



Is Market Price Determinate?

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IS MARKET PRICE DETERMINATE?

SUMMARY

The current doctrine stated, 394. — In fact, demand often does not respond to price in the way assumed, 396. — The penumbra of indeterminate prices, 397. — Cases of fixed seasonal supply, 398. — Supplies that can be carried over, 400. — The demand curve not always negatively inclined, 402. — Speculation does not necessarily stabilize prices, 403. — Commodities produced continuously, 403. — Stock exchange dealings, 405. — The traditional grounds for justifying speculation not applicable to stock exchange dealings, 407. — Application of the present reasoning to dumping, 409. — To war prices, 410. — Conclusion, 410.

THE present paper is meant to point out some modifications or corrections of the usual statement of the theory of demand and the interplay of supply and demand. I am by no means sure that the suggestions are novel; nor do they tend to alter the essentials of received economic theory. But they may indicate wherein current versions are not in accord with the course which prices take under some familiar conditions, and thereby they may contribute toward an end of much consequence for the advance of economic science — the ascertainment of the precise relation between the short-period “irregular” phenomena and those long-period “normal” movements which have received most attention from economists.

The foundation of the theory of demand, as usually stated, is the principle of diminishing utility (desirability, gratification, order of preference — whichever term one chooses). From this it follows that successive increments of supply, having diminishing utility, can be disposed of only at progressively falling prices. The theory of demand is simple. The quantity demanded

becomes larger — demand increases — as price is lowered. The demand curve is said to be *always* negatively inclined.

The conditions of supply, to go on with the current version, are more varied. The supply curve may be positively inclined (“diminishing returns”) or negatively inclined (“increasing returns”) or horizontal (“constant returns”). The equilibrium of demand and supply accordingly is reached under varying conditions. The case of equilibrium deemed typical, and that to which the present discussion may be confined, is reached under positive inclination of the supply curve (diminishing returns, increasing supply price). The illustration by diagram is familiar to all of us: the demand curve slopes down, the supply curve slopes up, and at their point of intersection there is equilibrium of supply and demand.

In this way the conditions of market fluctuations and market prices are supposed also to be indicated. As supply (quantity offered) increases, price falls; but as price falls, that very increase in quantity offered is checked. On the other hand, as price falls, the demand (in the accurate sense of quantity demanded) becomes larger. A lower price drives some sellers from the market, but attracts additional buyers. A new equilibrium is established — new, but under the same conditions of interacting supply and demand. Such is said to be the course of grain prices in an ordinary market; such the equilibrium of daily or weekly prices on any exchange or in any market. Lowered price ensues when a larger quantity is offered in a market; but that lowered price means also that a larger number of bids will be attracted and the fall in price checked.

It does not alter the essentials of this statement if we reject, as Mr. Wicksteed does, the notion of opposing

sellers and buyers, and regard them all as a single group of persons who are maneuvering in essentially the same way. The potential buyer who is likely to be brought into the market by a lower price is also, says Mr. Wicksteed, a potential seller likely to be brought in by a higher price. The whole process is perhaps best regarded not as an interaction of supply and demand, but as the single play of demand, and in the last analysis, of an expression of choices and estimates of choices.¹ It still remains true, and indeed becomes more evident, that a lowered price stimulates purchases. The less the price per unit, the larger the number of units that can be disposed of.

It is just at this point that phenomena appear which are not in accord with the generalizations of the economists. Often lower price does *not* lead to an increase in the quantity that can be disposed of in a market. Neither does it necessarily lessen the quantity that will be offered there. On the contrary it will repeatedly happen that as price falls, less is demanded, not more; and that not less is offered for sale, but actually more. A decline in price, so far from tending always to bring its own remedy through tempting people to buy more, sometimes intensifies itself through inducing people to sell still more. Thus, in a city during many a winter, a fall in the price of eggs may cause the country dealers and the cold storage people not to hold back their supplies, but to send them in hurriedly, for fear of a further fall; while city dealers, so far from buying more, will

¹ "What about the 'supply curve' that usually figures as a determinant of price co-ordinate with the demand curve? I say it boldly and baldly: there is no such thing. What usually figures as such is merely a disguised and therefore unrecognised portion of the 'demand curve.' Diagrams of intersecting curves (and corresponding tables) of demand prices and supply prices are therefore profoundly misleading. They concentrate the attention of the student upon distinctions which have no theoretical relevancy; they co-ordinate as two determinants what are really only two arbitrarily and irrelevantly separated portions of one." Report of British Association for Advancement of Science, 1913, p. 568.

hesitate to buy, having the same fear. The bottom will drop out of the market. On the Chicago Board of Trade the bears, when they sell wheat short and pound away at the price, count on the same course of events. The lower price will not tempt others to buy, but frighten them to sell. Your equilibrium will not necessarily work out at all. It is a toss-up whether a decline in price will check itself by leading to more purchases or will intensify itself by leading to less purchases.

