Introduction

The purpose of this book is to present a general theory of the firm. The theory provides a microeconomic framework in which entrepreneurs, firms, markets, and organizations are endogenous. The models help to explain why firms exist, how firms are established, and what firms contribute to the economy. Because firms create and operate markets, *The Theory of the Firm* helps to explain how markets arise and how they work, and provides a basic analysis of the formation and design of organizations.

The structure of the theory of the firm is as follows. Consumers and their preferences, endowments, and intellectual property, are exogenous to the model. Consumers choose to become entrepreneurs by working to establish firms, which makes entrepreneurs endogenous. Through the actions of entrepreneurs, firms are established endogenously. Firms act as market makers by creating and operating markets, so that markets also are endogenous. Firms also create and manage organizations that transact internally and in the marketplace, making organizations endogenous. Economic equilibria are the result of consumer-entrepreneurs who establish firms and, in turn, of firms that create and manage markets and organizations. Firms, markets, and transactions are the results of economic equilibria. This framework is summarized in Figure I.1.

Economics is a social science. Economic relationships between individuals in society are its essential elements. Accordingly, the theory of the firm rests upon the characteristics and actions of individual consumers and their relationships. Acting together they form families, communities, social institutions, and governments. Consumers carry out market transactions through direct exchange. Consumers generate a wide variety of organizations that are alternatives to firms.

The critical first step in the theory of the firm is to begin with the individual consumer – and without firms or markets. Consumers have preferences over consumption bundles. They have initial endowments of factors of production and of goods and services. Consumers also have technological knowledge regarding production processes, product designs, transaction mechanisms, and organizational

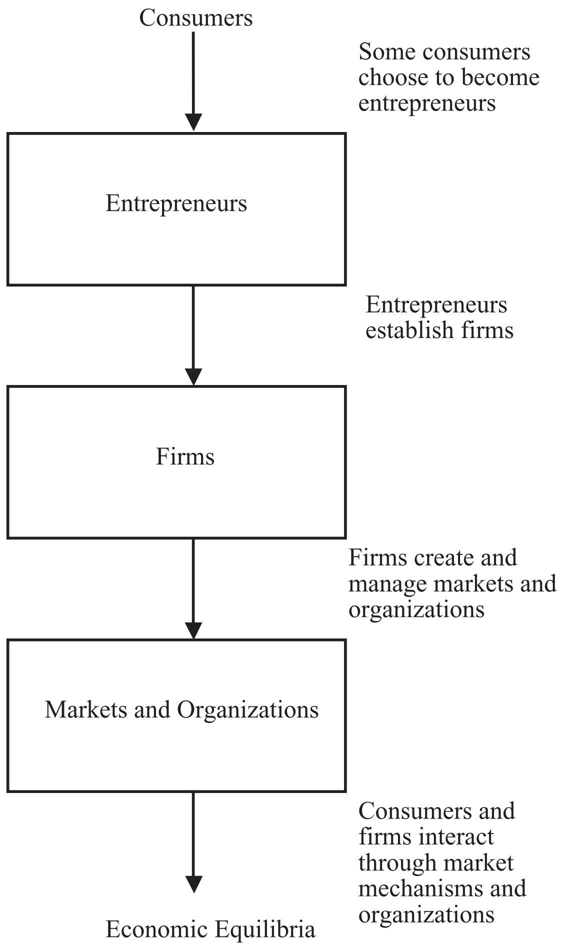

Figure I.1. Microeconomics with endogenous entrepreneurs, firms, markets and organizations.

management. They make purchasing decisions and labor supply decisions. Consumers are inventors, artists, managers, investors, and property owners. Consumers can act as producers and operate manufacturing technology, either individually or collectively. They are capable of technological and scientific invention, and they can commercialize their inventions.

Consumers also are able to set up and manage organizations. They can obtain benefits by transacting with one another through barter and bilateral contracts. They can form clubs, interest groups, and other associations. Consumers can devise more complex economic institutions, such as workers' cooperatives, consumers' cooperatives, and basic partnerships. Consumers can choose to form all kinds of social institutions to facilitate their economic interaction, and they can carry out economic transactions without the need for firms.

Although consumers realize gains from trade through direct exchange and cooperative agreements, they also encounter transaction costs. Such transaction costs include the time and effort required to search for trading partners. Consumers must communicate with one another, calculate the benefits from trade, negotiate the terms of exchange, design contracts, and observe the performance of contract terms by their partners. Consumers' net gains from trade will depend on how efficient direct transaction methods are in achieving gains from trade and how costly those transaction methods are.

Consumers, acting as entrepreneurs, choose to establish firms when doing so improves economic efficiency. An entrepreneur spends time, effort, and resources to establish a firm in order to receive the returns to ownership once the firm is established. The value generated by the firm must be greater than the costs of establishing the firm.

