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A NOTE ON THE HISTORY OF PERFECT COMPETITION

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PROFESSOR STIGLER opened his history of perfect competition with Adam Smith's treatment of the subject,¹ but noted that "Smith did not state how he was led to . . . [the] elements of a concept of competition." "We may reasonably infer," he added, "that the conditions of numerous rivals and of independence of action of these rivals were matters of direct observation" (Stigler, 1957, p. 2). The purpose of this note is to suggest (1) that Adam Smith was led to the concept of competition by his acquaintance with the economic literature of his time, and that the casualness with which he introduced and employed the term in the *Wealth of Nations* reflected the fact that competition was by then a familiar concept of economic reasoning, and (2) that the Smithian concept of competition was of a fundamentally different character than that which was later perfected by economic theorists.

Competition, as Stigler has pointed out, "entered economics from common discourse, and for long it connoted only the independent rivalry of two or more persons" (Stigler, 1957, p. 1). But any implication that its transition from an element of common discourse to a concept of economic analysis was a contribution of Adam Smith must be rejected. Neither the concept itself nor its analytical function was original with him. The idea that monopoly ("*monopolium*")

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¹ This is, of course, a not uncommon practice in economic literature. J. M. Clark, for example, in a chapter entitled "How Our Thinking about Competition Took Shape," also commences his historical survey of the subject with Adam Smith, whom he calls "a prophet of competition" (Clark, 1961, p. 24).

would result in high prices while competition in the form of many sellers ("*polypolium*") would drive prices down is found in the writings of the seventeenth-century German mercantilist, Johann Joachim Becher (Heckscher, 1962, p. 271). And Boisguillebert, according to Schumpeter, found in competition an "economic principle of order quite as clearly as did A. Smith more than half a century later. . . . His conception of competitive 'proportionate equilibrium' was as definite as A. Smith's" (Schumpeter, 1954, p. 216). Although Cantillon's was more explicitly a "bargaining" type of economic rivalry than was the concept of competition later employed by Smith, his discussion of market price foreshadowed Smith's treatment of the subject in several respects.

Suppose the Butchers on the one hand & the Buyers on the other. The price of meat will be determined after some altercation: & a pound of Beef will bear about the same ratio to a piece of money, that all the Beef offered for sale in the Market bears to all the money brought thither to buy Beef.

This proportion is settled by altercation; the Butcher holds out for a price according to the number of buyers he sees; the Buyers, on their part, offer less according as they believe that the Butcher will have less market: the price settled upon by some is ordinarily followed by the others. Some are more skillful in getting good prices for their merchandise, others more adroit in discrediting it. Though this method of fixing the prices of things in the Market has no just or geometrical basis, since it often depends upon the eagerness or the facility of a small number of Buyers or of Sellers; yet it does not seem possible to arrive at it in any other more suitable way. It remains true that the quantity of commodities or of merchandise offered for sale, compared with the demand or with the number of Buyers, is the basis upon which peo-

ple fix, or always think they fix, the prevailing market prices; & that in general these prices do not differ much from the intrinsic value [Monroe, 1948, pp. 261, 262].

A decade before the *Wealth of Nations* appeared, Turgot wrote:

The competition of rich entrepreneurs engaged in agriculture establishes the current price of leases in proportion to the fertility of the land and the price at which its produce sells, always according to the estimates which the farmers make of all their expenses and the profit they should make on their advances; they can pay the proprietor only the surplus.

But when the competition between them is very keen, they pay him all this surplus, the proprietor leasing his land only to the one who offers the highest rent [Monroe, 1948, p. 360].

Hume, in a letter to Turgot in 1766, foreshadowed not only Smith but also Jevons' law of indifference by noting that "the price of labour will always depend on the Quantity of Labour and the Quantity of Demand . . . there cannot be two prices for the same species of Labour . . . for the high price would tempt so many hands to go into that Species of Industry as must immediatly [*sic*] bring down the price" (Hume, 1955, pp. 208-9); and Turgot, in a reply, remarked that the wage rate (and presumably any other price) is "reduced by competition to its precise level." "In a country where trade and industry are free and active," he added, "competition sets . . . profit at the lowest rate possible" (Hume, 1955, pp. 210, 211).

