

Transfer Pricing: A Behavioral Context

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THE accounting, management science, and economics literature contains numerous models addressing the resource allocation and transfer pricing problems. Some of the earliest statements on the transfer pricing problem are recorded by Hirshleifer (1956 & 1957), Dean (1955), and Cook (1955). These authors suggest solutions to the transfer pricing problem which reflect the analogy of the internal price problem to the determination of the (Competitive) market price of traditional economics. The advent of mathematical programming produced another stream of articles addressing the transfer price problem, especially after the relation between a decentralized firm and the Dantzig and Wolfe (1960) decomposition principle was stated by Whinston (1964) and Baumol and Fabian (1964).¹

This paper represents an attempt to place the solutions proposed by the mathematical programming models as well as other traditional solutions in an appropriate context. Since the transfer pricing problem only arises within a recognizable social system (be it an organization or a socialist economy) the paper considers the solutions in a social system context.² The paradigm developed can then be used to evaluate the usefulness and limitations of the various proposed solutions.

DECENTRALIZATION AND DIFFERENTIATION

Decentralization is one approach to organizational design. Implicit in this approach is the segmentation of the organiza-

tion into various specialities. Numerous reasons are provided in the transfer price literature for decentralization. For example, Dean (1955) suggests, "... the modern integrated multiple product firm functions best if it is made into a miniature of the competitive free enterprise system." Dopuch and Drake (1964) suggest that the division managers are in a better position to process information concerning resource allocation. Along a similar vein Ronen and McKinney (1970) argue that the division manager's nearness to the market place provides relevant information regarding changes in prices of inputs and outputs and that more effective coordination of production factors should be obtained at the divisional level. Reasons such as size and diversity of modern corporations and the promotion of morale (because of the decision-making autonomy of managers) are also offered in support of decentralization (Godfrey, 1971). While each of these reasons may be true, none of the authors has offered a coherent theory of decentralization. Consequently, the implications that the authors see of decentralization for

¹ As examples of this see the articles by Dopuch and Drake (1964); Godfrey (1971); Gordon (1970); Hass (1968); Ruefli (1971 a&b).

² In this paper we only consider an organizational context, but there seems to be a direct analogy to a planned (or socialist) economy.

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transfer pricing are fairly restricted and pragmatic.

We consider the central problem facing complex organizations is one of coping with uncertainty. This is the view many current organizational theorists propose. Similarly, we identify the two major sources of uncertainty for a complex organization as its technology and its environment. An organization's design, then, represents a response to these sources of uncertainty.³ Specifically, an organization may create parts to deal with the uncertainty and thereby leave other parts to operate under conditions of near certainty, i.e., the organization will departmentalize and decentralize.⁴ Decentralization is a response to uncertainty.

Decentralization, however, does not quite explain the process involved. A consequence of the segmentation of the organization into parts (departments, divisions, etc.) is that the behavior of organizational members will be influenced by the segmentation. Because of the differences in the nature of the task and in the environmental uncertainty facing various segments, the organizational members will develop different mental processes and working styles, adopt different decision criteria, and may have varying perceptions of reality. A well-known example of this differentiation at the perceptual level is the research report of Dearborn and Simon (1958) which demonstrated that different executives can interpret differently the same organizational problem. The differences in interpretation reflect the departmental identification of the executives.

Therefore, we use the term *differentiation* to include not only the segmentation of the organization into specialized parts, but also to include the consequent differences in attitudes and behavior of organizational members. Requisite differentiation is a requirement for organizational success. That

is, each organizational unit must be designed so as to cope effectively with the demands of its technology and environment. Later we will discuss the role of management accounting and transfer pricing in achieving the requisite degree of differentiation between organizational units.

ORGANIZATIONAL INTEGRATION

The Concept

Differentiation is only one design problem facing the organization. The other side of the same coin, and another design problem, is integration: the process of insuring that efforts of the several organizational units, now appropriately differentiated, do collectively attain the goals of the total organization.

Lawrence and Lorsch (1967) in their research demonstrated that the most successful firms (in terms of the traditional measures of profitability) in the various industries studied were the firms that achieved the required differentiation and were then able to integrate the diverse units. Further, the research indicates that only firms that achieve these dual requirements can be successful. However, a basic organizational dilemma is that the more successful an organization is in achieving the requisite differentiation (especially those organizations requiring significant differentiation) the more difficulty the organization has in achieving the necessary integration. But, of course, the difficulties in achieving the required degree of differentiation and then integrating the total organizational effort is not uniformly distributed over all firms and industries.

