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ON PRICE-SETTING AND SEARCH
BEHAVIOR OF INDIVIDUAL SUPPLIERS:
A SUGGESTED APPROACH

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23

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On Price-Setting and Search Behavior of
Individual Suppliers: A Suggested Approach

by

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I. Since the explicit introduction of imperfect information into models of the explanation of price-formation by STIGLER [25], OZGA [23] and others (e.g. CLOWER [MILLS [19], R.R. NELSON [22]) at the beginning of the nineteen-sixties many approaches have been proposed to explain the wage-determination (ALCHIAN[1], HOLT[11], HOLT and DAVID [12], LUCAS and RAPPING [17], MORTENSEN [20], PHELPS [24], STIGLER [26], McCALL [18]) and to analyze the impact of the demand side on market prices (e.g. Ph. NELSON [21], KUHLMANN [14]) by considering costs of information. Yet an analysis of the problem of optimal information and of information costs at the side of suppliers is lacking.

If imperfect information is regarded and if thereby risk and uncertainty is introduced into a theory of the explanation of price formation it will be necessary to have a new look at the problem of market structure or market behavior¹⁾. Such an analysis based on the concept of imperfect information and the costs of searching for information will lead to a new basis for the explanation

of price formation processes under varying market conditions²⁾.

This note attempts to outline a probabilistic model of the price-setting behavior of suppliers in the case where by incurring information costs the degree of being informed about market conditions is increased and by this a preferable position is obtained. It is assumed that the quantity of goods supplied is fixed.

In the following sections II and III a simple model of the process of searching for the highest possible asking price of a supplier is proposed. In sections

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- 1) The first approach in this direction has been published by ALCHIAN and ALLEN [2, pp. 104 - 355]. It should be pointed out that in order to analyze the whole problem of market-equilibrium under conditions of imperfect knowledge "the information available to each decisionmaker" as well as "the possibilities they have for communicating with each other" must be specified (BORCH [5, p. 88]).
 - 2) If the possibility for changing market conditions by suppliers on the basis of the available information and the information costs are considered the existence of a price range for homogenous products cannot solely be based on statement like the following: "Es ist allgemein bekannt, daß Preise für homogene Güter auf nahezu allen Märkten zwischen einer oberen und einer unteren Grenze zu schwanken pflegen, da auf unvollkommenen Märkten, wie sie in der Realität gegeben sind, Präferenzen bestehen und weder vollkommene Markttransparenz noch unendliche Anpassungsgeschwindigkeit der Nachfrage herrschen, so daß kein eindeutiger Gleichgewichtspreis zustande kommt". (KUHLMANN [14, p.236])

IV and V the model is extended by considering the effects of actions of competitors on the realization of the maximum attainable asking price of an individual supplier. In section VI the role of inventories in the process of price-setting and information gathering is emphasized. Section VII summarizes some main conclusions of the analysis.

II. Assume for simplicity that a particular supplier wants to sell in period t a given quantity \bar{x} of good X already produced in period $t-1$. The decision which this supplier has to make is what asking price should he require, especially: should he change the price he charged in the preceding period $t-1$ where he also sold a quantity \bar{x} of X ? Assume further that the supplier behaves like a price searcher³⁾ and that he has some knowledge of some sort of demand area. The price he could charge depends on the distribution of the uncertain bidding prices the demanders are willing to pay and on the behavior of the competitors. Consider that the supplier knows the kind of density function of consumers' bidding prices.

