Chapter 19: Toward a Broader Neoclassical Synthesis

I. Introduction

Microeconomics is the analysis of the factors that jointly generate the networks of exchange, production, and innovation that characterize markets. The hallmark of microeconomic analysis is the assumption that each person and each economically relevant organization makes their decisions independently from all others, and the market emerges from all of those choices.

This approach to social science is often termed methodological individualism. From that perspective, social phenomena such as market networks emerge as consequences of individual decisions and, in many cases, expectations about the future. Consumers anticipate benefits from their purchases. Firms expect profits from their sales, and inventors expect income or praise from their innovations. Linkages between those aspirations arise through linkages in market networks. Market prices provide many of the most consequential linkages. Prices, for example, partly determine the "returns" associated with alternative things that can be bought, produced, sold, and invented. They thus play a role in most of the economically relevant decisions of consumers, firms, and innovators.

Microeconomic theory, for the most part, uses abstraction, models, and deduction to understand how economically relevant choices, circumstances, and linkages among those choices and circumstances produce the extended networks of exchange, production, and innovation that economists refer to as "markets." Although there is a sense in which market networks are instances of "spontaneous orders" in that no single person or organization designed the networks, there is another sense in which they are products of intent. Each consumer, producer, and innovator involved in the transactions that take place at a given node is there because doing so is expected to advance their interests.

Methodological individualism requires "factoring" markets into their smallest, essential, transactions. These include the purchase of an individual consumer, the production decisions of individual producers, and the choices by potential inventors to engage in or defer innovation. All these choices and their associated actions are in one sense different. The individuals and groups involved have different goals, they face different circumstances, they have different experience and expertise, and they have different capacities to make accurate assessments of the alternatives before them. Nonetheless, each of these

transactions has similarities. They are all efforts to advance the interests of two or more individuals or groups in settings of scarcity where goods or services can be voluntarily transferred from one person to another or from one organization to another.

Models of the common elements of circumstances, choices, and actions allow a handful of models to be used to understand how the millions of actual choices that actually produce markets do so.

Fortunately, the typical aims of purchasers, sellers, and innovators are often very clear. This facilitates the development of relatively simple but quite general models that characterize the choices of consumers, firms, and innovators and their various interdependences. The models characterize incentives and likely outcomes at typical (archetypal) nodes in market networks.

For example, sellers normally want to maximize the net-revenues (profits) realized when they produce and sell goods to buyers. The mathematics of profit maximization implies that the quantity produced for sale will be approximately that which sets marginal revenue equal to marginal cost. It does not matter whether sellers think in those terms or not; if they maximize their profits the conditions for maximizing profits will be met, regardless of how sellers ultimately manage to do so.

In cases in which any quantity can be produced and sold, as assumed in most models, the implications of the models developed in Part I of this text will be more exactly true. In cases in which outputs can only be produced in "whole units," that relationship will be approximately, but less precisely, true. In such cases, products will be produced and sold up to the point where marginal revenue is no longer greater than marginal cost, rather than to the point where marginal revenue exactly equals marginal cost.

The aim—maximizing net revenues—and the circumstance—producing and selling products to willing purchasers—have clear implications about what must be done to advance seller aims. Other details—the types of consumers, the nature of the products sold, the precise manner in which the products will be produced, the planning horizon of firms, all vary in many respects—although again the aims of each producer-seller remain maximizing net revenues. This has implications about what a firm will do if it actually manages to maximize profits (or more precisely the present discounted value of expected profits over the course of the firm's planning horizon).

These, in turn, have implications about market supply when dozens of firms make similar decisions and use similar methods to produce the goods brought to market—whether final

goods, as emphasized in this and other textbooks, or intermediate goods that facilitate the production of final goods by other firms in a chain of production.

On the Value of Qualitative Results

It should be acknowledged that the implications of general models of economic decisions and market networks are qualitative rather than quantitative—as is true of many other theories that can be applied using deduction, such as the theory of gravity. The theory of gravity predicts that a leaf falling from a tree falls downward toward the center of the earth. The theory of demand (demand curves slope downward) implies that individuals will purchase fewer units of a good when its price is high than when it is low. The theory of supply implies that producers will bring more goods to market when prices are high than when they are low—to the extent that they can choose when to sell their goods. In none of these cases, is there an exact prediction about the speed of a leaf's descent, the quantities of a good purchased by a consumer or the quantities sold by an industry. Qualitative models naturally produce qualitative results.