³ The exact roles technology and environment play in determining organizational design is still the subject of research: see Burns and Stalker (1961); Lawrence and Lorsch (1967); Mohr (1971); Thompson (1967); Woodward (1965).

⁴ Even in the most dynamic industries manufacturing operations are often sufficiently buffered to allow the effective use of standard cost systems to control manufacturing processes.

Rather, the more diverse and dynamic (uncertain) the subenvironments faced by organizational units, the more differentiated they must be. The greater the degree of differentiation, the more difficult is integration.

We stated, originally, that the central problem facing organizational designers is one of coping with uncertainty. This problem has now been restated in terms of achieving requisite differentiation of organizational components while simultaneously coordinating (or integrating) their collective efforts. The magnitude of the differentiation problem is basically determined by uncertainty in technological and environmental factors. However, the magnitude of the integration problem is partly determined by uncertainty factors and partly by the state of interdependence between organizational components.⁵ To summarize, the most challenging problems to those seeking integration arise when organizational components are strongly differentiated and highly interdependent. At the opposite extreme, mildly differentiated subunits which exhibit only minimal interdependencies do not pose significant integration problems.

Integrating Mechanisms

Integration is achieved by the use of integrating mechanisms of which there are obviously many. One list of such mechanisms is indicated below. This list is adapted from an article by Galbraith (1972).⁶

Rules, Routines, Standardization

Organization Hierarchy

Planning

Direct Contact

Liaison Roles

Temporary Committees (task forces or teams)

Integrators (personnel specializing in the role of coordinating inter-subunit activities)

Integrating Departments (departments of integrators)

Matrix Organization (an organization that is completely committed to joint problem solving and *shared* responsibility)

The list is ordered from the least elaborate to the most sophisticated integrative mechanisms. All organizations employ the first several mechanisms on the list. These mechanisms are sufficient for integrating many organizational functions and are probably all that is needed by organizations facing minimal environmental and technological demands. However, when environmental and technological demands become more complex, organizations become more differentiated and this increases the problem of integration. Consequently, more sophisticated integrating mechanisms (the latter ones listed), in addition to the simpler mechanisms, are required.

⁵ (i) We are considering interdependence basically from a technological (the actual technical processes employed) and resource allocation viewpoints, although interdependence may also arise through the environment (e.g., from operating in common input and output markets). Environmental interdependence is not excluded, although we believe the most important aspect of the environment is the uncertainty dimension.

(ii) We are using the term "interdependence" in the Thompson (1967) sense. He identifies pooled, sequential, and reciprocal interdependence. Pooled interdependence is a situation in which each part of the organization renders a discrete contribution to the whole and each is supported by the whole. The parts do not interact directly with one another. This is basically the situation where the only major common organizational link among subunits is some scarce organizational resource, e.g., capital. Sequential interdependence is a situation in which, in addition to the pooled aspect, direct interaction between the units can be pinpointed and the order of that interdependence specified. Reciprocal interdependence refers to the situation in which the outputs of two units become inputs for each other. The three types of interdependence are, in the order indicated, increasingly difficult to coordinate.

⁶ (i) Galbraith actually expands this list somewhat especially with regard to organizational planning.

(ii) Thompson (1967) has provided a somewhat different list. He suggests three mechanisms for achieving integration, coordination by standardization, coordination by planning, and coordination by mutual adjustment. The first two mechanisms we present correspond to Thompson's No. 1, while mechanisms 4 to 9 (lateral mechanisms in Galbraith's terminology) correspond to Thompsons No. 3.

DIFFERENTIATION, INTEGRATION, AND MANAGEMENT ACCOUNTING

The amount of differentiation required is determined primarily by technological and environmental demands, and an organization's adaptation to these demands is reflected in the first instance by the organizational design. The accountant, in designing the management accounting system, needs to consider the requisite degree of differentiation as a constraint. That is, the accountant cannot create or demand differentiation when behavioral factors dictate otherwise.

This is not to say that the management accounting system has no part to play in organizational design. In fact, the accounting system can be designed to facilitate or enhance the differentiation achieved. For example, each of the concepts—expense center, profit center, and investment center—may be employed, depending upon the differentiation required by the technological and environmental demands. When the appropriate accounting techniques are used in conjunction with required organizational design we expect the claimed benefits of decentralization to be realized.⁷

We are now in the position to consider the role of the accounting system in integration. An accounting system is a well-defined, formal information system within an organization. Basically, it is a set of rules and standard procedures. The accounting system can thus be classified as an integrating mechanism primarily of the first type listed above.⁸ In more complicated integrating situations, although the accounting system (or, more precisely, the costs and prices generating by the accounting system) may be helpful in obtaining integration, this will only be *one* input to the integrating process.

