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ADAM SMITH'S SYSTEM OF NATURAL LIBERTY: COMPETITION, CONTESTABILITY, AND MARKET PROCESS

BY
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In this article, I argue that Adam Smith's system of perfect liberty contains some of the seeds of perfect competition, but that the modern perfectly competitive model differs from Smith's perfect liberty in some important respects—in particular, the role of active competition among firms and the role of the entrepreneur. The article examines the analytical linkages between Smith's system of liberty and three strands of modern economic theory—neoclassical perfect competition, contestable market theory and the Austrian analysis of market process.

Many economists equate Adam Smith's system of "perfect liberty" with perfect competition. Frank Knight characterized perfect competition "... as a condensed summary of classical economic theory ..." (Knight [1921] 1957, p. 51). Tibor Scitovsky asserted in *Welfare and Competition* "That perfect competition would lead to an efficient organization of production most economists have known more or less vaguely and proved more or less rigorously ever since Adam Smith" (Scitovsky 1966, p. 180). Kenneth Arrow and F. H. Hahn asserted that "it can be maintained that Smith was a creator of general equilibrium theory" (Arrow and Hahn 1971, p. 2). William Baumol, John C. Panzer, Robert D. Willig. and Elizabeth E. Bailey (hereinafter, BPWB) refer to "entry behavior in the classical model of perfect competition" in their *Contestable Markets and the Theory of Industry Structure* and imply that Smith based his analysis on observations of perfectly competitive markets (BPWB 1982, p. 359).

However, a number of historians of economics—notably George Stigler (1957), Paul McNulty (1967, 1968), Evelyn Forget (1989), Roger Backhouse (1990), Frank

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Machovec (1995), Terrence Hutchison (1999), and Mark Blaug (1999, 2001)—argue convincingly that modern perfect competition, particularly the post–World War II mathematical general equilibrium models, are far removed from the meaning and intent of Smith's "natural system of liberty." Machovec (1995) argues that perfect competition marked a sharp departure from the classical model— not a continuous evolution from Smith's system of simple liberty.

This article shows that Smithian "liberty" contains the seeds of perfect competition, but perfect competition is different from "perfect liberty" in some critical respects, particularly the nature of competition and the role of entrepreneurs. It builds on earlier work by Stigler, McNulty, Machovec, Don Lavoie, Israel Kirzner, and others to analyze the relationship between Smithian "perfect liberty" and the perfectly competitive model that had developed by mid-twentieth century and the links between Smithian liberty, perfect competition, contestable market theory, and Austrian market process.

I. "PERFECT LIBERTY" AND NATURAL PRICE

Smith's concept of "perfect liberty" assumed only complete resource mobility and free entry and exit, "... where [a dealer] may change his trade as often as he pleases" (Smith [1776] 1981, Vol. I, p. 73). Resource mobility and freedom of entry and exit drive market prices to natural, average-cost prices in the long run by equalizing the total advantages of alternative employments of labor and capital. In a familiar passage in *Wealth of Nations*, he argued:

> The whole of the advantages and disadvantages of the different employments of labour and stock must, in the same neighbourhood, be either perfectly equal or continually tending to equality. . . . *This at least would be the case in a society where things were left to follow their natural course, where there was perfect liberty, and where every man was perfectly free both to chuse what occupation he thought proper, and to change it as often as he thought proper.* Every man's interest would prompt him to seek the advantageous, and to shun the disadvantageous employment (Smith [1776] 1981, p. 116, italics added).

This is a strong argument that "perfect liberty" is not only a property of competitive markets, but also part of the natural order.

By specifying "in the same neighbourhood" Smith essentially assumes away or minimizes the costs of moving factors among employments, which is also a characteristic of perfect competition. We would also expect more complete and symmetric market information within a single "neighbourhood" or market than across different neighborhoods or markets. However, unlike neoclassical perfect competition, Smith did not explicitly assume complete and symmetric information as a property of perfect liberty.

In Chapter IV of *Principles of Political Economy and Taxation,* "On Natural and Market and Price," David Ricardo argued that supply and demand can generate "... accidental and temporary deviations of the actual or market price of commodities from ... their primary and natural price," which will cause capital to move from less advantageous to more advantageous employments (Ricardo [1821]

2004, p. 88). For Ricardo, mobility of capital and the "... restless desire on the part of all employers of stock, to quit a less profitable for a more advantageous business" move "... funds from a less to a more profitable employment ... [and] prevent the market price of commodities from continuing for any length of time either much above, or much below their natural price" (*Ibid.*, p. 91). This implies mobility of capital among employments and freedom of entry and exit—*i.e.*, Smithian "perfect liberty." Because the owners of capital in the Ricardian system seldom if ever make mistakes, or at least Ricardo doesn't include errors in his argument, he implies that they have sufficient information to make the correct choices.

John Stuart Mill argued that with "free and active" competition and "liberty of production or exchange" (Mill [1871] 2006, Vol. II, p. 239)—essentially Smith's "perfect liberty"[1]—in the long run,

> The cost of production, together with the ordinary profit, may ... be called the *necessary* price, or value, of all things made by labour and capital. ... [T]his Necessary Value, the minimum with which the producer will be content, is also, if competition is free and active, the maximum which they can expect (Mill [1871] 2006, Vol. III, pp. 471–472).

John Elliot Cairnes—the last major economist in the classical tradition of Smith, Ricardo, and Mill—argued that "... *where perfect liberty of action is permitted*, labourers will seek those employments, and capitalists those modes of investing their capital, in which, ceteris paribus, wages and profits are highest" (Cairnes [1875] 2006, II.34, italics added). Like Smith, Cairnes makes no specific assumptions concerning information, but his argument that workers and capitalists "seek" employments that maximize their wages and profits implies incomplete information.

In short, for the classical economists from Smith to Cairnes, the only explicit properties of "perfect liberty" are resource mobility and freedom of entry and exit. These are important properties of perfect competition but assumptions concerning information are only implicit in, or absent from the classical literature. Numbers of firms in the market, the size of the firm relative to the market, and price-taking firms and households are absent in the classical analysis.

II. FROM PERFECT LIBERTY TO PERFECT COMPETITION

Roughly a century and a half elapsed between Smith's system of natural liberty in *Wealth of Nations* and the assembly of the elements of perfect competition—rationality, mobility, perfect knowledge, price-taking individuals, freedom of entry and exit, etc.—into a formal model in the 1920s and 1930s. This, of course, did not take place in a vacuum. Changes in the intellectual and institutional context in this period were broadly compatible with the development of perfect competition.

[1]Medema (2007) points out that although Mill was a strong proponent of liberty and unregulated markets, he did allow for a more expansive role of government than did Smith and the earlier classical economists, but the burden of proof of the necessity of intervention rests on those who propose it (Medema 2007, p. 344).

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"Scientization," "Mathematization," and Formalization[2]

The classical economists were, or at least aspired to be, scientific in their analysis and in application of the scientific principles they developed to real problems and issues. Margaret Schabas argues that "... until the mid-nineteenth century, economic theorists regarded the phenomena of their discourse as part of the same natural world studied by natural philosophers" (Schabas 2005, p. 2).

In his early works on the history of physics (Smith 1982b) and astronomy (Smith 1982a), Smith argued that the broad function of science is to "... to introduce order into this chaos of jarring and discordant appearances ..." (Smith 1982a, pp. 45–46) and "... to lay open the concealed connections that unify the various appearances of nature ..." (Smith 1982a, p. 51). He carried much of this scientific perspective over into *Wealth of Nations* to identify *natural* economic forces and a *natural* economic order (Hetherington 1983).

For example, the influence of Newtonian physics on Smith's economics is evident in his analysis of the "gravitation" of the "market" (short-run equilibrium) price to the "natural" (long-run equilibrium) price (Schabas 2005, p. 88). Jerry Evensky argues that Smith saw the invisible hand as a first principle, analogous to Newtonian gravity, but that "The invisible hand was not a first principle adequate to the task" (Evensky 1989, p. 142). Perfect liberty, like the "early and rude state of society," in *Wealth of Nations* is a necessary abstraction to isolate economic relationships in much the same way that natural scientists isolate phenomena physically in laboratories or mentally in imaginary mind experiments.

Smith criticized the "mercantile system" because it too frequently fails to see any unifying connections in the economy and pays too much attention to nominal or "apparent" economic relationships at the expense of understanding real or natural economic relationships. Leo Rogin argued that, for Smith, "... the most reprehensible aspect of mercantilist policy is that it contributes to an *unnatural and, for that reason, less productive* employment of capital" (Rogin 1956, p. 64, italics added).

The "scientization" of economics since Smith is not a transition from pre-scientific to scientific analysis, but to increasingly formalized and technically rigorous models, beginning with Ricardo's *Principles of Political Economy and Taxation*, which is more abstract than *Wealth of Nations* and contains virtually no institutional or historical material. In his Preface, Ricardo stated that his purpose was "To determine the *laws* which regulate ... distribution..." and to identify the "*natural* course of rent, profit, and wages" (Ricardo 2004, p. 5, italics added). Blaug argues: "... if economics is essentially an engine of analysis, a method of thinking rather than a body of substantive results, Ricardo literally invented the technique of economics" (Blaug 1996, p. 134). John Stuart Mill specifically linked competition to economics as a deductive science:

> ... [O]nly through the principle of competition has political economy any pretension to the character of a science. So far as rents, profits, wages, prices, are determined by competition, laws may be assigned for them. *Assume competition to be their exclusive regulator, and principles of broad generality and scientific precision may be laid down, according to which they will be regulated* (Mill [1871] 2006, Vol. II, p. 239).