As in the case of gravity, a qualitative theory can be used as the basis for making quantitative predictions. For such quantifications to be broadly useful, this requires particular concrete functional forms that are more or less universal. The gravitational constant varies among planets and one can only estimate how fast things tend to fall if one has parameterized the gravitational force function for the things of interest.[1] Similarly, microeconomic models grounded in the qualitative models are often estimated or calibrated for such purposes. The specific predictions of well calibrated models are valid only for the microeconomic choice setting modeled and parameterized. Unlike a fundamental law of nature, the "laws" of demand and of supply are context specific and generalize across markets only qualitatively—more or less in the same manner that the laws of gravity generalize across planets.

Nonetheless, quantitative results are often very useful, as a firm can make better decisions if it has an accurate estimate of its profit function than when it does not. When quantification is the aim of an analysis, general models similar to those developed in this text can be used as a basis for calibration or estimation using statistical methods. General economic models

[1] Newton's law of gravitation is general: $F = G\frac{m_1 m_2}{r^2}$ where m_1 and m_2 are any two masses, G is the gravitational constant and r is the distance between the centers of the two masses.

make claims about causal factors and co-determined relationships that can be estimated. By identifying variables that are likely to be exogenous and those that are likely to be endogenous or codetermined, they allow those undertaking the estimation to narrow the range of data likely to be relevant, avoid endogeneity problems, and facilitate steps to avoid or reduce simultaneous equation bias.

Nonetheless, it should be pointed out that for many purposes qualitative models are often more useful than quantified models, because they apply to a broad range of circumstances rather than particular instances of them. Price theory's predictions about how prices, innovations, and rules affect economically relevant human behavior and how changes in circumstances may induce markets to expand or contract are essentially universal—although they are not always, or perhaps even usually, obvious without substantial training in economics.

Markets extend back beyond the dawn of history, but they were not always as productive as they have been for the past century within a subset of the territories on earth. The most encompassing models help us understand why the extent of material comforts varies among times and places, whether they are expanding or not, and whether material comforts could be expanded more rapidly or not.

II. Price Theory: Coordination, Income, and Sales

Part I of the book provides an overview of the core of microeconomics: price theory. It characterizes the notion of equilibrium price, shows the properties of such prices, and it also shows why prices are important. Every economic decision is conditioned on prices of various kinds. Equilibrium prices thus influence and coordinate the wide variety of choices and behaviors that produce the networks of exchange, production, and innovation that characterize contemporary markets. It is through those networks that products are produced, incomes are earned, and subsequently used to purchase necessities and frivolities, and partly set aside as savings and self-insurance.

As noted by Hayek (1945), prices induce coordination. By providing a convenient index of the relative value of things that might be produced and the relative cost of things that may be purchased, prices induce individuals and firms to economize both when they produce things and when they purchase things. Prices do not "force" coordination, they simply frame most economically relevant choices and thereby determine the extent of individual

opportunities and partially determine the marginal returns (utility, profits, etc.) and the opportunity cost of alternative uses of the resources at one's disposal.

Together the impulse to economize and the relationships among prices create linkages between the otherwise independent choices of millions—indeed billions—of consumers and firms at the same time that they are themselves largely consequences of those same choices. It is largely through such linkages that the grand network of exchange, production, and innovation emerges.

Nearly every single contemporary electronic device, for example, is the joint product of millions of individuals working in thousands of firms and dozens of industries and countries. It is through ratios of prices that the cost of inputs and the value of products are judged by producers. It is through the ratios of prices that the opportunity costs of purchases of a single product are determined. It is through the effects on the demand for inputs and indirectly for other inputs throughout the whole supply chain that resources come to be used to efficiently provide the goods and services that consumers value most highly. (Here it should be acknowledged that laws and associated penalties and rewards also have significant effects on supply chains, as discussed below.)

Microeconomics is not merely about production and sales, but of the incentives that induce products to be brought to market at prices that ordinary people can afford.