It will be said at once that all this is possible only within limits. A decline in the price of eggs, if considerable, will cause a reaction; in the end buyers will be tempted by lower price. And this is perfectly true. The uncertainty about the working of demand and supply is found only within what may be called the *penumbra*: a phrase and a concept which I submit for consideration and will try to explain.

Consider first a situation in which there may be said to be no penumbra at all. Suppose a fixed supply, unalterable during the period under consideration, and sold on the market by competing sellers to consumers (not to middlemen) for what it will fetch. This is the case which Mill treats as illustrating *the* principle, or law, of supply and demand. There will then be, as he puts it, an "equation" of supply and demand. There is some one price at which the quantity demanded is equal to the (fixed) quantity supplied. At that price we have the equation. And the outcome is not at all uncertain. The process works out infallibly; the resulting price is not subject to manipulation or fluctuation, but is settled once for all.¹

It is not impossible to find cases which seem in fact to conform to these assumptions, or in which there is at least a sufficient approach to conformity. Some agri-

¹ See the well-known passage in Mill's Principles, Bk. III, chap. ii, §4.

cultural commodities are not only produced seasonally, but almost of necessity are also consumed season by season. Such are potatoes and apples. They can indeed be preserved through a year, and their consumption can be spread over a year; but not over a longer period. Even in these days of cold storage no supplies of either potatoes or apples are kept over; at the end of each season the dealers hold barely enough to connect current consumption with that of the ensuing season; each year's output is consumed during the year, no more or less. Doubtless the same is the case with most fruits and vegetables. Cold storage has wrought a modification for some articles which were formerly in the highly perishable class and were incapable of being carried over from season to season, such as fresh meat and eggs. Fish also — not indeed a seasonable article, but one for which the uncertainties of the catch bring about similar irregularities in the available supply — has been removed from the perishable class. A fare of fresh fish was formerly the most apt illustration of a supply fixed for the time being, which had to be sold at once and without reservation for whatever it would fetch. But cold storage has changed all this. How important is the possibility of lessening the immediate supply by postponing sale will be noted presently. For the moment let us confine attention to the cases in which there seems to be no such possibility — the season's supply of potatoes and apples. Here there would seem to be no indeterminate or fluctuating price, a simple equation of demand and supply, no penumbra at all.

In reality, however, as every one knows, fluctuations persist. An element of indeterminateness evidently remains. There *is* a penumbra within which market prices fluctuate. The general range of the price of potatoes or apples for the season will indeed be approximately de-

terminate; it must be high or low, according to the season's crop and the season's demand. But the general range itself may change considerably in the course of the season, and the prices from week to week and from month to month are likely to show frequent ups and downs. The obvious fact is that there are elements of uncertainty on both sides of the account. Even the supply be physically fixed, no one knows what is its precise amount. Crop reports may prove inaccurate, unexpected deficiencies or surpluses may be discovered. On the other hand, the effect of price on demand — what is the quantity that can be sold at a given price — is also a matter of some uncertainty. Beyond peradventure a small crop will mean a higher price, but just how much higher? Even the most abundant information on the supplies and the prices of past seasons will leave a doubt about the extent to which the consumers of this year will retrench or expand, will resort to substitutes or eschew them. All these elements of uncertainty, both on the side of supply and on that of demand, must be taken into account by the dealers and speculators. More or less there must be gambling on them. And the state of mind of the dealers themselves adds another element of uncertainty. Some are cool-headed, others excitable. Some are temperamental optimists, others pessimists. Some are shrewd and well-informed; but many go by vague newspaper statement, guesswork, current opinion and rumor. Possibly (I say possibly!) there would be less uncertainty if all sales were to "ultimate" consumers and if utility were to operate on price without intermediate traders and middlemen. The transactions on the market, however, are largely between these middlemen, and the influence of consumers' demand — of purchases checked or stimulated by changes in prices — operates indirectly, affect-

ing the calculations and bids of the buyers and sellers, but is by no means identical with them.

