

Postponement, Speculation and the Structure of Distribution Channels

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➤ While the study of marketing has long been concerned with the creation of time, space, and possession utilities, much of the literature of the field has dealt with the problems of ownership. Issues involving space and time, in particular, have been scarcely touched. The role of time with respect to the character of the structure of distribution channels, for example, has just begun to be charted. The purpose of this article is to derive a principle describing the effect of temporal factors upon distribution systems.

THE CONCEPT OF SUBSTITUTABILITY

Underlying the logic of the principle to be developed is the hypothesis that economic interaction among basic marketing functions, and between these functions and production, provides much of the force that shapes the structure of the distribution channel. These interactions occur because of the capability of the various functions to be used as substitutes for each other within certain broad limitations. This capability is comparable to the opportunities available to the entrepreneur to use varying ratios of land, labor, and capital in the production of his firm's output. The substitutability of marketing functions may occur both within the firm and among the various institutions of the channel, *e.g.*, producers, middlemen, and consumers. This substitutability permits the work load of one function to be shrunk and shifted to another without affecting the output of the channel. These functional relationships may also be seen to be at the root of the "total cost" concept employed in the growing literature of the management of the physical distribution system [3, 9].

A familiar example of one type of substitution that may appear in the channel is the use of inventories to reduce the costs of production stemming from cyclical demand. Without the inventory, production could only occur during the time of consumption. Use of the inventory permits production to be spread over a longer period of time. If some institution of the channel senses that the costs of creating a seasonal inventory would be less than the savings accruing from a constant rate of production, it would seek to create such a stock

and to retain the resulting profits. The consequence of this action is the formation of a new and alternate channel for the product.

The momentum of change, however, is not halted at this point. Unless there is protection against the full brunt of competitive forces, the institutions remaining in the original, and now high-cost channel, will either be driven out of business or forced to convert to the new system as well. With continued competitive pressure the excess profits, initially earned by the institutions which innovated the new channel, will eventually be eliminated and total channel costs will fall.

In essence, the concept of substitutability states that under competitive conditions institutions of the channel will interchange the work load among functions, not to minimize the cost of some individual function, but the total costs of the channel. It provides, thereby, a basis for the study of distribution channels. By understanding the various types of interactions among the marketing functions and production that could occur, one may determine the type of distribution structure that should appear to minimize the total channel costs including those of the consumer. The principle of postponement-speculation, to be developed below, evaluates the conditions under which one type of substitution may occur.

POSTPONEMENT

In 1950, Wroe Alderson proposed a concept which uniquely related certain aspects of uncertainty and risk to time. He labelled this concept the "principle of postponement," and argued that it could be used to reduce various marketing costs [2]. Risk and uncertainty costs were tied to the differentiation of goods. Differentiation could occur in the product itself and/or the geographical dispersion of inventories. Alderson held that "the most general method which can be applied in promoting the efficiency of a marketing

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system is the postponement of differentiation . . . postpone changes in form and identity to the latest possible point in the marketing flow; postpone change in inventory location to the latest possible point in time." [1] Savings in costs related to uncertainty would be achieved "by moving the differentiation nearer to the time of purchase," where demand, presumably, would be more predictable. Savings in the physical movement of the goods could be achieved by sorting products in "large lots," and "in relatively undifferentiated states."

Despite its potential importance, the principle has received relatively little attention since it was first published. Reavis Cox and Charles Goodman [4] have made some use of the concept in their study of channels for house building materials. The Vaile, Grether, and Cox marketing text [10] also makes mention of it. As far as can be determined, this is the totality of its further development.

As a result, the principle still constitutes only a somewhat loose, and possibly misleading, guide to the study of the distribution channel structure. The major defect is a failure to specify the character of the limits which prevent it from being applied. The principle, which states that changes in form and inventory location are to be delayed to the latest possible moment, must also explain why in many channels these changes appear at the earliest. As it stands, the principle of postponement requires modification if it is to be applied effectively to the study of channels.