Supply Chains

Microeconomics sheds light on the entire network of exchange, production, and innovation by focusing on decisions at a single link in the long chain of choices that characterize many contemporary production processes (supply chains). Because such decisions are commonplace, understanding a few of these can shed light on linkages within and among supply chains. Without such linkages, the coordination that we observe between final goods markets and input markets would be less complete and less self-evident. Large surpluses and shortages would be commonplace. By understanding the essential features of a "typical" node in the networks of production and innovation, one understands why such market failures are rare.

The model of firms that produce final and intermediate goods implies that firms respond to the selling price of the goods and services that they produce in three ways. First, selling price influences their output decisions—they produce the profit maximizing output (the one where marginal cost = marginal revenue). Second, selling prices, the usefulness of alternative

inputs, and the prices of those inputs influence both how things are produced and the distribution of income among input providers. Each input is demanded up to the point where its marginal revenue product equals its marginal cost. Third, selling prices and expected selling prices influence decisions about what to produce to sell: the characteristics of the products ultimately sold to consumers, and changes in them that occur through time.

In equilibrium, input prices throughout the chain of production equate demand (marginal revenue product) with supply (the marginal opportunity cost of the inputs in alternative uses).

In the rare case where a final product is directly produced from natural resources, the supply chain is very short. However, most products are made from inputs that are themselves products of production, which in turn are also products of prior instances of production, on back until the earliest stages of production are reached—as with mining or prospecting for minerals in the many cases in which metals or plastics are used to produce intermediate and final goods.

Supply chains often involve many transformations of raw materials into increasingly refined products that can more easily be used to produce the next intermediate goods which ultimately are used to produce one or more types of final goods. Silicon sand may become glass or computer chips, but not through one step from sand to window or microprocessor.

Intermediate goods producers are influenced by the prices of their goods and services in much the same way as final goods producers—with the exception that they sell their outputs to other firms rather than to consumers. Firms that produce intermediate goods also produce the quantities of their products that maximize profits, with characteristics that are most useful to their purchasers. This also occurs at outputs where their marginal costs equal their marginal revenues. Their marginal revenues, in turn, reflect the prices of all the subsequent uses of the intermediate goods produced (computer chips, auto parts, lumber, pipes, etc.). The larger an intermediate goods marginal revenue product in the next stage in production, the more buyers are willing to pay for them. Thus, the higher is the demand for an input's final products, the greater is the demand and selling price of the input, other things being equal.

To illustrate, consider a four-link process of production by a series of price-taking firms. In the last stage $MC(Q_1^*) = P_1$. In the second to last stage, demand is determined by the marginal revenue product of the input of interest in the final stage of production,

$MC(Q_2^*) = P_1 MP_1$. In the third to last stage, demand for the input is determined by the marginal revenue product of the input in the second to last stage, which is partly determined by its value in the final stage, $MC(Q_3^*) = (P_1 MP_1)MP_2$. In the fourth to last stage (the first stage of production), $MC(Q_4^*) = (P_1 MP_1)MP_2 MP_3$. In equilibrium, the demand for each input in this series is simply the original price times the marginal products of each stage in the production process between the final stage and the stage at which a particular intermediate good is produced.[2]

Together the market prices at each "next" stage, together with the scarcity of the inputs used to produce the intermediate good of interest, determine the market price of the input. In each case, the market price is influenced (partly determined) by the selling price of the final good produced and its importance in the supply chain (marginal product) between it and the final stage of production in which the goods sold to consumers are produced.

Note also that the essential character of each link in the chain is similar to that of the other links in the supply chain.

At every link in the chain, firms maximize profits by choosing a production level that sets marginal cost equal to the selling price of their product. The linkages between successive links in the chain (or nodes of production) occur through effects on the marginal revenue products of inputs. Each marginal revenue product in a supply chain is partly determined by the selling price of the final goods that an input will directly or indirectly be used to produce. In a sense, it is "marginal revenue products all the way down."