The asking price of the supplier then is a random variable. Denote the density function of the expected possible consumers' bidding prices if no search activity is undertaken by $f(p)$, the mean value of

3) Compare for the characteristics of a price-searcher ALCHIAN and ALLEN [3, pp. 104-122 and 296-315]

this distribution by $E(p)$ and the corresponding variance by $V(p)$. The function $f(p_s|n)$ denotes the density function of asking prices, $p_s|n$, of the supplier which he obtains if n searches concerning the bidding prices of consumers are made by the supplier⁴⁾. This density function $f(p_s|n)$ is a function of n with $\partial E(p_s|n)/\partial n > 0$ and $\partial V(p_s|n)/\partial n < 0$, where $E(p_s|n)$ is the mean value of $f(p_s|n)$ and $V(p_s|n)$ the corresponding variance. It is assumed further that the supplier is a rational decision maker⁵⁾ who is risk-neutral. Since it is assumed that the decision about the output to be sold is already made the objective of the supplier is the maximization of his utility function only with respect to n , the number of searches for bidding prices of consumers in

4) There are in principle two ways of looking at search processes: On the one hand, a search problem consists of a number of searches for the uncertain items before any decision is made. In this case initially the number of searches is determined before the process of search begins. The searcher then has some idea about a prior probability of, for instance, finding the maximum attainable price. This kind of analysis of a search process as it is applied by STIGLER [25] is called a "prior theory of search" (Ph. NELSON [21, p.313]; for a somewhat similar approach compare LANZETTA and KANAREFF [15, p. 416]) In the present note mainly this prior theory of search is applied. The alternative approach, however, is to conceive the search process as a sequential process. In this case a sequence of decisions takes place where the experience from preceding searches and decisions is an important basis for deciding about further searching activity. In such a case we can speak of a "sequential theory of search". An application of sequential search processes to the analysis of consumer behavior is found in Ph. NELSON's paper [21]

5) "Rational decision maker" here is taken in the sense of HADLEY [3, pp. 108 - 119]

order to charge an optimal asking price.

Since we assume a risk-neutral rational supplier utility maximization is equivalent to profit maximization⁶⁾. Thus, the utility function of the supplier is given by

$$(1) \quad U(n) = (p_s | n) \bar{x} - ns$$

In equation (1) are: $p_s | n$ the asking price, n the number of price searches, s the cost per search and \bar{x} the quantity produced which the supplier wants to sell. $U(n)$ is a random variable because $p_s | n$ is a random variable. Therefore we have:

$$(2) \quad E[U(n)] = \bar{x} E(p_s | n) - ns$$

where $E[U(n)]$ is the expected utility or expected profit - if n searches are undertaken.

By assumption, the supplier is able to raise the expected maximum price by investing in information about bidding prices of consumers. Thus, the density function of his maximum prices with respect to the number of searches, $f(p_s | n)$, is given by:

$$(3a) \quad f(p_s | n) = n f(p) \left[\int_{-\infty}^p f(p) dp \right]^{n-1}$$

or

6) For a prove of this statement compare HADLEY [8, pp. 121 - 124]

$$(3b) \quad f(p_s | n) = n f(p) [F(p)]^{n-1}$$

where $F(p)$ is the cumulative density function of $f(p)$ ⁷⁾. The expected maximum price if n searches are made is given by

$$(4) \quad E(p_s | n) = n \int_{-\infty}^{+\infty} p f(p) \left[\int_{-\infty}^p f(p) dp \right]^{n-1} dp$$

Substituting the R.H.S. of eq. (4) for $E(p_s | n)$ in eq. (2) yields:

$$(5) \quad E[U(n)] = n \bar{x} \int_{-\infty}^{+\infty} p f(p) \left[\int_{-\infty}^p f(p) dp \right]^{n-1} dp - ns$$

III. In order to specify the distribution function of consumers' bidding prices assume that these prices are distributed uniformly between a lowest price, a , and a highest price, b .

7) Compare for an analogous distribution function of minimum prices faced by consumers: STIGLER [25 pp. 214 passim]. The derivation of eq. (3a) runs as follows: In his searching for consumers' bidding prices the supplier is interested in the attainable maximum price. The assumption we make about the effect of information thereby is "that information has value to the extent that it increases the probability of choosing the alternative which yields the most favorable outcome" [15, p.460]. Thus, if the distribution of bidding prices $f(p)$ is given, the probability that an observed price, p , is greater than, or equal to the maximum price, p_s , is given by $\int_{-\infty}^p f(p) dp = F(p)$. If there are n observations and if we assume that the observed prices are independent the probability that the maximum of n observations is smaller than or equal to p is given by $[F(p)]^n$. The density function of maximum prices which belongs to the cumulative density function $[F(p)]^n$ is obtained by differentiation of $[F(p)]^n$ with respect to p which yields: $n [F(p)]^{n-1} f(p)$. See for a formal proof: HOGG and CRAIG [10, pp. 170-172].