Postponement and the Shifting of Risk

If one views postponement from the point of view of the distribution channel as a whole, it may be seen as a device for individual institutions to shift the risk of owning goods to another. The manufacturer who postpones by refusing to produce except to order is shifting the risk forward to the buyer. The middleman postpones by either refusing to buy except from a seller who provides next day delivery (backward postponement), or by purchasing only when he has made a sale (forward postponement). The consumer postpones by buying from those retail facilities which permit him to take immediate possession directly from the store shelf. Further, where the consumer first contacts a number of stores before buying, the shopping process itself may be seen as a process of postponement—a process which advertising seeks to eliminate.

From this perspective it becomes obvious that every institution in the channel, including the consumer, cannot postpone to the latest possible moment. The channel, in its totality, cannot avoid ownership responsibilities. Some institution, or group of institutions, must continually bear this uncertainty from the time the goods start through production until they are consumed.

Since most manufacturers do produce for stock, and the ownership of intermediate inventories by middlemen is characteristic of a large proportion of channels, it is clear that the principle of postponement can reach its limit very quickly. As a result, it provides no rationale for the forces which create these inventories. Hence, postponement is really only half a principle. It must have a converse, a converse equally significant to channel structure.

SPECULATION

This converse may be labelled the principle of speculation. It represents a shift of risk to the institution, rather than away from it. The principle of speculation holds that changes in form, and the movement of goods to forward inventories, should be made at the earliest possible time in the marketing flow in order to reduce the costs of the marketing system.

As in the case of postponement, application of the principle of speculation can lead to the reduction of various types of costs. By changing form at the earliest point, one makes possible the use of plants with large-scale economies. Speculation permits goods to be ordered in large quantities rather than in small frequent orders. This reduces the costs of sorting and transportation. Speculation limits the loss of consumer good will due to stock outs. Finally, it permits the reduction of uncertainty in a variety of ways.

This last point has already been well developed in the literature. It received early and effective treatment from Frank H. Knight [6]. He held that speculators, by shifting uncertainty to themselves, used the principle of grouping, as insurance, to transform it into the more manageable form of a relatively predictable risk. Further, through better knowledge of the risks to be handled, and more informed opinion as to the course of future events, risk could be further reduced.

THE COMBINED PRINCIPLE

From the point of view of the distribution channel, the creation of inventories for holding goods before they are sold is the physical activity which shifts risk and uncertainty. Such inventories serve to move risk away from those institutions which supply, or are supplied by, the inventory. Such inventories, however, will not be created in the channel if the increased costs attending their operation outweigh potential savings in risk. Risk costs, according to the substitutability hypothesis, cannot be minimized if other costs increase beyond the savings in risk.

This discussion shows the principle of speculation to be the limit to the principle of postponement, and vice versa. Together they form a basis for determining whether speculative inventories, those that hold goods prior to their sale, will appear in distribution channels subject to competitive conditions. Operationally, postponement may be measured by the notion of delivery

time. Delivery time is the number of days (or hours) elapsing between the placing of an order and the physical receipt of the goods by the buyer [9, p. 93]. For the seller, postponement increases, and costs decline, as delivery time lengthens. For the buyer, postponement increases, and costs decline, as delivery time shortens. The combined principle of postponement-speculation may be stated as follows: A speculative inventory will appear at each point in a distribution channel whenever its costs are less than the net savings to both buyer and seller from postponement.

OPERATION OF THE PRINCIPLE

The following hypothetical example illustrates how the postponement-speculation principle can be applied to the study of distribution channels. The specific problem to be considered is whether an inventory, located between the manufacturer and the consumer, will appear in the channel. This inventory may be managed by the manufacturer, a consumer cooperative or an independent middleman.