[2]This section draws on Blaug (1999), Fourcade-Gourinchas (2001), Machovec (1995), Mirowski (1989a, 1989b), and Weintraub (2002).

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''Mathematization'' and formalization went hand in hand with the ''scientization'' of economics and appeared quite early in the literature.[3] At Cambridge, the seat of neoclassical economics in the nineteenth century, mathematics was considered an essential element of a sound education, and a Cambridge student's performance on the Mathematics Tripos examination had a major impact on his future academic prospects.[4] (Weintraub 2002, pp. 11–25). William Whewell of Trinity College began his 1829 essay, *Mathematical Exposition of Some Doctrines of Political Economy*, with the following: ''[S]ome parts of this science of Political Economy, may be presented in a more systematic and connected form, and I would add, more simply and clearly, by the use of mathematical language than without such help'' (Whewell [1829] 1971, p. 1).

After about 1860, the ''marginal revolution'' moved economics along the path of mathematization and formalization.[5] William Stanley Jevons and León Walrás blazed the trail that leads to mathematical models, perfect competition, and general equilibrium. However, Carl Menger's subjectivist version of marginal utility analysis in his *Principles of Economics* (Menger [1871] 2004) leads to the modern Austrian analysis of value, competition, and markets which is quite different from neoclassical perfect competition.

Equilibrium and Price Takers

Smith implies equilibrium in his discussion of natural (long-run) and market (short-run) prices. However, his definitions of demand and supply as quantities demanded and supplied at the natural price give an awkward picture of the short run.[6]

Like Smith, Jean Baptiste Say argued that ''The healthy state of industry and wealth is the state of absolute liberty, in which each interest is left to take care of itself''[7] (Say 1855, I.XVII.74). Although he is not generally considered a foundation

[3]Irving Fisher's appendix to Cournot's *Mathematical Principles of the Theory of Wealth,* Bibliography of Mathematical Economics (Fisher 1927, pp. 173–209), is thirty-six pages long and includes works from 1711 to 1897.

[4]Marshall's high ranking on the Mathematics Tripos (Second Wrangler) secured him a fellowship at Cambridge. John Maynard Keynes's more modest performance (Twelfth Wrangler) excluded him from a fellowship. (Weintraub 2002, pp. 10-25, Skidelsky 1986, p. 132)

[5]A more complete treatment would include other contributions prior to the so-called ''revolution''—most notably Cournot, Jules Dupuit, Johann von Theunen, and Hermann Gossen. Ekelund and Hebert (1999) provide an excellent account of the role of Dupuit and the ''Engineers.''

[6]For Smith, ''demand'' and ''supply'' are the quantities demanded and supplied at the natural (average cost) price. Excess demand or supply are defined only at this price. The ''gravitation'' of market price, where ''demand'' and ''supply'' are equal, is consistent with the existence of demand and short-run supply curves, but Smith never developed or referred explicitly to them.

[7]In the Advertisement to his *Treatise on Political Economy* (Say 1855), Say acknowledged his debt to Smith.

> In the whole range of inquiry in political economy, perhaps there is not a single proposition better established, or one that has obtained a more universal sanction from its enlightened cultivators in every country, than the liberal doctrine, that the most active, general, and profitable employments are given to the industry and capital of every people, by allowing to their direction and application the most perfect freedom, compatible with the security of property. This fundamental position of political economy, and the various principles that flow from it as corollaries, were first systematically developed, explained, and taught by the great father of the science, Dr. Adam Smith; although glimpses of the same important truth had previously, and about the same time, reached the minds of a few eminent individuals in other parts of the world (Say 1855, A. 19).

figure of Smith's stature, his analysis moved closer to modern notions of demand, supply, and equilibrium in competitive markets.

First of all, Say clearly suggested demand and supply functions.

> When a product is raised in price, . . . the number of its consumers is reduced; for it can only be obtained by such as can afford to pay for it. . . . In such cases, not only is the number of consumers diminished, but the consumption of each consumer is reduced also . . . (Say 1855, II.I.25). In respect to supply, it consists of the whole of any commodity which the owners for the time being are disposed to part with for an equivalent, in other words, to sell at the current rate, and not merely of what is actually on sale at the time . . .(Say 1855, II.I.19–21).[8]

Say then defines equilibrium where quantity demanded equals quantity supplied: "Demand and supply are the opposite extremes of the beam, whence depend the scales of dearness and cheapness; the price is the point of equilibrium, where the momentum of the one ceases, and that of the other begins" (Say 1855, II.I.25). This is an important step toward competitive, market-clearing equilibrium models.

Like Smith (but unlike perfectly competitive static equilibrium models), Say tended to view competition as a process of firms actively competing against other by innovation, emulation, and other means to minimize costs that drive price to average cost. He argued that the prospect of higher profit is a strong incentive for entrepreneurial "invention," but information and active competition of other firms adopting successful inventions will drive profits to their normal level and price to average cost.

> . . . [T]hough the inventor may indeed for some years enjoy the exclusive advantage of his invention, . . . yet there is no instance of a secret remaining long undivulged. Nothing can long escape publicity, least of all what people have a personal interest in discovering. . . . The product is thenceforward cheapened by competition to the full extent of the saving in the cost of production; and thenceforward begins the full advantage to the consumer (Say 1855, I.VII.19).

This combination of a competitive "process" of adjustment to innovation and his notions of equilibrium and competition bridges the neoclassical static equilibrium state and the Austrian competitive process, which are discussed later in this article.

Augustin Cournot introduced price-taking firms as the essential property of "unlimited competition"—a sufficiently large number of firms selling identical products that each firm has an "inappreciable" effect on the market price (Cournot [1838] 1971, p. 90).[9] He apparently believed that "unlimited competition" is not

[8]Say's analysis of price and quantity demanded implies both income effects ("When a product is raised in price, . . . the number of its consumers is reduced; for it can only be obtained by such as can afford to pay for it . . .") and substitution effects (". . . the consumption of each consumer is reduced also. . .").

[9]Wicksell's (1934, p. 43) explanation of price taking is essentially the same as Cournot's. Joan Robinson ([1933a] 1961, p. 18; 1933b, p. 104) defined perfect competition as a market in which the individual firm faces a completely price elastic demand for its output, which also means constant $p \equiv MR$. E. H. Chamberlin (1962, pp. 16–17) held the perfectly competitive firm's price invariant with output by assuming a large number of firms, which is closer to Cournot, and "a perfectly homogeneous product."

merely an assumed property of an abstract zero-friction economic model, but "... one which is realized, in social economy, for a multitude of products, and, among them, for the most important products" (*Ibid.*). However, Cournot saw an additional benefit of assuming "unlimited competition" and price-taking firms: "*It introduced a great simplification into the calculations ...*" (*Ibid.,* italics added).

Cournot treats unlimited competition as an exogenously given market structure and the equilibrium with unlimited competition as an end state with very little discussion of the nature of the competitive process. This, as a number of historians of economics correctly argue, makes Cournot, rather than Smith, the logical ancestor of perfect competition. Machovec (1995), for example, characterizes Walrasian general equilibrium and perfect competition as "Cournotian."

Combining Say's concept of market equilibrium where quantity demanded equals quantity supplied with Cournot's model of unlimited competition with price-taking firms, we get something resembling the perfectly competitive model. However, unlike Smith and Say, Cournot's analysis lacks the competitive process. As McNulty concluded,

> For Smith ... competition was a process through which a predicted result, the equation of price and cost, was achieved. With Cournot, it became the realized result itself. The two concepts are not only different; they are fundamentally incompatible. Competition came to mean with the mathematical economists, a hypothetically realized situation in which business rivalry, or competition in the Smithian sense was ruled out by definition. Perfect competition, as Hayek has cogently observed, "means indeed the absence of all competitive activities" (McNulty 1967, p. 398).

After reassuring his readers that "Happily there is nothing in the laws of value which remains for the present ... or any future writer to clear up ..." (Mill [1871] 2006, Vol. III, p. 456), Mill introduced demand and supply functions and another precursor of neoclassical equilibrium.[10]

> Demand and supply, the quantity demanded and the quantity supplied, will be made equal. If unequal at any moment, competition equalizes them, and the manner in which this is done is by an adjustment of the value. ... [A]nd the value which a commodity will bring in any market is no other than the value which, in that market, gives a demand just sufficient to carry off the existing or expected supply.
>
> This, then, is the Law of Value, with respect to all commodities not susceptible of being multiplied at pleasure (Mill [1871] 2006, Vol. III, pp. 467–468).

Alfred Marshall developed his model of quantity-adjusting markets and equilibrium in *Principles of Economics*—mainly in Book V, which includes equilibrium of "temporary" demand and supply (the market period) and equilibrium of short-run and long-run "normal" demand and supply. In Chapter IV, he defines a perfect market as "... a district, small or large, in which there are many buyers and many sellers all so keenly on the alert and so well acquainted with one another's affairs that the price of a commodity is always practically the same for the whole of the district"

[10]See Bradley (1989) on Mill's theory of demand.