This does not mean that there are unlimited or quite unpredictable fluctuations. The underlying conditions of supply and demand are known for all the staples well enough to make possible a rough prognostication of the season's course of prices. It may be quite clear that potatoes will be higher than last year. But there will be a penumbra of uncertainty. Within this there will be ups and downs, many and perhaps wide fluctuations.

This will, of course, be the case even more with articles further removed from the perishable class. Wheat and cotton, for example, are seasonal products, and in so far may be regarded as fixed in supply for the time being. Indeed, Mill specifically refers to grain as "temporarily . . . unsusceptible of increase of supply; . . . the quantity of corn already existing in the world is all that can be had for sometimes a year to come." Some part of the supply, however, may be carried over from year to year, and the irregularities of seasonal years thus in some degree equalized. This seems to be done to a considerable extent for wheat, and also for cotton. The persons who thus hold over necessarily gamble on the following season's crop. They may profit handsomely, may lose heavily. An accentuation of the same trend through several seasons — a succession of poor crops or of good crops — puts a term to this particular form of speculation. But from year to year there is usually more or less of it; and to the extent that it operates, the season's output is not necessarily identical with the season's supply. Hence there is not so near an approach even to an approximate seasonal equation between demand and supply, between the fixed supply and quantity demanded; since the

supply for the season is itself somewhat flexible. And therefore short period oscillations, from week to week and from month to month, such as we find even when the season's crop is identical with the season's supply, are more certain to occur. There is a wider range for unexpected developments in the situation, for the calculations and guesses among dealers and speculators, optimism and pessimism, waves of sentiment and belief. There is a zone of uncertainty, a penumbra, of considerable extent.

Now it is with regard to the fluctuations within the penumbra, the familiar ups and downs of the market, that we need to be cautious in stating any theory of market price. The daily or weekly or monthly "equilibrium" of supply and demand is a very ticklish matter. To return to the egg market, mentioned at the outset by way of illustration: demand and supply and price are not necessarily connected, for short periods, in the way commonly assumed. Suppose a well-known dealer cuts the price and puts eggs on the market at a lower figure; others follow his lead; the price will fall further; the lower price will quite possibly stimulate still others, not to make purchases, as is usually assumed, but on the contrary to make sales — *until* the edge of the penumbra is approached. Then indeed there will be a reaction, or at least a check. Eggs will not go down indefinitely. But within the penumbra there is no certainty about the effect of lowered price on supply or demand or on the further course of prices. Conceivably the course of events may be just the opposite of that just described. The well-known dealer who cuts his price may be confronted by another dealer equally well-known, who snaps his offers up and bids for more at the same figure. Then still others will follow *his* lead, country dealers will hold back, not force their supplies on the market,

and eggs will go up until the other edge of the penumbra is approached. And so it is, I take it, in the wheat pit or at the cotton post. There is no telling what immediate response there will be to an offer of larger supply or to a decline in the day's or week's quotation. A heavy sale by a big operator and a lower price accepted by him may easily mean, not that more will be bought by others, but that buyers will be scared off and that price will fall still further. This is precisely what the big bear operator expects to bring about. Or the bear's maneuver may not succeed. Price may not fall further; it may rebound and rise.

To put the matter in more technical terms: the demand curve over "short periods" — which may be a matter of weeks or even months — is not necessarily inclined throughout in the same direction. It may be inclined positively.¹ And similarly the supply curve, indicating what quantities are offered for sale at different prices, does not necessarily have that constant positive inclination which is usually assumed. In the course of the higgling of the market this in its turn may have a negative inclination.

The combats of bulls and bears, familiar phenomena of the market, are incomprehensible under the orthodox theory of market price. They can be understood only if we admit that within the penumbra there is no determined or determinable market price. A good observer has said that the successful speculator is not necessarily a man of wide statistical information or of much experience in the trade. But he must be a shrewd judge of

¹ Marshall remarks (Principles, Bk. III, chap. iii, §5; p. 99 in 6th ed.) that there is "one general law of demand . . . the amount demanded increases with a fall in price, and diminishes with a rise in price." Or, as stated in a footnote with reference to the familiar diagram: "the one universal rule to which the demand curve conforms is that it is *negatively inclined* throughout the whole of its length." This proposition doubtless holds as regards "ultimate" demand or purchases by consumers; if not universally, at least with exceptions so few as to be negligible. That it by no means holds universally as regards "market" prices is my main contention in the present paper.

human nature. As regards the fluctuations within the penumbra, there is much truth in the statement. The market may react in all sorts of ways to changes in offers and bids and going prices. The outcome depends on men's hopes and fears and guesses and momentary states of mind. The nifty man may make money by coolly watching his more sensitive fellows and playing on their frailties.