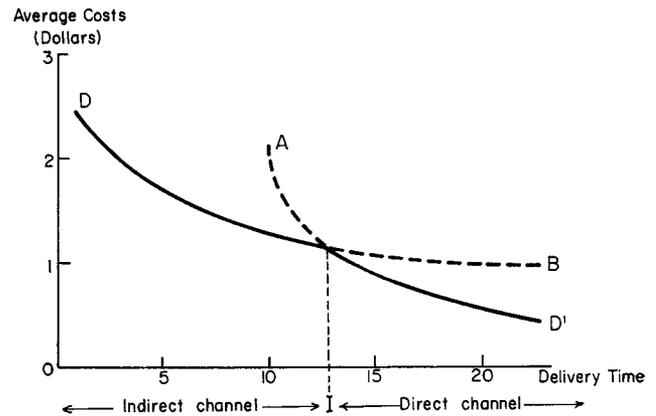
Assume that trade for some commodity occurs between a set of manufacturers and a set of customers, both sets being large enough to insure active price competition. The manufacturers are located close to each other in a city some significant distance from the community in which the customers are situated. All of the customers buy in quantities sufficiently large to eliminate the possibility of savings from sorting. Manufacturing and consumption are not affected by seasonal variations. Assume, further, that production costs will not be affected by the presence of such an intermediate inventory.

To determine whether the intermediate inventory will appear, one must first ascertain the shape of the various relevant cost functions with respect to time. In any empirical evaluation of channel structure this is likely to be the most difficult part of the task. For present purposes, however, it will be sufficient to generalize about their character.

The costs incurred by the relevant functions are divided into two broad categories. The first includes those costs originating from activities associated with the potential inventory, such as handling, storage, interest, uncertainty, and costs of selling and buying if the inventory is operated by a middleman. It also includes those costs emanating from transportation, whether the transportation is direct from producer to consumer or routed through the inventory. All of these costs will, in turn, be affected by the particular location of the inventory between the producer and the consumer. In the present instance, it is assumed that the inventory will be located in the consumer city.

In general, this first category includes all the relevant costs incurred by the producer and intermediary, if any. These are aggregated on Diagram 1. In this diagram, the ordinate represents the average cost for

Diagram 1
AVERAGE COST OF DISTRIBUTING ONE UNIT OF A COMMODITY TO A CUSTOMER WITH RESPECT TO DELIVERY TIME IN DAYS



moving one unit of the commodity from the producer to the consumer. The abscissa measures the time in days for delivery of an order to the consumer after it has been placed. The curve DB measures the cost of using the speculative inventory to supply the consumer for the various possible delivery times. Curve AD' shows the cost of supplying the consumer direct without use of such an inventory. DD' is the minimum average cost achievable by either direct or indirect distribution of the commodity.

The diagram shows that DD' declines as the delivery time is allowed to increase [7]. With very short delivery times the intermediate inventory is absolutely necessary because only in this way can goods be rushed quickly to the consumer. Further, when virtually immediate delivery is required, the safety stock of the inventory must be kept high in order to prevent temporary stock-outs from delaying shipment. Also, delivery trucks must always be available for short notice. These factors create high costs.

As the delivery time to be allowed increases, it becomes possible to reduce the safety stocks, increase the turnover and reduce the size of the facilities and interest cost. Further increases permit continued savings. Eventually, a point will be reached, I in Diagram 1, where the delivery time will be sufficiently long to make it cheaper to ship goods directly from the factory to the consumer than to move them indirectly through the inventory. This creates the discontinuity at I as the costs of maintaining the inventory and the handling of goods are eliminated.

In part, the steepness of the slope of DD' will be affected by the uncertainties of holding the inventory. Where prices fluctuate rapidly, or goods are subject to obsolescence, these costs will be high. The extension of delivery time, in permitting the intermediate inventory to be reduced in size, and eventually eliminated, should bring significant relief.

The second category of costs involves those emanating from the relevant marketing functions performed by the customer. Essentially, these costs will be those of bearing the risk and costs of operating any inventory on the customer's premises. These costs are shown as C on Diagram 2, with the ordinate and abscissa labelled as in Diagram 1.

The shape of C is one that increases with delivery time. The longer the delivery time allowed by the customer, the greater the safety stock he will have to carry. Such stock is necessary to protect against failures in transport and unpredictable surges in requirements. Hence, his costs will increase. The greater the uncertainty cost of inventory holding, the steeper will the slope of this function be.

