters to the market, it is important to be realistic about the performance of particular regulatory methods. In most regulatory systems a combination of methods are normally employed. For example, privatized telecommunications firms may, on the one hand, be subject to sector-specific regulation on issues such as pricing and network access and, on the other hand, also be subject to general competition laws on matters such as mergers and acquisitions. Similarly, railways tend to be subject to several levels of regulation on matters such as the railway safety, route franchising, track access pricing, and passenger fares.

E. Who regulates?

Regulation can be undertaken by a variety of bodies. The nature of the regulatory institutions created can have a significant effect on the style of regulation, the regulatory strategies employed, and also on the achievement of the regulatory objectives. The main types of regulator are:

- Self-regulators;
- Local authorities;
- Courts and tribunals;
- Central government departments;
- Regulatory agencies;
- Directors General.

Indeed, in some cases Parliament itself has acted as the regulatory body. For example, in the United Kingdom of Great Britain and Northern Ireland, Parliament imposed control over a number of infrastructure industries, such as ports, railways, gasworks and electricity generating plants, by passing private bills. The statutes were the equivalent of tailor-made licences and laid the foundation for modern utilities regulation.
Self-regulators

The main examples of self-regulation are found in trade or industry associations and professions. In addition, some cartels, such as liner shipping conferences, are sometimes regarded as self-regulators.

The main advantages of self-regulation are that they usually receive industry support and expertise. However, the operators’ interests and those of consumers and the public may not coincide. Further, owing to low accountability and a lack of independence in the resolution of complaints, self-regulation may require government oversight and judicial scrutiny.

Local authorities

Local authorities often have responsibility for regulating environmental development and infrastructural investment related to urbanization. Local authority regulation provides for democratic control by those with a detailed knowledge of an area, control that is likely to be more responsive to particular regional concerns than a regulatory regime run by a central government department or agency. A move towards centralized regulation, however, may be argued for in certain circumstances:

(a) Where there is a need for uniform standards or to coordinate controls across areas;
(b) Where the pooling of technical knowledge is necessary;
(c) Where a close linkage with government policy is required;
(d) Where economies of scale from regulation exist;
(e) Where there is a need to prevent the possible capture of the regulatory processes by dominant local interests.

Courts and tribunals

Regulation through the judicial procedures of the courts and of tribunals is common in the railways, ports, inland waterways, and air transport. Their procedures are usually seen as fair and open. However, conflicts with government policies may undermine their regulatory functions. In addition, case law may develop only sporadically and there is unlikely to be any systematic development of regulatory guidelines or plans.

Central government departments

Regulation directly by government departments is still common in areas such as safety, shipping, and mineral extraction. Ministerial accountability and the ease of coordination with government policy are the main advantages of this form of regulation. The main problem, however, is that there will be a perceived lack of independence, dynamism and expertise. In particular, it is likely that party politics will become involved when regulatory decisions are taken. It is for these reasons that the creation of independent regulatory agencies is generally regarded as essential.
Regulatory agencies

Regulatory agencies are independent bodies that act on behalf of central government, but are not central departments of state. One of their strengths, as institutions, is their ability to combine governmental functions by deciding disputes between parties, and promulgating and enforcing rules. They usually regulate specific sectors such as civil aviation and are managed by expert career regulators. Importantly, regulatory agencies have the ability to develop policy and plan the regulation of an industry on a continuing basis. It is possible however, that accountability of such agencies may be limited and may suffer political interference.

Director Generals

The privatizations of utilities, particularly in the United Kingdom, were effected by statutes that gave regulatory powers to individuals called Directors General appointed by the Secretary of State with duties and powers prescribed by law. The decisions of Directors General can be challenged in courts of law or appealed to the Monopolies and Mergers Commission. Accountability to the government is exercised through annual reporting and treasury financial controls. The main advantage of this approach is that it promotes decisiveness and accountability since this lies with an identifiable individual. The disadvantages are that discontinuities can arise when there is a change of Director General and there is a risk of exposure to the ‘cult of personality’. Indeed there have been moves to replace Directors General with regulatory boards and commissions with similar powers.

