

Regulation's Impact on Value Creation and Allocation: Managerial Economics Concepts

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Introduction

Management is both an art and a science involving the application of a wide range of concepts and decision tools by business executives. Since regulation places constraints on firms and establishes incentives for particular kinds of behavior, regulators need a thorough understanding of how managers acquire, analyze, and act on information. Regulation influences market structure, limits corporate activities, and affects dimensions of industry performance (profitability, productivity advance, and new service introductions). If regulators appreciate the potential consequences of alternative policy options, they will be more aware of how their decisions determine how value is created, destroyed, and/or allocated among stakeholders.

This write-up provides a very brief overview of some key concepts from managerial economics. It is not intended to substitute for intensive reading in the area of microeconomic principles as applied to corporate decision-making. No claim for novelty is made since the ideas are fairly standard for MBA-level courses. Their relevance for regulators is that unless the business case is understood, agencies will promulgate rules and mandates that have unintended (and potentially negative) consequences. The initial outline of issues was derived from Edwin Mansfield's *Managerial Economics: Theory, Applications, and Cases* (W.W. Norton, 1999). However, additional examples and concepts have been drawn from my own experience and other sources. By being aware of fundamental decision-frameworks, regulators (and industry executives) will be in a better position to develop win-win policies in the future.

1. Introduction to Managerial Economics

The basics of supply and demand set the framework for all managerial decision-making. Technologies, input prices, and entry conditions determine the former, while the latter are determined by consumer incomes, prices of substitutes, demographics, and consumer preferences. These underlying factors represent the reality of the market.

Key concepts:

- Structured Decision-making with limited information.
 - Define the Problem
 - Identify your objectives, organizing concepts, and policy options
 - Analyze the various policy options
 - Evaluate each option in terms of impacts on objectives
 - Choose the policy option based on policy priorities (weights given each objective)
 - Implement the policy

- Review and evaluate the actual outcomes, so as to learn from your mistakes.
- Shifts in supply or demand affect the equilibrium market price and output
- Government policies can cause shortages or surpluses
- Organizations and individuals respond to incentives—rewards and penalties for different types of performance. Competitive markets reward firms that keep their costs down and introduce products valued by consumers. If organizations reward excellent performance, the behaviors associated with such outcomes will occur on a more regular basis.
- Regulatory rules establish incentives for firms.
- Michael Porter's Five Forces that Shape Competition determine the *average* profitability of firms in an industry:
 1. Intensity of rivalry among existing competitors
 2. Pressure from Substitute Products
 3. Bargaining Power of Buyers
 4. Bargaining Power of Suppliers
 5. Threat of Entry
- A firm's performance relative to others in the market is determined by its Operational Effectiveness (how close it is to best practice) and to Strategic Positioning (Differentiation or Cost Leadership). Executives have to make choices, since being both low cost producer and highest quality delivered is (generally) impossible.

2. Optimization Techniques

Mathematical techniques and spreadsheet analyses characterize good decision-making. The ultimate decision-makers need not have performed the analysis, but members of their staff must have the skills required to model fundamental relationships. Quantify where possible, and establish a range of coefficient values to facilitate sensitivity tests. Regulators (and executives) need to examine the full implication of alternative scenarios. The future is uncertain, but decisions must be robust relative to different developments in the industry. Math is a tool (just as statistics is a tool). If decision-makers cannot back up decisions with clear and carefully development frameworks, they have no business risking the owners' financial investments.

Key concepts:

- Some decision-models utilize calculus to determine optimum price, output, product quality, advertising, or other variables. Derivatives are "slopes" of functions; maximization of profits requires marginal revenue to equal marginal cost.
- *Functions* can be graphed (or used in spreadsheets)
- Decisions tend to be (1) made on the margin (incremental benefits outweigh incremental benefits), or (2) all or nothing (produce a second product or not, shut down vs. continue to produce). The key is to identify what is given up and what is gained by a decision (such as the benefits and costs of hiring an additional employee).