Probably the most complete pre-Smithian analysis of competition was that of Sir James Steuart, who stressed that competition might exist among either buyers or sellers. When supply falls short of demand, he wrote, it "occasions a competition among the buyers, and raises the current, that is, the ordinary prices . . . [but] it is from the effects of competition among sellers that I apprehend prices are brought down" (Steuart, 1767, I, 174, 189). The ideal situation, according to Steuart, was that in which competition existed simultaneously among both buyers and sellers, which he termed "double competition."

Double competition is, when, in a certain degree, it takes place on both sides of the contract at once, or vibrates alternatively from one to the other. This is what restrains price to the adequate value of the merchandize. . . . *Double competition* is what is understood to take place in almost every operation of trade; it is this which prevents the excessive rise of prices; it is this which prevents their excessive fall. While *double competition* prevails, the balance is perfect, trade and industry flourish [Steuart, 1767, I, 196-97].

These examples suffice to show that by the time the *Wealth of Nations* appeared, competition was a familiar concept in economic writing and that its analytical function was its recognized tendency to bring market price to a level which would eliminate both excessive profits and unsatisfied demand, that is, to the lowest level sustainable over the long run. Adam Smith's employment of competition as the force tending to equate market and natural price was thus not original but was eminently in the tradition of the economic literature of his time. His contribution with respect to the concept of competition was the systematization of earlier thinking on the subject and, more importantly, the elevation of competition to the level of a general organizing principle of economic society—an achievement far greater, surely, than that of any of his predecessors.

Rather than considering Adam Smith as the progenitor of a concept whose refinement came at the hands of a group of successors, it is more accurate, as far as the history of competition is concerned, to think of Smith's work as marking the end of one era and the beginning of another. The pre-Smithian period saw the gradual emergence of a body of literature in which price determination through the principle of competition was coming to replace ethically and politically oriented price administration as the focus of economic analysis. The *Wealth of Nations* was in many ways the capstone of this work. After Smith's great achievement, the concept of competition became quite literally the *sine qua non* of economic

reasoning. Ricardo limited his analysis, as Smith himself had not done, to those situations in "which competition operates without restraint" (Ricardo, 1955, p. 6); and John Stuart Mill went on to assert, without dissent from the profession, that "only through the principle of competition has political economy any pretension to the character of a science" (Mill, 1864, I, 306). The function of competition in late-nineteenth-century economics came to be more than simply the assurance of allocative efficiency in resource use; it also gave to economics itself an analytical rigor without which, it was felt, its claims to the status of science would be seriously weakened. If "There is no longer competition among men and among employers," Jevons could declare, then a problem "has little or nothing to do with economics. It is not a question of science" (Jevons, 1882, pp. 153-55). Economists came to believe that, unless competition could be postulated, their discipline, as even Edgeworth admitted, "would be indeed a dismal science" (Edgeworth, 1881, p. 50). But the concept of competition upon which nineteenth-century economists came to rely so heavily was not the concept which had earlier been employed by Adam Smith. On the contrary, the process of analytical refinement that began with Cournot and continued through the work of Jevons, Edgeworth, and J. B. Clark, reaching its fullest expression in Frank Knight's *Risk, Uncertainty and Profit* (Stigler, 1957), involved a basic conceptual change.

One aspect of this change was that price came to be a parameter rather than a variable from the standpoint of the individual firm (Schumpeter, 1950, p. 78). As Stigler has pointed out, the mathematical economists came "to define competition as that situation in which P does not vary with Q —in which the demand curve facing the firm is horizontal" (Stigler, 1957, p. 5). This was a quite drastic change from the concept employed by Smith, for whom competition meant nothing but the necessity for the individual seller or buyer to raise or lower his price or offer in response to market con-

ditions. Smith's concept of competition was decidedly not one in which the firm was passive with respect to price but was, rather, one in which the market moved toward equilibrium through the active price responses of its various participants. When quantity supplied exceeded that demanded, he wrote, "some part must be sold to those who are willing to pay less . . . [and] the market price will sink more or less below the natural price, according as the greatness of the excess increases more or less the competition of the sellers, or according as it happens to be more or less important to them to get immediately rid of the commodity" (Smith, 1937, p. 57). Smith's concept of competition was competition "in the sense of rivalry in a race—a race to get limited supplies or a race to be rid of excess supplies" (Stigler, 1957, pp. 1-2). This is fundamentally different from the concept of perfect competition which, as Frank Knight has often stressed, implies "no presumption of psychological competition, emulation, or rivalry, and . . . [from which] 'bargaining' is also excluded" (Knight, 1946, p. 102). As far as the concept of competition is related to market structure, we should have to say that Smith, by suggesting that the individual seller could sell more by lowering price and less by raising it, presented a theory of *imperfect* competition. But, in fact, Smith's use of the term seems to have been largely independent of market structure. Of duopoly, he wrote: "If . . . capital [in the amount required to satisfy the demand for groceries] is divided between two different grocers, their competition will tend to make both of them sell cheaper" (Smith, 1937, p. 342). Although Smith specified that competition would be the more active, the greater was the number of competitors, the essence of competition in duopoly was evidently what it was in any other market structure, namely, the attempt to undersell one's rival in the market by lowering price.