DIFFERENTIATION, INTEGRATION, AND TRANSFER PRICING

Essentially we have argued that the re-

quisite differentiation has to be taken as given by the accountant when he designs an organization's formal control and reporting subsystems. In some cases there will be a one-to-one mapping between the differentiated units and the accountant's responsibility centers, i.e., the expense, profit, and investment centers. However, when there is not this convenient mapping we would argue that the behavioral factors dominate, and that the accountant should not try to impose differentiation through the creation of artificial responsibility centers. Organizational design is a complete task. Numerous variables must be simultaneously considered. The accountant must accept the organizational structure as given. Restructuring the organization merely to facilitate the management accounting system is not recommended.

What then is the role of transfer pricing? Obviously, once responsibility centers are established, goods and services transferred among these units need to be priced. This helps separate and pinpoint responsibility for different aspects of the firms functioning. In other words, to some extent, the transfer pricing mechanism *enhances* differentiation. But, we have also demonstrated above that differentiation is only one part of the problem. Integration is another facet of this problem. Can the transfer pricing mechanism be used to help achieve the required integration? Again the answer is obviously "yes." In many cases the pricing mechanism is a routine or standardized process, a formula like, for example, standard cost, cost plus, marginal cost, a fixed price, etc. This type of transfer pricing is at least applicable in simple integrating situations, although in more com-

⁷ For one listing of these claimed benefits "automatically" arising from decentralization see Horngren (1972), p. 693.

⁸ Budgeting and planning are also usually considered part of the management accounting system. Notice, however, that planning has also been classed as a fairly simple or routine integrating mechanism.

plicated integrating situations it may be only one input to the integrating process.

MATHEMATICAL PROGRAMMING SOLUTIONS TO THE TRANSFER PRICING PROBLEM

As stated in the introduction to this paper many of the papers proposing programming solutions to the transfer price problem rely on the interpretation of the decomposition principle as a model of decision making in a decentralized firm. While the analogy is undoubtedly useful for analyzing some situations, the methodology appears to have some limitations.

The first limitation of these approaches is that they maintain only the facade of decentralized decision making. The last phase of the process is usually dictated by central management. For example, in the Baumol and Fabian (1964) model, although the optimal divisional plan will be a weighted average of the plans submitted by the division, the weights are entirely determined by central management. Godfrey (1971, pp. 289-90) in evaluating the Baumol and Fabian article and the more recent refinements to their model says:

Despite the appeal of the decomposition technique, in our opinion, it is still a highly centralized decision making procedure. The divisions are at the mercy of central headquarters and would probably not agree that they enjoy the autonomy of decision making that is intended.⁹

There seems to be two explanations for this problem. The first is that many authors of the programming solutions are primarily interested in the mathematical properties (or elegance) of their solutions and only secondarily in the model's organizational implications. The second is that most authors in the transfer price literature are asking the question, "What transfer price will result in the decentralized firm maximizing joint (or corporate) profits?" Since the emphasis is on the maximization of joint profits whenever

conflict arises between this goal and the decentralization philosophy, the latter tends to be sacrificed. The solution is always centralized decision making whether this is through some stated price rule, a wishful appeal to competitive market prices and their surrogates, or to mathematical programming solutions. The result is predictable since none of these authors has offered a coherent theory for decentralization. On the other hand, we have offered a theory for explaining decentralization, and under this theory it is not clear that decentralization should be sacrificed or that sacrificing decentralization will optimize decision making.

A second limitation of this approach is that they concentrate on the behaviorally simple integration problems.¹⁰ The environments are stable and the interdependencies are of the simplest kinds. This is true even of recent articles in the area. Ruefli (1971a), for example, develops a decomposition model which can be interpreted as a representation of decision making in a three-level hierarchical organization. Ruefli greatly restricts the degree and incidence of interdependent relationships within his tri-level hierarchy.¹¹

⁹ Godfrey also uses the decomposition approach in his short-run planning model but freely admits it is a centralized decision making model.

¹⁰ (i) We are using mathematical programming models as the example. However, the same argument could be made against the economic solutions and against the traditional accounting solutions.

(ii) We are not arguing against the future development of programming models. Even the development of more efficient algorithms for handling solved problems is undoubtedly important.