3. Demand Theory

The quantity demanded depends on the price (holding product attributes and other aspects of the marketplace constant). Useful concepts include *price elasticity of demand* (and income elasticity, and cross-price elasticity). These concepts help characterize basic market conditions. In particular, the marginal revenue can be derived from the firm's demand. The firm's demand is dependent on the market demand and the offerings of rivals. The market demand is just the horizontal sum of individual customer demands. Analysts generally use market (or even firm) demands. However, for more sophisticated pricing techniques, the patterns of individual demand can be shown to affect the kinds of price structures that can be offered. This point is utilized for multi-part pricing (one pricing strategy applicable in infrastructure industries). The *consumer surplus* (the benefits consumers obtain that are greater than their outlays at a given price) sets a ceiling on the monthly fee that could be extracted from a particular consumer. Firms are careful about extracting "all" the consumer surplus, due to the threat of potential entry by rivals (or potential search activity by customers--to find more economical ways to meet their needs). Knowledge of demand patterns (the mix of customers consuming different amounts and their elasticities) is crucial to establishing appropriate multi-part prices. The same principles apply to price discrimination.

A key concept is that of marginal revenue. Technically, MR is the addition to Total Revenue due to a small increase in output. In order for the output to be sold (given the downward sloping market demand), price also adjusts. The new total revenue is then compared with the previous total revenue--yielding the marginal revenue. For down-ward sloping demands, it can be shown that MR is less than price.

Key concepts:

- *Demand* is an entire schedule (or function) relating quantity demanded to variables like price and income. The demand schedule relating P and Q is holding all other demand determinants constant. We can write $P = f(Q) = A - bQ$, or $Q = g(P)$, where the latter form allows us to calculate elasticity a bit more easily.
- *Price Elasticity*: If demand is inelastic, a price increase will increase total revenue. If demand is elastic, a price increase will decrease total revenue (ie. Total consumer expenditures on the product decline). Memorize the formula.
- *Income elasticity*: Firms forecast demands on the basis of demand-drivers, such as income. Of course, incomes determine market demand. The price and quality offerings of rival firms determine a firm's elasticity of demand.
- *Cross-Price Elasticity*: Products have substitutes and complements, and managers need to identify how changes in the prices of related goods affects their product's quantity-demanded.
- *Marginal Revenue* = dTR/dQ ; when $MR = 0$, we have a unitary elasticity of demand. For profit maximization, the firm will produce where marginal revenue just equals marginal cost.
- In calculating *short run demand elasticities*, we do not allow consumers (or firms) to make major adjustments (such as consumers buying more fuel-efficient automobiles to adjust to gasoline price increases or firms building new production capacity because that is perceived as profitable). Without much time to make adjustments, consumers are unable to adapt to higher (or lower) prices.

- In the *long run* (two to four years or more, depending on the situation), decision-makers can more fully adapt to price signals. Generally, demand is more elastic (more responsive) to changes in price. However, there are important exceptions--related to durable goods whose purchase might be hastened or delayed.

4. Estimating Demand and Cost Functions

The use of quantitative techniques is expanding, as administrative data begins to be used for understanding disaggregated processes--behavior of particular customer groups or production relationships at particular types of plants. Most decision-makers are uncomfortable with statistical models, yet they base decisions on coefficients estimated by statisticians. They need a sense of how estimations of empirical relationships can be used in decision-making. After all, marginal cost depends on the shape of the cost function--so such relationships need to be estimated either using engineering data or with other data-bases. The intuition behind basic regression analysis is that an equation "fits" the data. However, numerous problems can arise in the estimation process. Decision-makers need to be able to ask intelligent questions of those purporting to do statistical analyses. Some will find that these tools are essential for their work. Others just need to gain an appreciation for the strengths and limitations of forecasting and other types of quantitative analysis.

Key concepts:

- Coefficients used to establish equations for total revenue or for total cost can be derived using statistical techniques.
- R^2 (R-square) is a measure of how well the dependent variable (such as Total cost, TC) is explained by independent variables (such as output, Q). As it approaches 1, the explanatory power of the regression approaches a "perfect fit".
- Managers regularly use quantitative techniques, including regression analysis, to determine ranges for coefficients so that they can conduct sensitivity tests.
- Nonlinearities can be captured by introduced the square of variables, logarithms, or other transformations of variables. The specification of a statistical model requires that theory be incorporated into the study--for example, if diminishing returns is present, non-linearities will arise.

5. Government and Business

Public policy is a crucial factor affecting the behavior of firms and infrastructure industry performance. Understanding past government activities can improve a manager's ability to forecast future developments. The context for business decision-making cannot ignore the government. Single product or multi-product economies determine the optimal number of firms in a market of a given size. For a single product firm, average cost for a firm is just total cost divided by the quantity produced. The U-shape suggests increasing returns to scale up a point. If scale economies are large relative to the size of the market, then we may have a "Natural Monopoly". Government regulation can be justified to limit the exercise of monopoly power.