Transaction costs help to explain why consumers need firms and markets. A firm is a particular type of social institution that can improve the efficiency of transactions. Firms enhance net gains from trade by offering transaction methods not available to individual consumers or even to groups of consumers. The firm achieves transaction efficiencies by creating markets and organizations. To be economically viable, a firm must increase net gains from trade in comparison with direct exchange between consumers. Although consumers may develop and own such transaction technologies, they must establish a firm to implement them. The firm is an instrument for carrying out transactions.

A critical source of the firm's transaction efficiencies is that its objectives differ from those of its owners. The objectives of the firm are distinct from those of its customers, suppliers, managers, or employees. After establishing the firm, the entrepreneur becomes an owner. Therefore, the objectives of the firm are also separate from those of the entrepreneur who established it.[1] The separation of the entrepreneur and the firm allows for a development of a theory of the entrepreneur.

Separation helps a firm to improve the efficiency of transactions in comparison to direct exchange between consumers. By extending the neoclassical separation theorem, separation implies that the firm maximizes profits. Separation allows the firm to be an independent economic actor and decision maker. The firm is an additional player in the economic game. By adding a new player, an entrepreneur gives the economy additional degrees of freedom and new economic instruments. As an additional economic player, the firm performs economic functions not available to consumers. The firm can handle multilateral transactions simultaneously and thus improve efficiency relative to bilateral transactions between consumers.

1 Richard Cyert and James March (1963, p. 10) once observed with regard to the neoclassical paradigm, "If we take seriously the concept of a firm as something distinct from an individual entrepreneur, there is no consensus on a theory of the firm." Cyert and March (1963), in their behavioral approach to the firm, criticized the basic profit maximization framework of neoclassical economics, which in their view was based on the notion that the entrepreneur and the firm were one and the same. By separating the entrepreneur and the firm, the analysis presented here provides a theory of the firm that is consistent with optimization by rational economic agents.

The firm is much more than a nexus of contracts. It is an autonomous player that acts as the counterparty in contracts with customers, suppliers, investors, and employees. The firm enters into many contracts simultaneously as a central player. By acting as a contracting hub, the firm can achieve more than would a complete set of contracts directly linking its trading partners. The firm is a market maker, with instruments such as posted prices and auctions that can aggregate and balance supply and demand. The firm is a matchmaker that can coordinate and connect buyers and sellers. The firm is a centralized clearinghouse that can aggregate transactions and process information.

Because the firm's objectives are separate from those of its owners, it offers incentive mechanisms without the budget-balancing requirement of a buyers' cooperative, a workers' cooperative, or a business partnership. Budget-balancing requirements limit the efficiency of incentive mechanisms. The firm's ability to earn a profit enhances its ability to design incentive contracts for consumers, suppliers, and employees. The firm manages an organization with internal transactions that motivate managers and employees.

Because its objectives are separate from those of its owners, the firm offers other advantages. The firm has longevity, with a lifetime that stretches beyond its particular economic relationships and exceeds the lifetimes of its trading partners. The firm also can transcend geographic limits on its trading partners by operating in a convenient central location or by operating simultaneously in multiple locations. The firm has a brand identity and business reputation beyond those of its individual owners, managers, and employees.

The firm, in the form of a corporation or complex partnership, allows its investors to have both limited liability and liquidity. Investors in corporations are residual claimants. The analysis shows that corporations can provide incentives for managers that cannot be achieved within a basic partnership. Investors can withdraw their capital by selling their shares without disrupting the corporation's business and without selling the company to realize the value of its assets.

The theory of the firm as presented here provides an important insight about economic institutions. In a variety of economic settings, the theory of the firm yields the following result. The establishment of complex economic institutions depends on the extent of the market. The greater the extent of the market, the more economic institutions such as firms, markets, and organizations are established. This recalls Adam Smith's observation that the realization of economies of scale depends on the extent of the market. The greater the extent of the market, the greater the contribution of firms in improving transaction efficiencies. This suggests why the establishment of firms, markets, and organizations is associated with economic growth, economic development, and international trade.