Different types of regulatory institution have varying strengths and weaknesses. In broad terms:

(a) Self-regulators tend to be strong on industry expertise, but weak on public accountability;
(b) Local authorities tend to be strong on local democratic accountability, but weak on coordination;
(c) Courts and tribunals are likely to be fair, but weak on planning;
(d) Entral government departments tend to be strong on planning and coordination, but weak on neutrality;
(e) Agencies are strong on expertise and political neutrality, but weak on accountability;
(f) Directors General are likely to be expert and responsive, but weak on spreading discretionary powers.

F. Principles of good regulation

To decide whether a system of regulation is good, acceptable, or in need of reform, it is necessary to be clear about the benchmarks that are relevant to such an evaluation. Table 1 sets out a number of criteria or benchmarks, that may be used in evaluating a regulatory system, how they may be assessed, and associated problems.
Table 1. Benchmarks for regulation

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<tr>
<th>Benchmarks</th>
<th>Criteria</th>
<th>Problems</th>
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<tr>
<td>Legislative mandate</td>
<td>Authorization from elected legislature</td>
<td>Parliament’s intention may be vague or contain conflicting objectives</td>
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<td>Excessive delegated discretion</td>
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<tr>
<td>Accountability and control</td>
<td>Evidence of effective control and accountability</td>
<td>Lack of representation of body holding regulator to account</td>
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<td>Due process</td>
<td>Fair, accessible and open procedures</td>
<td>Establishing an acceptable trade-off between openness, accessibility and efficiency</td>
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<td>Expertise</td>
<td>Specialist knowledge, skills and experience</td>
<td>General distrust of experts</td>
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<td></td>
<td></td>
<td>Expert may be subject to ‘capture’ or self-interest</td>
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<tr>
<td>Efficiency</td>
<td>Productivity of procedures and investigations</td>
<td>Limited ability of public to judge efficiency</td>
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<td>Value for money with efficient and effective outcomes</td>
<td>Auditing complexities</td>
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The above criteria are all subject to difficulties, but collectively they constitute a set of benchmarks for alternative regulatory regimes and their suitability in particular infrastructure industries. Assessing regulation will require agreement to be reached on how performance on each criterion should be measured, the relative weightings to be attached to the various benchmarks, and how the assessments should be aggregated. Finally, any regulatory strategy must provide an ‘incentive driven’ environment in order to ensure the efficient delivery of services and the provision of infrastructure at minimum cost.

G. Cost–benefit analysis

Cost-benefit analysis and other methods of economic evaluation can be used, in principle, to assess the efficiency of a particular regulatory regime. It has been common, in many countries for government departments, when proposing regulation to have to:

(a) Prepare a regulatory impact study, setting out the costs and benefits of the proposed regulation, including a risk-analysis;

(b) Enumerate alternative regulatory approaches that might achieve the given regulatory objectives at a lower cost;

(c) Identify both monetary costs and benefits along with non-quantifiable benefits;
(d) Demonstrate positive net benefits from the proposal to regulate;

(e) Prepare a ‘Compliance Cost Assessment’, showing the costs to businesses of complying with the requirements of the proposed regulatory regime.

Economic appraisal can, to some extent, be used to compare regulatory proposals with the benchmarks set out in the previous section:

- **Legislative mandate** – by having to measure regulatory alternatives against mandated regulatory policy goals, appraisals may improve the pursuit of such policy aims

- **Accountability** – appraisals introduce objectivity and expose the pursuit of hidden agendas. In addition, they reveal the costs of regulation to society and expose policy judgements to formal review

- **Due process** – appraisals ensure that procedures are open and that decision-making is rational

- **Expertise** – appraisals encourage experts to clarify and justify their proposals for regulation. In particular, they point out gaps in information and additional research needs

- **Efficiency** – appraisals seek to identify the lowest cost regulatory regime for a given level of potential benefit. Alternative regimes will be evaluated against the proposed regulatory system

In practice, there are significant problems associated with data constraints and measurement to be addressed in undertaking an economic appraisal. In addition, distributional concerns may outweigh efficiency requirements in the development of regulatory regimes. Nevertheless, appraisals are useful particularly if they focus on the questions set by policymakers and examine the costs and benefits of ‘live’ proposals for regulatory rules. Public trust in regulators can be significantly enhanced if any proposal to introduce regulation includes an organizational structure which demonstrates exactly how regulatory system will work.