Eq. (5) then becomes:

$$(6a) \quad E[U(n)] = n \bar{x} \int_a^b p \frac{1}{b-a} \left[\int_a^p \frac{1}{b-a} dp \right]^{n-1} dp - ns$$

or

$$(6b) \quad E[U(n)] = n \frac{\bar{x}}{(b-a)^{n-1}} \int_a^b p(p-a)^{n-1} dp - ns$$

Solving the integral in eq. (6b) yields:

$$(7) \quad E[U(n)] = \frac{a + bn}{n + 1} \bar{x} - ns$$

In order to obtain the number of searches, n^* , for which the expected utility is at a maximum, we have to calculate n^* from $\partial E[U(n)] / \partial n = 0$. This yields:

$$(8) \quad \frac{\partial E[U(n)]}{\partial n} = \frac{(b-a)\bar{x}}{(n^* + 1)^2} - s = 0$$

Solving for n^* gives:

$$(9) \quad n^* = \sqrt{\frac{\bar{x}}{s} (b-a)} - 1$$

From eq. (9) it is easily inferred that the higher the cost of information and the smaller the anticipated range of possible bidding prices of consumers the smaller is the number of searches.

Thus, the higher the cost of information the lower will be the expected maximum asking price of a supplier. This is an expected result.

IV. Up to now, it has been assumed that only the bidding prices of consumers are relevant for the price-setting decision of the supplier in question. Thus, the interdependence of the various sellers who offer to sell their goods at the market has up to now been disregarded⁸⁾. The distinguishing feature as against the model outlined in Section II is the introduction of the selling prices of competitors, as anticipated by the supplier in question, as determinants of his attainable asking price. If competition between various sellers is regarded the expected attainable asking price, p_s^* , can no longer be considered to be alone the expected value, $E(p_s|n)$, of the distribution of maximum prices in n searches about consumers' bidding prices. Now, the attainable price, and consequently also the expected profit, is a function both of the uncertain bidding prices of consumers and of the uncertain selling

8) It should be noted that in the context of a prior theory of search the consideration of what is called "oligopolistic indeterminacy" or "oligopolistic interdependence" is not relevant. In such a prior theory of search no learning process with regard to differences in anticipated and observed competitors' selling prices is regarded. Such aspects are to be analyzed in a sequential theory of search.

prices of competitors anticipated by the supplier in question.

The utility or profit function is again given by eq. (1) as it is in the case of assuming only consumers' bidding prices as determinants of the seller's asking price. But now the maximum attainable asking price, p_s^* , is also a function of competitors' anticipated selling prices. Assume that the supplier knows the distribution of the selling prices in the past periods. He then particularly knows the distribution of competitors' prices in period (t-1). From these prices he anticipates⁹⁾ the distribution of his competitors' selling prices at the end of the current period, denoted by $g(p_c^a)$, where the selling price of the j-th competitors, p_{cj}^a , is a random variable. The mean value and the corresponding variance of this distribution are denoted by $E(p_c^a)$ and $V(p_c^a)$, respectively.

Thus, by assumption, the existence of competitors and their price-setting policies impose restrictions on the realization of the potential maximum price, $E(p_s | \Delta)$, the supplier expects to charge from the consumers, if

9) This assumption implies that the cost of searching for past competitors' prices is negligibly small. This is deduced from the existence of various means by which suppliers can inform themselves about competitors' prices without high information costs like price-list, etc.

he invests in information. One possible way to express this constraint is to weight the price $E(p_s | n)$ by the probability of its realization. Let us denote this probability by β_s ¹⁰⁾.