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(Marshall [1920] 1990, p. 94).[11] He then defines perfect competition, but reminds his readers that competition generally is not perfect.

> . . . [W]e do not assume that competition is perfect. Perfect competition requires a perfect knowledge of the state of the market; . . . The older economists, in constant contact as they were with the actual facts of business life, must have known this well enough; but partly for brevity and simplicity, partly because the term "free competition" had become almost a catchword, partly because they had not sufficiently classified and conditioned their doctrines, they often seemed to imply that they did assume this perfect knowledge (Marshall [1920] 1990), pp. 448–449).[12]

Marshall's message on the perfectly competitive equilibrium state and the competitive process in *Principles of Economics* is decidedly mixed. This is hardly surprising, since *Principles* combines pure economics, applications, personal observations, and Victorian aphorisms.

Marshallian demand and supply curves—aggregate quantities demanded and supplied—implicitly assume that individual buyers and sellers are price takers. In a Marshallian quantity-adjusting market, ''When the demand price is equal to the supply price, the amount produced has no tendency either to be increased or to be diminished; it is in equilibrium'' (Marshall [1920] 1990, p. 289), —*i.e.,* where $\overline{p}=p(\overline{Q})=p_d(\overline{Q})=p_s(\overline{Q})$. In the short run, firms must cover their prime (variable) costs, but in the long run they must also cover supplemental (fixed) costs (Marshall [1920] 1990, pp. 289–291).

However, Marshall also described competition as an active process of rivalry between competing entrepreneurs—for example: ''The strict meaning of competition seems to be the racing of one person against another, with special reference to bidding for the sale or purchase of anything'' (Marshall [1920] 1990, p. 4). He also assigns a positive role for entrepreneurial activity.

> . . . [W]e may divide employers and other undertakers into two classes, those who open out new and improved methods of business, and those who follow beaten tracks. The services which the latter perform for society are chiefly direct and seldom miss their full reward: but it is otherwise with the former class (Marshall [1920] 1990, p. 496).

While the competitive process and active entrepreneurial activity are not absent in Marshallian neoclassical economics, they are not integrated into his ''engine of analysis,'' which is primarily a static partial equilibrium model.

The components of perfect competition were combined in the 1920s and 1930s by Frank Knight ([1921] 1957), Joan Robinson (1933, 1934), and E. H. Chamberlin (1962),[13] among others. However, the ''neoclassical'' perfect competition that

[11]Marshall recognized that markets in the real world are not ''perfect,'' and argued in Book V, Chapt. I that ''. . . the more nearly perfect a market is, the stronger is the tendency for the same price to be paid for the same thing at the same time in all parts of the market. . .'' (Marshall [1920] 1990, p. 270).

[12]Marshall's conjecture that the classical economists really meant perfect competition, like those of modern economists, is very speculative. It is, however, consistent with Schumpeter's assertion that Marshall wanted to place himself and his neoclassical analysis as part of a linear development from Smith, Ricardo, and J. S. Mill and to establish his place as the national leader of the classical tradition (Schumpeter 1954, pp. 837–840; Bradley 1989, pp. 53–54).

[13]This is the eighth edition of *The Theory of Monopolistic Competition,* first published in 1933.

emerged in the twentieth century, especially in the second half of the century, is quite different from Smith's perfect liberty.

Institutionalization and Professionalization

Until the middle to late nineteenth century, economics wasn't even considered a distinct academic discipline, let alone a science, and the term "economist" was associated more with radical political agitators and social reformers than with respectable scholars or professionals. This situation changed in the late nineteenth century, particularly in England and the United States.[14]

As economics departments emerged in universities and economics evolved as a unique discipline rather than a branch of philosophy, political science, moral science, or history, it developed its own methodology, analytical tools, and approach to problems. There were, of course, conflicts over the nature of the discipline. In England, the main camps were the more idealistic, reformist economists at Oxford, the more "scientific" neoclassical Marshallian economics at Cambridge that looked to physics and mathematics as models, and the ultra *laissez faire* economics of the Manchester School—although the conflicts in England weren't as virulent as the *Methodenstreit* that divided continental economists (Maloney 1985, Fourcade-Gourinchas 2001).

The secularization of economics in the United States after the Civil War contributed to a more analytical and at least apparently scientific discipline.[15] As in England and on the continent, American economists of the late nineteenth and early twentieth centuries were divided along ideological and methodological lines—political and economic reformers, institutionalists, and theorists—on questions of methodology and the nature and function of economics (Morgan 1993). Ultimately, the theorists prevailed, and a well-defined mainstream neoclassical economics emerged with perfect competition at its analytical core.

The rise of American research universities after 1860 also shaped the discipline in ways that are compatible with perfect competition. The land grant universities established by the Morrill Act emphasized applications of science to practical problems and issues, mainly those that were important to business interests. New private research universities, such as the Johns Hopkins University (1876) and the University of Chicago (1890), were also shaped in part by the economic interests and *laissez faire* ideologies of their major benefactors (Goodwin 1998).

Neoclassical perfect competition, with its optimistic assessment of the power of unregulated markets, was far more attractive to business interests and governmental agencies than the reformist historical and institutional economics of Richard

[14]In France and Germany the patrons of the new discipline were primarily the state, and the economics that emerged was more concerned with designing economic policies and educating a professional bureaucracy than with economic theory (Fourcade Gourinchas 2002). Walràs, for example, did not get an academic appointment in France and developed his general equilibrium models while teaching in the Law School at the University of Lausanne. Mises' assertion that "The development of a profession of economists is an offshoot of interventionism" (Mises 1963, p. 869) was generally accurate for the economics profession that developed in France and Germany.

[15]See Bateman (1998, 2008) and Fourcade-Gourinchas (2001), p. 424.

T. Ely, John R. Commons, and the other young PhDs who had completed their graduate studies in Germany under the tutelage of German historical economists. Craufurd Goodwin (1998) argues that ''neoclassical'' economics, with perfect competition at its core, was attractive to university administrators and fledgling economics departments because it was unlikely to rankle their public and private patrons:

> Leaders of higher education ... can perhaps be pardoned for having hesitated to appoint or promote an economist likely to bring down on the institution the wrath of several vital external constituencies: members of the governing body, legislators, donors, or the alumni. ... [The] neoclassical economist had all of the virtues many of his ''plural'' brethren lacked. Therefore, when hard-pressed administrators were faced with a choice between these two types of economist, can we doubt where their better judgment would have led? (Goodwin 1998, pp. 61–62).

Learned societies and specialized scholarly economics journals appeared in the late nineteenth century, which fostered the growth and formalization of the discipline. The British Economic Association (the Royal Economic Society after 1902) was founded in 1890, and *The Economic Journal* was inaugurated in 1891. The London School of Economics and Political Science was founded in 1895. In the United States, the American Economic Association was founded and *American Economic Review* began publication in 1885, followed by the *Quarterly Journal of Economics* in 1886 and the *Journal of Political Economy* in 1892 (Fourcade-Gourinchas 2001, p. 399). Initially, the key journals reflected the diversity and fundamental methodological, ideological, and analytical divisions among economists. However, as time went on they evolved into outlets for a more homogeneous ''mainstream'' economics centered on neoclassical competitive equilibrium models.[16]

III. PERFECT LIBERTY AS PERFECT COMPETITION

Did the perfect competition of the twentieth century follow from classical notions of competition based on Smithian liberty? In his monumental *History of Economic Analysis,* Schumpeter implies that Mill's notion of ''maximum'' competition was essentially perfect competition.

> [Mill] emphasized the fact ... that competition often 'falls short of the maximum' and that in this case a general correction must be applied, 'whether expressly mentioned or not,' to all conclusions arrived at on the hypothesis of perfect competition (Schumpeter 1954, p. 546).

Mill did indeed argue in the section cited by Schumpeter that freedom of entry and a number of competing firms were essential characteristics of ''maximum'' competition, but there is no mention of large numbers of price-taking firms or producing at the minimum average cost, important ''conclusion[s] arrived at on the hypothesis of perfect competition.''

[16]Mary Morgan and Malcolm Rutherford (Morgan and Rutherford 1998) have compiled an interesting collection of papers that deal with the transition from a more pluralistic economics in the interwar period to a dominant and less pluralistic neoclassical economics after WWII.

Moreover, Mill argued that firms in competitive markets actively compete *with each other*, whereas in perfect competition, individual firms don't view each other as competitors.

> When indeed the market, being that of a great city, holds out a sufficient inducement to large capitalists to engage in retail operations, it is generally found a better speculation to attract a large business by underselling others, than merely to divide the field of employment with them (Mill [1871] 2006, Vol. II, p. 243).

Active competition among firms with market power "underselling others" is quite different from price-taking firms simply adjusting output to the market-determined price and not competing with each other.