**H. Enforcing regulation**

It is preferable that where a regulatory body exists then any regulatory impact assessments and compliance cost analyses should be undertaken by the regulator, and not by government, for the benefit of Parliament. Further, if auditors are used to evaluate such studies or proposals they should not be able to challenge regulatory decisions since this could compromise the independence of the regulator.

The bringing to bear of regulatory rules on persons or organizations they are intended to influence or control is vital to the success of regulation. Failures to identify and deal with breaches of rules will undermine any regulatory system. Regulators need to consider five issues in enforcing regulation:
Styles of enforcement

Regulators seek to gain compliance with the law not simply by formal enforcement and prosecution, but also by informal techniques including education, advice, persuasion and negotiation. The former is termed ‘deterrence’ and the latter ‘compliance’ approaches to enforcement. Compliance oriented approaches can either be persuasive or insistent in emphasis.9

Proponents of deterrence argue that compliance approaches are flawed and are indicative of capture and an insufficiency of enforcement resources. Deterrence approaches on the other hand are argued to be highly effective in changing corporate cultures so as to improve standards of behaviour and reduce the risks of the infringement of rules and regulations. On the one hand, compliance approaches are often argued to be more cost-efficient and can significantly reduce the number of expensive prosecutions. Further, deterrence may alienate public support for regulation if it leads to the closure of firms and therefore unemployment.

Instead of drawing a sharp distinction between compliance and deterrence, it is possible to see enforcement as a progression from compliance-seeking strategies to sanctions. Indeed, successful regulation involves establishing a synergy between punishment and persuasion. Ayres and Braithwaite10 introduced the concepts of enforcement (Figure 1) and sanctions (Figure 2) hierarchies or pyramids.

Figure 1. The enforcement pyramid

Command regulation
Insistent strategy
Persuasive strategy
Enforced self-regulation

The above describes a model of ‘responsive regulation’ whereby those regulated are subject to increasingly interventionist regulatory responses as they continue to infringe and less interventionist regulatory strategies as they increasingly comply. A similar hierarchy exists in terms of the sanctions that a regulator may apply.

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Those designing a regulatory system must determine the enforcement strategies and the way that sanctions will be escalated. The implementation of enforcement methods will however, depend on the legal, social and economic environment and on the leadership style of the regulator.

**Rules of enforcement**

Enforcement will depend on the kinds of regulatory rules that are used. Regulatory regimes, for example, that rely on prosecution will require precise rules so that guilt or innocence can be established.

In drawing up rules it will be important to ensure:

(a) The appropriate degree of specificity and precision;
(b) There is sufficient coverage and inclusiveness;
(c) Accessibility and intelligibility;
(d) The appropriate legal status and force;
(e) The necessary prescriptions and sanctions for breaches of the rules.

There will need to be compatibility between the rules and the compliance-seeking strategies employed by the regulator.

**When to intervene**

Regulators must not only decide the method of intervention but must also determine the appropriate timing or stage of intervention. There are broadly three stages of regulatory intervention:

(a) **Preventive actions**: such actions are justified where the costs of rectifying a breach of the rules or regulations is very costly relative to the costs of prevention. For example, it is less expensive to prohibit a merger between firms that will create a monopoly than to break it up after the event. Referrals of mergers
and acquisitions for sanction or approval are, therefore, preventive actions.

(b) **Act-based interventions**: intervening when an act occurs that breaches the rules may sometimes be less expensive than preventive measures. This is common where providers of infrastructure facilities and services are held accountable under the terms of franchising or concession agreements. For example, if a train operator reduces service frequencies below an agreed level, then it is relatively simple for the regulator to identify the breach of contract and seek a remedy.

(c) **Harm-based interventions**: enforcement costs may sometimes mean that it is more cost effective to prosecute and make an example of those few firms that actually cause harm or significant costs as a result of a breach of the regulation. This is cheaper than attempting to identify all breaches including those that do not result in actual harm. Examples abound in the area of health and safety regulation but are also found in price regulation.

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**How much to enforce**

Decisions also have to be made about how much to intervene since it is almost impossible to achieve perfect compliance. In economic terms, the socially optimal level of enforcement occurs at the point where the extra costs of enforcement exceed the extra benefits to society. Included within the costs of enforcement are the following:

(a) The costs of agency monitoring;
(b) The expenses of processing and prosecuting cases;
(c) The defence costs of guilty and innocent parties;
(d) The costs of misapplications of law, convicting the innocent, and deterring desirable behaviour.