Considerations of this sort, further, may go to explain why it is that commodities in which there is much speculation, so far from being very stable in price, often are not so. The discussion of speculation which is common in our textbooks leads one to expect stability of price in commodities dealt with on a large scale on the exchanges. The facts of the markets by no means uniformly confirm the expectation. The fluctuations in the prices of speculative commodities are great, they are immensely influenced by rumor, they exhibit no clear tendency to quasi-automatic adjustment or to a smoothing off in the fluctuations. This is explicable, it is commonly said, on the ground that many speculators are ill-informed, are not mercantile dealers, are merely the gambling outside public, are outwitted by the professionals. Very possibly; none the less the irregularities are there, and are not readily explained under the familiar formula of supply and demand. Market equilibrium seems to be as far from stability as from predictability.

Leaving now the comparatively simple cases — agricultural products which can most plausibly be treated as fixed in supply for the season — and turning to the less simple but more frequent one of continuous and flexible supply, we may use the same reasoning with even greater confidence. Copper and iron, for example, are continuously produced. Mill undertook to apply his

formula of an equation of demand and supply to commodities of this class, also remarking that at any given time the supply of any and every commodity was fixed. So much was on hand, no more and no less.¹ Now it is obvious that for these, as well as for the seasonal products, there is uncertainty about the precise quantity on hand. Moreover there is the same flexibility as regards the *rate* at which the existing supply will be fed onto the market. And there is the further circumstance that this flexibility of the amount available during the period in which the market is to be fed is of the more influence because the available stock can be increased rapidly by additions to current output. Whatever is on hand in marketable shape can be sold at once or can be sold at a more rapid rate, while the depleted stock can be re-enforced through hastened production. We have here a situation that comes nearer to that of the traditional formula. We have a supply that is flexible, and flexible in two ways: as regards the rate at which the commodity comes on the market and also as regards the quantity produced. It is not necessary for the purposes of the present discussion to consider what limits there may be to the extensibility of output — how far the supply even of these goods may after all be regarded as approximately fixed for the time being. Evidently they are not susceptible of unlimited increase. There remains some limitation even of the rate at which they

¹ It is due to Mill to point out that he did not overlook entirely the intricacies of the problem. The very inconsistencies of which he was guilty show that he perceived the problem to be not simple after all. In the section (§ 4) preceding that in which he speaks of agricultural commodities as fixed in supply, he refers to farmers and speculators as withdrawing part of the supply from the market — that is, considers demand and supply as “equalized” for short periods by a *change* in the supply. And in the next chapter he remarks that a decline in cost of production may reduce price, even tho supply be not actually enlarged; the mere probability of change in cost suffices. This is true, but is obviously inconsistent with the doctrine of the “equation.” The prompt effect of cheaper production on price ensues through the middlemen and through the rate at which these are led to put on the market the stock already on hand. Mill, like Adam Smith, had glimpses of many important and valid propositions which he touched but momentarily, never working them out in consistency with his main doctrines.

can be rushed on the market. What is here to be noted is that in the first instance it all works out through the same mechanism: the sales and purchases of dealers and middlemen, and their guesses and fancies and tremors. Very likely the middlemen for these "non-speculative" articles are a less susceptible set than the wheat and cotton speculators. The market organization is less perfected and less accessible, and the articles are not standardized to the same degree. Dealings are confined to a smaller knot of experienced brokers and merchants. On the other hand the influence of ultimate consumers and ultimate demand is at least as distant and uncertain. The utility of copper and aluminum, for example, is nowadays highly indirect. The remoteness of the utilities from telephones and power transmission is to be considered, as well as the obvious and immediate utility of pots and pans. The response of demand to new conditions of supply and price is very uncertain. The penumbra is wide. Within it there is much room for fluctuations of opinion and therefore of price, for the influence of an aggressive operator or a commanding firm, and so for indeterminate phenomena.

