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THE SCOPE OF INDUSTRIAL ECONOMICS AND ITS HISTORY

1.1 INTRODUCTION

Industrial economics is a distinctive branch of economics which deals with the economic problems of firms and industries, and their relationship with society. In economic literature it is known by several names with marginal differences such as 'Economics of Industries', 'Industry and Trade', 'Industrial Organization and Policy', 'Commerce' and 'Business Economics' etc. The name 'Industrial Economics' was adopted in the early fifties perhaps through the writings of P.W.S. Andrews.¹ Although this name is becoming popular day by day some authors, particularly in the American circle, prefer 'Industrial Organization' as a title of the subject.² At present there is no clear-cut consensus on the name of the subject.

There are two broad elements of industrial economics. The first one, known as the descriptive element, is concerned with the information content of the subject. It aims at providing the industrialist or businessman with a survey of the industrial and commercial organizations of his own country and of the other countries with which he might come in contact. It would give him full information regarding the natural resources, industrial climate in the country, situation of the infrastructure including lines of traffic, supplies of factors of production, trade and commercial policies of the governments and the degree of competition in the business in which he operates. In short, it deals with the information about the competitors, natural resources and factors of production and government rules and regulations related to the concerned industry. The second element of the subject is concerned with the business policy and decision-making. This is the analytical part dealing with topics such as market analysis, pricing, choice of techniques, location of plant, investment planning, hiring and firing of labour, financial decisions, product diversification and so on. It is a vital part of the subject and much of the received theory of industrial economics is concerned with this. However, this does not mean that the first element, i.e. descriptive industrial economics, is less important. The two elements are interdependent, since without adequate information no one can take proper decision about any aspect of business.

1 P.W.S. Andrews, 'Industrial Analysis in Economics' in T. Wilson and P.W.S. Andrews (Ed.), Oxford Studies in the Price Mechanism. Clarendon Press, Oxford, 1951; and 'Industrial Economics as a Specialist Subject', Journal of Industrial Economics, 1952.

2 See, for example, J.V. Koch, Industrial Organization and Prices; Prentice-Hall, N.J., 1974; and W.G. Shepherd, The Economics of Industrial Organization, Prentice-Hall, N.J., 1979; Jean Tirole, The Theory of Industrial Organization, Cambridge, Mass, the MIT Press, 1988.

How decision-making problems arise in industries? To answer this question, we have to go back to the core of economics. According to L. Robbins, "Economics is the science which studies human behaviour as a relationship between ends and scarce means which have alternative uses".³ As implicit in this definition, an economic problem arises because of scarcity of means and their alternative uses in relation to the needs of an individual or a group or society as a whole. For example, the income (i.e. resources) of a consumer is generally limited but his wants are unlimited. In this situation he has to adopt some criterion to achieve maximum gain from his limited income. This is the problem of utility maximization in the theory of consumer behaviour. Similarly, for a producer, the resources like land, raw materials, labour, capital, etc. are scarce. Given such scarcity, he has to take decisions about production and distribution. There are several basic issues on which the producer will be taking decisions such as: what commodities he should produce, what should be the level of output of each, what type of technology he should adopt, where should he produce the goods, what should be the size of his factory, what price he would charge, how much wages he should pay, how much he should spend on advertisement, should he borrow from banks or elsewhere, etc. All such decisions explain the producer's behaviour in the different market situations, which we endeavour to study in industrial economics. In microeconomics also we study producer's behaviour in relation to scarcity of resources. Because of this fact, some economists would regard industrial economics as being primarily an elaboration of, and development from the traditional theory of the firm taught under microeconomics. In fact, Stigler emphatically argued that the field of industrial economics does not really exist. It is nothing more than a slightly differentiated microeconomics.⁴ Tirole in the opening paragraph of his book considered industrial organization as study of the function of markets, a central concept in microeconomics.⁵