From the regulator’s point of view, a key calculation is how much the group of potential offenders will be deterred by the regulator’s current or prospective approach to enforcement.

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**Controlling corporations**

Regulators face a series of difficulties in enforcing control of errant firms. Key issues relate to the sanctions that can be applied to influence corporations, the extent of corporate criminal fault, and the difficulties of proving liability.

Regulators can resort to administrative or criminal sanctions in dealing with corporations. Statutory administrative sanctions include improvement notices which require remedial action to be taken within a defined period or order the termination of an undesirable activity. Criminal sanctions normally involve fines against the firm or, in serious cases, fines against or the imprisonment of identifiable persons or officers of a corporation. In some cases, equity fines can be used as a means of penalizing shareholders. Equity fines involve the issuance of a
given number of shares to the state or the defined victim’s compensation fund. The advantage of such an approach is that shareholders will have an incentive to discipline managers while the firm’s costs and hence workers and consumers will not be directly affected. Other sanctions include punitive injunctions, corporate probation, enforced accountability, compensation orders, and adverse publicity.

All such devices have their strengths, weaknesses and areas of most useful application. Regulators need to approach corporate failure and corporate breaches of regulations and rules with the full array of sanctions available. If regulatory rules define corporate fault then the law will need to recognize the principle that criminal fault can be attributed to corporations. Further, it is important that the law facilitates the proving of liability by defining specific non-delegable responsibilities to nominated or identifiable individuals.

I. Setting standards

Regulatory rules often link a regulatory response (for example, a fine, tax or administrative order) to a standard of performance. The setting of standards is not exclusive to command and control regimes but is common to the regulation of performance contracts, franchising, and concessions. Regulators have to address two issues in setting standards:

(a) **Types of standard:** Standards can be applied at different stages of intervention. Specification or design standards focus on prevention by controlling the processes that give rise to potential dangers or breaches of rules. Examples include standards of road, railway or vehicle construction. Performance or output standards specify a given level of delivery such as rail services in franchised train operations. Target standards link standards to regulatory goals directly. For example, if the regulatory goal was that rivers and waterways were able to sustain fish life, then this would be the set target and firms would be free to decide how this was to be achieved. An advantage of this approach is that firms are given an incentive to find the cheapest way of meeting the target standard.

(b) **Performance levels:** Typically there are three approaches to setting performance levels:

(i) **Absolute standards:** these demand that undesirable activities are eliminated or do not exceed a defined level. For example, power station emissions may be limited to defined levels;

(ii) **Working limits:** these are defined, in flexible terms, and are expressed as the maximum levels of risks, emissions, or harms allowed within good practice. For example, the maximum market share that firms may command before they are regarded as dominant may be regarded as a working limit;

(iii) **Cost-benefit trade-offs:** some standards may explicitly allow the costs of avoiding dangers or harm to be weighed against the benefits to society. This approach is often used in the regulation of competition among providers of infrastructure facilities and services. This approach is sometimes extended to the use of tolerances in the development of
standards for performance standards. The total elimination of risks and harmful affects is usually prohibitively expensive. Therefore, it is important for the regulator to assess the level of performance at which the costs of avoiding risks equates with the benefits of that avoidance.

J. Self-regulation

Self-regulation occurs when a group of firms exert control over their own membership and their behaviour. Examples are found in a number of professions, such as medicine and law, and in industries, such as banking and insurance. Self-regulatory associations or groups can pursue the private interests of their membership or act in lieu of government in the pursuance of the public interest. Liner shipping conferences are sometimes argued to combine both sets of interests.

The case for self-regulation, or incorporating elements of self-regulation into governmental regulation, rests principally on considerations of expertise and efficiency. Concerns about self-regulation centre on the mandates, accountability and the fairness of procedures. Self-regulatory schemes must be able to command public confidence and should operate within a statutory framework with:

(a) Strong external involvement in the design and operation of the scheme;
(b) Separation of the control and operation of the industry from the institutions of the industry;
(c) Full representation of consumers and possibly government on the governing body of the scheme;
(d) Clear statements of principles and standards in the form of a published code;
(e) Clear and accessible complaints procedures to deal with breaches of the code;
(f) Adequate sanctions for breaches of the code;
(g) Periodic review and updating of the scheme;
(h) Annual reporting.

