

## Chapter 2

# The Market

The economic theory of markets has been central to economic growth since the days of Adam Smith. There have been three major phases of this theory: the classical theory, the neoclassical theory, and the modern theory of global markets. Adam Smith is the first classical economist who emphasized the role of markets in industry growth. His economic contribution *The Wealth of Nations* contains several features of the market evolution, which leads to industry growth and overall economic development.

Competition in private markets and the balancing of supply and demand in equilibrium are the first aspects identified by Adam Smith. He both identifies the tendency of competition toward equilibrium and implies that the allocation of resources thereby produced is optimal from society's point of view. This theory of economic equilibrium is intrinsically related to the theory of economic evolution. Technological progress for Smith is not an exogenous force affecting economic growth but central to his theory of economic development. As Richardson (1975) points out as follows:

In *The Wealth of Nations* competition is given more to do than equate demands and supplies within the context of a given industrial structure and a given technology; the invisible hand has also to adapt both structure and technology to the fresh opportunities created by expanding markets. In our modern microeconomic theory, on the other hand, it is the equilibrating and allocative functions of competition that obtain all but exclusive attention; technical progress is made exogenous and structural evolution largely ignored.

### 2.1 The Classical Approach

Adam Smith laid great emphasis on increasing returns as a source of economic growth and development. He pointed out that the division of labor and specialization due to increasing returns leads to the establishment of new trades. But for this to happen the market has to be large enough. He stressed the gains from foreign trade, which help widen the extent of the market – thereby raising the productivity of the trading countries. Central to the gains from free trade are the allocative efficiency

gains arising from international specialization based on absolute differences in costs. Trade enables a country to buy goods from abroad at a lower real cost than that at which they can be produced at home.

In modern growth theory Lucas (1993) and others have strongly emphasized the role of increasing returns through direct foreign investment, which induced learning by doing through knowledge capital. The newly industrialized countries (NICs) of Southeast Asia have achieved very high growth rates in the last two decades, and the export market had played a most dynamic role.

In recent decades the economies have undergone a profound transformation from large-scale material manufacturing to the design and use of new technologies depending on improved software and designs. These new technologies are increasingly characterized by increasing returns to scale. These are mechanisms of positive feedback that act to reinforce other complementary forces. These increasing returns occur due to three main reasons: (1) high fixed costs and very low variable costs, (2) network effects where the value of a product increases with the number of users, and (3) high switching costs.

## 2.2 The Neoclassical View

The neoclassical approach to economic growth has used two basic premises. The first is the competitive model of Walrasian equilibrium, where markets play a critical role in allocating resources efficiently. Markets for labor, capital, and finance following competitive rules help to secure the optimal allocation of inputs and outputs. This type of competitive paradigm was used by Solow to develop a growth model, which used a production function with labor and capital as substitutable inputs subject to diminishing returns. The second premise of the neoclassical model assumes that technology is given. Solow used the interpretation that the technology in the production function is exogenous. The point is that R&D investment and human capital through learning by doing were not explicitly recognized.

Solow used a Cobb–Douglas production function with two substitutable inputs: labor and capital, and a technology factor. While competitive market forces determine the allocation of labor and new capital, technology is assumed to be completely exogenous. With a constant saving–income ratio, an increase in aggregate capital stock helps initially to raise income, but as capital per worker rises, diminishing returns set in, generating a decline in the marginal product of capital. In the long run the economy enters a stationary steady state with unchanging standard of living. Despite this the neoclassical growth theorists were not pessimistic about the long-run prospects for the aggregate economy. This is because technological progress could shift the production frontier upward. Solow showed that with advances in technology, which he took to augment the labor productivity at an exogenous rate, the marginal product of capital need not decline as capital per worker increased.

The neoclassical emphasis on competitive markets and their role in allocating resources such as labor and capital optimally in a decentralized economy has