A key variable repeatedly emerges in a variety of different contexts – the number of consumers. When there are few consumers, direct exchange may be the most efficient economic process. Consumer transactions and consumer organizations are most efficient. When there are many consumers, firms intermediating exchange

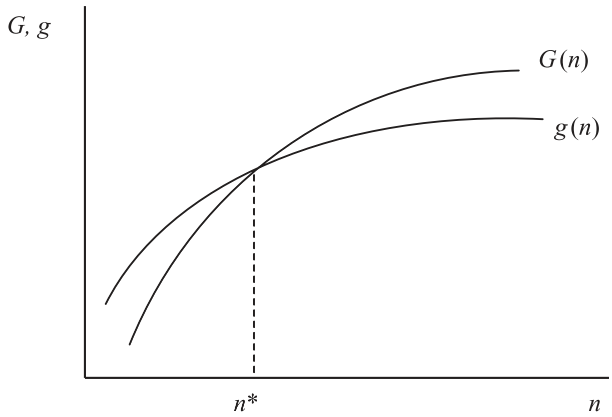

Figure I.2. Entrepreneurs establish firms when the number of consumers is sufficiently greater than $\boldsymbol{n}^*$. The establishment of complex economic institutions depends on the extent of the market.

becomes the most efficient way to organize the economy. Establishing firms and creating markets and organizations provide economic efficiency relative to direct exchange. The greater the size of the economy, in terms of the number of consumers, the greater are the efficiencies that can be realized by establishing firms.

When there are many consumers, direct exchange may not perform as effectively as intermediated exchange due to transaction costs associated with search, communication, and bargaining, and due to such problems as free riding. As the number of consumers increases, the economy realizes benefits from setting up firms, which are due to economies of scale in transaction technologies. The economy also realizes returns to centralization of exchange through the use of market mechanisms and organizations.

In many models, there is a critical size at which the economic equilibrium switches from direct exchange between consumers to intermediated exchange through firms. It is useful to illustrate the effects of the extent of the market on economic institutions. Let $g(n)$ represent the consumers' total net gains from trade with direct exchange when there are n consumers in the economy. Let $G(n)$ represent the total net gains from trade when there is intermediated exchange through firms. As the number of consumers increases, net gains from trade with direct exchange may increase more slowly than net gains from trade with intermediated exchange through firms. The effects of the extent of the market are illustrated in Figure I.2. Entrepreneurs become active when the size of the economy is greater than n^*. When there are costs to establishing firms, there must be a sufficient increase in net gains from trade relative to direct exchange.

The importance of the size of the economy for the formation of firms has not been recognized elsewhere. The main point is that direct exchange between consumers through decentralized institutions may be preferable with a small number of people. Intermediated exchange through firms becomes preferable when there is a large number of people. One forerunner of the idea that transaction costs depend on the number of people is Ronald Coase's (1960) discussion of externalities in the classic article "The Problem of Social Cost." Coase observes that with a smoke nuisance "a large number of people are involved and . . . therefore the costs of handling the problem through the market or the firm may be high." Coase declines to suggest whether markets or administrative decisions within firms are better at handling many transactions.

The Theory of the Firm explores the great variety of economic conditions under which the establishment of firms may or may not be worthwhile. The theory provides a unified framework for studying firms and markets that attempts to integrate much of the previous work on the firm. Within a general framework, different reasons for firms to undertake an activity will be valid depending on economic conditions. Some explanations may have greater resonance than others in empirical applications. All of these explanations are highly valuable for organizing our thoughts about firms. The theory of the firm should not advocate any particular explanation for the boundaries of the firm. Rather, it provides a set of methods that can be used to compare and evaluate the various explanations for firms' activities.

The Theory of the Firm introduces a general analysis of the entrepreneur. The analysis builds on the classic work of Richard Cantillon, Jean-Baptiste Say, Frank Knight, and Joseph Schumpeter. Knight (1971) emphasizes the essential role of the firm as a means of handling incentives. Entrepreneurs exercise judgment in the face of uncertainty and earn profit as a residual return that depends on the uncertain outcome.

The role of the firm in creating and operating markets is central. The firm is an intermediary that reduces the costs of market transactions; see Daniel Spulber (1996a, 1996b, 1999). The firm is instrumental in solving problems due to the absence of a double coincidence of wants. It allows consumers to engage in risk sharing. The firm coordinates exchange over time and provides services that substitute for money in an economy without fiat money or without a store of value. The firm acts as a matchmaker to alleviate the costs of search. The firm sets up markets to improve coordination between buyers and sellers. The firm creates markets for contracts that improve efficiency in comparison to bilateral contracting.

In the theory of the firm, firms also coordinate transactions within organizations. Governance within the firm provides an alternative to market contracts. Ronald Coase (1937, 1988, 1994) explains the firm as an oasis of planning and organizational administration that is an alternative to transactions in the market. Firms choose whether to buy an input and thereby incur a transaction cost or to make the input in-house, thereby benefiting from management and control of activities within the organization. Coase's insights, particularly the introduction of transaction costs into economics, are reflected throughout the discussion.

