ORGANIZATIONAL FORMS AND INVESTMENT DECISIONS*

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This paper analyzes investment rules for various organizational forms that are distinguished by the characteristics of their residual claims. Different restrictions on residual claims lead to different decision rules. The analysis indicates that the investment decisions of open corporations, financial mutuals and non-profits can be modeled by the value maximization rule. However, the decisions of proprietorships, partnerships, and closed corporations cannot in general be modeled by the market value rule.

1. Introduction

Different organizational forms are distinguished by the characteristics of their residual claims on net cash flows, for example, restrictions on the extent to which residual claimant status is separable from decision roles, or restrictions on the alienability of the residual claims. Different restrictions on residual claims imply different rules for optimal investment decisions. This paper analyzes the relations between characteristics of residual claims and investment decision rules in open and closed corporations, partnerships, proprietorships, financial mutuals and nonprofits. Our purpose is to determine whether the decisions of each of these organizations can be modeled 'as if' they come from the maximization of an objective function – for example, the value maximization rule of the financial economics literature. We focus on investment decisions, but the rules are applicable to all decisions. We ignore the effects of taxes.

We first analyze the investment decision rule implied by the common stock residual claims of open corporations. We compare this rule to the decision

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rules implied by the more restricted residual claims of proprietorships, partnerships and closed corporations, and we discuss aspects of the choice of organizational form. Finally, we analyze the investment decision rules implied by the even more specialized residual claims of financial mutuals and non-profits.

2. The decision rule implied by the common stock of open corporations

The least restricted residual claims in common use are the common stocks of large corporations. These residual claims have property rights in net cash flows for an indefinite horizon. They are separable in that stockholders are not required to have any other role in the organization. The residual claims of open corporations are also alienable without restriction. We call these organizations open corporations to distinguish them from closed corporations that are generally smaller and have residual claims that are largely restricted to decision agents.

The unrestricted nature of the residual claims of open corporations fosters the development of a capital market that specializes in pricing such claims and transferring them among investors at low cost. Suppose the capital market is perfectly competitive, that is, suppose there are perfect substitutes for the unrestricted residual claims of any open corporation, and both investors and open corporations are price takers in the capital market. Suppose also that unrestricted residual claims can be traded costlessly among investors, and that the capital market is efficient or rational in the sense that the prices of residual claims correctly reflect available information. In this situation, a corporation's stockholders all agree that all decisions, including investments with payoffs in future periods, should be evaluated according to their contribution to the current market value of their residual claims. [See, for example, Fama (1978).]

The logic of the market value or maximum wealth rule is straightforward. The existence of perfect substitute securities that are always correctly priced and can be traded without transactions costs in a perfectly competitive market means the consumption streams that an investor can realize in future periods are constrained only by current wealth, that is, the market value of current and future resources. When the stream of payoffs implied by the wealth or value maximizing investment decisions of an open corporation does not correspond to an investor's optimal consumption stream, the capital market can be used to exchange residual claims in the corporation for other claims with the same market value but with a stream of payoffs that better matches the investor's desired consumption stream.

Because most residual claimants in open corporations have no direct role in the decision process, and because there are conflicts of interest with managers, there are agency problems between managers and residual claimants. As a consequence, an important investment choice in open corporations is the decision control process. As for other investment decisions, maximizing market value involves extending decision control mechanisms to the point where the
incremental market value of improved decisions is just offset by the market value of the cost of improved decision control. This means some decisions that nominally reduce value will be taken when the cost of preventing them exceeds the value reduction they cause. It is obvious, but worth emphasizing, that market value reflects all costs, including agency costs — the costs incurred because contracts with decision agents are not costlessly written and enforced. These issues are discussed in detail in Jensen and Meckling (1976) and Fama and Jensen (1983a, b).

One can quarrel with the perfect capital market assumptions needed to obtain the conclusion that all investors prefer the market value rule for investment decisions by open corporations. However, this case is a useful point of reference for judging the effects of restrictions on residual claims on rules for investment decisions.

3. Decision rules implied by the restricted residual claims of proprietorships, partnerships and closed corporations

Unlike the unrestricted common stock of open corporations, the residual claims of proprietorships, partnerships and closed corporations are generally restricted to the organization's important decision agents. We are concerned with the effects of this restriction on investment decisions.

3.1. Proprietorship investment decisions under certainty

Many issues central to the analysis of investment decisions involve riskbearing and agency problems that are somewhat artificial in a world of certainty. We begin the analysis with the certainty case because it allows simple derivation of many major results.