The perfectly competitive model that had developed by the twentieth century rests on some critical assumptions in addition to freedom of entry and exit, or "perfect liberty" (Robinson 1933, pp. 95–97; 1934, p. 104; Chamberlin 1962, p. 16; Stigler 1957; McNulty 1967, 1968; Kirzner 1973, p. 90). The assumption of price-taking firms in Cournot's "unlimited competition" model ([1838] 1971, p. 90) requires a sufficiently large number of firms selling identical products such that each is too small relative to the market to affect the market price.[17] Price-taking firms in perfectly competitive markets produce the output $(\overline{q}_i)$ where $\overline{p} \equiv MR(\overline{q}_i) = MC(\overline{q}_i)$ to maximize profit at the market-determined price $(\overline{p})$. Smithian "liberty" drives the perfectly competitive market to long-run equilibrium with the price-taking firms earning zero economic profit at a price equal to short-run and long-run average costs—$\overline{p} = MC(\overline{q}_i) = AC(\overline{q}_i) = LRAC(\overline{q}_i)$—or the classical "natural price."[18]

With individual firms too small relative to the market to affect the market price, no firm sees the others as competitors—and, ironically, there is no competition among perfectly competitive firms. Blaug (1998, 2001) and others characterize the perfectly competitive equilibrium as an "end state" in which there is no strategic behavior or competitive rivalry between price-taking firms. The individual firms simply adjust outputs to maximize profit at the market-determined equilibrium price.

> The classical notion of competition as a process was jettisoned by the new school of technical economists because it could not yield a calculable set of predictions regarding output, price, and social welfare effects, like those generated by the 'providential' model of perfect competition (Machovec 1995, p. 268).

This is hardly the kind of active competition and competitive "process" implied by the classical economists.

[17]Machlup (1952, pp. 138–144) coined the tongue-twisting "perfect polypoly" to describe markets with many price-taking firms, which

> "... can exist (with few exceptions) only in industries in which the optimum size of the single establishment is very small in relation to the industry as a whole. Where the optimum size of the establishment is large, the number of firms in the industry is probably small; polypoly must then give way to oligopoly, to the market where sellers are few and rival-conscious (Machlup 1952, p. 144).

[18]This requires technologies that generate "U-shaped" short-run and long-run average cost curves with long-run average cost curves reaching their minimum points at sufficiently small outputs that there is room for a large number of optimum sized price-taking firms in the market.

English classical economists were largely silent on the questions of the number of firms or the size of the individual firms relative to the market in markets characterized by ''perfect liberty.'' They were also silent or ambiguous on the ability of individual firms to affect the price at which they sold their outputs and the quality of market information, which are critical in perfect competition. They did, however, include entrepreneurship and an active competitive process—both of which are absent in the perfectly competitive model.

IV. PERFECT LIBERTY AS CONTESTABLE MARKET THEORY

Baumol developed contestable market theory in the 1970s and 1980s. *Contestable Markets and The Theory of Industry Structure* (BPWB 1982) is the most complete treatment of the model. It was also the subject of Baumol's 1981 Presidential Address to the American Economic Association (Baumol 1982).

Contestable market theory generated a firestorm of criticism and controversy, with William Shepherd perhaps the most severe of its numerous critics (Shepherd 1984, 1995; Schwartz and Reynolds 1983; Schwartz 1986; Cairns and Mahabir 1988; Spence 1983; BPWB 1983, 1986). It is not the purpose of this article to assess the merits of the arguments and counterarguments concerning contestable market theory, but simply to examine the relationship between Smith's ''perfect liberty'' and contestable market theory. Analysis is limited to the single-product contestable market model because it seems more consistent with Smith's ''simple system of liberty'' and the kinds of firms implicit in the classical literature than the richer but more complex BPWB multiproduct model.

Perfect Contestability

Perfect contestability and perfect competition have much in common. In fact, a perfectly competitive market is perfectly contestable (Baumol 1982a, p. 2). However, perfect contestability captures the essence of Smith's perfect liberty and competitive markets without as many restrictive assumptions that are not explicit or apparent in the classical literature.

As in Smithian ''perfect liberty'' and perfect competition, there are no entry or exit barriers in a perfectly contestable market, which BPWB define as

> . . . one that is accessible to potential entrants and has the following two properties: First, the potential entrants can, without restriction, serve the same market demands and use the same productive techniques as those available to the incumbent firms. . . . Second, the potential entrants evaluate the profitability of entry at the incumbent firms' pre-entry prices. . . . [T]he entrants . . . assume that if they undercut the incumbents' prices they can sell as much of the corresponding good as the quantity demanded by the market at their own prices (BPWB 1982, p. 5).

Unlike the price-taking firms in perfect competition or in Cournot's ''unlimited competition,'' however, the incumbent firms in a perfectly contestable market and potential entrants are not necessarily passive price takers. Potential entrants evaluate entry decisions in terms of their assumed or perceived market demand and ''their own prices.''

Other than ''natural'' or institutionally created monopolies, the size and number of firms consistent with ''perfect liberty'' and whether or not they are price takers aren't obvious issues in the classical economic literature or in perfectly contestable markets. Firms in classical markets need not be price takers, and their decisions may be interdependent.

Mill, for example, thought that competition would concentrate production in a few large firms if there were economies of scale and the market were large enough to support large-scale production.

> As I have already remarked of large establishments generally, when compared with small ones, whenever competition is free its results will show whether individual or joint stock agency is best adapted to the particular case, since that which is most efficient and most economical will always in the end succeed in underselling the other (Mill [1871] 2006, Vol. II, p. 140).

Even if production were concentrated in as few as two firms, perfect contestability will generate the classical ''natural'' average-cost price. The key is the assumption of free and reversible entry in perfectly contestable markets because ''*exit is absolutely costless"* (Baumol 1982a, p. 3). Potential entrants know that fixed costs are completely recoverable upon exit and there are no unrecoverable sunk costs. BPWB argue that even a perfectly contestable ''natural duopoly'' is sustainable and will generate prices equal to marginal cost and minimum average cost.

As in the perfectly competitive long-run equilibrium, price has to equal average cost and economic profits of incumbent firms must be zero in a perfectly contestable market. If the incumbents charge prices above average cost, ''perfect liberty'' and entry will drive the price average cost and profit to zero. Some of the incumbents will exit if the price falls below average cost, and the price will rise until it equals average cost.

Marginal-cost pricing by firms with market power is a little trickier. In a perfectly contestable market, if incumbents charge a price that exceeds potential entrants' marginal costs, new firms can enter and charge a price between their marginal cost and the incumbents' price and undersell the incumbents.[19] Thus, $p > MC(q_i)$ will attract entrants and is not sustainable in a perfectly contestable market. A price below potential entrants' marginal cost is also unsustainable in a perfectly contestable market because it also attracts entrants if entrants can produce slightly smaller outputs than the incumbents, undercut the incumbents' price, and still realize an economic profit. [20]

In short, in perfectly contestable markets, $p \neq MC(q_i)$ attracts entrants and is not sustainable. Combining this with $p > AC(q_i)$ attracting entrants and $p > AC(q_i)$ generating exit, we end up with $p = MC(q_i) = AC(q_i)$ as the necessary condition for a sustainable output and price in a perfectly contestable market. Firms in perfectly contestable markets thus produce at minimum $AC(q_i)$, the classical ''natural price,'' just as in Smithian ''perfect liberty'' and the perfectly competitive long-run

[19]The story runs like this. If the market price (p) exceeds the incumbents' marginal cost, $MC(q_i)$, then $[p - MC(q_i)] > 0$. Because incumbents and potential entrants have the same techniques available, a potential entrant can produce $\Delta q_e > 0$, slightly larger than q_i at $p_e \leq MC(q_i) > p_1$ and earn $\pi_e = \pi_i + (p_e - MC)\Delta q > 0$.

[20]If $p < MC(q_i)$, a potential entrant could produce a slightly smaller output $\Delta q < 0$, and realize an economic profit of $\pi_e = \pi_i + (p_e - MC)\Delta q > 0$ because $p_e - MC > 0$ and $\Delta q > 0$.

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equilibrium. Unlike perfect competition, however, perfect contestability generates this outcome without requiring large numbers of passive, price-taking firms.

The optimal number of firms in a perfectly contestable market depends on the output $\hat{q}_i$ where $AC(\hat{q}_i) = \min AC(q_i)$ and the quantity of the good demanded in the market at $\hat{p} = AC(\hat{q}_i) = \min AC(q_i)$. The optimal number of firms in a perfectly contestable market is $\hat{n} = \hat{Q}/\hat{q}_i$, where $\hat{Q} = Q(\hat{p})$ is the quantity demanded in the market at $\hat{p}$. The only requirement is that $\hat{n} \geq 2$. A natural monopoly occurs with $\hat{n} = 1$ if market demand intersects the downward-sloping portion of $AC(q_i)$ and entrants could not undersell the incumbent without incurring an economic loss. Beyond this, $\hat{n}$ could be as small as $\hat{n} = 2$ or large enough that firms are price takers, depending on market demand and production technology. In this sense, the perfectly contestable market appears more consistent with classical "perfect liberty" or "free competition" than the less general perfectly competitive model with its restrictive assumption of large numbers of price-taking firms.[21]

If $\hat{n} = \hat{Q}/\hat{q}_i$ is small and production is concentrated in a few firms in a contestable market, why don't the firms exercise their market power and maximize profit where $MR(\overline{q}) = MC(\overline{q})$, charge $P(\overline{q}) > MC(\overline{q})$—and possibly $P(\overline{q}) > AC(\overline{q})$—and realize $\pi(\overline{q}) > 0$, as in Chamberlin-Robinson monopolistic/imperfect competition?

By assuming away non-recoverable sunk costs in perfectly contestable markets, exit becomes costless. This makes virtually instantaneous "hit-and-run" entry and exit possible. If there are potential profit opportunities, potential entrants enter the market, grab what profits they can, recover their fixed costs, and exit when profit opportunities are exhausted. This is akin to Smithian perfect liberty.