This probability of realization of $E(p_s | n)$ depends, at the one hand, on the difference between the average level of competitors' anticipated selling prices, and, at the other hand, on the variability of these prices. The level of competitors' prices, characterized by $E(p_c^a)$, is assumed to have an effect on the realization of $E(p_s | n)$ only, if $E(p_c^a)$ is smaller than $E(p_s | n)$.

The probability of realizing $E(p_s | n)$ will be the greater the smaller is the difference between the level of competitors' prices and the maximum price chargeable from consumers. But not only this difference $E(p_s | n) - E(p_c^a)$ is of influence on the expected realization of $E(p_s | n)$. The variability of competitors' prices plays an essential role in determining β_s . The greater the variability of competitors' prices the smaller is the likelihood that the majority of the consumers meet those suppliers with the lowest selling prices. But the smaller the variability, provided the level of competitors' prices is lower than $E(p_s | n)$, the greater will be the likelihood that the majority of consumers will buy at

10) Another way to express the impact of competitors' prices is to treat β_s as the probability of realizing the sales revenue $E(p_s | n)X$. The conclusions then are the same as before.

the lower $E(p_C^a)$.

We can conclude our assumption as follows: The probability β_S to realize the maximum price attainable from consumers, $E(p_S|n)$, is a function

$$(10) \quad \beta_S = \begin{cases} h[E(p_S|n), E(p_C^a), V(p_C^a)], & \text{if } E(p_S|n) - E(p_C^a) \\ 1, & \text{elsewhere} \end{cases}$$

with $\partial\beta_S/\partial E(p_C^a) > 0$ and $\partial\beta_S/\partial V(p_C^a) > 0$.

V. One possible function by which β_S can be specified is the exponential function

$$(11) \quad \beta_S = \begin{cases} 1 - \text{EXP}\left[-V(p_C^a)/\{E(p_S|n) - E(p_C^a)\}\right] \\ \quad \text{if } E(p_S|n) - E(p_C^a) > 0 \\ 1, & \text{elsewhere} \end{cases}$$

where $\text{EXP}(-z)$ stands for e^{-z} .

By the specification of eq. (11) the expected utility or the expected profit of the supplier is given by

$$(12) \quad E[U(n)] = \begin{cases} \bar{x} E(p_S|n)\beta_S - ns; & \text{if } E(p_S|n) - E(p_C^a) > 0 \\ \bar{x} E(p_S|n) - ns, & \text{elsewhere} \end{cases}$$

or

$$(12a) \quad E[U(n)] = \begin{cases} \bar{x} \left[1 - \text{EXP}\left(-V(p_C^a)/\{E(p_S|n) - E(p_C^a)\}\right) \right] E(p_S|n) - ns \\ \quad \text{if } E(p_S|n) - E(p_C^a) > 0 \\ \bar{x} E(p_S|n) - ns, & \text{elsewhere} \end{cases}$$

If we again assume a rectangular distribution of consumers' bidding prices between a and b the expected utility or profit is

$$(14) \quad E[U(n)] = \begin{cases} \bar{x} \frac{a+bn}{n+1} \left[1 - \text{EXP}\left(-V(p_C^a) / \left(\frac{a+bn}{n+1} - E(p_C^a)\right)\right) \right] - ns & \text{if } E(p_C^a) - E(p_C^a) > 0 \\ \bar{x} \frac{a+bn}{n+1} - ns, & \text{elsewhere} \end{cases}$$

The first order condition for maximizing eq.(14) is given by:

$$(15) \quad \frac{\partial E U(n)}{\partial n} = \bar{x} (b-a) \left\{ \frac{V(a+bn)}{a+bn-(n+1)E_a} \text{EXP}(-Z) + \frac{1}{n+1} [1 - \text{EXP}(-Z)] \right\} - s(n+1) = 0$$

where: $V = V(p_C^a)$; $E_a = E(p_C^a)$; $Z = \frac{(n+1)V}{a+bn-(n+1)E_a}$

If the first order condition (15) is solved (which seems to be technically very difficult) for n we obtain a function similar to eq. (9) which determines the optimal n^* .