To view industrial economics as a development of microeconomics is quite understandable. Both are concerned with the economic aspects of firms and industries seeking to analyse their behaviour and draw normative implications. However, there are some differences between the two. Microeconomics is a formal, deductive and abstract discipline. Industrial economics on the other hand is less formal, more inductive in nature. Microeconomics by and large assumes profit maximization as the goal of the firm and tells us to maximize it subject to given constraints. It is passive in approach. Industrial economics does not believe in single goal of profit maximization. It searches the goals of the firm from the revealed facts. It concentrates on the constraints which impede the achievement of the goals and tries to remove them. It is an active discipline in this sense. Microeconomics, being abstract, does not go into operational details of production, distribution and other aspects of the firms and industries. Industrial economics does go into the depth of such details. Further, the conclusions derived from the microeconomics may not be testable empirically and therefore we may not assess their predictive efficiency. Industrial economics is free from such limitation because of its emphasis on empiricism. Public policy implications are taken care of in industrial economics but microeconomics may shun them if necessary. It is true that the theory of firm (i.e. microeconomics) provides the main theoretical basis for the study of industrial economics, but several important influences from outside have given a totally different character to industrial economics. In the light of such influences the conventional theory of the firm is bound to be revised.

Recently, there has been considerable emphasis on managerial economics in business or industrial management. This branch of economics deals with the concepts and analysis of demand, cost, profit, competition and so on, that are appropriate for decision-making. Such topics are also covered in industrial economics. Then, what are the differences between the two? There are two striking differences.⁶ First,

3 L. Robbins, *The Nature and Significance of Economic Science*, Macmillan, London, 1962.

4 G.J. Stigler, *The Organization of Industries*, R.D. Irwin Inc., Homewood, 1968, Chapter 1.

5 J. Tirole, *op. cit.*, p. 1.

6 *Managerial Economics: A New Frontier?* American Economic Association: Papers and Proceedings, May 1960.

managerial economics by and large starts from the assumption that the firm aims to maximize its profits and then proceeds to examine the manner in which decision rules and procedures of the firm should be formulated in order to achieve its goal. The approach of industrial economics is different from this where the main emphasis is placed upon understanding and explaining the working of the existing system and thereby prediction of the effects of changes in variables of the system. It is a branch of social science which is interested in what actually happens (positive aspect) rather than what should happen in hypothetical or ideal situations.⁷ Industrial economics thus, has a positive approach while managerial economics follows the normative one. Secondly, managerial economics is more interdisciplinary in nature than industrial economics. Accountancy, Operations Research, Psychology, Marketing, etc. are to be combined together with economics in managerial decision-making. Industrial economics does not go too far for its analysis of the problem. It may be mentioned here that the study of industrial economics is the basic element in managerial economics because it provides a knowledge of the structural constraints affecting the achievement of the management goals of a firm. In fact, the new emerging field of study known as 'organizational economics' is integrating both managerial economics and industrial economics.

So far, we were looking at the problem of decision-making in an industry from the micro angle, but it has macro dimensions also. For a society as a whole, the resources for production are scarce just as in the case of a producer. With scarce resources, the problem is to produce varieties of goods and services in the current period and in future also. What commodities should be produced—'bread' or 'guns'? If 'guns' are preferred, then the series of problems faced by the society may be: what types of 'guns', what type of factory (large vs. small scale); where to produce (locational problem); how to distribute them, etc. These are the questions which we have posed earlier for an individual producer also. But here we have to examine them from the social angle. The decisions in the context of society as a whole may be at variance with the decisions by an individual producer. If this is so, a state will clearly specify the policy framework in which the individual producers will function. In other words, to achieve the broader policy objectives, a state will regulate industries through varieties of ways such as nationalization, anti-trust policies, control on prices and outputs, credit controls, taxes, etc. A study of all such instruments of industrial regulation is very much a part of industrial economics. How they affect the performance of the firms is a crucial aspect to be examined under industrial economics. Such information is useful for the regulatory agency of the government to assess the success of its industrial policy.

Concluding this section, we may say that industrial economics is predominantly an empirical discipline having micro and macro aspects. It has a strong theoretical base of microeconomics. It provides useful applications for industrial management and public policies and has acquired the status of a specialist subject. It is concerned with the analysis of the markets for which the traditional competitive models are inadequate.