The classical literature doesn't advance this argument clearly or completely, but it is implicit in some of the classical arguments on markets and perfect liberty. For example, Smith argued that

> The market price of any particular commodity, though it may continue long above, can seldom continue long below, its natural price. Whatever part of it was paid below the natural rate, the persons whose interest it affected would *immediately feel the loss, and would immediately withdraw either so much land, or so much labour, or so much stock from being employed about it, that the quantity brought to market would soon be no more than sufficient to supply the effectual demand.* Its market price, therefore, would soon rise to the natural price. *This at least would be the case where there was perfect liberty* (Smith [1776] 1981, Vol. I, p. 79, italics added).

"Immediate withdrawal" from the market is consistent with the costless exit in perfectly contestable markets.

Ricardo apparently thought that that the adjustment of market price to natural price is sufficiently rapid that he defined exchange value as natural price:

> In speaking of the exchangeable value of commodities, or the power of purchasing possessed by one commodity, I mean always that power which it would possess, if

[21] The optimal number of firms produces an *n-tuple* multiple of the optimum output of a single firm, which raises some issues of indivisibility and fractional firms. BPWB get around this by allowing for "flat-bottomed" $AC(q_i)$ curves for the firms so that market demand passes through flat segment of $AC(q_i)$. Fama and Laffer (1972, p. 674) had shown that "When there are at least two non-colluding firms in an industry, there is no clear-cut relationship between the number of firms and the degree of competition" (Fama and Laffer 1972, p. 674).

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> not disturbed by any temporary or accidental cause, and which is its natural price(Ricardo [1821] 2004, p. 92).

He argued that, in most cases, circulating capital is highly mobile among employments because the movement of capital "is probably effected, by a manufacturer not absolutely changing his employment but only lessening the quantity of capital he has in that employment" (Ricardo [1821] 2004, p. 89).

In the Ricardian system, financial markets and a "monied class" play a key role in the mobility of capital because "There is perhaps no manufacturer, however rich, who limits his business to the extent that his own funds will allow" (*Ibid.*).

> When the demand for silks increases, and that for cloth diminishes, the clothier does not remove with his capital to the silk trade, but he dismisses some of his workmen, he discontinues his demand for the loans from bankers and monied men; while the case of silk manufacturer is the reverse: he wishes to employ more workmen, and thus his motive for borrowing is increased: he borrow more, and thus capital is transferred from employment to another, without the necessity of a manufacturer discontinuing his usual occupation (*Ibid.*).

Mill made a similar argument. "This equalizing process, commonly described as the transfer of capital from one employment to another, is not necessarily the onerous, slow, and almost impractible operation which is very often represented to be" (Mill [1871] 2006, vol. II, p. 407). Interest is a component of profit for Mill, and the interest rate plays an important role in the rapid reallocation of capital.

> All persons in business are occasionally, and most of them constantly, borrowers: while all persons not in business, who possess monied property, are lenders. Between these two great bodies there is a numerous, keen and intelligent class of middlemen, composed of bankers, stockbrokers, discount brokers, and others, *alive to the slightest breath of probable gain. The smallest circumstance, or the most transient impression on the public mind, which tends to an increase or diminution of the demand for loans either at the time or prospectively, operates immediately on the rate of interest* (Mill [1871] 2006, Vol. II, p. 405, italics added).

This addresses the questions of the source of entry and who the entrants are in the contestability model (Cairns and Mahabir 1988). The "entrants" may be existing firms shifting their capital from one employment to another or borrowing additional capital from the "monied" capitalists and banks. The Ricardian "monied property" lenders—or capitalists—are the link between entrepreneurial "groping" to find profit opportunities and financing their entry into new ventures.

Often, potential entry and credible threats of entry will suffice to force the incumbents to adjust price to just cover average cost.[22] In Book III, Chapter 3 of *Principles of Political Economy* Mill argues that potential competition, combined

[22]Andrews argued that new entrants into an industry "may be businesses already established elsewhere" (Andrews 1964, p. 78). These businesses would not have to start up from scratch and could enter relatively quickly. Presumably, they could exit relatively quickly as well. If firms' products are differentiated within an "industry," Andrews argues, "... the most immediate potential competitors are then businesses established in the same industry with all the facilities which that implies" (*Ibid.*). This type of entry and exit could come close to perfect contestability.

with information in financial markets, would keep incumbent firms' prices from remaining above average cost with positive economic profit. In fact, the caption of section 2 of this chapter in the Toronto edition of *Principles* is "*Law of their Value, Cost of Production operating through potential, but not actual, alterations of supply.*"

If we interpret "alteration of supply" as entry of new capital into the market to produce an increased supply, Mill argued that if the cost of production fell, actual entry and increased supply would not necessarily be required to lower the price. "The mere possibility often suffices; the dealers are aware of what would happen and their mutual competition makes them anticipate the result by lowering the price" (Mill [1871] 2006, Vol. III, p. 473). Again, there is no implication by Mill that this requires a large number of firms or that firms be price takers, as in the perfectly competitive model.[23]

Sunk Costs, Entry Barriers and Sustainability

With perfect contestability, sustainability requires that price (p) must just cover the incumbent firms' marginal and average cost, as explained above. The only sustainable configuration with price greater than marginal and average cost is a natural monopoly.[24]

Contestable market theory offers some insights into the classical economists' analysis of monopoly and imperfectly competitive markets. The classical economists argued—generally correctly, but usually for the wrong reasons—that a monopoly price is not determined by cost of production. For example, Smith argued: "The price of a monopoly is upon every occasion the highest which can be got. The natural price, or the price of free competition is the lowest which can be taken ... for any considerable time together" (Smith [1776] 1987, Vol. I, p. 78). According to Ricardo,

> ... [A] monopoly price ... is ... the very highest price at which the consumers are willing to purchase it. Commodities are only at a monopoly price, when by no possible device their quantity can be augmented; and when therefore, the competition is wholly on one side—amongst the buyers. ... The exchangeable value therefore of a commodity which is at a monopoly price, is nowhere regulated by the cost of production (Ricardo [1821] 2004, pp. 249–250).

Smith, Ricardo, and to a lesser extent Mill tended to define monopoly in terms of the ability to change quantity. Land of a given quality and location and "natural productions [that] require such a singularity of soil and situation" (Smith [1776] 1987, p. 78) were seen as "natural" monopolies that could keep price above the natural price and as the source of rent. Similarly, Mill argued: "It is at once evident that rent is the effect of a monopoly; though the monopoly is a natural one" (Mill [1871] 2006, Vol. II, p. 416).

Other than land and other resources and goods fixed in supply, the classical economists tended to see monopoly as "abnormal" (Schumpeter 1954, pp. 545–546).

[23]However, Gilbert (1989) conducted a number of experiments and concluded that "The specific conclusion of contestability theory—that potential competition is as good as actual competition—is not clearly supported by the outcomes of market experiments."

[24]Mosca (2008) analyzes the history of the theory of natural monopoly.

According to Smith, except for things permanently fixed in supply, monopolies could be maintained only by ''secrets in trade'' to conceal unusually high profits that would attract entrants, ''secrets in manufacture'' to prevent entrants from producing an unusually profitable product or utilizing a particular production technology, and ''. . . the exclusive privileges of corporations, statutes of apprenticeship, and all those laws which restrain, in particular employments, the competition to a smaller number than might otherwise go into them." He thought that these monopolies would last only as long as the secrets in trade and manufacture or ''. . . the regulations of police which gave occasion to them'' (Smith [1776] 1987, Vol. I, pp. 77–79).

Ricardo argued that the Corn Laws that protected British landowners from the competition of East European and American wheat enhanced the monopoly power of British landowners and generated high wheat prices and high land rent, an argument that he advanced often in Parliamentary debate against proposals for protection of British agriculture.[25]

In the context of contestable market theory, the additional costs imposed on entrants by ''secrets in manufacture'' and ''regulations of police'' are entry barriers imposed on entrants, but not on incumbents, and make it possible for incumbents to realize economic profits by charging non-optimal prices above marginal and average cost (BPWB 1982, Chapter 10). Entry barriers also allow the incumbents to engage in strategic and collusive behaviors that are not sustainable in perfectly contestable markets or with ''perfect liberty.''

Smith had a sophisticated and pragmatic view of the role of government, and was not a doctrinaire proponent of *laissez faire*. However, he was skeptical about the motives of government policies that interfere with the operation of markets because he thought that these policies are dominated by the ''Merchants and master manufacturers. . . . To widen the market and to narrow the competition is always the interest of the dealers'' (Smith [1776] 1987, Vol. I, pp. 266–267). In unusually lurid terms, he condemned the laws and regulations ''. . . which the clamour of our merchants and manufacturers has extorted from the legislature, for the support of their own absurd and oppressive monopolies. Like the laws of Draco, these laws may be said to be all written in blood'' (Smith [1776] 1987, Vol. II, p. 648).

Legislation and institutions that ''narrow the competition'' by imposing entry barriers reduce contestability and make it possible for incumbents to earn economic profits. These entry barriers also permit and encourage collusion among incumbent firms to sustain high prices and profits.