received three types of challenges in recent times. First, the dynamics of high-technology industry growth in recent times have changed the market structure and world trade most dramatically. In the world of innovations in new technology and the spillover of R&D investment effects, various forms of noncompetitive market structures have evolved in recent times. Second, the endogenous growth models have recently emphasized the role of inputs such as human capital and R&D capital, which have significant spillover effects for other industries and other countries, and these may have either constant or increasing returns; also these inputs may be complementary rather than rivalrous to other inputs such as labor and physical capital. Also much of technology inventions in Solow's model is market driven, since firms have invested in new technologies when they see an opportunity to earn profits. Finally, one should note the cases of market failure, where competitive principles fail to perform their function. Then cases generate a divergence between the private and social optimum in resource allocations. In many markets, firms compete over time by cost-reducing investments. In many instances they take the form of developing new products with cheaper prices. Cost-reducing expenditures are largely fixed costs. In a market system the criterion for determining the value of cost-reducing R&D is profitability or revenues. Since revenues may understate the social benefits in the aggregate and at the margin, there is no reason to expect a competitive market to result in the optimal outcome. Furthermore, R&D largely represents fixed costs, and depending on the technological environment, sometimes a large one, market structures are likely to be concentrated and imperfectly competitive with consequences for prices and allocative efficiency. Also R&D expenditure has externality benefits and spillover effects on other firms. These effects reduce the incentives to perform R&D investments, creating a divergence between private and social optimum.

The neoclassical growth model developed by Solow fails to explain the most basic fact of actual growth behavior. To a large extent this failure is due to the model's prediction that per capita output approaches a steady state path along which it grows at a rate that is given exogenously. This means that the long-term rate of national growth is determined outside the model and is independent of preferences and most aspects of the production function and policy measures.

## 2.3 The Modern Approach

The modern approach to market dynamics has several basic features. First, the new economic order emerging today, sometimes called the new economy, is spreading all over the world. This is nothing short of an industrial revolution. It is a revolution in information explosion and in knowledge capital. Three key elements of this revolution are worth emphasizing: (1) increasing efficiency of the microcomputer industry and telecommunications, (2) interfirm and interindustry diffusion of knowledge, and (3) new innovations in the Schumpeterian sense and the global

expansion of trade through network and market externalities. Economies of scale occur in market demand, which stimulates productivity of existing and improved inputs. Modern growth theory emphasizes two main channels of inducing growth through R&D expenditures, which include knowledge capital and the core component of knowledge innovations. One is the impact on the range of available goods and services and the other is its impact on the stock of knowledge and the so-called learning-by-doing phenomena. Helpman (2004) has discussed the role of endogenous R&D investments in improving industrial productivity of a developing country participating in world markets through international trade. Two impacts are distinguished. The first is the market size effect: this is very similar to Adam Smith's ideas. Access to a larger world market raises the probability of inventive activities and encourages more R&D investment and more knowledge creation. The second is the competitive effect, which has two sides. On the negative side, it may hurt profits in the short run, since foreign competitors are more efficient than domestic firms. On the positive side, however, open competition may induce the domestic technological leaders in business to forge ahead. The NICs of Southeast Asia such as South Korea, Taiwan, and Hong Kong and also Japan have adopted this positive side of competitive efficiency, and the openness in trade has opened up new challenges by which these countries achieved a very high growth rate in the last two decades.

An important feature of the modern approach to market dynamics is its view of the market as a set of social institutions in which a large number of commodity exchanges regularly take place, and to a large extent, these exchanges are facilitated and structured by those institutions.

## 2.4 The Institutional Approach

In the neoclassical market model the primary institutions that facilitate exchange are private ownership and legally enforceable contracts. Exchange is done through contracts, and the governments ensure compliance with contracts. But the neoclassical model does not reflect the breadth and complexity of behavior actually correlated in markets.

The institutional approach to market dynamics and economic growth has emphasized several important features for the theory of economic development. First, the institutions are rules or humanly devised constraints, which allow agents to form expectations about the behavior of other agents and thus facilitate coordination among them. Thus, the major role of institutions relating to markets and the various interindustry linkages is to reduce the various uncertainties arising from incomplete information about other agents' behavior by establishing a stable structure to human interactions. The three most important aspects of the role of institutions in securing an efficient market system are the transaction cost (TC) approach, the equilibrium-of-the-game approach (EG), and the evolutionary approach.

The TC approach is central to the new institutional approach. The neoclassical paradigm with competitive general equilibrium emphasizing efficiency in resource allocation is invalid in the word of positive transaction costs. Not only do positive transaction costs exist but also they are in fact quantitatively substantial. According to some estimates, transaction costs in modern market economies comprise as much as 50–60% of net national product. The discovery of transaction costs by Ronald Coase (1937) started a revolution in microeconomic thinking. Market transaction costs consist primarily of information and bargaining costs. These have three components: (1) search and information costs, (2) bargaining and decision costs, and (3) supervision and enforcement costs. The recent management science literature has emphasized the managerial transaction costs. In the neoclassical world all these transaction costs are ignored. It is important to refer to the Coase theorem here, as follows:

Individuals who are normally only interested in maximizing their own incomes and not concerned with social cost will only undertake an activity if the value of the product of the factors employed is greater than their private costs. But if private cost is equal to social cost, it follows that the individuals will only engage in an activity if the value of the product of the factors employed is greater than the value which they would yield in their best alternative use. That is to say, with zero transaction costs, the value of production would be maximized (Coase 1998).