1.2 HISTORY OF THE FIELD

It is difficult to know the true beginnings of the field because of non-availability of facts. There is, of course, some evidence according to which monopolistic practices and other elements of the industrial economics were in operation as far back as 2100 BC.⁸ It may not be useful for our purpose to go back into the antiquity of the subject. We shall rather see the evolution of modern industrial economics in the last two hundred years for which necessary data and documents are available. The cutoff point for our purpose is 1776 when

7 P.W.S. Andrews, *Journal of Industrial Economics*, 1952, op. cit.

8 M. Hamphrey, *The Economics of Ancient Greece*, Macmillan, New York, 1940; and W.G. Shepherd, *The Economics of Industrial Organization*, Prentice-Hall, Englewood Cliffs, 1979, p. 14.

the ‘Wealth of Nations’⁹ of Adam Smith appeared on the scene. This book laid down a strong foundation for the economic theory which we know by the name of classical economics. The early theory of the firm which we may regard as the mother of the contemporary industrial economics was born at this stage as an integral part of the classical economics. Since then there has been a steady growth of the field, particularly during the last fifty years. A brief review of this is presented below:

Adam Smith’s ‘Wealth of Nations’ is a treatise dealing with the basic philosophy and thereby implicit principles of economic theory. It has assumed competitive conditions for the economy in which ‘invisible hands’ operate to maximize their own self-interest. Given this kind of market environment and natural propensity to truck, barter and exchange of one thing for another, Adam Smith propounded the principle of division of labour. According to him: ‘The greatest improvement in the productive powers of labour and the greater part of the skill, dexterity, and judgement with which it is directed, or applied, seem to have been the effects of the division of labour.’¹⁰ To support his contention, Adam Smith gave the famous example of pin-making, whereby through division of labour, the productivity went up manifold. This principle has a fundamental bearing for industrial economics and now-a-days, particularly in modern large corporations, production is impossible without division of labour (or machines) as a way of production. Apart from division of labour, Adam Smith’s contribution to the field of industrial economics is the analysis of product pricing. He regarded a product having two prices ‘market price’ at which it changes hands and ‘natural price’ or ‘value’ determined by the labour required to make the product. Much of his analysis was devoted to the determination of ‘natural price’, ignoring the market price altogether. Though he is criticized on this count, yet his work is regarded as a pioneering study of price-cost margins for industries under competitive conditions.

After Adam Smith, the historical development of the economic analysis of industrial activities was subjected to the methodological division. One school of thought led by Jevon followed abstract, deductive reasoning to derive testable hypotheses in the theory of the firm, while the other, known as Historical School, followed inductive or empirical approach for study of the economic behaviour of the firm and industry. S. Jevon,¹¹ almost 100 years after Adam Smith, developed the theory of demand in terms of the present utility theory. In addition to this, he was able to refine the concepts of costs and the factors of production. He and his follower Edgeworth¹² were able to establish the conditions for equating price and average cost of a product and thus, elimination of the excess profit. Clark¹³ carried their work further and Knight¹⁴ was able to refine the perfect competitive model which we see at present.

From this stage, the theory of firm started taking a significant turn. The assumption of perfect competition was found inappropriate to describe the true behaviour of the firm. Sraffa’s description of the laws of returns under competitive conditions¹⁵ was perhaps the turning point. Thereafter came the stumbling blocks of John Robinson’s theory of imperfect competition¹⁶ and Chamberlin’s analysis of monopolistic competition.¹⁷ These two theories particularly of Chamberlin’s opened altogether new venues for the industrial economics. Duopoly, oligopoly, product diversification, advertisement behaviour, research and development, pricing policy, etc., became burning topics for analysis. More realism was infused in the traditional theory of the firm. The impact of Chamberlin’s work on industrial economics was so profound