In one of the most famous passages in *Wealth of Nations* Smith argued that ''People of the same trade seldom meet together, even for merriment and diversion, but the conversation ends in a conspiracy against the publick, or in some contrivance to raise prices'' (Smith [1776] 1981, Vol. I, p. 145). Although he considered collusion to raise prices a ''conspiracy against the publick,'' Smith thought that laws that would ''prevent such meetings'' would be ineffective because it would be practically impossible to prevent them, and legislation that attempted to do so would violate

[25]For example, the *Parliamentary Record* states: ''Much had been said, affirming and denying the direct interest of landholders in monopolizing the market. [Mr. Ricardo] would say, without hesitation, that gentlemen of landed property had an interest in getting the monopoly of the market for their own corn'' (''Mr. Gooch's Motion for a Committee on Agricultural Distress,'' 3/7/1821, Ricardo 2004a, p. 88).

liberty. However, he argued that "... though the law cannot hinder people of the same trade from sometimes assembling together, it ought to do nothing to facilitate such assemblies; much less to render them necessary" (*Ibid.*).

Mill recognized government intervention as a source of monopoly, but he also recognized that technology and economies of scale could lead to "natural monopolies (meaning thereby those which are created by circumstances and not by law)" or oligopoly and collusion.

> If a business can only be advantageously carried on by a large capital, this in most countries limits so narrowly the class of persons who can enter into the employment that they are enabled to keep their rate of profit above the general level. A trade may also, from the nature of the case, be confined to so few hands, that profits may admit of being kept up by a combination among dealers (Mill [1871] 2006, Vol. II, p. 405).

Smith and Mill both imply that concentration will inevitably lead to some "contrivance to raise prices" or some form of "combination among dealers."

In a perfectly contestable market, however, concentration doesn't necessarily lead to collusion.[26] As long as there are no entry barriers and exit is costless—except in natural monopolies—economies of scale, high fixed costs, and other variables that generate concentration and large firms in an industry will not lead to collusion or strategic behavior to keep the incumbents' price above average and marginal costs. However, the introduction of *artificial* entry barriers imposed by government policy removes credible threats of entry, reduces contestability, and permits these behaviors by monopolistic or oligopolistic incumbents. By restricting the entrepreneur's freedom to "change his trade as often as he pleases" (Smith [1776] 1981, Vol. I, p. 73), entry barriers restrict Smithian "liberty."

V. LIBERTY AND AUSTRIAN MARKET PROCESS

Carl Menger and the early Austrians shared the classical economists' ideals of individualism, free markets, competition, and a minimal economic role for government, but they parted company with the classical theories of value and equilibrium.[27] There are some similarities between the analysis of competition and markets in the later Austrian literature and Smith's "system of liberty." For example, compare Ludwig von Mises' abstract "pure economy" with Smith's "perfect liberty."

> The imaginary construction of a pure or unhampered market economy assumes that there is division of labor and private ownership (control) of the means of production

[26]Nicola Tynan (2007) analyzes the arguments of Senior for private ownership of municipal water supplies vs. Mill's advocacy of public ownership of municipal water supply as a natural monopoly. The issue involves the question of the London water supply market as a contestable market (Senior) vs. a natural monopoly (Mill).

[27]In his *Principles of Economics* (Menger [1871] 2004), Menger rejected the classical cost of production (or "labor") theory of value and explained the value of final (lower order) goods in terms of marginal utility rather than cost of production and imputed the values of factor inputs and intermediate (higher order) goods from the marginal utility and value of the final goods they produce (Menger [1871] 2004, pp. 147–154). Thus, in the Austrian model, there is no natural average-cost price.

> and that consequently there is market exchange of goods and services. It assumes that the operation of the market is not obstructed by institutional factors. It assumes that the government . . . is intent upon preserving the operation of the market system, abstains from hindering its functioning, and protects it against encroachments on the part of other people (Mises ([1949] 1996), p. 23).

Competitive Equilibrating Forces vs. Perfectly Competitive Equilibrium

Unlike the neoclassical competitive static equilibrium state, Austrian economists emphasize the adjustments of individuals to a continually changing economy in a world of highly incomplete and imperfect information. The economic actors make their decisions or plans on the basis of recent experience and future expectations. Unless their expectations are correct or they have perfect foresight, they must change their plans to correct for errors.[28] Hayek, for example, argues:

> . . . [C]ompetition is important only because and insofar as its outcomes are unpredictable and on the whole different from those that anyone would have been able to consciously strive for; and that its salutary effects must manifest themselves by frustrating certain intentions and disappointing certain expectations (Hayek [1968] 2002, p. 10).

Since the economic data are always changing, the actors are continually altering their decisions to buy and sell. There are no ''given'' demand and supply functions determining static equilibrium prices in this approach. Consequently, the Austrian analysis pays much more attention to the dynamic ''equilibrating tendencies'' of the market process. In his 1948 essay, Hayek portrays competition as ''. . . by its nature a dynamic process whose essential characteristics are assumed away by the assumptions underlying static analysis'' (Hayek ([1948] 1990, p. 94). Kirzner argues that ''Equilibrium is indeed never attained, yet the market does exhibit powerful tendencies towards it'' (Kirzner 1992, p. 7). Lavoie advances a similar argument on equilibrating forces and equilibrium: ''Equilibrating forces, all driven by entrepreneurial action, never actually work to their completion before changes in the data (some of which these forces themselves have caused the situation)'' (Lavoie 1985, p. 110).

Entrepreneurial Competition and Rivalry

The entrepreneur in the Austrian analysis is continually identifying and reacting to economic *changes* to take advantage of gaps in market information and unforeseen economic changes that appear as ''profit opportunities.'' In *Human Action*, Mises identifies the role of the entrepreneur as ''. . . acting man in regard to the changes occurring in the data of the market'' (Mises ([1949] 1996), p. 254). Kirzner stresses the alertness of entrepreneurs to profit opportunities: ''I view the entrepreneur not as a source of innovative ideas *ex nihilo*, but as being *alert* to the opportunities that exist *already* and are waiting to be noticed'' (Kirzner 1973, p. 74).

[28]Horwitz (2008) provides a clear summary explanation of the nature of competition in Austrian economics.

Rival entrepreneurs actively compete with each other in the Austrian model, as do Mill's "underselling" entrepreneurs and Marshall's entrepreneurs "in a race" with each other. Hayek argued that in a realistic case in which no two firms produced exactly the same good, there are not separate markets or industries but a spectrum of goods of varying degrees of substitutability. In this case, he argued that entrepreneurial competition would "... bring about a set of prices at which each commodity sold just cheap enough to outbid its close substitutes" (Hayek [1948] 1990, p. 100). This argument is consistent with the kind of competition envisioned in Smith's system of perfect liberty, and also with contestable market theory.[29] Moreover, Mises argued that this type of active competition is not limited to markets with many small firms.

Competition is independent of the number of firms in the market.

> The concept of competition does not include the requirement that there should be a multitude of competing units. Competing is always the competition of one man or firm against another man or firm, no matter how many others are striving after the same prize. Competition among the few is not a kind of competition praxeologically different from competition among the many (Mises ([1949] 1996), p. 362).

This is the kind of active entrepreneurial competition suggested in Smith's example of competition among grocers.

> The quantity of grocery goods, for example, which can be sold in a particular town is limited by the demand of that town and its neighbourhood. The capital, therefore, which can be employed in the grocery trade cannot exceed what is sufficient to purchase that quantity. If this capital is divided between two different grocers, their competition will tend to make both of them sell cheaper than if it were in the hands of one only; and if it were divided among twenty, their competition would be just so much the greater, and the chance of their combining together, in order to raise the price, just so much the less. Their competition might perhaps ruin some of themselves; but to take care of this is the business of the parties concerned, and it may safely be trusted to their discretion (Smith [1776] 1981, Vol. I, pp. 361–362).

In the Austrian system, the entrepreneurs who succeed and are not "ruined" by competition do not require neoclassical perfect information. They only need better information and luck than those who do not succeed (Mises ([1949] 1996), p. 287).

The normal rate of profit is a component of opportunity cost and of the neoclassical long-run equilibrium price. However, Forget (1989) argues that the normal rate of profit and natural price are not given or known accurately by the actors in the market. Rather, buyers and sellers make decisions on the basis of expectations in the face of incomplete information. This suggests that the classical natural, long-run, average-cost price is a long-run expectation in markets governed by "perfect liberty" (Forget 1989, pp. 103–105).

Factor mobility and freedom of entry and exit, the essential elements of Smithian liberty, are critical in the Austrian system if the entrepreneurs are to perform their essential functions of reallocation of resources and changing outputs in response to

[29]If we extended this to perfectly contestable markets, this type of competitive behavior could drive firms' prices toward average cost, or the classical natural price.

economic changes. Of course, those who are most threatened by economic changes will try to reduce competition by restricting mobility and entry by collusion and through their influence on legislation.

> The classical economists favored the abolition of all trade barriers preventing people from competing in the market. Such restrictive laws, they explained, result in shifting production from those places in which natural conditions of production are more favorable to places in which they are less favorable. They protect the less efficient man against his more efficient rival. They tend to perpetuate backward technological methods of production. In short they curtail production and thus lower the standard of living. In order to make all people more prosperous, the economists argued, competition should be free to everybody. In this sense they used the term *free competition*. There was nothing metaphysical in their employment of the term *free*. They advocated the nullification of privileges barring people from access to certain trades and markets (Mises [1949] 1996, p. 274).