¹¹ (i) Ruefli's model, as he notes, is easily generalized to an n -level hierarchical model.

(ii) In a second article Ruefli (1971b) does mention, with regard to behavioral externalities, the question of bidirectional effects (reciprocal interdependence) for operational units within a management unit. However, he does not propose any solution. Ruefli even proposes an integrating mechanism (a behavioral center) which he says could be a liaison arrangement, a joint planning committee, etc. However, this behavioral center seems to act very similarly to the central management unit and consequently be subject to the same "centralization" criticism.

THE CASE AGAINST NEGOTIATED PRICES

The use of negotiated prices has rarely been seriously entertained by those writing in the transfer price literature. Joel Dean (1955) pressed for negotiated prices, but in such a way that they simulated a competitive market. The foundation for his recommendations really lay in the availability of markets outside the decentralized firm. Cook (1955) also discussed the use of "free negotiation" but proceeds to point out two disadvantages: (1) the amount of executive time it is likely to take, and (2) negotiated prices may distort the profit center's financial reports.¹² However, Cook (1955, p. 93) does suggest, ". . . if managers are sophisticated and equipped with good accounting data on their operations, such a free negotiation system could satisfy the basic criteria outline above; that is, a transfer price that will not lead to transfers which will reduce the company's profit but will permit and encourage any transfer which increases the company's profit."¹³ Dopuch and Drake (1964, p. 13) also seem to be concerned about Cook's second point above when they state:

In evaluating the resulting performance of the divisional managers, however, the central management may be evaluating their ability to negotiate rather than their ability to control economic variables. Accordingly, the information economies of decentralization may be more apparent than real.

Later, in their paper, when discussing the decomposition procedure solutions Dopuch and Drake (1964, p. 18) suggest:

The relevant point is that, if this method can be applied in practice, it will provide a basis for negotiation between the departmental and central management levels. In this respect it would not be necessary for the divisional managers to negotiate with each other. This in itself may be an advantage since situations of negotiation between divisional managers may degenerate into personal conflicts.

Although there is undoubtedly some

truth to each of these observations, that is, at times negotiated transfer prices may have these dysfunctional effects, we believe a very strong case can be made for the use of negotiated transfer prices. In presenting this case we will also be suggesting a way for obtaining suitable transfer prices for the complicated integrating situations.

TRANSFER PRICES AND CONFLICT RESOLUTION

Lawrence and Lorsch (1967) in their research were able to isolate three conflict resolution mechanisms in the firms they studied. One of their most interesting results was that the successful firms facing uncertain environments were able to resolve effectively interdepartmental conflict, and the most important means of resolving this conflict was confrontation, i.e., negotiation.¹⁴ This effective resolution of interdepartmental conflict seemed to be an important reason why these successful firms could achieve a high degree of integration as well as the high degree of differentiation demanded by their uncertain environment.

A second point worth noting is that within a complex organization conflict is going to be multidimensional. In a highly differentiated organization this will at times involve the transfer and pricing of goods and services within the organization. But it may also include design and engineering changes, production and delivery schedules, and quality control. Seen in this light, the transfer pricing question be-

¹² One, often mentioned, example of this is when one division occupies a monopoly position.

¹³ Unfortunately, (technically) sophisticated managers and good accounting data are probably not sufficient conditions for insuring proper integration. Dean (1955) also suggests the position of "price mediator" for a company when *initially* installing his system. These ideas are similar to the concepts of an integrator which we will discuss later.

¹⁴ Forcing was also an important back-up means. Smoothing was the third method and generally was the least effective.

comes one facet of a multidimensional conflict resolution process.¹⁵ If the appropriate conflict resolution process is negotiation, then it appears the transfer price should be one arrived at through negotiation.¹⁶ Specifically, determination of transfer prices could be part of the integrative process. Note that this is not a wholesale endorsement of negotiated transfer prices in all cases. There are undoubtedly instances in which unalterable formulas could be employed (e.g., the least difficult integration situations). Such formulas may be necessary to guard against obvious diseconomies or, more importantly, to enhance requisite differentiation. But if the requisite degree of differentiation is achievable and the problem is to obtain adequate integration, one of the integrative tools available might well be negotiating intra-firm prices. If organizational subunits seek to resolve conflict by confrontation—possibly with the aid of an integrator—and negotiate their differences, negotiated transfer prices might well be the desired result.