An unregulated natural monopolist can charge a high price relative to the incremental cost of production. (Think of customer demand for subscription to a cable TV company before satellite TV, Blockbusters, and potential entry of telephone companies into video).

The public policy chapters raise a number of important issues:

- (1) What antitrust issues are raised by new technologies?
- (2) Which environmental regulations have the greatest cost implications for firms (and their customers)? What technologies are used today to comply with such regulations?
- (3) Which safety regulations have the greatest cost implications firms?

Key concepts

- Government intervention arises when economic or social problems catch the attention of those involved in political processes.
- Antitrust, sector economic regulation, and cross-sector social-environmental regulation influence mergers (strategic alliances), infrastructure development, and production processes.
- Government introduces constraints on decision-making, so firms will lobby against costly regulations and provide information to policy-makers on alternative approaches to resolving issues.
- In the case of many public policies, the benefits are highly concentrated, and the costs dispersed over a number of groups. For groups with high per capita benefits, political lobbying activity will be intense. This pattern means that some public intervention is likely to result in the aggregate costs being greater than the benefits (for example, the protection of special interests).

6. Production Theory

An understanding of underlying production processes is crucial if costs are to be characterized correctly. It provides extremely important foundation material for managerial economics. The relationship between inputs and outputs can be developed in an abstract way, but decision-makers should be thinking in terms of their own firms or organizations. Where does the (short run) law of diminishing returns make itself felt? With multiple inputs, production isoquants can be used to capture the “recipe” linking different input combinations to the output level.

Key concepts:

- *Diminishing returns* applies to the short run--since capacity is being held fixed, and only variable inputs are being increased. Diminishing marginal returns to inputs explain why short run marginal cost rises.
- *Returns to scale* is a long run concept. Increasing returns to scale implies that a 10% increase in all inputs will increase output by more than 10%. Thus, LRAC (long run average cost) is falling over this output range (where $AC = TC / Q$)
- Fragmented industries have offered opportunities for entrepreneurs to consolidate production--often via acquisitions. New production functions are created in this way.

- *Returns to scope* is another long run concept. Economies of scope refer whether the addition of entire product lines is efficient. Technological change can create (or destroy) multi-product economies.

7. Technological Change and Industrial Innovation

Technological change is both extremely disruptive and inevitable. Executives ignore the research and development activities of firms at their peril. Major enterprises have suffered because top executives held incorrect visions of where innovative activities were driving the industry. IBM's mainframe managers did not adequately anticipate microcomputers. Digital did not adequately anticipate desktops. Laptops by Compaq, Dell and others caught desktop producers by surprise. Microsoft did not adequately anticipate the impact of the world-wide-web and distributed processing. Intel has to continually improve its microprocessors.

A fundamental concept related to new technologies is the *time-cost trade-off* for determining the introduction date of an innovation. Note, the time-cost trade-off applies to many situations. Speeding up projects raises costs, while at the same time raising benefits--from earlier commercialization. Firms conduct Research and Development programs to make money, but under some circumstances they cannot capture all the benefits of their discoveries. In general, public policy is often designed to improve the basic research of a nation, so applied researchers have a better knowledge-base for developing solutions to production problems. Because no entity may have all the skills required for developing and introducing a new product, joint ventures and other forms of strategic alliances are often utilized to increase the present value of the net benefits from innovation. R&D is highly uncertain (but, so is investment activity in general).

Key concepts:

- *Innovations* change industry boundaries as new markets, new customers, and new firms are created. Entirely new uses for products involve new markets. Lower prices can induce new customer groups to consume the product. And new firms are often the most innovative, since they are not blinded to new opportunities by managers who are tied to the past.
- Innovations affect competitive processes as well, by creating substitutes, altering supplier and customer relationships, facilitating (or delaying) entry, or altering the relative cost positions of firms within the industry.
- The *state of science* and *industry conditions* both affect the pace and pattern of technological change. The latter include both the size (and growth of the market) and the degree of rivalry.
- Both R&D costs and Net Operating Revenues from a project depend on the length of time between project initiation and product introduction. The *present value of net benefits* will determine the optimal timing of innovation.
- As firms gain greater experience in producing a product, costs fall. This phenomenon is called the *Learning Curve*. Thus, AC = function of the cumulative output of the particular product.
- The *diffusion process* involves a few early users, with additional consumers trying the product with time. Consumption growth can be very rapid for a time, and then additional sales come slower--as the market is saturated.

