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Letters to the Editor

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LETTERS TO THE EDITOR

*Letters should be addressed to the Editor, Graduate School of Business, 401 Uris Hall
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On Project Scoring Models

I quote Moore and Baker's abstract [1] "the most serious shortcoming in the models is the relatively arbitrary fashion in which the models have been constructed and the failure of the model builders to recognize the impact of certain structural considerations on resulting project scores." This must be said of the scoring model used in their work.

If one is going to limit a scoring model to deal only with cost, income, cash flow timing and probability of success, there is no doubt at all that one can construct a scoring system which will always give the same ranking as the Profitability Index. Note that $\log R$ will give the same ranking as R , so that an additive scoring model will give perfect correlation with the Profitability Index if the component scores are the logarithms of parameters which multiply to give the Profitability Index. Apparently quite fortuitously, the scores used by Moore and Baker have good linear correlation with the relevant logarithms of actual values. It is then not surprising that the additive scoring and Profitability Index models show good consistency of ranking. If scores are based on logarithms of actual values then number of intervals, shape of distribution, and estimates of mean and standard deviation play no part at all in "tuning the model" when all that has to be decided is the economic criterion to use.

I see no reason why scoring models involving non-economic criteria should, (and there are strong arguments why some should not) produce the same rank-ordering as a purely economically oriented criterion such as a Profitability Index, but *when the model uses only economic parameters it must be designed to agree with the economic criterion of one's choice.*

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On the Nature of Application

We have been reading the various journals published by the Operations Research Society of America and the Institute of Management Sciences for the last ten years. The *Management Science* series called "Application" sometimes has articles which depict true applications, while other articles, as far as we are concerned, can be classified as "Theory." At many conferences of the Institute of Management Sciences, various members have raised questions about publication policies. We would like to offer a simple suggestion which, if practiced, could remove some of the biases that exist.

We would like to see the "Application Series" associate editors and referees being selected from members and persons who have a minimum of five years experience in successfully conducting and implementing projects in the "real world," and the

publication policies for the "Application Series" being decided after consulting TIMS members and readers working in the "real world."

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Practical Financial Management Models: Reply

I am indebted to Mr. Gefpert [1] for pointing out the possible extension of my corporate cash management model to commercial banks. His other comments apply to problems that were covered in [2] and [3] but were not discussed in my paper [4] because of their technical nature. Clearly, acceptance by management is not improved by more technical details but by incorporating subjective constraints into the model and by exercising managerial judgment in its implementation. Nevertheless, the problems mentioned by Gefpert may be of interest to the management scientist while adopting the model to a specific firm.

The first problem may arise only if cash requirements are uniformly distributed so that short-term financing is proportional to the length of each interval. As mentioned correctly by Gefpert, this problem can be easily solved by introducing additional borrowing and sales constraints. Other interesting limitations on short-term financing may arise, for example, from restrictions imposed by a lender or because of the negative effect of selling large quantities of marketable securities in a short period. All these situations can be easily taken care of by adding intra-period borrowing and sales constraints to the general, inter-period financing limitations (Constraints (5) and (6)).

The second problem highlights some of the technical difficulties inherent in using unequal time intervals. Most of these difficulties can be overcome by certain approximations without materially reducing the accuracy and applicability of the results, particularly since the model is constantly rerun. Consider, for instance, the "discount" example mentioned by Gefpert. The extension of the discount interval into period 11 is based on an assumption, which is both reasonable and agrees with current practices, that payments on a 2 percent—10 days, net—30 days invoice will be made either close to day 10 or close to day 30 but not, for instance, on days 1–5 and 11–25. In longer periods, however, the discount problem becomes more difficult and its solution requires some knowledge of the distribution of invoice arrivals. Again, the recomputation of the model with updated data, even once-a-week and not daily, reduces the inaccuracies resulting from these approximations.

It should be remembered that the unequal-time structure of the model is not offered as an "escape" from unpleasant estimation problems but as the most appropriate framework (which has some additional advantages) for the cash management problem. Normally, the length of time intervals increases as the horizon is approached ($t_j \geq t_{j-1}$ for $j = 2, \dots, T$) in a similar way to the time-division example on page B-80. The model, however, is not restricted in this respect and can incorporate short intervals of special interest, e.g. the last day of a firm's fiscal year, between two longer periods.