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[2] The illustration assumes that the inputs are used to produce a single final good. In cases in which many final goods can be produced, the market demand at each stage in production is the sum of the demand functions in each of the markets served. Each demander will purchase the input of interest up to the point where its marginal revenue product equals its marginal cost (price in the intermediate goods market). Thus, the "typical firm's demand" is grounded in the "typical firm's marginal product" of the input (intermediate good). This is true of the supply chains for all the products produced with the intermediate good of interest. The supply chain illustrated simply provides a sharper characterization of the roles of final good prices and intermediate marginal products than in the multi-product case—with very little loss of generality.

The prices of final goods thereby influence the production of goods and services from the final step in production all the way back to its first steps. And in order to be profitable, each step in the supply chain is value increasing. At or near equilibrium prices, the total value of the products sold exceeds the total cost of the inputs employed in each step in the supply chain. Resources are never intentionally wasted in this economic sense. It is only value-increasing chains of production that are sustainable.

Consumer Interests, Market Prices, and Personal Income

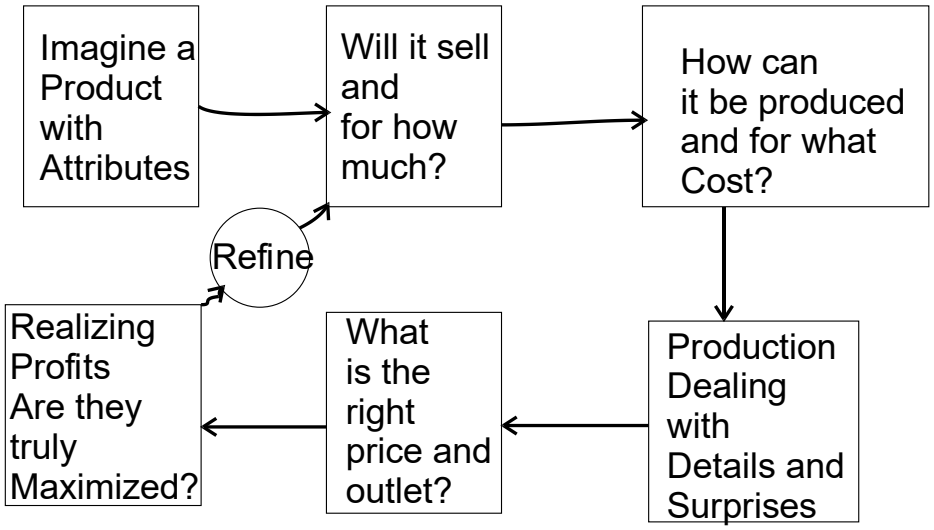
The scarcity and productivity of inputs and the demands for the final goods produced by them, jointly determine both the chain of production, and the distribution of income in the societies that participate in the trading networks of interest. Each firm's interest in profits, together with price competition, assures that inputs are used for their most valued applications (given the knowledge of the producers). (Again, it should be acknowledged that laws and regulations also affect the relative returns from production and the use of inputs, and thus some value adding (in the economic sense) opportunities may be ruled out, while others are encouraged. Thus, the logic of value adding production and efficient use of inputs goes through—subject to legal constraints.)

Bringing New Products to Market

Price theory focuses for the most part on settings where products and production methods are well known—because its main focus is not on how markets develop, but on the nature of equilibrium states after markets have emerged and patterns of exchange and production have become routinized. The core models thus abstract from the process of bringing new things to markets and cost reducing modifications of production methods and trading networks. However, that neglect does not imply that innovation cannot be brought into neoclassical models. Chapters 8 and 10 demonstrated how this could be done.

Figure 19.1 illustrates some of the decisions that are undertaken when a firm or entrepreneur decides whether to bring a new product to market, or not. It illustrates a multi-step intra-firm process through which learning and invention may take place—a process that was compressed into a single choice in the models developed in Chapters 8 and 10.

Figure 19.1 Bringing Products to Market



Note that every step involves estimates of prices, demand functions, production methods, and innovation (refinements). In equilibrium, when refinements cease, all these may be known, but certainly not beforehand. In Part II, we developed models of each of the types of choices characterized in the flow chart. As in the case of production, the models of product development reviewed in Part II characterize "links" in the chain of innovation, application, and revision that takes place within most innovative firms.