9 Adam Smith, *An Inquiry into the Nature and Causes of the Wealth of Nations*, London, 1776.

10 Adam Smith, *op. cit.*

11 S. Jevon, *Theory of Political Economy*, London, 1871.

12 F. Y. Edgeworth, *Mathematical Psychics*, London, 1881.

13 J.B. Clark, *The Distribution of Wealth*, New York, 1899.

14 F. Knight, *Risk, Uncertainty and Profit*, New York, 1921.

15 P. Sraffa, ‘The Laws of Returns under Competitive Condition’, *Economic Journal*, 36, 1926, pp. 535–555.

16 John Robinson, ‘The Economics of Imperfect Competition’, Macmillan, London, 1933.

17 E.H. Chamberlin, *The Theory of Monopolistic Competition*, Harvard University Press, 1933.

that it was regarded as the single most important antecedent of contemporary industrial economics.¹⁸ Along with the line of Chamberlin, Hotelling¹⁹ developed the stability conditions for competition by taking differentiated goods and spatial dimensions. His work and Chamberlin's theory, together influenced Lancaster²⁰ who has developed altogether a new theory of consumer demand which is very much relevant for industrial economics. An independent development in the theory of firm was seen during the decade of the 1940's, when Von Neumann and Morgenstern published their work on the game theory.²¹ Economists accepted this as a break-through in the study of market-structure under conflicts. In the context of industrial economics, this theory has many potential uses. Martin Shubik²² in fact, demonstrated some of them, but the full empirical analysis based on game theoretical approach is yet to come.

Along with the deductive stream of thoughts discussed above, the alternative methodology of inductive reasoning was in extensive use right from the time of Adam Smith, to develop a meaningful and realistic theory of industrial economics. The need for such an approach was felt mainly because the method of logical deduction being too abstract failed to analyse the economic behaviour of the firms as seen in real life. That is, the universality of the behavioural assumptions on which the theory rests, was rather found weak in practice. In the inductive approach which was followed by the Historical School²³ and many other economists, the behavioural assumptions are not made on a priori ground, they are rather discovered from the facts about the firms and industries. This school of thought, and many other individual researchers, used the histories of the individual firms and industries and case studies covering the institutional and local conditions in which the firms operated, to find out common patterns regarding varieties of industrial activities such as product variation, merger, innovation, investment, employment, pricing policies, distribution of profits, advertisement, etc. The important authors who made significant contributions in this side of industrial economics during the early thirties were Allen,²⁴ Sargent Florence,²⁵ Berle and Means²⁶ and W.G. Hoffman²⁷. Allen's work was mainly concerned with the aim of describing the structure of certain British industries against the background of their historical development, at the same time considering some of the more significant trends in the industry as a whole. Florence examined the industrial structures and functions in a more logical way linking economic and political sciences and other related disciplines like statistics and psychology. Hoffman provided a very lucid description of manufacturing industries and the historical pattern of growth they generally follow. Berle and Means made a break-through in the empirical analysis of the modern corporations by making a separation between ownership and management. Mason²⁸ was an

18 See, Donald, A. Hay and Drek, J. Morris, *Industrial Economics: Theory and Evidence*, Oxford University Press (1979) for a full review of Chamberlin's impact on industrial economics.

19 Hotelling, 'Stability in Competition', *Economic Journal*, 39, 1928, pp. 41-57.

20 K. Lancaster, *Consumer Demand: A New Approach*, New York, 1971.

21 Von Neumann and Oskar Morgenstern, *Theory of Games and Economic Behaviour*, Princeton University Press, 1947 (2nd Ed.) Also See J. Nash, 'The Bargaining Problem', *Econometrica*, 18, 1950, pp. 155-162.

22 Martin Shubik, 'A Curmudgeon's Guide to Microeconomics', *Journal of Economic Literature*, 8, 1970, p. 425. Also see L.G. Telser, *Competition, Collusion and Game Theory*, Macmillan, London, 1971.

23 Some important economists associated with the Historical School were Roscher, Schmoller, Ashley, Ingram and Leslie.

24 G.C. Allen, *British Industries and Their Organization*, London, 1933.

25 P.S. Florence, *Logic of Industrial Organization*, Kegan Paul, London, 1933.

26 A.A. Berle and G.C. Means, *The Modern Corporation and Private Property*, Commerce Clearing House, New York, 1932.

27 W.G. Hoffman, *The Growth of Industrial Economics*, 1931 (German Edition), 1958 (English Translation), Oxford University Press.