There is no part of the industrial field to which these general observations apply more forcibly than to stock exchange securities and their prices. To the market prices of these the ordinary reasoning about demand and supply seems to me little applicable. Consequently the ordinary grounds for justifying speculation or for finding results from it which are useful to society become questionable.

The play of demand and supply for the typical stock exchange security is, as we all know, peculiarly subject to manipulation. There are constant offerings and prices that are designed to affect later offerings and later

prices, and do not stand simply for a mere willingness to sell a given quantity now at a given price. Bears and bulls make their drives. It is a toss-up whether the dumping of large amounts of Steel or of Union Pacific at lower than current prices will lead the market to snap them up, or cause a scare and the sale of more of them at still lower prices. The course of prices depends on guesses as to the "technical" position of the market — is it undersold or oversold? — on guesses about the doings of the "insiders," on vague rumors, on epidemics of optimism or pessimism. No doubt, over a considerable period and underlying all the fluctuations, there is the governing influence of the earning powers of the properties. But this too is largely a matter of uncertainty and guess. The only securities for which one can perceive anything like the play of demand and supply as usually formulated are good bonds and the like, yielding a fixed rate of return with risk virtually eliminated. Here we can see offers and demands influenced by price in the orthodox way. But this is simply part of the market for interest on loans, closely connected with the general market for loanable funds. The quotations of most stock exchange securities are loosely connected with the interest market. They are subject to complex influences of their own, among which, whether for short-run or long-run prices, there is even less of the orthodox equilibrium of supply and demand than for speculative commodities like wheat and cotton.

It is obvious that the factor which after all does limit and in a sense govern the price fluctuations of wheat and cotton or of copper and iron, their utility or power to serve human wants, does not operate (unless in a far-fetched sense) on securities. Here there can be no question of ultimate consumers, of diminishing utility, of derived demand, of choices between different goods.

Limits there are, of course, within which the market prices of securities fluctuate. Irregular and indeterminate tho they may be, there is a penumbra within which the fluctuations are confined. The limits, however, are fixed in a different way and the penumbra is wide. These limits are found in such sober and unshakeable expectations as there may be concerning the earning powers of the properties. The most aggressive bear knows that there is a point below which he cannot offer Steel shares without their being snapped up. The range of fluctuation and possible manipulation will vary greatly, I take it, for different securities at different times. The penumbra is of very variable width. But the very limits are not something objective, in the sense in which the utility of cotton or copper is objective. They are estimates and expectations of profits. The long-run or "normal" prices of securities are enormously influenced by factors of essentially the same kind as the short-run or market prices of commodities — opinion and prevision. Tho the long-run prices of securities may not be subject in the same degree as the short-run to rumor and manipulation, they are still peculiarly subject to influence from conspicuous individuals or pervading currents of opinion.

It follows, as was intimated a moment ago, that the grounds on which stock exchange speculation is to be defended and perhaps justified cannot be the same as those adduced to show the social usefulness of speculation in commodities. For the latter, the ground of justification is in essence that speculation promotes maximum utility. By the operation of price advances or reductions the available supplies are so distributed as to be all consumed, no more, no less; consumed, moreover, by those whose offers, as anticipated and gaged by the successful speculators, indicate that they are the

persons to whom utility is greatest.¹ Speculation, it is argued, merely anticipates consumers' demands, and through the influence of price spreads these properly and satisfactorily. This doubtless is valid in the rough, or for the general trend of seasonal prices. I suspect it is difficult of proof for the fluctuations *within* the penumbra, precisely those with which speculation has most to do. Whatever the validity of the reasoning for speculation in commodities, it is not applicable to stock speculation. Here there is no play of utility or of varying gratifications, no adaptation to consumers' demands. True, it might possibly be argued that there is advantageous adjustment of another kind, between present and future; a distribution of gratifications over a period of time, through the operation of the interest rate. We need not stop to consider the subtle problem of analogy suggested by this sort of reasoning. It is applicable at best only to non-speculative securities and the money market. So far as concerns the immensely greater part of stock dealings, there is no room for the arguments about the adjustment of demand and supply or the promotion of maximum satisfaction.