The models indirectly characterize market dynamics. Product attributes and production methods are constantly being refined. Even relatively simple ancient products such as beer and pizza are constantly being fine-tuned to increase demand or reduce marginal costs, along with restaurant ambiance, pricing, and service levels. Schumpeter's gale of creative destruction implies that product development and refinement are central to nearly every firm's efforts, rather than activities undertaken by a handful of specialized "high tech" firms or genius entrepreneurs.

A company that does not continue to innovate will lose customers to those that do so successfully, because the latter companies will do a better job of simultaneously advancing customer interests and realizing profits.

Equilibria still exist, in the sense that business plans may be stable for decades at a time. This may be true at the same time that other markets are being disrupted by innovation. That such disruptions occur more or less one market at a time, rather than system wide

shocks, both reduces uncertainty for market participants and implies that innovation does not constantly undermine every firm's and consumer's pattern of life.

Thus, rather than a high-variance random distribution of outcomes, or a perfect circular flow, the result is a spiral as many production and consumption routines continue in place, while others are adapted to new circumstances and opportunities.

This is true of other areas of life as well. When one walks across a road at a pedestrian crossing, one does not imagine where each of one's footsteps will go and then close one's eyes and undertake to place one's feet in the places implied by such a plan. Instead, our eyes remain open, and we constantly validate and revise our planned course across the road of interest, looking for road imperfections, unanticipated behavior by other pedestrians, adjusting to slight missteps as we place our feet, and looking for vehicles that might pose risks to our safety. If we cross the road safely without significantly changing our general road-crossing plan, we regard the plan to be successful. If we changed our path or even returned to where we started, adaptation is more obvious. However, even in the ordinary case in which our plan was followed, we were prepared to change our plans at every instant—e.g. to innovate to avoid losses from pavement imperfections and errant behavior by other pedestrians, cyclists, and automobile drivers.

III. Legal, Political, and Social Effects on the Extent of Market Networks

Parts I and II together imply that market equilibria, when they exist, are a bit fuzzier than those that emerge from the core models. On the one hand, they tend to be more extensive, as markets for risk-management, financial intermediation, and creative forms of expertise emerge. On the other, they tend to be less extensive than implied by full information models.

Not all products that might be produced are produced, because their existence has not yet been discovered, nor their appeal for consumers recognized. In addition, as pointed out by Stigler (1961), rather than a single price, a range of prices may exist at a market equilibrium, because information costs rule out a complete convergence to the single price equilibria of models that abstract from information problems and transactions costs.

In addition to the equilibrating effects of price competition, there are other disrupting processes taking place all the same time, as with the case of innovation. Even long-standing market routines may be transformed by innovation, as the horse and buggy—mainstays for centuries—gave way to the automobile and new more rapid forms of transportation.

Such extensions of the core price theory models may have been unnecessary in 1850, but clearly were if the experience of the rest of the nineteenth and the twentieth centuries are to be accounted for.

Additional extensions are necessary to account for changes in the legal, political, and cultural setting of market activities. Part III introduces models that shed some light on why economic development is affected by such social phenomena, which provides a partial explanation for why economic development tends to be so uneven.

It turns out that the methodological individualist methodology and utility-based models of volition can be used to explain why such factors affect the extent and growth rates of markets. And, it turns out, that there is a good deal of statistical evidence that such factors have affected development in the twentieth century.[3]

Many of these effects should be obvious to students of economics, who are aware of the assumptions of the core models of neoclassical price theory. For example, it should be clear that some laws encourage individuals to engage in voluntary transactions rather than coercive ones. Property law does so by characterizing who owns what, and how ownership can be voluntarily shifted from one individual or organization to another. Such laws reduce transactions costs. If transferable ownership rights did not exist, trade would be far more difficult and riskier to undertake. Indeed, without the possibility of lawful exchange, relative abilities to produce violence and threats of violence would likely be the main determinant of control over resources rather than the productivity of one's mind, hands, and team at producing goods and services for sale.

Legal and informal normative incentives that induce persons to produce and sell rather than steal and extort clearly produce much more extensive networks of exchange than would have existed without such laws and norms. Such laws provide the rule-based foundations for most market activities, and do so through effects on individual decisions throughout market networks.

