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The Design of a Company's Banking System: Discussion

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discounts versus credit card usage by Ingene and Levy [3].) Furthermore, as S&H point out, it is awkward to apply many of the concepts of modern financial theory. And, as previously mentioned, the economic theory suggests that the relevance of the trade credit decision arises largely from market imperfections. In addition to the imperfections cited above, some of the arguments usually employed in evaluating factoring or bulk financing agreements are pertinent here. There are tax considerations, not only in the financing of receivables, but also, for example, with respect to retailers' very significant tax deferrals on revolving credit sales. There are numerous balance sheet effects that must be considered. Finally, casual empiricism suggests that trade credit policies are rather uniform across product classes, often relating to the perishability or obsolescence characteristics of the product. Evaluating changes in credit policies must consider these pragmatic issues (including "marketing" effects) as well as the relevant net present values.

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DISCUSSION

GARY W. EMERY*: Professor Stone's paper represents the newest member of a family of models that may be used to assign credit and tangible service activities to banks and to determine the least cost method of payment. He makes a convincing case for the necessity of revising existing models to more accurately reflect present banking practice and he clearly describes the required changes to the objective function and constraints. Because of the communality among these models, my discussion primarily addresses some issues that apply to banking system design models in general.

First, a banking system design model should recognize the interactions between the use of tangible services and the availability and cost of credit. Professor Stone's model does incorporate some of the interactions since the fees paid and balances maintained are payments for both types of services. Furthermore, planned borrowing and therefore credit line size are based on the company's

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actual cash requirement plus the cash needed for bank compensation. There are, however, other interactions that are not accounted for in Stone's model or its predecessors. Consider first how financial market characteristics can affect the demand for a specific tangible service, a lock-box collection system.

Firms maintain a collection system to accelerate the receipt of cash. This "operational" acceleration system reduces but cannot eliminate the mail, processing, and deposit float that is the cause of the delay. Firms can also "financially" accelerate the receipt of cash by borrowing. Financial acceleration is instantaneous and does not involve any excess costs in a perfect financial market while some delay and excess cost remains in an operational acceleration system because it has mechanical components. The firm would therefore prefer the financial acceleration alternative and there would be no demand for tangible services. Market imperfections reduce the effectiveness and increase the cost of financial acceleration and thereby make the lock-box collection system more attractive. This implies that financial market conditions (or alternatively, the cost and availability of credit) affect not only the firm's assignment of tangible services to banks, but also its total demand for these services. Stone's model accounts for the first type of interaction but not the second.

The interactions work in the opposite direction as well since the assignment of and method of payment for tangible services can affect the cost and availability of credit. All other things equal, assigning tangible services to a particular bank should reduce the effective interest rate on loans at that bank since the lender's opportunity to observe transactions in the account provides additional information about the borrower while the opportunity to set-aside the account balance in the event of default provides additional security. Stone's model provides for this interaction because a unique interest rate on loans is associated with each bank. The use of additional balances rather than fees to pay for tangible services should also affect the interest rate on loans because they provide additional set-aside opportunities. This interaction does not appear to be accounted for in Stone's model.

Second, a banking system design model should include variables that represent both the cost and quality of a bank's services. Variables that account for differences in cost are included in Stone's model. Examples of qualitative factors that are important to firms are the bank's credit standards and the amount of information that must be provided to support a request for a loan, the bank's tolerance during periods the firm experiences temporary adversity, and the bank's own default probability. Companies will pay for differences in quality and/or design a portfolio or consortium of banks that is diversified across these qualitative dimensions. The recognition of differences in quality is not a part of Stone's model or its predecessors but must be done judgementslly after the model identifies the least cost set of banks.

The third and final point that applies to banking system design models in general is that it is not obvious whether the company should solve this problem or simply buy a banking system design from a bank. Factors that favor a "homemade" consortium are that the values of the credit parameters required by these models are firm specific and that a bank-designed consortium may be diversified over quality dimensions other than those that are important to the

firm. A bank-designed, bank-led consortium may certify the quality of the borrower and produce lower borrowing costs, however, in which case it would be preferred to a homemade consortium.

Professor Stone's model does differ from its predecessors in an important way in that it is a multi-period model. This change was made to permit the model to take advantage of annual averaging in meeting compensating balance requirements and it also enables the model to better account for seasonal variations in cash requirements. This change does introduce two problems, however. First, the costs in the objective function are undiscounted. While this may be relatively unimportant when the planning horizon is one month, it is inappropriate to give interest paid late in a one-year horizon equal weight with fees paid at the beginning of the horizon. Second, the model carries forward the expected level of borrowing from one month to another but there is no provision for carrying forward deviations from the expected value. The model therefore lacks an important property of dynamic multi-period models.

In summary, Professor Stone's paper provides a logical extension of some existing models for designing a firm's banking system. It is a useable model that represents an improvement because it more accurately reflects current banking practice. Potentially important interactions between the use of tangible services and the cost and availability of credit have been omitted as have measures of the quality of bank service. Never-the-less, the structure of the model he provided is sufficiently general that these factors can be added when they are deemed to be significant.