Self-regulation may play a part as an element within a scheme of regulation. A mechanism allowing for self-assessment may, for example, be incorporated within a regulatory compliance system. Further, firms may be given a role in drafting rules that government agencies may enforce. Co-regulation whereby an industry association engages in self-regulation with some oversight or ratification by government may have wider acceptance and effectiveness than externally imposed rules. Government regulators can also use ‘enforced self-regulation’ to establish rules that are applicable to individual firms. The regulator may expect firms to demonstrate that their internal systems and procedures account for the need to comply with the requirements of the law.
K. Regulatory risks

Regulation is centrally concerned with the control of risks – such as the risk that infrastructure facilities and services will be inadequate or prices will be excessive. To view regulation in terms of risk control improves our understanding of regulatory decisions, methods and priorities.

(a) **Defining and assessing risks**: regulatory efforts should be devoted, as first priority, to the reduction of the most severe risks. Assessments have to be made to identify potential risk in terms of its cost impact and probability of occurrence. Regulators need to establish society’s risk preference in determining regulatory priorities.

In infrastructure industries it may be deemed that the greatest initial risks arise from the possibility that private sector monopolies may quickly emerge following privatization, or that dominant firms may engage in predatory pricing practices, or that potential bidders for operating licences may collude when bidding. Risks must be defined and assessed as a matter of priority and regularly reviewed by regulators.

(b) **Risk management**: involves regulating risks in an effective and acceptable manner. The stage at which intervention should occur is a key issue. Risk management may involve the adoption of strategies to minimize the creation of the risk or it may involve mitigating the adverse effects of such risks. An example of the former would be the prohibition of mergers that might create a monopolist while an example of the latter might be price regulation in a market deemed to be monopolistic.

Risk management also involves deciding whether a risk is a matter of public concern or can be left to private resolution. In addition, risk management involves selecting the appropriate regulatory technique or techniques to target the identified risks.

(c) **Legitimacy of risk regulation**: regulators face problems of legitimacy in their regulatory decision-making. The problem can arise as a result of the potential gap between lay and expert opinion and also as a result of perceived political interference and influence. Limitations of knowledge, data and analytical procedure can also affect the quality of regulatory processes. Breyer recommends therefore, that a ‘depoliticized regulatory process might produce better results’. The concept of an independent regulator is founded on the principle that such an agency will be specialized, expert and sufficiently focused to develop and implement a rational risk management programme. Independence and expertise will, it is often argued, enhance public acceptance provided that sufficient accountability and due process exists.

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I. Regulatory competition and coordination

Regulators often find themselves in competition with other regulators. Competition may occur between national regulators or at a regional or local level. Regulatory regimes may be competitors in order to secure national or sectoral economic advantage. Competition between regulators may also occur within a sector, for example, where a water industry regulator and an environmental protection agency have overlapping responsibilities. While there may be some benefits from regulatory competition particularly where this leads to improved standards of consumer protection, in general regulatory coordination across national or sectoral boundaries is desirable. Problems tend to arise when the following circumstances are encountered:

(a) Cross-jurisdictional or cross-sectoral harms;
(b) Regulatory bias within states or sectors participating in a market;
(c) A lack of information concerning the intentions and operations within a given market, of different regulators;
(d) Tendencies to delay regulatory liberalization so as not to prejudice the competitive positions of regulated firms;
(e) Disinclination of firms to comply with a regulator’s rules if competing firms are subject to slacker regulation;
(f) High costs of compliance for firms;
(g) The ability of regulated firms to manipulate costs and profits by distributing these between different states or sectors or between regulated and unregulated activities so as to distort regulation in their own favour.

Regulatory coordination may also produce benefits from the transfer of knowledge and expertise between regulatory agencies.

Coordinating regulation across sectors or states is not, however, a simple task. Resistance to coordination may stem from political objections to the policies or procedures, or to the transfer of powers from one decisionmaker or jurisdiction to another.

M. Summary

1. Regulation is the sustained and focused control, normally exercised by a public agency, over activities that are valued by a community.
2. Regulation can either prevent undesirable behaviour, actions and activities or enable and facilitate desirable ones.
3. Regulation can be effected in different ways. One form of regulation involves establishing specific rules or commands which have to be complied with but, also includes those actions designed to affect the social behaviour and activities of companies, organizations or individuals, such as taxation, subsidization, contractual requirements, licensing and franchising.
4. Governments may regulate the provision of infrastructure facilities and services in order to respond to market failures, to limit abuses of market power, and to improve economic efficiency.