Firms manage investments in risky projects. A potential advantage of firms over direct exchange is that firms are mechanisms for separating ownership and control. The discussion includes the classic work on the theory of the firm due to Michael Jensen and William Meckling (1976). They characterize the public corporation as a "nexus for a complex set of voluntary contracts among customers, workers, managers, and the suppliers of materials, capital, and risk bearing." In their view the firm is a mechanism for allocating control when there is economic risk. "Corporations, like all organizations, vest control rights in the constituency bearing the residual risk" (Jensen 2000, p. 1).

The discussion examines the financial structure of the firm and compares the sole proprietorship, the partnership, and the corporation. Research on the corporation in economics and finance tends to emphasize moral hazard and adverse selection problems that result from delegating authority to the CEO. In the traditional framework, the corporation's investors are principals and must design incentives for the manager, who acts as their agent. The financial literature examines the inefficiencies that result from the separation of ownership and control using the benchmark of first-best efficiency. In contrast, it is suggested here that the shortcomings of the corporation should be measured against the yardstick of the best organizational alternative. The organizational alternative that combines ownership and control is the partnership. The discussion gives conditions under which either the partnership or the corporation is more efficient, based on Poblete and Spulber (2008b).

An important task of the firm is the employment and management of labor. Firms manage production operations whether they are used to manufacture goods and services or to generate transactions. The role of the firm is examined in comparison to that of the labor-managed organization. The firm chooses employment at the margin to maximize profit. In contrast, the labor-managed firm chooses employment to maximize the average benefit of its members. The firm provides efficiencies as a consequence of profit maximization.

The general theory of the firm differs from neoclassical economics in a number of critical areas.[2] In the general theory of the firm, the entrepreneur is the central player because the entrepreneur establishes the firm. In neoclassical economics, there are no entrepreneurs because firms already are established.

In the general theory of the firm, the firm is responsible for intermediating transactions. In contrast, neoclassical economics limits the function of the firm to that of being a producer that operates a technology. Arrow and Hahn (1971, p. 17),

2 The classical economists include Adam Smith, David Ricardo, and John Stuart Mill. See Sowell (2006) for a highly illuminating overview and discussion of classical economics. By neoclassical economics, I refer to economics since the marginalist revolution, including the work of Léon Walras, William Stanley Jevons, and Carl Menger. I also use the term neoclassical economics as shorthand for the general equilibrium model that was developed by Kenneth Arrow, Gerard Debreu, Robert Hahn, and many others. The neoclassical theory of value refers to the concept that the value of goods and services is determined by a market equilibrium in a general equilibrium setting based on consumer preferences, initial consumer endowments, and producer technologies.

for example, observe that households and firms "are distinguished by the property that firms do, and households do not, take production decisions." Firms take prices as given and make no organizational, management, purchasing, or marketing decisions. Firms do little more than choose the input-output mix that maximizes profits.

The general theory of the firm is founded on transaction costs. In contrast, neoclassical economics is without frictions because markets are established and operate without transaction costs. In the neoclassical general equilibrium framework, a fictitious Walrasian auctioneer clears markets by exogenously selecting prices. Neoclassical economics presents a theory of value that does not consider the institutions of exchange. The market equilibrium with endogenous firms provides a more general theory of value because it reflects transaction costs.

In neoclassical economics, the firm is a veil that covers the decisions of consumers as well as those of suppliers, customers, and owners of firms. Once the veil of firms is removed, all the action in the neoclassical tradition is on the consumer side. Consumers own firms and unanimously agree on the profit-maximizing input choice, so the production decision coincides with the consumer-owners' decision. Consumers are the suppliers of firms, providing the firm with all of its primary factors of production, because consumer endowments include labor and all other resources. Consumers purchase all of the outputs of firms that are not used as inputs for other firms. The transformation of inputs into outputs through production is absorbed into the economy's excess demand function. The production activity could just as well be owned and operated by consumers, who then supply outputs to firms or to other consumers.

The general theory of the firm draws from neoclassical economics and institutional economics. Neoclassical economics offers an analysis of the benefits of transactions through its study of the theory of value. Institutional economics offers an analysis of the costs of transactions through its study of the mechanisms of exchange. By considering both the benefits and costs of transactions, the general theory of the firm combines the strengths of these two important traditions.

The general theory of the firm presented here contains a number of new models and results. The discussion presents equilibrium models in which entrepreneurs choose to establish firms. The discussion examines equilibrium models that contrast the decisions of consumer organizations with those of firms. The analysis compares how consumer organizations and firms choose the size of the organization, obtain capital investment, provide incentives, and allocate resources. The discussion considers how firms create and operate markets. The general theory of the firm helps to explain the vital economic role played by the firm in the contemporary economy. Microeconomics with endogenous entrepreneurs, firms, markets, and organizations provides insights into the nature and function of economic institutions.