8. The Analysis of Costs

Fundamental to good decisions is an understanding of costs: total cost, average cost and marginal cost. Clearly, one needs an understanding of the shapes of these functions but more important is the intuition behind the relationships. Short run marginal cost rises rapidly to the extent that marginal product of variable inputs declines--given the fixed amount of production capacity. The application of *break-even analysis* is used in marketing and in accounting. It provides a way of identifying sensitivity of profits to different demand outcomes.

Economies of scale, scope, and sequence refer to long term adaptations of output levels and output mixes. Clearly, the process is evolutionary in nature, as managers discover how the operating characteristics of the organization limit (or enhance) various activities. Engineering cost functions can put boundaries on costs, but operations in a given time period (and the impact of the learning curve over a number of years) need to be understood if cost data are to be meaningful. Again, for decision-making, accounting data must be adjusted to reflect *opportunity costs*. Accounting information provides useful historical data, but these numbers do not necessarily capture economic reality.

Key concepts:

- *Cost leadership* is a strategy that can be adopted to address the five competitive forces identified by Porter.
- Total cost depends on total output (holding constant all input prices and the production technology).
- $AC = TC / Q$ *average cost* is just cost per unit
- $MC = dTC / dQ$ *marginal cost* is the opportunity cost of producing one more unit of output
- *Incremental cost* can be used to approximate MC if a TC function is not available. It is the change in total cost divided by the relevant increment of output.
- *Short run marginal cost* is calculated holding production capacity fixed. We will not address issues of long run marginal cost since technological change complicates the story. Capital budgeting provides a sound framework for capacity adjustment issues--and this is covered in Financial Management.
- *Scale economies* (and the *minimum efficient scale--MES*) gives us an idea of how many suppliers can "fit" into the market. Scale economies represent entry barriers to the extent that an entrant must supply a large proportion of the market to produce at MES. That additional output will tend to cause price to drop, discouraging entry (unless the incumbents accommodate entry by reducing their output, raising price above what it would otherwise be).
- Great care must be taken when determining the profitability of a product line. Arbitrarily allocating (overhead) costs to products can result in lost cash flows if profitable product lines are discouraged by *inappropriate cost allocations*.
- *Break-even analysis* can help decision-makers understand the level of product purchases required if the firm is to cover its costs (including a normal return on investment). For a pre-determined price, the volume of break-even output will be higher if total costs are higher.

This decision-framework is especially helpful if *demand is uncertain*, and managers need to determine the sensitivity of profits to different cost structures.

9. Perfect Competition, Monopoly, and Monopolistic Competition (Quality)

Businesses emphasize *non-price competition*. When there is relatively easy entry and product differentiation, the market structure is labeled *monopolistic competition*. Such a structure combines elements of monopoly and competition. From the former, demand is downward sloping, so firms have some control over price (due to differentiation that meets some customer needs). It resembles competition to the extent that entry occurs in response to above normal profits.

It is also useful to consider the decision to shut-down an enterprise (Average Variable Cost greater than Marginal Revenue) and on how firms adapt to unprofitable situations (including asset sell-offs and other forms of exit). When output (and price) is the only decision-variable, executives will focus on marginal cost and on marginal revenue. Both the perfect competitor and the monopolist have the same decision-rule for determining the level of output: $MR = MC$. However, only in competition is price identical to marginal revenue ($p = MR$).

Product differentiation is becoming more important in segments of infrastructure industries, as new services are introduced (product mix, promotion, and place). Location, quality, value-added services and guarantees all represent ways firms differentiate their products. Price is often a dangerous variable--so firms turn to R&D, advertising, and other activities to compete with one another. Once customers face a number of options, there is less justification for government intervention to protect consumers.

Key concepts:

- *Differentiation Strategy* can be used to address Porter's five competitive forces.
- Individual firms in perfectly competitive markets cannot influence price, so $P = MR$ for each firm. If firms collectively cut back production, market price would increase. Such collusive behavior would be an antitrust violation in the U.S..
- *Perfect competition* (where no differentiation is possible) can result in firms making above normal profits in the short run, but these will attract entry--bringing down price and profits. Of course, no market is "perfectly competitive". The term is used to illustrate situations where firms are price-takers since there are many suppliers, homogeneous products, easy exit and entry, and full information regarding market conditions.
- Negative profits will induce exit by some firms. However, they should not necessarily exit in the short run. Of course, delayed exit continues to depress price--causing financial strains on all firms (even low-cost ones). Ultimately, financial losses lead to the shut down and exit of relatively inefficient firms.
- A firm should shut down production if price falls below average variable cost (ie. Total revenue is less than the costs associated with variable inputs: TVC).
- *Monopolistic competition* is the technical term for a situation involving non-price competition among firms, but entry barriers are minimal. Thus, although firms face downward sloping demands, entry will shift in those individual demands.