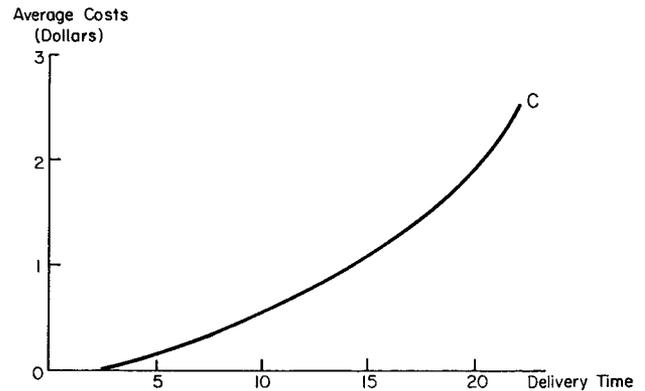
Determination of the character of the distribution channel is made from the joint consideration of these two cost categories, C and DD'. Whether an intermediate inventory will appear in the channel depends upon the relationship of the costs for operating the two sets of functions and how their sum may be minimized. Functions $DD' + C$ on Diagram 3 represents the sum of functions DD' and C. The diagram reveals, in this instance, that costs of postponement are minimized by use of a speculative inventory as the minimal cost point, M, falls to the left of I. If, however, the risk costs to the customer had been less, or the general cost of holding inventories at the customer's home (or plant site, as the case may be) had been lower, then C would be farther to the right. M would also shift to the right. With a sufficient reduction in consumer cost, M would appear to the right of the discontinuity, indicating that direct shipment in the channel would be the means to minimize postponement cost.

SIGNIFICANCE OF THE PRINCIPLE

As developed, the principle of postponement-speculation provides a basis for expecting inventories to be present in channels because of production and distribution time requirements. In particular, it treats the role of speculative inventories in the channel. The concept, as a consequence, extends beyond the physical flow of the goods themselves to the flow of their title. Speculative inventories create the opportunity for new institutions to hold title in the channel. Without such inventories, there may be little economic justification for a title holding intermediary to enter the channel. The economic need to have such an inventory in the physical flow opens the door to a middleman to show whether he is capable of reducing the risk cost of that inventory below the level attainable by either the producer or some consumer cooperative.

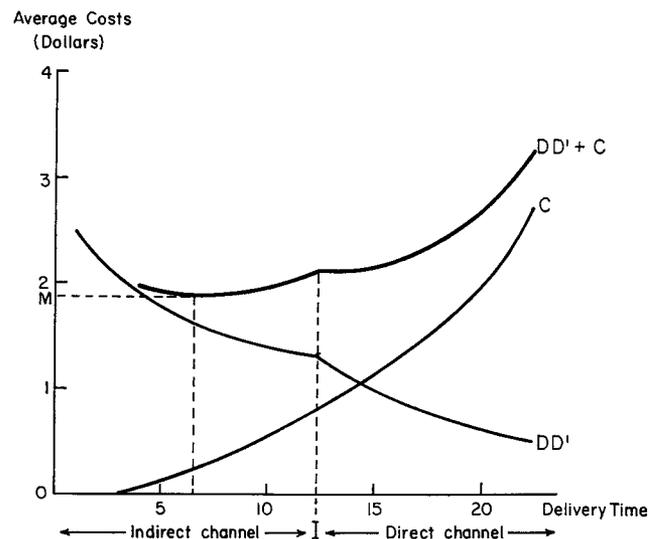
The presence of an inventory in the channel for either collecting, sorting, or dispersing does not create the same type of opportunity for a title-taking intermediary to appear in the channel. Such inventories are not speculative in character. They do not need to hold

Diagram 2
AVERAGE INVENTORY COST FOR ONE UNIT OF A COMMODITY TO A CUSTOMER WITH RESPECT TO DELIVERY TIME IN DAYS



uncommitted stocks of goods available for general sale in order to fulfill their purpose. For example, the REA Express, the parcel post system, freight forwarders, and even the Greyhound Bus Corporation's freight system sort a substantial volume of goods through many non-speculative type inventories each day. Milk producers establish handling depots where bottled milk is transferred from large, long-distance vehicles to city delivery trucks. Catalogue sellers discharge full truck shipments upon the post offices of distant cities where customers reside. None of these inventories involves the risk of unsold goods. None of these inventories provides the basis for the emergence of a title-holding middleman.