The exact timing of transactions within longer intervals is desirable but practically quite difficult. Whenever possible, especially in large transactions, the exact transaction day should be identified. If this cannot be done, averages and other approxima-

tions should be used, based on the firm's cash flow patterns and on computational and practical considerations. For instance, in purchasing a marketable security maturing in a month-long interval, the amount invested can be uniformly distributed over the entire interval. Alternatively, the whole amount can be invested in a marketable security maturing in the middle of the maturity interval, resulting in an average yield approximately the same as the yield from uniformly distributed maturities. Another possibility is to select the first day or any other specified day in each period as "the" transaction day, a method which is often used in multi-period models (e.g., [5]). The inaccuracies resulting from these restrictions or from averaging (as suggested by Gefpert) will be minimal because of the unequal-time structure of the cash management model.

In implementing the model for a particular firm a management scientist will face other technical problems that were not discussed here. It is expected, however, that all the necessary adjustments can be easily made because of the general and flexible structure of the model.

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Professional Employees in Organizations

In a recent issue of this journal, Professors Ritti and Goldner [6] published a very comprehensive study concerning the professional-management model of conflict. This study provides some valuable insights in understanding changes taking place in organizational dimensions and the relationship between man and organization resulting from rapid technological developments. After reading this study one can not help but ponder how the complex social, psychological, and behavioral aspects of man's organizational life can ever be comprehended.

The Ritti and Goldner study points out that in the technology-based organizations the growing number of university trained specialists and the sub-organizations composed of these employees complicate the organizational dimensions. Because top management strives for a greater control over the future uncertainty, professional specialists who can provide such a control will emerge with greater power. Thus, the conflict and competition develop among many groups of specialists themselves rather than between professional and management.

A study by this writer [2] concerning the organizational life of professional scientists also revealed similar results. In a division of the Federal Public Health Service, those scientists who enjoy a high status in the profession tended to reveal the minimum degree of conflict with management. A further analysis indicated that these so-called "cosmopolitan" scientists [See Gouldner, 1] revealed the highest level of motivation, the lowest propensity to leave the organization, and the highest degree of organiza-

tional identification. The results of this study have some valuable implications. So far as professional activities of the specialists are not in conflict with organizational expectations, and if the professional status is an important criterion necessary for organizational prestige, the celebrated professional-management conflicts are not significant. In technology-based organizations (organizations whose survival is basically determined by its technological accomplishments and where factions of professionals and management are not easily partitioned), there seems to be only negligible conflict between the professional goals of scientists and the organizational objective. Hence, the primary conflict occurs among professionals from two primary sources, as Ritti and Goldner points out: direct competition for resources necessary to perform professional functions; and attempts of the newer specialties to preempt the professional prerogatives of the older specialty by routinizing its performance.

In the typical business organization, however, professional employees represent only a small portion of the total employee group. The functions of the professional employee are usually well defined and his vertical-mobility within the organization is also clearly limited. This is especially true for scientists. In such organizations, it is very doubtful that the results reported by the above studies would equally apply. As Marcsen [4], Kornhauser [2], and Strauss and Rainwater [7] pointed out, unless the professional's personal aspirations are organization-oriented, there would be an inevitable conflict between traditional business ideology and scientific values of the profession.

The professional employee's commitment to an organization as a whole is different from a commitment to certain values of the work. This implies that for those who are professional value oriented there will be an inevitable conflict between their organizational commitment and their commitment to certain values of work. The degree of tension between the professional's employee-role and his role in the profession would be determined by his personal aspirations (whether it is organization-oriented or profession-oriented) and the degree of compatibility between his organizational functions and professional ideal conception. In this regard, Ritti [5] has pointed out the differences in work goals between scientists and engineers.

This tension may be reduced if (a) the professional employee departs from his scientific role and chooses the organizational path as his personal goal, or (b) the business organization redefines the employee-role of the professional to be compatible to his professional goals. Therefore, unless it is a technology-based organization, where functions of the professional are highly valued and his vertical mobility allows personal aspirations that are organization-oriented, or the organization provides a special effort to reconcile the employee-role of the professional with his scientific goal, conflict is an inevitable outcome. Furthermore, this conflict is most likely between professional specialists and management. The magnitude of this tension may be the function of a combined effect of the type of profession the employee specializes, his psychological and social attributes and organizational environment.

As the technological adaptation becomes an essential factor for the survival of many organizations, professional standards will increasingly govern organizations while professional employees will more readily accept the bureaucratic life. Then, the problem is one of change—change from which new organizational dimension patterns are yet to emerge. In the meantime, there will continue to be conflicts, tensions, and problems.

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