Austrians tend to attribute monopoly to government policies and institutions that reduce the mobility of resources and hence the "liberty" of the owners of capital to choose where to employ it. With no such restrictive policies and institutions, monopoly would be extremely rare in the Austrian system, if it existed at all. Even if technology and economies of scale resulted in an apparently natural monopoly, Mises argued that the power of the monopolist over price would be tempered by the freedom of entrepreneurs to establish competing industries. He used rail transportation as an example.

> . . . [P]eople used to declare: You cannot compete with the railroad companies; it is impossible to challenge their position by starting competing lines; in the field of land transportation there is no longer competition. The truth was that at that time the already operating lines were by and large sufficient. For additional capital investment the prospects were more favorable in improving the serviceableness of the already operating lines and in other branches of business than in the construction of new railroads. However, this did not interfere with further technological progress in transportation technique. The bigness and the economic "power" of the railroad companies did not impede the emergence of the motor car and the airplane (Mises [1949] 1996, p. 275).

Even an apparently natural monopoly may in fact be contestable in the sense that new competition may arise in a new industry. In fact, the "bigness" and "economic power" of the railroads that insulated them from the competition of entrants into railroading may well have rendered them less nimble in responding to the competition from other forms of transport.

VI. CONCLUDING REMARKS

Smith's simple system of "perfect liberty" is much more than a naïve precursor of perfect competition. "Perfect liberty" is an important element of perfect competition, contestable market theory, and Austrian market process analysis. It is largely fruitless to argue that Smith and the classical economists "really meant" any one of these alone when they assumed "perfect liberty" and "free competition."

Resource mobility, freedom of entry and exit, and the natural, average-cost price are important properties of perfect competition, but most of the other restrictive assumptions (price-taking firms and perfect information, in particular) in the perfectly competitive model are only implicit in or absent from Smith. Moreover, entrepreneurial behavior and the active competitive process in Smith are largely absent in the perfectly competitive static equilibrium models.

With sufficient resource mobility and ease of entry and exit, Smithian liberty is compatible with market power. Except for natural monopoly, Smith argued that monopoly is largely sustained by collusive cartels and legislation and "the regulations of police" that restrict entry and competition.

Contestable market theory also builds on Smithian "perfect liberty," but unlike perfect competitors, firms in perfectly contestable markets need not be price takers. Except in natural monopolies the only sustainable price is equal to minimum average cost—*i.e.*, the classical natural price. It pays more attention to entrepreneurship and active interfirm competition from potential entrants, but like perfect competition, its main focus is the static sustainable state in a zero-friction setting.

Austrian economists generally share the classical ideal of Smithian perfect liberty. However, rather than a static equilibrium state, the later Austrians emphasize active competition among entrepreneurial firms as the mechanism that allocates productive resources to produce the goods and services demanded by consumers. Kirzner's equilibrating forces in what he called the Austrian "middle way" drive prices to the classical average cost natural price, but the system never completely reaches an equilibrium state. "Austrian" entrepreneurs continually search for profit opportunities in a world of dispersed and constantly changing information. Kirznerian equilibrating forces don't generate equilibrium, but this approach captures the essence of the kind of competition implied by Smith's "simple system of liberty" more fully than either neoclassical perfect competition or contestable market theory.

I conclude with two broad questions, to which I do not have definitive "answers." The first is why neoclassical static equilibrium analysis, and perfect competition in particular, have prevailed as economic orthodoxy and Austrian economics has been relegated to the background if, as appears to be the case, Austrian market processes are more consistent with Smith's classical notion of active competitive behavior in a setting of perfect liberty.

One possible explanation is that developments in mainstream "neoclassical" economic theory have expanded the analysis beyond the simple equilibrium state of earlier naïve versions of perfect competition. Imperfect competition, game theory, strategic behavior, information uncertainty, dynamic models, and behavioral economics include some of the active competitive process found in Smith, although these innovations have not been easily incorporated into the Cournot-Walrás and Arrow-Hahn general equilibrium models. These "new" analytical innovations make the theory of competitive markets more compatible with Adam Smith's "old" system of liberty. Austrian economists tend to reject static equilibrium models in imperfectly competitive markets for the same reasons that they reject the perfectly competitive static equilibrium model.

The expanding role of econometric hypothesis testing in mainstream modern economics has made it less receptive to the Austrian paradigm. Static equilibrium models generate empirically testable hypotheses. Austrian market processes,

equilibrating forces, and discovery provide invaluable insights into the way that markets work, but they are not easily incorporated into models that generate empirically testable hypotheses.[30]

In the final analysis, is consistency with Adam Smith a decisive criterion in evaluating contemporary economic theory? Placing contemporary theory in an analytical tradition with its roots in classical economics is important, as evidenced by the numerous arguments that perfect competition captures Smith's concept of liberty; that Smith "really meant" perfect competition or Marshallian neoclassical economics, etc. Indeed, examining these links is one of tasks of the history of economics. However, important as they are, *Wealth of Nations* and other foundation works are not sacred texts containing absolute truth. If they were, the discipline would have advanced very little over the past two and a half centuries.

Adam Smith's work is the root of much of modern economics, but many branches have grown from this root. This article has analyzed three of them. If we consider only the static competitive equilibrium state, we ignore the process of competition and the way markets work. If we ignore static equilibrium and consider only equilibrating forces that never reach equilibrium, we may not have a clear idea of where they are heading. The challenge is to find ways of combining analytical approaches and paradigms. The links between Smith's natural liberty, the perfectly competitive static equilibrium, contestability, and the dynamic Austrian equilibrating forces attest to the breadth of his analytical vision and his understanding of competitive markets.

REFERENCES

Andrews, P. W. S. 1964. *On Competition in Economic Theory.* New York: St. Martin's Press.

Arrow, Kenneth J. and F. H. Hahn 1971. *General Competitive Analysis.* San Francisco: Holden-Day.

Backhouse, Roger E. 1990. "Competition." In John Creedy, ed., *Foundations of Economic Thought*. Cambridge, MA: Basil Blackwell, pp. 58–86.

Bateman, Bradley W. 1993. "Clearing the Ground: The Demise of the Social Gospel Movement and the Rise of Neoclassicism in American Economics." In Mary S. Morgan and Malcolm Rutherford, eds., *From Interwar Pluralism to Postwar Neoclassicism.* Durham, NC: Duke University Press, pp. 29–52.

Bateman, Bradley W. 2008. "The Secularization of American Economics." *Journal of the History of Economic Thought* 30 (1): pp. 1–20.

Baumol, William J. 1982 "Contestable Markets: An Uprising in the Theory of Industry Structure." *American Economic Review* 72 (1): 1–15.

Baumol, William J., John C. Panzar, Robert D. Willig, and Elizabeth E. Bailey (BPWB) 1982. *Contestable Markets and the Theory of Industry Structure.* New York: Harcourt Brace Jovanovich.

Baumol, William J., John C. Panzar, Robert D. Willig and Elizabeth E. Bailey (BPWB) 1983. "Contestable Markets: An Uprising in the Theory of Industry Structure: Reply." *American Economic Review* 73 (2): 491–496.

Baumol, William J., John C. Panzar, Robert D. Willig and Elizabeth E. Bailey (BPWB) 1986. "Contestability: Developments since the Book." *Oxford Economic Papers*, New Series 38(Supplement): 9–36.

Blaug, Mark. 1999. "The Formalist Revolution or What Happened to Orthodox Economics after World War II?" In Roger E. Backhouse and John Creedy, eds., *From Classical Economics to the Theory of the Firm.* Northampton, MA: Edward Elgar, pp. 257–280.

[30]See Hayek (2002).

Blaug, Mark. 2001. "No History of Ideas, Please, We're Economists." *Journal of Economic Perspectives* 15 (1): 145–164.

Bradley, Michael E. 1989. "John Stuart Mill's Demand Curves." *History of Political Economy* 21 (1): 43–56.

Cairnes, John Elliot. [1875] 2006. *The Character and Logical Method of Political Economy.* Macmillan and Co., 1875. Library of Economics and Liberty. <http://econlib.org/library/Cairnes/crnPE1.html>.

Cairns, Robert D. and Dhanayshar Mahabir. 1988. "Contestability: A Revisionist View." *Economica, New Series* 55 (218): 269–276.

Chamberlin, Edward H. 1962. *The Theory of Monopolistic Competition*, 8th edition. Cambridge: Harvard University Press.

Cournot, Augustin. [1838] 1971. *Mathematical Principles of the Theory of Wealth*. New York: Augustus M. Kelly Publishers.

Edgeworth, Francis Y. [1881] 1967. *Mathematical Psychics*. New York: Augustus M. Kelley Publishers.

Ekelund, Robert B. and Robert F. Hébert 1999. *Secret Origins of Modern Microeconomics.* Chicago: University of Chicago Press.

Evensky, Jerry. 1989. "The Evolution of Adam Smith's Views on Political Economy." *History of Political Economy* 21 (1): 123–146.

Fama, Eugene F. and Arthur B. Laffer 1972. "The Number of Firms and Competition." *American Economic Review* 62 (4): 670–674.

Fisher, Irving. 1927. "Bibliography of Mathematical Economics." Appendix in Augustin Cournot [1838] 1971, *Mathematical Principles of the Theory of Wealth*. New York: Augustus M. Kelly Publishers, pp. 173–209.