If we look at the effect of $V(p_C^a)$ on n^* we find that as $V(p_C^a)$ approaches infinity, n^* approaches that value given by eq. (9); whereas as $V(p_C^a)$

approaches zero, n^* approaches -1 ; that is, no search activity should be undertaken. Similar considerations can be made concerning the effect of $E(p_c^a)$ on n^* .

VI. In the preceding section it has been shown how the optimal length of the search process for the asking price of a supplier depends on several determinants. Especially, the assumed range between a maximum and a minimum price and the search cost per search are of importance. It could also be seen into what direction the optimal number of searches will change if anticipations of the supplier in question concerning the prices of his competitors and the whole price-structure are taken into consideration.

By considering the effect of competitors' prices on the probability of realizing the maximum price attainable from consumers only the expected maximum asking price of the supplier is given by

$$(15) \quad p_s^* = \beta_s E(p_c | n)$$

This price p_s^* is that asking price at which the supplier expects to sell all his \bar{x} . If, however, in the current period t he cannot sell all his \bar{x} , his inventories in x will increase. If we assume that the supplier aims at a "desired" level of inventories¹¹⁾, a change in

11) For a distinction between "desired" and "actual" inventories see COURCHENE [7, p. 317]. Compare also: LIU [16, pp. 311-317].

inventories only changes his actual inventories. If the "desired" inventories, i.e. the demand of the supplier for inventories, are determined by the demand conditions as conjectured by the supplier in such a way that if the demand is supposed to rise for a longer period then the desired inventories are raised, continuously diminishing inventories (caused by the fact that at the price set more than the actual \bar{x} is sold in every period) are taken as an indicator of persisting changes in demand. In this case where further increases in demand are expected the desired inventories will increase.

On the other hand an increasing or a decreasing difference between desired and actual inventories are taken as an indicator of not finding the optimal asking price.

VII. The previous reflections lead to the following main conclusions: The asking price of a supplier will be the higher, the more searches for the bidding prices of consumers he realizes. If resources for information gathering are limited it follows that the higher the costs of information, or the higher the cost per search, the lower will be the expected optimal asking price. The asking price set by a supplier will be the lower the lower is the level of competitors' prices and the smaller the variance of these prices around the mean value of the distribution.

If we consider that at the time the supplier is planning what asking price to set for the following period he knows his asking price of the preceding period, his de-

cision problem can be described as follows: The question the supplier has to answer is whether to maintain the price of the previous period or to change his price, preferably to raise the price.

The question whether the asking price is changed and if so into what direction can be answered, with respect to information costs, in the following way:

If we assume - as has been done in the preceding sections - that the costs of information in searching for consumers' bidding prices are relatively much higher than the costs of information about competitors' prices, then the asking price of an individual seller will be altered the less frequently the higher are the costs of information for consumers' bidding prices. The higher are the costs of information the more stable will be the asking prices if transient, temporary fluctuations in demand occur. This will be the case even if no inventories are held¹²⁾,

If the anticipations about competitors' prices of all suppliers change in such a way that a rise in prices is expected all asking prices of competitors will increase at the same time without conspiracy or something like that. In the long run, if a persisting change in demand occurs and if no change in information costs is to be expected the asking prices of suppliers will change but not at the same time and in the same direction.

12) For a similar statement in the case where inventories held are understood as means of economizing on information costs, compare: ALCHIAN and ALLEN[2, p.155]