On the other hand, other laws and governmental policies may impede rather than promote market activities. Whether they do or not depends in part on their effects on individual choices. The likelihood that the laws and policies adopted promote or discourage economic

[3] See, for example, Doucouliagos and Ulubaşoğlu (2008), Efendic, Pugh, and Adnett (2011), and Rodrik, Subramanian, and Trebbi (2004).

activity varies with the type of government in place (extractive or productive) and on the preferences and expectations of those who determine government policies.

Internalized norms, as with ideologies, may be pro or anti market, and the public policies adopted by governments thus may also be pro or anti market insofar as governments advance the perceived interests of persons with internalized ideological and/or normative interests.

IV. Interpreting Economically Relevant Behavior with Neoclassical Models

The core models can abstract from many details that actually are important to firms, but still account for a good deal of market behavior because the decisions focused on are important, consequential ones, and their essential characterizations in the core models are reasonably accurate despite the many abstractions adopted. Indeed, that this is true is a mark of successful abstraction. Prices induce firms to provide the goods and services that consumers are willing to pay the most to acquire, and competition among firms for consumer sales assures that products are produced at approximately least cost (for the entire package of product and services provided).

Market Responses to Surprise Events

The comparative static results also are usually borne out. This tends to be true of both anticipated "shocks" and unanticipated ones. A firm often has conditional plans, and when a change in circumstances arises, they know exactly what to do. On the other hand, such plans do not cover surprise events (more or less by definition). As it turns out, adaptations and surprises often resemble each other in terms of their qualitative effects.

Suppose that the weather forecast predicts a frost will occur in a week in an orange growing territory. Some orange farmers will have conditional plans and place heaters and fog producers among their trees—others will not. In both cases, orange production will fall to some degree—albeit to a lesser extent than without such plans and reactions to frost forecasts. Prices tend to rise, but to a lesser degree than without the ameliorating steps taken by some or all orange growers in the affected area.

The effects of surprise events are further moderated by extended trading networks. A surprise frost that reduces the crop of oranges in California causes orange juice prices to rise in the United States, which induces consumers to shift a bit toward other sources of orange juice not affected by the frost. Such shifts, in turn, raise prices of those juices, the trees that produced them, and related ports and shipping networks that delivered them to U.S. markets

and other markets. These supply adjustments further moderate the effect of a California frost (or real-estate boom) on the cost of orange juice throughout the U.S.

Some or all of those facilities expand to meet demand. Contracts with orange growers in other parts of the world may be rewritten and imported oranges may increase, offsetting part of the reduction in domestic orange supply.

When such frosts occur regularly, but not necessarily periodically, various insurance like products and contracts may be introduced to reduce the risks from growing oranges and using them as inputs for other products. For example, larger inventories (reserves) of frozen orange juice and other substitutes for fresh orange juices may be accumulated. Such steps somewhat increase the production costs of oranges and their products, but mitigate the price effects of future frosts.

Very similar logic operates in settings where firms are price makers rather than price takers. As demand falls, the quantity that maximizes profits tends to fall, which reduces demand for inputs, and causes the firm's willingness to pay for their services to fall. As a consequence, input providers begin to look elsewhere for employment opportunities and/or for industries where their inputs are in greater demand.

The main difference between the reactions to shocks in markets composed of firms that are "price makers" and those in which firms are price takers is that prices emerge directly from the decisions of firm owners and managers when they are price makers, rather than emerging indirectly through very small adjustments by individual firms and consumers when they are price takers. It bears keeping in mind that most price making firms also compete for consumer dollars and the extent of that competition varies with the number of firms selling similar products. In equilibrium, supply equals demand in both settings.

How long an equilibrium remains in place depends on a variety of "surprise" events—events that are not fully anticipated by market participants. Mutual gains from trade are not static but change through time. Any factor that significantly affects those gains is properly part of microeconomics, and all logically consistent explanations of how such factors affect markets are properly part of microeconomic theory. For example, the supply of California oranges has diminished as immigration increased the demand for housing, which increased the demand for land by home builders, which bid up the cost (opportunity cost) of orange farming, and induced many orange farmers to sell their farms to real estate developers.