Forget, Evelyn L. 1989. "J. S. Mill and J. E. Cairnes on Natural Value: The Role of Expectations in Late Classical Thought." *History of Political Economy* 21 (1): 103–122.

Fourcade-Gourinchas, Marion (2001). "Politics, Institutional Structures, and the Rise of Economics: A Comparative Study." *Theory and Society* 30 (3): 397–447.

Gilbert, Richard J. 1989. "The Role of Potential Competition in Industrial Organization." *The Journal of Economic Perspectives* 3 (3): 107–127.

Goodwin, Craufurd. 1998. "The Patrons of Economics in a Time of Transformation." In Mary S. Morgan and Malcom Rutherford, eds., *From Interwar Pluralism to Postwar Neoclassicism*. Durham NC: Duke University Press, pp. 53–81.

Hayek, F. A. [1937] 1981. "Economics and Knowledge." *Economica, New Series* 44 (February): pp. 33–54. Reprinted in James M. Buchanan and George F. Thirlbe, eds., *L.S.E. Essays on Cost*. New York: New York University Press, Institute for Humane Studies.

Hayek, F. A. [1948] 1990 "The Meaning of Competition." In Stephen Littlechild, ed., *Austrian Economics*, Volume III. Aldershot, UK: Edward Elgar, pp. 169–183.

Hayek, F. A. 2002. "Competition as a Discovery Procedure," translated by Marcellus S. Snow. *Quarterly Journal of Austrian Economics* 5 (Fall): 9–23.

Hetherington, Norriss S. 1983. "Isaac Newton's Influence on Adam Smith's Natural Laws in Economics." *Journal of the History of Ideas* 44 (3): 497–505.

Horwitz, Steven. 2008. "Catallaxy, Competition, and 21st Century Capitalism: An Agenda for Economics." In John T. Harvey and Robert F. Garnett, Jr., eds., *Future Directions for Heterodox Economics*. Ann Arbor: University of Michigan Press, pp. 225–39.

Hutchison, Terence. 1999. "Adam Smith and General Equilibrium Theory." In Roger E. Backhouse and John Creedy, eds., *From Classical Economics to the Theory of the Firm*. Northampton, MA: Edward Elgar, pp. 243–256.

Kirzner, Israel M. 1973. *Competition and Entrepreneurship.* Chicago: University of Chicago Press.

Kirzner, Israel M. 1992. *The Meaning of Market Process: Essays in the Development of Modern Austrian Economics.* New York: Routledge.

Kirzner, Israel M. 1997. "Entrepreneurial Discovery and the Competitive Market Process: An Austrian Approach." *Journal of Economic Literature* 35 (1): 60–85.

Knight, Frank H. 1956. *On the History and Method of Economics.* Chicago: University of Chicago Press.
Knight, Frank H. [1921] 1957. *Risk, Uncertainty and Profit.* New York: Harper & Row.
Machlup, Fritz. 1952. *The Economics of Sellers' Competition: Model Analysis of Sellers' Conduct.* Baltimore: Johns Hopkins University Press.
Machovec, Frank M. 1995. *Perfect Competition and the Transformation of Economics.* New York: Routledge.
Maloney, John. 1985. *Marshall, Orthodoxy, and the Professionalization of Economics.* Cambridge: Cambridge University Press.
Marshall, Alfred. [1920] 1990. *Principles of Economics*, 8th edition. Philadelphia: Porcupine Press.
McNulty, Paul J. 1967. "A Note on the History of Perfect Competition." *Journal of Political Economy* 75 (4): 395–399.
McNulty, Paul J. 1968. "Economic Theory and the Meaning of Competition." *Quarterly Journal of Economics* 82 (4): 639–656.
Medema, Steven G. 2007. "The Hesitant Hand: Mill, Sidgwick, and the Evolution of the Theory of Market Failure." *History of Political Economy* 39 (3): 331–358.
Menger, Carl. [1871] 2004. *Principles of Economics*, online edition. Ludwig von Mises Institute.
Mill, John Stuart. [1871] 2006. *Principles of Political Economy With Some of Their Applications to Social Philosophy (vols. II and III*, The Collected Works of John Stuart Mill). Indianapolis, IN: Liberty Fund.
Mirowski, Philip. 1989a. *More Heat than Light: Economics as Social Physics, Physics as Nature's Economics*. Cambridge: Cambridge University Press.
Mirowski, Philip. 1989b. "The When, the How and the Why of Mathematical Expression in the History of Economic Analysis." *Journal of Economic Perspectives* 21 (1): 145–157.
Mises, Ludwig von. [1949] 1996. *Human Action*. Irvington-on-Hudson, NY: Foundation for Economic Education, Inc., 1996. [Online] available from http://www.econlib.org/library/Mises/HmA/msHmA15.html; accessed 31 May 2006.
Morgan, Mary S. 1993. "Competing Notions of 'Competition' in Late Nineteenth-Century American Economics." *History of Political Economy* 25 (Winter): 564–604.
Mosca, Manuela. 2008. "On the Origins of the Concept of Natural Monopoly." *European Journal of the History of Economic Thought* 15 (2): 317–353.
Ricardo, David. [1821] 2004a. Principles of Political Economy and Taxation. In Pierro Sraffa and M. H. Dobb, eds, *The Collected Works and Correspondence of David Ricardo*, Vol. II. Indianapolis, Liberty Fund.
Ricardo, David. 2004b. *The Collected Works and Correspondence of David Ricardo*, Vol. V, edited by Pierro Sraffa and M. H. Dobb. Indianapolis, Liberty Fund.
Robinson, Joan. [1933] 1961. *The Economics of Imperfect Competition*. London: Macmillan.
Robinson, Joan. 1934. "What is Perfect Competition?" *Quarterly Journal of Economics* 49 (1): 104–120.
Rogin, Leo. 1956. *The Meaning and Validity of Economic Theory.* New York: Harper & Brothers Publishers.
Rutherford, Malcolm. 1999. "Institutionalism as 'Scientific' Economics." In Roger Backhouse, E. Backhouse, and John Creedy, eds., *From Classical Economics to the Theory of the Firm*. Northampton, MA: Edward Elgar, pp. 223–242.
Say, Jean-Baptiste. 1855. *A Treatise on Political Economy*, translated by C. R. Prinsep, edited by Clement C. Biddle. Philadelphia: Lippincott, Grambo & Co. Library of Economics and Liberty. <http://www.econlib.org/library/Say/sayT42.html>.
Schabas, Margaret. 2005. *The Natural Origins of Economics.* Chicago: University of Chicago Press.
Schumpeter, Joseph A. 1954. *History of Economic Analysis.* New York: Oxford University Press.
Schwartz, Marius. 1986. "The Nature and Scope of Contestability Theory." *Oxford Economic Papers, New Series* 38: 37–57.
Schwartz, Marius and Robert J. Reynolds 1983. "Contestable Markets: An Uprising in the Theory of Industry Structure: Comment." *American Economic Review* 73 (3): 488–490.

Scitovsky, Tibor. 1966. *Welfare and Competition: The Economics of a Fully Employed Economy.* London: Unwin University Books.

Shepherd, William G. 1984. "'Contestability' vs. Competition." *American Economic Review* 74 (4): 572–587.

Shepherd, William G. 1995. "Contestability vs. Competition—Once More." *Land Economics* 71 (3): 299–309.

Skidelsky, Robert. 1986. *John Maynard Keynes: Hopes Betrayed, 1883–1920.* New York: Penguin Books.

Smith, Adam. [1776] 1981 An Inquiry into the Nature and Causes of the Wealth of Nations. In R. H. Campbell and A. S. Skinner, eds., *The Glascow Edition of the Works and Correspondence of Adam Smith*, vols. I and II. Indianapolis: Liberty Classics.

Smith, Adam. 1982a. The Principles Which Lead and Direct Philosophical Enquiries; Illustrated by the History of Astronomy. In R. H. Campbell and A. S. Skinner, eds., *The Glascow Edition of the Works and Correspondence of Adam Smith*, Vol. III, Adam Smith, *Writings on Philosophical Subjects*. Indianapolis, Liberty Classics, pp. 31–105.

Smith, Adam. 1982b. The Principles Which Lead and Direct Philosophical Enquiries; Illustrated by the History of the Ancient Physics. In R. H. Campbell and A. S. Skinner, eds., *The Glascow Edition of the Works and Correspondence of Adam Smith*, Vol. III, Adam Smith, *Writings on Philosophical Subjects*. Indianapolis, Liberty Classics, pp. 107–117.

Spence, Michael. 1983. "Contestable Markets and the Theory of Industry Structure: A Review Article." *Journal of Economic Literature* 21 (3): 981–990.

Stigler, George J. 1957. "Perfect Competition, Historically Contemplated." *Journal of Political Economy* 65 (1): 1–17.

Tynan, Nicola. 2007. "Mill and Senior on London's Water Supply: Agency, Increasing Returns, and Natural Monopoly." *Journal of the History of Economic Thought* 29 (1): 49–68.

Weintraub, E. Roy. 2002. *How Economics Became a Mathematical Science*. Durham, NC: Duke University Press.

Whewell, William [1829] 1971. *On the Mathematical Exposition of Some Doctrines of Political Economy.* New York: A. M. Kelley

Wicksell, Knut. 1934. *Lectures on Political Economy, Volume I: General Theory.* London: Routledge & Kegan Paul.