Diagram 3
TOTAL OF AVERAGE DISTRIBUTING AND CUSTOMER INVENTORY COSTS WITH RESPECT TO DELIVERY TIME IN DAYS



From this perspective, the principle of postponement-speculation may be regarded as a concept which broadens the channel analyst's understanding of the intimate relationship between title and physical flows. The intertwining of the roles of ownership and the holding of speculative stocks provides a fundamental rationale for the position of the merchant middleman. The principle of postponement-speculation, as a consequence, can be employed to provide at least part of the explanation for the number of ownership stages in the channel. This, of course, is one of the basic questions toward which traditional distribution analysis is directed [5].

In this light, for example, the principle may be of use in explaining the emergence of an "orthodox channel of distribution." This concept, developed by Shaw [8], was used to characterize the nature of the distribution channel through which a large proportion of products traveled, to wit: the manufacturer-wholesaler-retailer route. That such a concept should emerge to characterize products, whose sorting needs are different because of diverse physical characteristics and market reach, is of extreme interest. Similarities among channels for different products implies that forces, which may not vary significantly among many types of goods, should be sought as explanatory variables of channel structure. Since many groups of consumer goods generate similar temporal types of risk, the principle of postponement-speculation may provide a major explanation for this phenomenon.

Testing the Principle

The principle of postponement-speculation will not be easy to test for a number of reasons. First of all, it is normative. It is derived from assumptions of profit maximization and predictions are based upon what firms should do. Second, it approximates the real world only when the channel environment is sufficiently competitive to produce a variety of price-product-delivery time offers. Finally, it cannot predict the necessary time delays that occur in the channel for new facilities to be built or old ones abandoned.

Despite these problems, a number of hypotheses may be generated from the model and subjected to evaluation by surveys of existing channels. These surveys would locate any intermediate, speculative inventory in the channel and measure the time elapsing between the placing of an order by, and its delivery to, the customer. Use of industrial or commodity channels would undoubtedly be the best initial subjects for the surveys. The confounding effects of collecting, sorting, and dispersing in consumer channels will make the impact of the principle of postponement-speculation more difficult to isolate.

Six hypotheses which could be tested in this manner follow:

1. The shorter the delivery time, the greater the probability the channel will include an intermediate, speculative inventory.
2. The shorter the delivery time, the closer any speculative stock will be to the consumer.
3. The shorter the distance between a customer and a speculative stock, the greater the probability of a second such inventory in the channel.
4. Products which are heavy, bulky, and inexpensive are likely to flow through channels with more intermediate, speculative inventories than products with the opposite characteristics.
5. Products which consumers find expensive to store on their premises, but whose use is both urgent and difficult to forecast, have a greater probability of passing through an intermediate, speculative inventory than products with the opposite characteristics.
6. The greater the inelasticity of consumer and/or producer cost with respect to changes in delivery time, the greater the stability of the most efficient channel type over time.

All of these hypotheses are subject to the *ceteris paribus* limitation. Tests, as a result, should include only those channels operating under reasonably similar economic conditions. This is particularly important with respect to the distance between the producer and the consumer. Variations in this factor will affect the cost of providing any given delivery time. Channels which traverse longer distances, in other words, are likely to require more speculative inventories than those which move goods less extensively.