28 E.H. Mason, 'Price and Production Policies of Large Scale Enterprises', *Am. Eco. Review (Supplement)*, 39, March 1939, pp. 61-74.

important author in the late thirties who dealt with the price and production policies of large scale corporations and in the forties came a very important work of P.W.S. Andrews.²⁹

The fifties and sixties developed bulk of the industrial economics that we read at present. The Journal of Industrial Economics was started in 1952. Then appeared the important contributions by Bain,³⁰ Marris,³¹ Stigler³² on one side and Simon,³³ Cyert and March³⁴ and Galbraith³⁵ on the other. Bain provided the 'structure-conduct-performance' nexus as a framework for industrial analysis. His contribution in industrial economics is quite significant. Robin Marris analysed the role of managerial behaviour in the context of modern corporations. His work has been extended further in a quite different framework of 'techno-structure' by Galbraith. Cyert and March developed a behavioural theory of the firm which opened a new frontier in the study of industrial economics. Simon studied the process of decision-making in the context of industrial organization as an administrative unit. Stigler focused on the analysis of the oligopoly structures, apart from other things. The list of authors is not exhaustive. The theoretical and empirical works are going on with full swing at present on various aspects of the subject. The rate of progress is quite rapid on all aspects of the subject.

While the deductive and inductive sides of the theory of the firm were in the course of their distinctive development, there were economists who adopted a compromising stand, that is, the use of both the methods in the study of the economic behaviour of the firms and industries. Schumpeter³⁶ and Marshall³⁷ were leading economists in this category. Schumpeter was mainly a development economist, but his work on entrepreneurship, innovation and analysis of competition had a profound impact on contemporary industrial economics. Marshall was deeply impressed by the utility theory of Jevons and inductive or institutional approach of the Historical School. He, therefore, adopted the middle way. This is reflected in his book 'Principles of Economics' and even more so in his 'Industry and Trade' which was an early textbook of industrial economics. According to him, "induction, aided by analysis and deduction, brings together appropriate classes of facts, arranges them, analyses them and infers from them general statements and laws."³⁸ Following the line of Marshall, we have seen the highly useful work of E.A.G. Robinson³⁹ in the field of industrial economics. His book is still taught as a major textbook of the subject in universities all over the world.

Summing up the review of the historical development of the subject, we may say that it has come up to the present stage mainly during the last 40 to 50 years. The subject is rushing fast towards maturity covering both theoretical and empirical dimensions. Apart from the traditional approach in the framework of market structure, market conduct and market performance link the subject is exploring several interesting

29 P.W.S. Andrews, *Manufacturing Business*, Macmillan, London, 1949.

30 J.S. Bain, *Industrial Organization*, Wiley, N.Y., 1959.

31 Robin Marris, *The Economic Theory of Managerial Capitalism*, Free Press, N.Y., 1964.

32 G.J. Stigler, *The Organization of Industry*, Irwin, Homewood Ill, 1968.

33 H.A. Simon, *Models of Man*, Wiley, N.Y., 1957, and *Administrative Behaviour*, Macmillan, N.Y., 1957 (Second Ed.).

34 R.M. Cyert and J.G. March, *A Behavioural Theory of the Firm*, Prentice-Hall, Englewood Cliffs, 1963.

35 J.K. Galbraith, *The New Industrial State*, H. Hamilton, London, 1967.

36 (i) J. Schumpeter, *The Theory of Economic Development: An Enquiry into Profits, Capital, Credit, Interest and the Business Cycle*, Harvard University Press, Cambridge (Mass), 1936.

(ii) -----, *Business Cycle: A Theoretical, Historical and Statistical Analysis of the Capitalistic Process*, McGraw-Hill, N.Y. and London, 1939.

(iii) -----, *Capitalism, Socialism and Democracy*, Harper & Brothers, N.Y. 1947 (Rev. Ed.).