5. Where markets do not function adequately, there may be a need for government regulation to ensure the adequate provision of goods and services at reasonable prices. There are three main instances of market failure: natural monopoly, externalities and asymmetric information.

6. In considering whether to regulate, it is important to balance the market and its failings with regulation and its failings.

7. The trend in many countries has been to reassess the rationale for the regulation of infrastructure industries and in many cases open them up to some degree of competition through liberalization. Once a government is satisfied that free competition exists, the case for regulation diminishes or becomes more limited in scope. Where economic reforms lead to a continuation of monopoly in a market, then there is a case for continuing, albeit reformed, regulation.

8. If the state wants to control an infrastructure provider that possesses a natural Monopoly, it may use a number of different strategies, including:

- Harnessing markets by use of:
  - Competition laws;
  - Franchising;
  - Regulation by contract;
  - Tradeable permits;
- Command and control
- Incentives
- Informing
- Acting directly
- Self-regulation

9. In deciding whether to regulate or to leave matters to the market, it is important to be realistic about the performance of particular regulatory methods. In most regulatory systems a combination of methods are normally employed.

10. Regulation can be undertaken by a variety of bodies:

- Self-regulators
- Local authorities
- Courts and tribunals
- Central government departments
- Regulatory agencies
- Directors General
11. Different types of regulatory institution have varying strengths and weaknesses. In broad terms:

(a) Self-regulators tend to be strong on industry expertise, but weak on public accountability;
(b) Local authorities tend to be strong on local democratic accountability but weak on coordination;
(c) Courts and tribunals are likely to be fair, but weak on planning;
(d) Central government departments tend to be strong on planning and coordination, but weak on neutrality;
(e) Agencies are strong on expertise and political neutrality but weak on accountability; Directors General are likely to be expert and responsive, but weak on spreading discretionary powers.

12. To decide whether a system of regulation is good, acceptable or in need of reform, it is necessary to be clear about the benchmarks that are relevant to such an evaluation. Typical benchmarks include:

(a) The extent of the legislative mandate;
(b) The quality of accountability and control;
(c) The use of due process;
(d) The expertise employed;
(e) Efficiency and effectiveness.

13. Cost-benefit analysis and other methods of economic evaluation can be used, in principle, to assess the efficiency of a particular regulatory regime.

14. The bringing to bear of regulatory rules on persons or organizations they are intended to influence or control is vital to the success of regulation. Failures to identify and deal with breaches of rules will undermine any regulatory system. Regulators need to consider the following issues in enforcing regulation:

(a) Styles of enforcement;
(b) Rules of enforcement;
(c) When to intervene;
(d) How much to enforce;
(e) How to control corporations.

15. Regulatory rules often link a regulatory response (for example, a fine, tax or administrative order) to a standard of performance. The setting of standards is not exclusive to command and control regimes, but is common to the regulation of performance contracts, franchising, and concessions. Regulators have to address two issues in setting standards:

(a) The types of standard to employ;
(b) The required performance levels.
16. The case for self-regulation, or incorporating elements of self-regulation into governmental regulation, rests principally on considerations of expertise and efficiency. Concerns about self-regulation centre on the mandates, accountability, and the fairness of procedures. Self-regulatory schemes must be able to command public confidence and should operate within a statutory framework.

17. Regulation is centrally concerned with the control of risks – such as the risk that infrastructure facilities and services will be inadequate or prices will be excessive. To view regulation in terms of risk control improves our understanding of regulatory decisions, methods and priorities.

18. Regulators often find themselves in competition with other regulators. Competition may occur between national regulators or at a regional or local level. Competition between regulators may also occur within a sector.

19. While there may be some benefits from regulatory competition particularly where this leads to improved standards of consumer protection, in general, regulatory coordination across national or sectoral boundaries is desirable.

20. Regulatory coordination may also produce benefits from the transfer of knowledge and expertise between regulatory agencies.

21. Annex III suggests, for specific infrastructure sectors, the main reasons for regulation; its aims; who regulates; and key regulatory strategies.