- Marketing is the field of study that focuses on obtaining a deeper understanding of consumer psychology and how firms select strategies to differentiate products.
- The monopolist maximizes profits by setting $MR = MC$. Unlike with competition, $MR < P$.
- Advertising is undertaken to increase profits. It is like other inputs. Beyond some point, there are diminishing returns to additional advertising. Firms with less elastic demands will tend to advertise more (holding all else equal), since the price-marginal cost markup is greater, and comparable shifts in demand yield greater cash flows to cover the additional advertising outlays.

10. Oligopoly and Strategic Behavior (Rivalry)

When only a few suppliers are present, the resulting behavior can be relatively competitive--but there is also the possibility that tacit collusion occurs. What causes the structure of an industry to involve only a few firms? One cause is scale economies relative to the size of the market. Scale economies are an entry barrier--to the extent that entrants must enter at a scale that causes the market price to fall. Similarly, a *dominant firm* has some control over the market, so that as a price leader it must take the output behavior of a competitive "fringe" into account. Also, an industry's evolution tends to reflect trends in price, entry, and exit--so familiarity with what has happens in typical markets is necessary for more effective decision-makers.

Porter's three generic strategies (Differentiation, Overall Cost Leadership, and Focus) represent a stylized set of approaches to the marketplace. Earlier, the need to make choices and to build upon a firm's comparative advantage was noted. Here we return to the ways strategies can address the five forces which threaten a firm's profits: rivalry within the market, entry, substitutes, buyers' power, and suppliers' power. Middle-level managers may not be responsible for addressing these threats--but they should certainly be aware of these factors. Their business careers may depend on their being able to understand and communicate the implications of these threats for their own corporation's success.

Key concepts:

- An *oligopoly* market structure involves only a few firms. In such a situation, these *oligopolists* will tend to take reactions of rivals into account when making decisions.
- Such recognized interdependence can dampen competition--though rivalry is often brutal. It is difficult to predict outcomes in such circumstances.
- There are still clear advantages for firms who are low cost suppliers (as in the duopoly case) or who produce a differentiated product that consumers view as having a very high value.
- The *dominant firm price leadership* model illustrates how the predicted reactions of rivals (in this case, the competitive fringe firms who are price takers) enables the price leader to set a profit maximizing (but not a monopoly) price.
- *Above normal profits* can result from the exercise of market power, innovative activity, or risk. It is often difficult to distinguish which factor is at work in a particular situation. Being lucky is better than being unlucky!

11. Pricing Techniques

In a sense, Pricing Strategies integrate all the concepts that have been introduced so far: demand patterns, cost structures, and external constraints (including antitrust, imports, and the behavior of rivals). One theme of managerial economics is the creation and allocation of value. Improved product quality creates value, and enables a higher price. It *requires* a higher price if costs rise and demand involves a parallel shift. Shareholder value is created when managers implement projects that return more than the (risk-adjusted) cost of capital. The term economic profit has been given names like *economic value-added* (Stern Stewart) and *value-based management* (Marakon). In general, firms price for profit maximization (recognizing that a multi-period, multi-product framework must be utilized to capture the complexity of the evolving market).

The September 28, 1998 *Fortune* features the Marakon management consulting firm: "Strategy is the result of a process; 'Strategy Happens' . . . it is not a plan imposed but a pattern inferred from the outcome of hundreds, even thousands, of analyses and decisions made at the smallest possible level of detail." (p. 156) This approach emphasizes that managers must be able to measure or control the effects of their decisions. To illustrate, in the case of Nordstrom (retailing), the new set of business units (geographical and merchandising) "allows [them] to measure what they can manage." "For example, merchandising managers are responsible for gross margins on the products they pick--which means that they, not store managers own their inventory; but store managers are liable for labor and selling costs, which they can control." Profit is tracked by item, by category, and department. Such an orientation focuses on creating incentives for those who can make decisions based on appropriate information. It avoids arbitrary cost allocations and emphasizes economic (not accounting) costs.