The grounds of defense for stock speculation must be found, if at all, in another direction: that it is a useful part of the machinery of capitalism, promotes investment, advances the production of wealth. It is essentially the ground on which we may defend corporate organization itself, with its system of divided ownership and limited liability of shareholders. By the corporate

¹ This general statement is, of course, subject to the qualification arising from inequalities of income. That qualification should be borne in mind whenever we treat of the relation between utility and price. The present paper does not undertake to consider the far-reaching questions involved, or the extent to which maximum satisfaction is or is not reached by the play of demand under different sorts of social conditions. Assuming, as we may for the purpose in hand, that the existing distribution of wealth is just and the consequent play of consumers' demand conducive to a just distribution of satisfactions, we may identify vendibility with utility and accept the general proposition stated above.

organization of industry risk is divided and limited, investment is made easier and more tempting, accumulation of capital is encouraged, ventures in new fields are enormously promoted. Transferability of shares conduces to the same ends. A person is more likely to invest, especially in novel and hazardous enterprises, if he knows that in case of doubtful prospects or of change in his own circumstances, a sale can be made to another who is willing to step into his place. There is no need of dilating on the topic.¹ It raises questions of the sort that must be considered and if possible answered about the whole system of private property and capitalist control of industry. They are questions of pros and cons, of the balance of advantages and disadvantages, of the acceptance of unwelcome concomitants because the general results are the best within reach. Very disagreeable things happen on the stock exchange, but perhaps the institution is none the less worth while and may even be thought indispensable. What I wish here to emphasize is that the discussion must take a very different turn from that about commodity speculation. The bearing of the two classes of speculative dealings on social welfare, their justification or lack of justification, must be considered for each on grounds of its own.

To return now to the main thread of the reasoning. It bears upon a question which at first sight may seem remote — that of dumping sales. A search is often made for some out-of-the-way and perhaps obscure market, when there is difficulty in disposing of current output at going prices. According to the traditional reasoning, a producer need never have any real difficulty in disposing of the whole of his product or of having on his hands

¹ I venture to refer to what I have said in my *Principles of Economics*, chaps. 6 and 11.

what he calls a "surplus." He simply needs to lower his price; a large quantity will then be disposed of. In fact, however, a reduction in price is apt to lead, within the penumbra and for sales to the trade, not to larger sales but to smaller. For a period of time which seems to the business man a long one (and indeed is the only period which he usually takes into consideration), and for sales to the persons with whom he deals directly, the probabilities seem to him the reverse of those indicated by the economists. "The trade" will *not* buy more, may hold off for a considerable time and not buy at all, in expectation of a possible still greater reduction in price. Hence follows a search for some market where additional sales can be made without spoiling the customary market. Various devices are resorted to in order to reach this end. Goods are put out without the usual brand, or are sold surreptitiously to a few favored purchasers, with stipulations against resale or requirements concerning resale prices. Sales for export are also used for this purpose, especially if the exports are sporadic and do not form a large proportion of the total. Where indeed export business is carried on regularly, the export market becomes as sensitive as the domestic, and needs to be handled with the same caution. Export sales of the sporadic type, however, would seem to be among the phenomena here under consideration.

The reasoning has a bearing also on war prices, war speculation, price-fixing during war times. Under the abnormal conditions of war all prevision of the immediate future is obscured. In a host of transactions it is doubtful whether there can be said to be in any accurate sense an equilibrium of demand and supply. Least of all is an equilibrium to be found when the purchasers in the market are not dealers or other commercial persons, but government agents. No question can enter their

mind concerning ability to dispose of the goods to the consuming public. Their attitude is simply that they must have the goods, irrespective of price. If the price of the commodity they want goes up, they may become uneasy, panic struck, and in hot haste may buy *more*, for fear that the supply will not hold out. Something of this sort happened in the spring of 1917, when agents of the Allied governments bought wheat in Chicago at almost any price asked, determined to get their supply and fearful lest it should not be obtainable at a later date. For them, moreover, consumers' demand was quite immaterial. The governments which bought the breadstuffs were ready to resell to consumers at a loss, if general expediency so prompted them, and indeed did this on a large scale. Under such conditions the penumbra is wide and price is quite unpredictable.

No one supposes that economics is an accurate science, or that the neat arithmetic or diagrammatic illustrations, the mathematical equations and deductions, conform to the facts of the market. They stand only for tendencies; they are compact statements of the underlying trend. We are tempted by our instinct of ratiocination to state the tendencies with undue sharpness of definition. For purposes of exposition we are quite justified in doing so. It is incumbent on us, however, to go further, and to set forth as explicitly as we can in just what way the tendencies work out and how our statements of them need to be modified in view of the complexities and disturbances of actual life. It is chiefly as a contribution to this end that the present paper is offered.

F. W. TAUSSIG.