1

MARKETS: PERSONAL FINANCE

This book studies markets and government. This first chapter focuses on markets. We ask whether competitive markets achieve the societal objectives of efficiency and social justice. We study trust, which facilitates the existence of markets. We consider consequences of departure from competition: monopoly is used to portray a non-competitive market and to show the inefficiency due to deadweight losses and also rent seeking in quest of monopoly profits. We study "natural" monopoly, which occurs when competition is inefficient because a single producer minimizes costs of supply. We review assessments of whether markets are beneficial. Our conclusion is that, although there are qualifications, competitive markets can be used as a benchmark to determine whether public finance and public policy are required to achieve efficiency objectives. We observe that competitive markets are consistent with social justice defined as the natural right of possession, but we leave social justice for later judgment, after we have considered other definitions of socially just outcomes.

1.1

Introduction to Markets and Government

We have little or no influence over the taxation and spending decisions of governments, whereas markets provide us with the *economic freedom* to make our own voluntary decisions to buy and sell, and to earn income as we wish or as best we can. In this introductory chapter, we study the

personal finance of markets as the benchmark for comparison with the public finance of government (which we study in Chapter 2). All costs and benefits in markets that we consider in this chapter will be personal, with no one benefiting from other people's personal spending nor imposing costs on others.

We shall maintain a clear distinction between "normative" and "positive" questions. A "normative" question asks "what ideally should be." With markets providing economic freedom to voluntarily buy and sell, and payment of taxes to finance public spending being obligatory, our primary normative question is:

> *When should a society forgo the economic freedom of markets and assign responsibilities to government?*

In contrast to normative questions that ask about what ideally ought to be, positive questions seek explanations and predictions. In this book, we shall be concerned with two broad societal objectives – "efficiency" and "social justice" (efficiency is preparing the best cake possible with the means at hand; social justice is how to share the cake). Our primary positive question is:

> *If markets fail to achieve society's objectives of efficiency and social justice, will assigning responsibility to governments result in improvement – or are there limitations on what we can expect governments to achieve?*

The distinction between normative and positive questions is important. Without a clear distinction, an endless debate can take place. Some people might make the normative declaration: "We recommend the following public spending and public policies for achievement of efficiency and social justice." Others might ask the positive question, "How do you know that, if governments are given the responsibilities that you propose, outcomes will be as you predict?" There may be no meeting point between answers to normative and positive questions. Normative questions ask about an ideal world. Positive questions ask about the world as it is or is predicted to be.

Although economists can recommend policies, decisions about public finance and public spending are made by elected representatives or politically appointed government officials. Economics and politics are therefore intertwined. "Political economy," which is the interface between economics and politics, will be prominent in our study. Political economy addresses "positive" questions about "politicized" policy decisions (Hillman 1991), although there are also normative questions such as choice of appropriate checks and balances on majority voting. To address political-economy issues, original concepts from the public-choice school of thought will primarily be used (see Holcombe 2016), although there have been later re-renditions of the same or similar concepts. Ideas from "behavioral economics" (the interface between economics and psychology – see Kahneman and Tversky 2000) will be used and we shall draw on evidence from experiments.

No particular country or government will be the epicenter for our study. We are looking for principles that could apply generally to countries and governments. The form of government matters for public finance and public policy. For the most part, we shall be concerned with democratic government, but also at times we consider government that is not democratic.

Government has a prominent role in Western market economies. Public spending by governments ranges from under 30 percent of gross national product (inclusive of all levels of government and social security or pension spending) to in excess of 55 percent (see https://data.oecd.org/gga/general-government-spending.htm). The involvement of government extends beyond public finance (taxation and public spending) to a range of public policies that we shall study, including with regard to the environment, public safety, education, health care, income for retirement, unemployment insurance, and support for people not earning income.

Questions involving economics are not at the forefront of people's minds in an agricultural society in which a few people who own the land are rich and the majority of people are poor. The rich have what they need and the poor have little to choose from. Issues of choice from alternatives that are at the core of the study of economics arise when an incipient middle class emerges, which occurred in the modern western world around the time of Adam Smith, to whose ideas we now turn.

1.2
The Competitive-Market Model

The methodology of economics is based on models. A model is a set of specified relationships based on assumptions that allow precision in deriving conclusions. The assumptions specified in a model may not correspond precisely to reality, but may be sufficiently close approximations to reality to make a model conceptually and empirically useful. Such is the case with the economic model of a competitive market.[1]

The competitive-market model presupposes many buyers and sellers who do not influence a market-determined price. Profits have the role of guiding resources to enter or leave markets: sellers enter the market to increase supply when there are positive profits and exit when there are losses. In the "long-run" market equilibrium, there is neither entry nor exit of sellers and risk-adjusted profits are "normal" for the industry.