REFERENCES

- [1] A.A.ALCHIAN, Information Costs, Pricing, and Resource Unemployment, in: The Western Economic Journal, Vol.7 (1969), pp. 109-128
- [2] A.A.ALCHIAN and W.R.ALLEN, Exchange and Production. Theory in Use, Belmont (Cal.) 1969
- [3] A.A.ALCHIAN and W.R.ALLEN, University Economics, 2nd. ed., Belmont (Cal.) 1968
- [4] J.S.BAIN, A Note on Pricing in Monopoly and Oligopoly, in: The American Economic Review, Vol.39 (1949), pp.448-
- [5] K.H.BORCH, The Economics of Uncertainty, Princeton 1968
- [6] R.W. CLOWER, Some Theory of an Ignorant Monopelist, in: The Economic Journal, Vol. 69 (1959), pp. 705-716
- [7] Th.J.COURCHENE, An Analysis of the Price-Inventory Nexus with Empirical Application to the Canadian Manufacturing Sector, in: The International Economic Review, Vol. 10 (1969), pp. 315-336
- [8] G.HADLEY, Introduction to Probability and Statistical Decision Theory, San Francisco - Cambridge - London - Amsterdam 1967
- [9] J.M.HENDERSON and R.E. QUANDT, Microeconomic Theory. A Mathematical Approach, New York - Toronto - London - Tokyo 1958
- [10] R.V.HOGG and A.T.CRAIG, Introduction to Mathematical Statistics, 2nd.ed, New York 1965
- [11] C.C.HOLT, Job Search, Phillips' Wage Relation, and Union Influence: Theory and Evidence, in: E.S.Phelps et al. Microeconomic Foundations of Employment and Inflation Theory, New York 1970
- [12] C.C.HOLT and M. DAVID, The Concept of Job Vacancies in a Dynamic Theory of the Labor Market, in: R.Ferber (ed.), The Measurement and Interpretation of Job Vacancies, New York 1966
- [13] B.O.KOOPMAN, The Theory of Search, III. The Optimum Distribution of Searching Effort, in: Operations Research, Vol. 5 (1957), pp. 613-626
- [14] E.KUHLMANN, Ökonomische Aspekte der Theorie der Konsumenteninformation, in: Jahrbücher für Nationalökonomie und Statistik, Bd. 184 (1970) pp. 226-247

- [15] J.T. LANZETTA and V.T. KANAREFF, Information Cost, Amount of Payoff, and Level of Aspiration as Determinants of Information Seeking in Decision Making, in: Behavioral Science, Vol.7 (1962), pp.459-473
- [16] T.C. LIU, An Exploratory Quarterly Econometric Model of Effective Demand in the Post-war U.S. Economy, in: Econometrica, Vol. 31 (1963), pp. 301-348
- [17] R.E.LUCAS and L.A.RAPPING, Real Wages, Employment, and Inflation, in: The Journal of Political Economy, Vol. 77 (1969), pp. 721-754
- [18] J.J.McCALL, Economics of Information and Job Search, in: The Quarterly Journal of Economics, Vol. 84 (1970), pp. 113-126
- [19] E.S.MILLS, Uncertainty and Price Theory, in: The Quarterly Journal of Economics, Vol. 73 (1959), pp.116 - 130
- [20] D.T.MORTENSEN, A Theory of Wage and Employment Dynamics, in: E.S. Phelps et al., Microeconomic Foundations of Employment and Inflation Theory, New York 1970, pp. 167-211
- [21] Ph.NELSON, Information and Consumer Behavior, in: The Journal of Political Economy, Vol. 78 (1970), pp.311 -329
- [22] R.R.NELSON, Uncertainty, Prediction, and Competitive Equilibrium, in: The Quarterly Journal of Economics, Vol. 75 (1961), pp. 41-62
- [23] S.A.OZGA, Imperfect Markets Through Lack of Knowledge, in: The Quarterly Journal of Economics, Vol. 74 (1960), pp. 29 - 52
- [24] E. PHELPS, Money Wage Dynamics and Labor Market Equilibrium, in: The Journal of Political Economy, Vol. 76 (1968), pp. 687-711
- [25] G.J.STIGLER, The Economics of Information, in: The Journal of Political Economy, Vol. 69 (1961), pp. 213-225
- [26] G.J.STIGLER, Information in the Labor Market, in: The Journal of Political Economy, Vol. 70 (1962), Supplement, Oct. 1962, pp. 94 - 105