The insights of neoclassical economics can be used to interpret most economic phenomena although it cannot always predict the surprise events that induce changes in market prices or in the pattern of consumption, production, and innovation—although after the fact, the theory can usually account for the effect of such surprises.

V. Neoclassical Models Are More Realistic Than They Might Appear

The limits of abstraction are determined by the relevance of the conclusions reached. Does a lean model actually describe behavior that we observe in the world or not? Neoclassical economics is grounded on a very abstract representation of markets, but one that has proven itself to be surprisingly faithful to the ebb and flow of real markets. It was worked out by Western scholars over the course of about a century and a half and relies upon methodological individualism for both its theories and models.

The models rest on the more or less permanent interests of individuals, families, and economic organizations and the economic constraints that limit each person's, family's, and firm's ability to advance their interests. Both interests and constraints are surprisingly easy to model when they are stable. General features of human interests are quite stable in that humans of the distant past would also have been interested in food and shelter, safety and reserves—with tasty health-increasing food preferred to those that are not, and aesthetically comfortable abodes preferred to their opposites, and larger reserves preferred to smaller ones, and so on. Opportunity sets have for many centuries been circumscribed by scarcity, market prices, norms, laws, and knowledge. The details vary, of course, but common elements persist and most are relatively easy to incorporate into the model of human volition used most frequently by economists.

The ubiquity of the pursuit of satisfaction and profits in settings of scarcity is what makes the utility maximizing and profit maximizing models work—e.g. sufficiently realistic for many purposes. Without scarcity, there would be no constraints on how interests could be advanced. Without relatively stable interests, there would be no underlying theme or purpose to human actions. Without purposeful behavior, behavior and consequences would tend to be less understandable and less predictable.

Given both scarcity and purposeful behavior, models of individual decision making based on the mathematics of constrained optimization can and have been developed. The implications of such models, perhaps surprisingly, account for a broad range of market

phenomena and do so with very "lean" characterizations of the choice settings and interests most relevant for market transactions.

Thousands of tests of the main implications of such models have been undertaken and the models have accounted for many of the observed features of markets and for much—but not all—of the individual behavior that generates the extensive networks of exchange, production, and innovation that characterize contemporary markets. Modest extension of the core models can, in turn, account for the effects of legal and political institutions and norms on the extent and scope of those networks.

The models revealed the importance of market prices for the choices made by individuals, families, and firms. They influence every choice in which scarcity is a factor. And, it is through their adjustments that adjustments in patterns of consumption and production occur throughout supply chains. Prices and choices are co-determined.

Moreover, the models allow for the fact that every person and firm may be a bit different. Neither people, nor firms necessarily act in unison, even when they are affected by the same prices.

Goods and services are for sale, and particular customers purchase particular market baskets of goods and services when they seem to be "worth the price." "Worth the price" turns out to mean that they best advance the interests of the purchaser, given his or her budgetary constraints and knowledge of the possibilities. Each person, family, or firm can make their decisions independently of one another in markets, and so may differ widely in the goods and services that they bring home. Contemporary grocery stores, department stores, and merchandise oriented websites would be much smaller if everyone had the same tastes and budgets.

Similarly, merchants, managers, and firm owners may also be quite different from one another. Although some models of production assume that firms are identical clones of one another, that is a simplifying assumption adopted to make the mathematics and teaching students easier, but which is totally unnecessary to understand market supply.

Firm owners may have different personalities, networks of families and friends, educational backgrounds, and personal histories. Nonetheless, they share an interest in realizing income by selling goods and services to consumers. And all would regard "more income" to be better than "less income" other things being equal. Thus, profit maximizing models of

economic organizations characterize many of the essential tradeoffs that "firms" confront when attempting to maximize their profits from selling goods and services.

Again, the implications of the shared goals of firms—maximizing the present discounted value of risk-adjusted profits—are less obvious than are the many differences among firms. But, their common interest in profits has clear implications about the types of choices firms will make and the relevance of selling price and production costs in those decisions.

It is the stability of these underlying interests that allows the lean models developed by neoclassical economists to shed light on the huge number of choices made by firms and consumers in a commercial society. Were these economic aspects of decisions less important and less universal, the models would have far weaker predictive and explanatory power than they do.