The model is based on self-interested behavior. In product markets, buyers are consumers who do the best they can for themselves by maximizing utility (or personal benefit); sellers are producers (or wholesalers or retailers) who do the best they can for themselves by maximizing profit (their benefit from selling). In factor markets, producers who are the buyers of factor services of labor or capital minimize costs and the individuals who are consumers in product markets earn income by making utility-maximizing decisions about supply of labor or capital. We might ask whether the pursuit of self-interest by buyers and

[1] A "market" is any means whereby buyers and sellers determine the terms of a transaction and that allows the transaction to take place. The Internet creates markets without buyers and sellers physically meeting one another.

sellers in product and factor markets is socially desirable behavior (which is a normative question). Perhaps we would want to describe people as altruistic rather than as concerned only with their own self-interest. Buyers could indeed be altruistic. We might buy something that we do not need from a person selling in the street who seems poor. Such charitable behavior is a matter that we shall consider when we study altruism (in Chapter 9, which is about social justice without government). Producers are sometimes called upon to forgo profits by exhibiting altruistic behavior through "corporate responsibility," by pursuing socially meritorious objectives. Because of the increased costs that would result, a firm exhibiting "corporate responsibility" could not survive when competing against firms that do not pursue "corporate responsibility," and so have lower costs.[2]

In the competitive-market model, buyers and sellers are fully informed. There can be no personal loss from a fully informed voluntary market decision: people who perceive that they will not benefit from a market transaction can simply decide not to buy or sell. With buyers and sellers making informed voluntary self-interested decisions, market decisions result in *mutual benefit* to buyers and sellers. We can ask:

> *Does the personal mutual benefit from voluntarily selling and buying in markets result in socially desirable outcomes?*

Adam Smith (1723–1790), who is regarded as the founder of modern market-based economics, proposed that the personal economic freedom to buy and sell in markets benefits individuals and also society at large. Adam Smith was a professor of moral philosophy. Moral philosophy studies ethical behavior. Adam Smith proposed that there is no need for buyers or sellers to have guilt feelings about pursuing their personal self-interest in markets. Buyers or sellers need not claim that they are altruists doing favors for others. Adam Smith proposed that we should be wary of people who claim to buy or sell in markets with the aim of benefiting others and not themselves.[3]

Adam Smith's case for social benefit from markets is intuitive. If all buyers and sellers are doing the best for themselves, and if society is composed of the same buyers and sellers, then surely through aggregation the market outcome from the buyers' and sellers' decisions is socially beneficial. He referred to an "invisible hand" that transforms personal self-interested decisions in markets into socially beneficial outcomes. The social benefit attributable to the

[2] Armen Alchian (1950) proposed a view of firm survival based on the "survival of the fittest." Alchian (1914–2013) was a professor at the University of California in Los Angeles.

[3] Adam Smith declared: "I have never known much good done by those who affected to trade for the public good" (1776/1937, p. 423). Here "public good" means the welfare of society. Adam Smith first studied at Glasgow University in Scotland and then at Oxford University in England. After leaving Oxford (he did not receive a degree because he had been found to have read the then-banned author, David Hume), he returned to Glasgow University, where he was first a professor of logic and subsequently a professor of moral philosophy. Adam Smith's well-known books are *The Theory of Moral Sentiments* (published in 1759) and *An Enquiry into the Causes of the Wealth of Nations* (first published in 1776). There is a substantial interpretative literature on Adam Smith's ideas. See, for example, Reisman (1975) and Evensky (2005).

"invisible hand" is efficiency. The "invisible hand" is a metaphor that has become part of the folklore of economics.[4]

In the time that has passed since Adam Smith's writings, formal proofs have been devised confirming that competitive markets result in efficient outcomes for a society. We now show, in a simple way, the efficiency of a competitive market. We focus on product markets. A more complex proof in Appendix B.1 combines product and factor markets.

A Proof of the Efficiency of a Competitive Market

To begin, we require a definition of efficiency. With B indicating total social benefit and C indicating total social cost, *net social benefit* or welfare is:

$$W = B - C. \tag{1}$$

An outcome is efficient when $W = (B - C)$ is maximized.