Pricing and promotion activity is at the center of profit maximization. Managers should be very comfortable with the strengths (and limitations) of the portfolio of pricing strategies available to them: mark-up pricing, multi-part pricing, bundling, price discrimination (based on price elasticities), yield management (price differentiation based on the corporation's detailed knowledge of different types of demanders), peak-load pricing (price differentiation by time of day, day of week, or season), and transfer pricing (within a firm). These observations only scratch the surface--but the principles of incremental decision-making ought to be clear.

Key concepts:

- *Cost-plus pricing* is not necessarily inconsistent with profit-maximization, especially if the mark-ups are related to marginal cost, and are lower for more elastic demands.
- *Multi-part pricing* gives firms two decision-variables. For example, the electricity supplier could charge a fixed monthly fee and a charge per kwh of electricity consumed. Customers can also be given the option of selecting from one or another price structure. For example a telephone customer might pay a high monthly fee for unlimited calling privileges or a lower monthly fee and a charge per call.
- *Bundling* can be profitable if there is a negative correlation between the willingness to pay for two products. This is also called a tie-in.
- For *price discrimination* to be profitable, managers must be able to identify separate markets, prevent resale, and have markets with different elasticities (so the more elastic demanders pay prices closer to marginal cost).

- *Yield management* is practiced via airlines and hotels using sophisticated reservation systems and by banks and other financial institutions. These organizations can conduct detailed analyses of demand patterns that facilitate the separation of customer groups with different valuations for their services (due to availability of substitutes, demographic characteristics, brand attachment, and other factors).
- *Price differentiation* based on time of day, day of week, or season of the year can enhance profits. Some products have very seasonal demands.
- Care must be taken in the case of *transfer pricing* within firms. The relevant cost is the opportunity cost of supplying the product to another division. Taxes in different jurisdictions will influence prices charged to other divisions, since reported net income will depend on reported revenues and costs at each location.

12. Taking a Global View: Trade, Strategic Alliances, and Investment

For some firms, the international economy represents the fundamental set of constraints (technologies, markets). No thoughtful executive should draw a blank on global issues, so they are considered here. Some topics include:

- (1) To what extent do particular industries depend on exports?
- (2) How are enterprises affected by tariffs, quotas, and exchange rates?
- (3) To what extent are the unregulated portions of infrastructure companies involved in international markets?

If executives think the only relevant rivals are domestic firms or that international markets are irrelevant--they probably have too small a vision. Shareholders would want decision-makers to have a broader perspective, in terms of the lessons to be learned around the globe and the threats (and opportunities) presented by global markets. Government-owned firms also need to be aware of what others are doing, since international benchmarking is one technique used to evaluate the performance of firms and executives.

A Postscript for Regulators ¹

The topics and concepts identified above have been described in terms of how they are relevant for business executives. However, since regulatory agencies are basically setting constraints on corporate behavior, those implementing public policy need to understand what is driving decisions in the marketplace.

How do firms create value? First, they create value by lowering costs. Valuable resources are freed up and used in other sectors of the economy. Second, since value is in the eyes of the consumer, value is created when product quality improvements or entirely new products better meet the needs of consumers. In competitive markets, firms creating value are able to capture

profits from their risk-taking activity. Economic profits represent returns to equity investors who put their capital at risk. Normal returns arise from normal performance (as determined by the five forces outlined by Porter). Above-normal returns arise from superior performance (reflecting best practice in operational effectiveness and selection of a strategy that meets the preferences of consumers and builds on the capabilities of the firm).

There are clear links between economic principles and business decision-making. Investors respond to signals provided by the securities markets and firms enter and exit markets based on profit expectations. Similarly, incentives established by regulators (including entry policies) have significant impacts on what firms do and how they do it. Unless agencies understand the processes underlying decisions in an unregulated setting, they will be unable to do a good job of meeting public policy objectives through appropriate selection and use of policy instruments. In particular, by encouraging firms to create value (via cost-containment and the introduction of valued new services) regulators can enhance industry performance. However, if poor incentives are promulgated, value can be destroyed, as investors withdraw capital from the industry or costs drift upward in response to cost-of-service regulation. The art of regulation involves establishing rules that allocate value to consumers and suppliers in such a way as to maintain incentives for the firm to create value, while maintaining political legitimacy in the eyes of consumers and other stakeholders. The material summarized here represents only a starting point for making progress in this area.

¹ This last section draws upon the author's companion paper, "Developments in Best Practice Regulation: Process vs. Performance" (1999), prepared for the Australia Competition and Consumer Commission.

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