VI. What Is Unique About This Book

What this book undertakes is somewhat broader coverage and synthesis of microeconomics than most books. It also attempts to do so with a smaller range of mathematical tools than most advanced microeconomic texts require. It does so partly because it attempts to cover the core ideas of neoclassical economics and natural extensions of it, rather than to provide an encyclopedia of economics or to stress exceptions to the rule that may occasionally occur. Calculus is use throughout the text partly because is it a powerful modeling tool and partly because many of the results can be used to deepen the economic intuitions that most advanced economics students have developed from their past studies.

The topics covered in Part I of this book would be covered in every advanced microeconomics textbook. Many of the topics reviewed in Part II would also be covered directly or indirectly by most microeconomic textbooks. However, Part II also covers topics that are neglected or given less attention by most textbooks, such as the importance of uncertainty, entrepreneurship, innovation, the designs of products, and effects of public policies on market equilibria. All these are necessary if one is to begin understanding how markets evolve and why markets vary in their ability to deliver goods and services at a given point in time.

Technology cannot advance unless knowledge is bounded, and, thus, ignorance and uncertainty are commonplace. Technological improvement reduces ignorance but does not eliminate it. Both learning and experimentation are important features of economic systems. The circular flow of medieval economic systems is no more. Other opportunities for

innovation exist for similar reasons. They have always existed, but rates and types of innovation have varied across societies at a given point in time and also through time. Taking entrepreneurship into account is necessary to understand how market networks emerge and extend through time.

The topics reviewed in Part III are even less covered by microeconomic textbooks. This may be because other authors are more comfortable taking all such influences as "given," or believe them to be well-functioning stable systems that can be ignored for purposes of their analyses.

However, the resulting analyses ignore the many effects that legal and political institutions and norms have on economic development. Such factors at least partially account for the significant differences in the productivity of market networks through time and among nation states and regions at a moment in time.

Another reason for neglecting such factors is that they may initially appear to be too difficult to incorporate into an economic textbook or course. However, the fields of law and economics, public choice, and socioeconomics have demonstrated that the effects of law, politics, and norms can easily be brought into microeconomics. Indeed, most of their effects can be modeled with minor extension of the models used to characterize equilibrium prices. Part III demonstrates that models very similar to the models used in neoclassical models of price determination can be used to understand and predict the effects of differences in laws, regulations, political institutions, and internalized norms on market outcomes.

Most laws, political decisions, and internalized norms affect choices in rather ordinary ways. They affect the risks and returns associated with various activities, and thus affect economically relevant choices by individuals and firms. Those choices, in turn, affect patterns of production and innovation that tend to arise because they affect the types of goods and services that can be profitably produced and sold. That their effects on markets can be modeled using straightforward rational choice models demonstrates that they are natural parts of a complete neoclassical microeconomics, rather than separate fields of study that are too abstruse for economic analysis.

Moreover, these institutions are among the fundamental determinants of the extent and scope of market networks. Opportunities for exchange, production, and innovation tend to be quite limited unless legal systems exist that tend to facilitate such exchanges. Formal and informal laws characterize ownership rights, the rules through which ownership can be

lawfully transferred, and discourage transfers that do not make all the directly affected parties better off.

Similarly, networks of voluntary exchange are unlikely to become extensive and dense unless public policies that tend to facilitate them are in place, rather than ones that discourage economic development. Examples include the adoption and enforcement of supportive civil and criminal laws, support for integrated transport systems, and policies that facilitate the development of useful innovations, such as patents and intellectual property rights.

Differences in the extent of economic development are partly the result of differences in capital stocks as often emphasized by neoclassical economists, but a good deal of evidence suggests that they are also caused by differences in education, legal, political, and normative systems. Such differences and their effects on economic activities imply that they should be considered part of microeconomics.

From the perspective of this text, microeconomics is a broader field than often acknowledged by other microeconomic textbooks. This is not an entirely new idea. Classic works from the period before neoclassical economics emerged often included or at least mentioned the effects of legal, political, and normative systems on market networks. This text merely brings those topics back into efforts to introduce students to advanced microeconomic ideas, models, and results.

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