There might be losers as well as gainers from an efficient outcome but, in defining efficiency, we now do not ask how benefits B and costs C are distributed in a population. Maximizing social benefit W in expression (1) requires that marginal benefit to be equal to marginal cost:

$$MB = MC. \tag{2}$$

Expression (2) applies to any maximization of W. In the case of a market, B is the total benefit of all buyers, C is the total cost of all sellers, and $W = B - C$ is the net social benefit from the existence of the market. Figure 1.1 shows $W = B - C$ as depending on the total quantity of output Q supplied in a market. The efficient quantity is Q_E, determined, as shown in expression (2), where $MB = MC$.[5]

Figure 1.2 shows the demand and supply functions of a competitive market. The market is in "equilibrium" at point E, where quantity is Q_E and price is P_E. The market has the following characteristics:

On the market demand function, the total benefit B to buyers of any quantity is maximized.
On the market-supply function, the total cost C of producing any quantity is minimized.
The market equilibrium at point E is efficient in determining output at Q_E to maximize $W = B - C$.

The maximized value of $W = B - C$ is shown in Figure 1.2 as the shaded area AEO, which indicates the net benefit from the existence of the market. The net benefit is shared between

[4] For qualified views of Adam Smith's intent regarding the meaning of the "invisible hand," see Rothschild (1994) and Grampp (2000). Was the invisible hand intended as metaphysical? See Anderson (1988) on Adam Smith and religion.

[5] Expression (2) is the first-order condition for maximum W. The second-order condition for a maximum requires that $\frac{\partial MB}{\partial Q} < \frac{\partial MC}{\partial Q}$, which is satisfied at output Q_E in Figure 1.1. When $Q = 0$, in Figure 1.1 also $W = 0$. When Q is sufficiently great, $W = B - C$ becomes negative (total costs exceed total benefits).

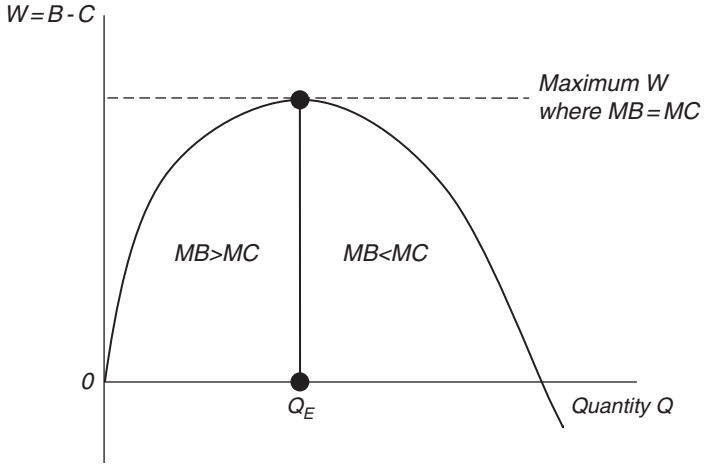

Figure 1.1 *W = (B – C)* is maximized at Q_E

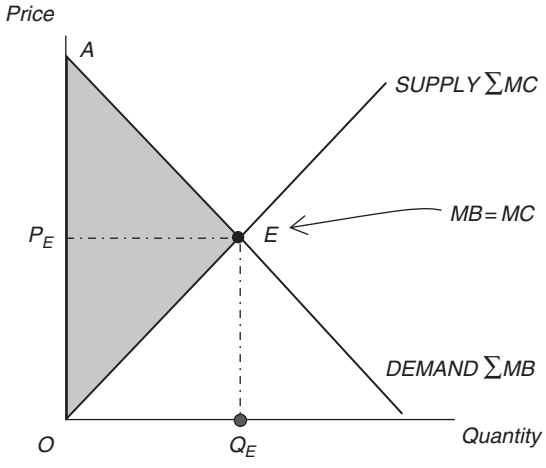

Figure 1.2 The market equilibrium

buyers and sellers: the shaded area above the equilibrium market price P_E is the gain to buyers (known as consumer surplus); the shaded area below the price P_E is the gain to producers (known as producer surplus).[6]

[6] A demand function includes substitution and income effects in response to changes in price. Formally, to measure consumer surplus, we require a "compensated" demand function based on the substitution effect alone. The "compensated" demand function is studied in a course on microeconomic theory. We proceed here on the assumption that, for any one good, the income effect is small and can be left out of account without significant consequences. See Willig (1976). The measurement of benefit by consumer surplus was introduced by Dupuit (1844/1969) (see Houghton 1958).