The *ceteris paribus* limitation also contains an important implication beyond that of the problems of testing. Consideration of this limitation provides the rationale for the presence of several different types of channels supplying the same type of product to a given group of customers. Producers, for example, provisioning some market from a distance, may be forced to use channels distinct from their competitors located adjacent to the customers. This diversity of channels may also be produced by imperfections in competition as well as variations in the urgency of demand among consumers in the market. Those who can easily tolerate delays in delivery are likely to use a different channel from those patronized by customers with dissimilar personalities or capabilities.

Implications of the Principle

The principle of postponement-speculation, in addition to providing a basis for developing hypotheses for empirical testing, makes it possible to do some *a priori* generalizing concerning the type of channel structure changes one may expect to see in the future. Any force, or set of forces, which affects the types of costs discussed may be sufficient to move the balance from speculation to postponement, or vice versa.

One type of change, already occurring and which may be expected to spread in the future, rests upon the relationship between the cost of transportation and

speed. Rapidly evolving methods of using air transport economically and efficiently are serving to narrow the spread between the cost of high-speed transportation and low-speed transportation. This has the effect of reducing the relative advantage of speculation over postponement. Hence, intermediate inventories will tend to disappear and be replaced by distribution channels which have a direct flow.

The increasing proliferation of brands, styles, colors, and price lines is another type of force which will affect the balance. This proliferation increases the risk of inventory holding throughout the entire channel, but particularly at those points closest to the consumer. Retailers will attempt to minimize this risk by reducing the safety stock level of their inventories and relying more upon speedy delivery from their suppliers. The role of the merchant wholesaler, or the chain store warehouse, will become increasingly important in this channel. Indeed, there will probably be increasing efforts on the part of retailers to carry only sample stocks in those items where it is not absolutely necessary for customers to take immediate delivery. General Electric, for example, is experimenting with wholesaler-to-consumer delivery of large appliances. Drugstores, where the role of the pharmacist appears to be slowly changing from one of compounding prescriptions to inventorying branded specialties, will become further dependent upon ultra-fast delivery from wholesalers.

Those stores, such as discount houses, which are successfully able to resist the pressure toward carrying wide assortments of competing brands are likely to utilize channels of distribution which differ significantly from their full-line competitors. Large bulk purchases from single manufacturers can be economically delivered directly to the discount house's retail facilities. Where warehouses are used in discount house channels they can serve stores spread out over a far greater geographical area than would be normally served by a wholesaler. Such stores are also apt to find their market segments not only in middle income range families, but also among those consumers who tend to be heavily presold by manufacturer advertising, or who simply are less finicky about the specific type of item they buy.

A final possible trend may spring from consumers who find that their own shopping costs represent too great an expenditure of effort with respect to the value received from postponement. As a result, such consumers are likely to turn more and more to catalogue and telephone shopping. Improved quality control procedures by manufacturers and better means of description in catalogues could hasten this movement. The acceptance of Sears telephone order services in large cities testifies that many individuals are prone to feel this way. If the movement were to become significantly enlarged, it could have a drastic effect upon the existing structure of distribution.

SUMMARY

The study of distribution channels, and why they take various forms, is one of the most neglected areas of marketing today. Part of the neglect may be due to the absence of effective tools for analysis. The principle of postponement-speculation is offered in the hope that it may prove useful in this regard and stimulate work in the area.

The principle directly treats the role of time in distribution and, indirectly, the role of distance as it affects time. The starting point for the development of the constructs of the principle may be found in the work of Alderson and Knight [2, 3, 7]. Postponement is measured by the change of delivery time in the shipping of a product. Increasing the delivery time decreases postponement costs for the seller, increases them for the buyer and vice versa. Justification and support for the relationships suggested between the costs of marketing functions and delivery time may be found in the recent literature of physical distribution.

The principle reveals the effect upon channel structure of the interaction between the risk of owning a product and the physical functions employed to move the product through time. It holds that, in a competitive environment, the costs of these functions be minimized over the entire channel, not by individual function. The minimum cost and type of channel are determined by balancing the costs of alternative delivery times against the cost of using an intermediate, speculative inventory. The appearance of such an inventory in the channel occurs whenever its additional costs are more than offset by net savings in postponement to the buyer and seller.

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