37 Alfred Marshall, *Principles of Economics*, Macmillan, London, 1919 (Revised Edition).

38 *Ibid*, p. 781.

39 E.A.G. Robinson, *The Structure of Competitive Industry*, University of Chicago Press, Chicago, 1958 (Revised Edition).

new fields of study like strategic behaviour, industrial dynamics, laboratory experiments, transaction convergence, price discrimination, efficiency of contracts, internal organization, non-price competition, financial structure and services, non-cooperative games, etc.⁴⁰ New methods of analysis such as econometrics, game theory, operations analysis, information science, etc., and a substantial rethinking of the causes, nature and effects of competitive behaviour have led the emergence of what we call as the New Industrial Organization having considerable scope for further growth of the subject.⁴¹ Advent of computers and their widespread use in practice helped considerable growth of empirical work in industrial economics which is expected to increase in future.⁴²

1.3 PLAN FOR THE BOOK

This is intended to be an introductory textbook of industrial economics which may be useful to the students of economics, business management and engineering. In view of the heterogeneity of the readers, the approach for presentation of the material will be simple and expository. Simple mathematical derivations related to the subject matter will be given wherever found necessary. Major empirical studies will be analyzed and the practical uses of the relationships postulated will be examined at appropriate length.

Keeping in mind the scope of the subject, the endeavour in this book will be to examine the various aspects of industrial economics in sequence. These are discussed in the following chapters: 2. Industrial Efficiency: Concepts and Measurement; 3. The Organizational Form and Alternative Motives of the Firm; 4. The Elements of Market Structure, Market Conduct and the Conceptual Framework for the Study of Industrial Economics; 5. Demand Analysis; 6. The Cost Theory and the Optimum Size of the Firm; 7. Market Concentration; 8. Diversification, Vertical Integration and Merger; 9. Market Structure and Innovation; 10. The Determinants of Profitability; 11. Industrial Finance and Accounting; 12. The Analysis of Financial Ratios and Relationships; 13. Investment Decisions; 14. Advertising Strategy; 15. Pricing Decisions; 16. The Growth of the Firm; 17. Industrial Location Analysis; 18. Government Regulation of Industry; 19. Labour Productivity; 20. International Dimensions of Industrial Economics and 21. Theory of the Firm: Alternative Approaches.

40 Some reference for getting full insight on such topics are Richard Schmalensee, *Industrial Economics: An Overview*; *The Economic Journal*, 98, 1988, pp. 645–681; R. Schmalensee and R.D. Willy, *Handbook of Industrial Organization*, Vols. I & 2, Amsterdam, North Holland Publishing Co. Elsevier Science Publishers B.V. 1989; de-Jong H.W. and W.G. Shepherd, *Main Streams in Industrial Organization*, Book 1 & 2, Dordrecht/Boston Kluwer Academic Publisher 1986. Anidya Sen: *Industrial Organization*; Delhi: Oxford University Press, 1996, Michael, R. Baye; *Industrial Organization JAI*: Elsevier Science Amsterdam, London. 2000. Mark Armstrong and Robert, H. Porter, (Ed.) *Handbook of Industrial Organization*; North-Holland; Elsevier, Amsterdam, Vol. 3, 2007.

41 R. Schmalensee: *The New Industrial Organization and Economic Analysis of Modern Markets*, in W. Hildabrand (Ed.) *Advances in Economic Theory*; Cambridge: Cambridge University Press, 1982, pp. 253–285.

42 For a fairly detailed history/antecedents of industrial economics, the following references may be consulted.

- (i) Devine, P.J. et al., *An Introduction to Industrial Economics*, George Allen and Unwin, London, 1974, Ch. 1.
- (ii) Donald, Hay and D. J. Morris, *op. cit.*, Ch. 1.
- (iii) W.G. Shepherd, *op. cit.*, Ch. 2.
- (iv) Stephen Martin: *Advanced Industrial Economics*, London; Blackwell Publication 2nd Ed. 2002, Ch. 1.