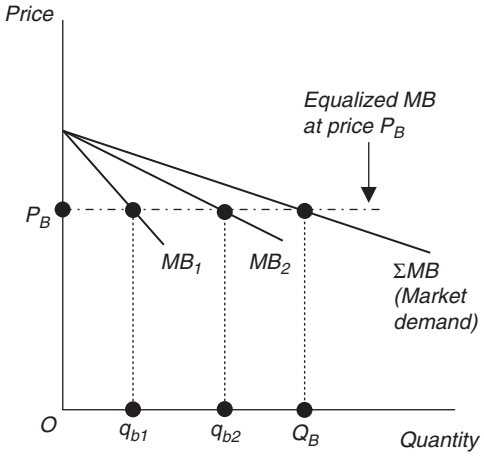

Figure 1.3 *At any price P_B,* total benefit is maximized on the market demand function

Maximal Benefit on the Demand Function

Competitive markets have many buyers. Figure 1.3 shows the demand of two representative buyers, with demand defined by the respective personal marginal-benefit functions MB_1 and MB_2 from consumption. MB_1 and MB_2 decline with the quantity consumed, indicating diminishing marginal utility from consumption (the MB functions need not be linear; linearity is for exposition only). Market demand $\sum MB$ is the horizontal summation of the individual demand functions MB_1 and MB_2 (at each price, quantities that individual buyers demand are added to obtain total demand). An individual's MB expresses willingness to pay for additional output, which is an amount of money.[7]

With benefit measured in terms of money, the total benefit of the two buyers in Figure 1.3 is given by:

$$B = B_1 + B_2, \tag{3}$$

which is maximized when

$$MB_1 = MB_2. \tag{4}$$

Expression (4) is a technical requirement (the first-order condition) for maximal total benefit from any total quantity of goods available. The market maximizes total benefit for buyers if

[7] MB indicates an individual's *maximum* willingness to pay for an additional quantity of a good. We take *maximum* to be understood. Utility and marginal utility in economic analysis are not measured in terms of money but are ordinal and indicate *rankings* expressed in preferences for consumption. Ordinality is sufficient for the derivation of individual and market demand functions. We here set aside differences between cardinal and ordinal utility. Again, a course in microeconomic theory studies the differences. We use the terms "utility" and "benefit" interchangeably and for the most part measure benefit of buyers cardinally in terms of the amount of money that buyers are (maximally) willing to pay.

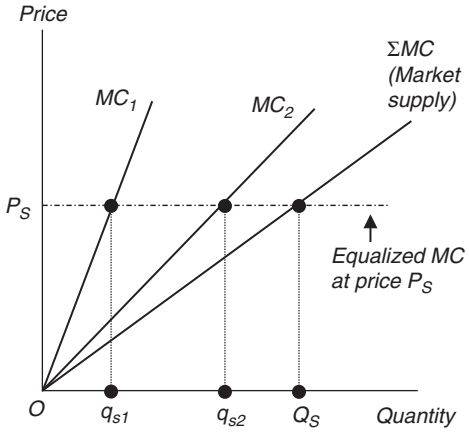

Figure 1.4 Total cost in a competitive market is minimized on the market-supply function

market decisions replicate expression (4). We see that this is the case. In Figure 1.3, P_B is an arbitrarily chosen price. At the price P_B, market demand is $Q_B = (q_{b1} + q_{b2})$, where q_{b1} and q_{b2} are the personal quantities demanded respectively by buyers 1 and 2. q_{b1} is determined for buyer 1 by $P_B = MB_1$ and q_{b2} for buyer 2 is determined by $P_B = MB_2$. Therefore the market ensures that:

$$P_B = MB_1 = MB_2. \tag{5}$$

Expression (5) is equivalent to expression (4). The market therefore "assigns" goods among buyers to maximize total benefit. The assignment is *self-assignment*, through the economic freedom for buyers to make personal utility-maximizing choices.

Minimized Total Cost on the Supply Function

Total costs of production are minimized on the market-supply function. In Figure 1.4, MC_1 and MC_2 are marginal cost functions (not necessarily linear) of two among many competitive sellers. MC is shown as increasing with output supplied, but could also be constant or declining. The total cost of supply of the two sellers is:

$$C = C_1 + C_2, \tag{6}$$

which is minimized when

$$MC_1 = MC_2. \tag{7}$$

Expression (7) is the technical requirement for minimum total cost. The market minimizes total cost if market decisions replicate expression (7). This is the case. The market-supply function ΣMC is the horizontal summation of the individual sellers' MC functions and shows the total