Three important implications of the Coase theorem are to be noted. The first is that the competitive general equilibrium solution is no longer efficient in a world of positive transaction costs. Market and other institutions turn out to be inefficient, and this inefficiency is basic and fundamental in the long run. Models of economic growth of the neoclassical school, which were utilized by Solow and other growth theorists, are, therefore, untenable to a large extent. Second, regulatory policies of government such as the FTC, which attempt to secure competitive efficiency without incorporating positive transaction costs, are not likely to be appropriate. Thus, the competitive model turns out to be a poor vehicle for understanding a wide variety of competitive tactics and institutions. Finally, the relationships between institutions and economic productivity are completely ignored. Economists almost take it for granted that modern economies need to be largely structured through markets and good institutions to support the effective operation of such an economy. But it is unclear what the effective operation of a market economy means. As Schumpeter argued long ago that the standard neoclassical theory of market organization and behavior is not capable of dealing with the phenomenon of innovation, which is so crucial to sustained economic growth. It is thus clear that once we emphasize the factors that support and speed up the innovation, a number of nonmarket organizations such as universities, public R&D research programs, and spillover effects turn out to be important along with the market organization. Thus, we need to develop a theory of innovation-driven economic growth that recognizes the key roles played by the nonmarket structures as well as those conventionally seen as market ones.

In many underdeveloped economies inefficient institutions inflate the share of transaction cost in the total cost of economic development to such an extent that

growth is impeded and market failures including lack of coordination between market and nonmarket institutions generate significant inefficiency in resource allocation and economic productivity. As a result the divergence of private social costs and benefits increases to a significant degree. This is time for both infrastructure activity and other developmental expenditures such as public education and research activities.

While transaction cost adds a monetary dimension to total costs of growth and industrialization, the EG (equilibrium-of-the-game) approach emphasizes that the central role of both market and nonmarket institutions is to establish a stable structure to human interactions and exchanges by reducing uncertainties arising from incomplete information about behavior of other agents. Thus, if institutions constrain the choices of agents, consistency is difficult to ensure. An important implication of the EG approach to institutional change is that the nonmarket institutions correspond to Nash equilibria, which are multiple in repeated plays, and typically, there are many possible institutional solutions. As Platteau (2008) has shown in the framework of economic growth and development that inefficient institutions may come to be established and sustained over time in poor underdeveloped economies. This follows the existence of multiple equilibria in the Nash equilibrium concept. As Platteau notes:

Just consider a simple two-agent coordination game in which there are two Nash equilibria in pure strategies, with one equilibrium Pareto dominating the other. For example two measurement systems are available but one is superior to the other, say because it is easier to use. For each agent, to coordinate on the same system is always preferable than to have a mismatch of strategies. Whether the convention established favors the socially efficient or the inefficient system will depend on the content of the shared benefits of the agents and on which equilibrium is a focal point in their minds. The inefficient measurement system may therefore predominate if agents believe that others are going to use it. Moreover once the inefficient convention is established, the very concept of Nash equilibrium that underlies it implies that it may persist for a very long time.

## 2.5 The Evolutionary View

The evolutionary view (EV) in the institutional approach stresses that rules of institutional change are the outcome of an organic process of Darwinian natural selection, which is similar to the competitive pressures of the market and Adam Smith's concept of "invisible hand." In the orthodox version of the EV model, the institutions such as market and governance that are inefficient are most likely to have a low evolutionary fitness and hence the competitive pressure would replace them in the long run by more efficient institutions.

Three important features of the EV model are to be noted because of their economic implications. First, the process of investing in knowledge capital and the evolution of competitive markets today are characterized by "adaptive learning" as an evolutionary mechanism. Herber Simon (1991) argues that human learning implicit in knowledge innovations works essentially via an adaptive feedback mechanism.

In Darwinian natural selection the central concepts are organisms, populations, fitness, genes, and mutations. In the evolutionary theory of Nelson and Winter (1982) counterparts of these concepts are easily found. Individual firms are organisms, industries are populations, profitability is fitness, routines are genes, and innovations are mutations. Darwinian natural selection entails two mechanisms: a selection mechanism and a replication mechanism. The selection mechanism that Nelson and Winter have in mind seems to be strictly analogous to natural selection. Just as the genes of reproductively successful organisms spread over the gene pool of the population, the profitable routines are spread in the industry at the expense of less profitable ones. An economic evolutionary theory that is based on the selection mechanism needs some replication mechanism to make qualitative predictions about changes in industry behavior. Nelson and Winter treat innovations as the economic equivalent of mutations.