IMPLICATIONS FOR RESEARCH ON TRANSFER PRICING

The obvious implication is that we need to know something about the conflict resolution processes. In particular, we would like to know how accounting data are, or can be, used in a conflict situation. It may be, for example, that accounting data are completely irrelevant or unimportant in the more difficult integrating situations. Alternatively we may find some accounting data useful and other accounting data less useful. It may even be that we need to develop new kinds of data for these tougher areas.

Let us for the moment consider a difficult integrating situation—one that requires a formal integrator to integrate successfully the differentiated units. What can we say about this situation? First,

although the protagonists may have somewhat different working styles, time horizons, decision criteria, and perceptions of reality (because they are part of a differentiated firm facing different subparts of the organizational environment), they are still members of the one organization and consequently have some attributes in common. There is some basis therefore for believing agreement can always be attained. Second, successful integration will depend largely on the skill of the integrator and how the personnel in the differentiated units perceive him.¹⁷ Third, from a strict accounting viewpoint, instead of giving point estimates to all the parties on the “correct” transfer price (as, for example, the output of a mathematical program) we may wish to provide guides to simply bound the solution area.¹⁸ These bounds could then reflect other accounting re-

¹⁵ Hence, it makes little sense to be concerned about a possible monopoly position by one department. It is unlikely, if at all possible, in uncertain environments or reciprocally interdependent situations (or both) that one department will have a monopoly position on all dimensions of the conflict.

¹⁶ This general argument for negotiated prices could probably be extended into the simpler integrating situations. Resolving conflict in part depends upon how close the protagonists' expectations of a suitable solution point are (see Schelling for a clearly stated exposition of this point). The similarity of expectations is also a function of the complexity of the situation. Thus, it could be argued that, when environmental demands or organizational interdependencies or their interaction are least complex, expectations of a mutually agreeable solution point are closest and so the conflict is easily resolved. This seems to be, for example, the conditions when a competitive market transfer price can be established. In other words, the market-based transfer price is a limiting (or simple) case of negotiated prices. See Schelling (1960).

¹⁷ Again notice Dean (1955) argues along a similar line when discussing his successful price mediator. He suggests the prime role of the mediator is not to dictate a price but to keep the negotiations flowing until that is a settlement.

¹⁸ (i) For example, the variable costs of the input units may represent a lower bound, and the selling price less the variable costs of the output units may represent an upper bound. We may also give the integrator various other combinations of cost data to facilitate his integrating role (e.g., full costs (plus a markup), the mathematical programming solutions, etc.)

(ii) These behavioral questions obviously require future empirical verification or falsification.

straints on the transfer price (e.g., the fact that the transfer price may be used in the evaluation of the economic performance of the units). However, within the guides set, the final transfer price is a result of the confrontation process.

If we move to a more complicated integrating situation requiring an integrating department, some members of this department may need to be experts in internal financial matters. The implications of this and the wider implications of a matrix organization, for management accounting practice, are still very open questions. We are saying that at times the management accounting process must perform more than a mere scorekeeping or attention-directing function. The integrator has one of the most crucial roles within the organization. Certain aspects of the managerial accounting system—specifically, resolving transfer price disputes—must perhaps be merged within the integrator's total activities.

Further, little empirical evidence has been gathered on how transfer prices are established in various organizations. In gathering such evidence in the future, it is suggested that assessments of the states of differentiation and integration between buyer and seller subunits, the degree of interdependence between them, and the mode of conflict resolution utilized be made. This will allow the transfer pricing techniques to be viewed in terms of the relevant organizational and behavioral

variances. Finally, it might be worth while to investigate the relative trade-offs between nonoptimal transfer prices and the dysfunctional consequences of removing this subject from the integrator's purview.

CONCLUSION

We have attempted to place the transfer pricing question in a relevant behavioral setting. Briefly, we have suggested the management accountant needs to consider organizational differentiation a constraint in designing the management accounting system. Working within this constraint we suggested the management accounting system can be designed to enhance the organizational differentiation achieved or to facilitate organizational integration. The transfer pricing mechanism, being part of the management accounting system, can be used to enhance organizational differentiation and to facilitate organizational integration. The transfer pricing mechanisms will probably play the role of enhancing differentiation in those instances in which integration is easily attained. This may well be achieved by the use of formula pricing mechanisms. In other cases, integration will be a major organizational problem. Consequently, the transfer pricing mechanism could be utilized to facilitate integration. An appropriate transfer price mechanism in this case seems to be negotiated pricing. Further areas of research suggested by this conclusion were discussed.

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