The most fundamental difference between Smith and the mathematical economists who developed the concept of perfect competition does not, however, reside in

the degree of individual control exerted over price but, rather, in the way in which competition is conceived. Not only did Smith fail to see competition as a "situation in which P does not vary with Q —in which the demand curve facing the firm is horizontal" (Stigler, 1957, p. 5); he did not conceive of competition as a "situation" at all but, rather, as an active process leading to a certain predicted result. The Smithian concept of competition is essentially one of business behavior which might reasonably be associated with the verb "to compete." The essence of that behavior was the active effort to undersell one's rival in the market, although, to be sure, Smith was not unaware of the organizational and technological elements in competition, as when he wrote that lowered prices and increased demand "encourages production, and thereby, increases the competition of producers who, in order to undersell one another, have recourse to new divisions of labour and new improvements of art, which might never otherwise have been thought of" (Smith, 1937, p. 706).

The concept of competition originating with Cournot, on the other hand, is totally devoid of behavioral content. This is because Cournot's focus was entirely on the effects, rather than the actual workings, of competition:

Everyone has a vague idea of the effects of competition. Theory should have attempted to render this idea more precise; and yet, for lack of regarding the question from the proper point of view, and for want of recourse to symbols (of which the use in this connection becomes indispensable), economic writers have not in the least improved on popular notions in this respect. These notions have remained as ill-defined and ill-applied in their works, as in popular language [Cournot, 1929, p. 79].

Cournot's attempt "to render more precise" the idea of the effects of competition resulted in what was perhaps the first formal definition of perfect competition—a definition, as Stigler has said, which was "enormously more precise and elegant than Smith's" (Stigler, 1957, p. 5). What must be stressed, however, is that it was not a

definition of the *behavioral process* of competing but, rather, a definition of competition as a *state* in which that process had run its limits:

The effects of competition have reached their limit, when each of the partial productions D_k [the production of firm k] is *inappreciable*, not only with reference to the total production $D = F(p)$, but also with reference to the derivative $F'(p)$, so that the partial production D_k could be subtracted from D without any appreciable variation resulting in the price of the commodity [Cournot, 1929, p. 90].

For Smith, then, 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."

The reason for this . . . [is that the idea of perfect competition] assumes throughout that state of affairs already to exist which, according to the truer view of the older theory, the process of competition tends to bring about (or to approximate) and that, if the state of affairs assumed by the theory of perfect competition ever existed, it would not only deprive of their scope all the activities which the verb "to compete" describes but would make them virtually impossible [Hayek, 1948, pp. 92, 96].

Frank Knight has said of competition that the "use of this word is one of our worst misfortunes of terminology" and has suggested that as far as perfect competition is concerned, " 'atomistic' is a better word for the idea" (Knight, 1946, p. 102). Although "atomistic" is indeed a good substitute for "competitive," as the latter term is used in the tradition from Cournot to Edgeworth, Jevons, Clark, and Knight, it is not a very good expression of the idea of competition advanced by Smith and his

predecessors, for it fails to convey the sense of business rivalry and market activity which was the essence of the earlier meaning of the term.

Stigler has rightly pointed out that it was Knight's *Risk, Uncertainty and Profit* whose "meticulous discussion . . . did most to drive home to economists generally the austere nature of the *rigorously defined concept* [of competition]" (Stigler, 1957, p. 11; emphasis added). Yet Knight has himself noted the lack of definition of the concept. "The critical reader of general economic literature must be struck," he has said, "by

the *absence of any attempt accurately to define* that competition which is the principal subject under discussion" (Knight, 1935, p. 49; emphasis added). The resolution of this apparent contradiction must surely lie in the distinction between competition as a market structure and competition as behavioral activity. It is that distinction which must be made between the concept of perfect competition developed and refined by nineteenth- and twentieth-century theorists and the concept of competition earlier employed by Adam Smith and his predecessors.

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