A second aspect of the EV approach emphasized the dynamic changes of the new market structures that have evolved in recent years. The new market structure is sometimes called hypercompetition. This market structure diverges from the neoclassical Walrasian market equilibria in several ways. First of all, it is driven by technology; second it increases various forms of nonprice competition. In recent times these dynamic forces have led to declining prices and costs of the new products and software services resulting in Cournot–Nash type solutions. Following Schumpeter's innovation approach D'Aveni (1994) has characterized this state as hypercompetition. He holds that competitive markets have two facets: static and dynamic. The former takes technology and innovations as given, so firms compete only on prices and costs. But the dynamic force changes technology and innovations at various points of the value chain, thus challenging firms to compete in new innovations, which are "mutants" in biological theory. Thus, the successful firms and industry transform their technology and innovations so as to create new strategic resources and products with increasing profits. New products and marketing technologies tend to create a state of monopoly profits until the other firms catch up. Recently Sengupta and Fanchon (2009) have discussed in some detail this new paradigm of change in modern technology-intensive industries such as computer and telecom industries.

Finally the EV approach uses a more generalized concept of equilibrium, which is fundamentally different from the other approaches. The EV approach believes that the equilibrium concept may be understood only within a dynamic framework. This framework is based on evolutionary game theory, where equilibrium is attained when the properties of different types of agents able to survive have become stable. It follows immediately that the concept of evolutionary efficiency based on the idea of maximizing average fitness differs significantly from the standard economic concepts in either the Pareto or the technological efficiency game. Another illuminating lesson of the EV approach is the path-dependent nature of institutional evolution: small initial differences may entail distinct societal histories to emerge. Because the evolutionary processes follow patterns that have different long-term characteristics depending on their initial starting conditions, the patterns of growth and development are up in different equilibria. Nothing can be said a priori about the comparative levels of efficiency or inefficiency reached by these



varied configurations. As North (1990) has emphasized large fixed costs, learning by doing, coordination effects, and adaptive expectations all contribute to creating path dependence. Solow-type models of economic growth seem to ignore these aspects of path dependence caused by all institutional changes, where the market forms a small part of overall growth.

## 2.6 Market Expansion and Growth

For the last two decades economic growth of national income has been most rapid in the newly developed countries (NICs) of Southeast Asia such as China, Taiwan, South Korea, and Singapore. For example the average GDP growth in China was 10.2% per year during the period 1985–1994. Since then a growth rate of over 9.5% per year has been sustained. The growth experience of other NICs has been very similar. To a large extent this high growth episode has been due to openness in international trade and the fast adoption and development of new technology. In the high-tech fields technology changes the market structure dramatically. Advances in computer and software technology and communication techniques and liberalization of global trade practices have played a most dynamic role in this regard. The emergence of this new economy has helped expand the markets. The internet economy allows the market to expand globally, also intensifying pressure of competition in hypercompetitive markets. Three aspects of this demand explosion are important here. The first is the increase in volume of demand due to globalization of trade. This expansion of trade has firms exploiting economies of scale. Traditional economic theory assumes that over a certain level of production there will be diminishing returns as the scale of production increases. However, as modern economies have undergone a transformation from large-scale material manufacturing to the designing and use of new technologies, the underlying mechanisms shaping economic activity are increasingly characterized by increasing returns. Knowledge intensive products such as computer hardware and software, telecommunications and pharmaceuticals, and the like have all the characteristics subject to increasing returns.

The second aspect of demand growth is due to the significant economies of scale in demand rather than supply. Since the value of a network goes up as the square of the number of users, demand growth has generated further investment in expanding the networks through interlocking and other linkages. Finally the globalization of trade and demand and the use of information technology (IT) networks in communication and other high-tech industries imply that US growth of IT technology will have a diffusion and spillover effect on other countries of Asia and Latin America and Europe.

In the high-tech industries of today, investments in knowledge capital have played a crucial role as engines of growth. Many of the subsectors of the IT and communication sectors specializing in software services and managerial skills in the arena of international “outsourcing” are highly labor-intensive. They export the spillover benefits of global R&D and innovation technology. Modern models of



endogenous growth theory have attempted to incorporate these spillover effects and the impact of market expansion in sustaining economic growth rates in the long run. The growth experiences of NICs in Asia have provided support to this worldview of expanding export markets.

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