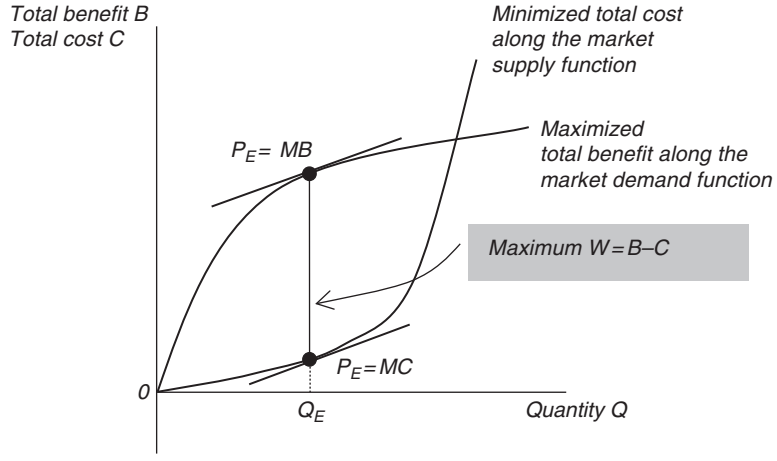

Figure 1.5 Efficiency of a competitive market.

quantity that sellers are prepared to supply at any given price. Supply at an arbitrarily chosen price P_S is $Q_S = (q_{s1} + q_{s2})$, with q_{s1} determined for seller 1 by $P_S = MC_1$, and q_{s2} determined for seller 2 by $P_S = MC_2$. Market decisions thus result in:

$$P_S = MC_1 = MC_2. \tag{8}$$

Market decisions therefore replicate expression (7). The total cost of supply is thus minimized on the market-supply function. Again, the market assignment, here of supply of individual sellers, is *self-assignment*, through the economic freedom to make voluntary market decisions.

Confirmation of the Efficiency of Competitive Markets

Figure 1.5 brings together the three attributes of market efficiency:

(1) Self-interested market decisions of buyers result in maximized total benefit for any quantity demanded on the market demand function.
(2) Self-interested market decisions of sellers result in minimized total cost for any quantity supplied on the market-supply function.
(3) Total benefit from existence of the market given by $W = B - C$ is maximized at the equilibrium market quantity Q_E where buyers and sellers face the common equilibrium market price P_E, which equals the MB of all buyers and the MC of all sellers.[8]

[8] In Figure 1.5, MB is declining and MC is increasing. The second-order condition for a maximum of W is therefore satisfied. See footnote 5 above.

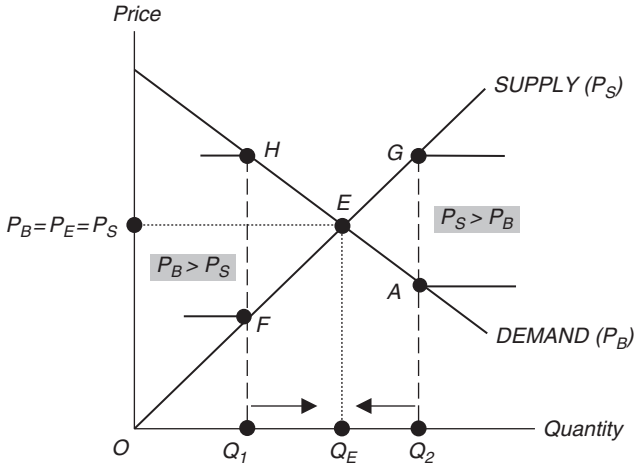

Figure 1.6 The competitive-market adjustment mechanism

The Competitive Market-Adjustment Mechanism

The competitive market outcome is efficient but there remains the question:

How do we know that a competitive market will be at the efficient point such as E in Figure 1.2?

At the quantity $Q_1 < Q_E$ in Figure 1.6, we see that:

$$P_S = MC < P_B. \tag{9}$$

With market participants having full information, sellers are aware that buyers' willingness to pay for additional output exceeds the *MC* of supply. There is a profit $(P_B - MC)$ for sellers from a marginal expansion of output. Sellers respond to market incentives by increasing supply beyond Q_1. At the efficient equilibrium quantity Q_E at point E, buyers' willingness to pay P_B is precisely equal to suppliers' *MC*. Suppliers therefore have no incentive to further expand output.

Alternatively, at a quantity such as $Q_2 > Q_E$ in Figure 1.6:

$$P_S = MC > P_B. \tag{10}$$

Sellers' *MC* of supply exceeds the price P_B that buyers are willing to pay. A seller loses $(MC - P_B)$ on the marginal sale of output. Output is therefore withdrawn from the market. The fall in output ceases at the efficient equilibrium quantity Q_E at point E.

Therefore:

A competitive market-adjustment mechanism ensures that a competitive market will be at the efficient point E.