Consider a proprietorship faced with a two-period perfectly certain world and the investment opportunities summarized in fig. 1 by the function $F(K; P)$, where $K$ is the amount of resources invested in the venture in period 1, and $P$ indicates that the organizational form is a proprietorship. A proprietorship is an organization in which the primary decision agent holds 100% of the residual claim on net cash flows. Open corporations are distinguished from proprietorships by the outside ownership of residual claims.

Proprietorships and open corporations can finance with debt as well as residual claims. For the moment, we only consider unlevered proprietorships, which means the organization is financed entirely from the proprietor's wealth. This restriction is dropped shortly, without major effects, when we extend the analysis to partnerships and closed corporations in which there are multiple residual claimants. The certainty assumption is relaxed in section 3.3 where the capital structure issue is addressed.

At time 1 the proprietor puts up $K_1$ units of resources. His opportunities for transforming current resources into future resources through investment in
Fig. 1. Investment decisions under certainty for two unlevered proprietorships. Consumption preferences on resources at times 1 and 2 for proprietors A and B are denoted by indifference curves $A_j$ and $B_j$ respectively. $F(K; P)$ is the transformation function relating investment at time 1 to payoffs at time 2 for the venture when organized as an unlevered proprietorship, $P$. Investment, $K$, is measured from $K_i$. $F(K, OC)$ is the transformation function for the same venture when undertaken by an open corporation, $OC$. $C_i^A$ and $C_i^B$ are the resources consumed at time $i$ by proprietors A and B. The dashed line denotes that an unlevered proprietorship does not issue outside debt or residual claims. The proprietorship is the optimal choice of organizational form for this venture.

plant, equipment, etc. are given by the function $F(K; P)$. The proprietor can also acquire resources at time 2 by buying the securities of open corporations. The capital market interest rate for such claims is $r$, and we continue to assume that they are traded without cost in a perfectly competitive capital market.

Suppose the indifference curves $A_j$, $j = 1, 2, \ldots$, represent the proprietor’s tastes for combinations of resources consumed at time 1 and time 2. The proprietor optimally invests $K_i^i K_1^i$ within the proprietorship and $C_i^A K_1^*$ in the securities of open corporations. He then consumes $C_1^A$ at time 1 and $C_2^A$ at time 2. The proprietor stops investment within the proprietorship at $K_1^* K_1^*$ because further investment has a marginal return less than the rate of interest available on the securities of open corporations. An open corporation with investment opportunities summarized by the same function $F(K; P)$ would also invest $K_1^* K_1^*$ since this decision produces the maximum possible current wealth, $W_1^*$. 
Although proprietor A in fig. 1 makes the same investment decision as an open corporation with the same opportunity set, a proprietor with tastes summarized by the indifference curves, $B_j$, $j = 1, 2, \ldots$, chooses to invest less. The essence of an unlevered proprietorship is that the proprietor is sole residual claimant. Thus, if proprietor B invests $K^*_1$ internally at time 1, he cannot sell off part of the resulting claim to the payoff $K^*_2$ generated at time 2. As a result, proprietor B maximizes utility by investing only the amount $C^*_B$ which generates the resource combination $(C^*_1, C^*_2)$ for consumption at time 1 and time 2.

Proprietor B’s welfare would improve if he could borrow $K^*B_1$, or if he could reorganize as an open corporation, invest $K^*K_1$ internally, and then sell his residual claim for $K^*_1W^*_1$. However, as Jensen and Meckling (1979) and Fama and Jensen (1983a, b) emphasize, differences in the contract structures of different organizational forms are likely to affect the costs of delivering products. Because alternative organizational forms involve different costs and thus different net payoffs for the same level of investment, the production or transformation function for a venture depends on organizational form. In fig. 1, the function $F(K; P)$ shows the maximum payoffs net of all costs that can be generated by an unlevered proprietorship at time 2 with different amounts of wealth invested internally at time 1. If the unlevered proprietorship is the optimal form of organization for the investment activities underlying fig. 1, the transformation function for the same venture undertaken by an open corporation (OC) might be $F(K; OC)$, which lies below the proprietorship transformation function. Similarly, if proprietor B issues debt, conflicts of interest with debtholders lead to contracting and other agency costs that also cause the transformation function (not shown in fig. 1) to shift downward by an amount that depends on the amount of debt issued. We compare here only open corporations and unlevered proprietorships.

In our certain world the dominance of the proprietorship transformation function for the venture in fig. 1 can be thought of as due to higher contracting costs in open corporations associated with writing and administering contracts with external residual claimants and internal decision agents. In a world of uncertainty these costs would be balanced against the efficiencies in risk-sharing allowed by the open corporate form. A realistic situation where this analysis in fig. 1 is relevant occurs when the personal human capital of the primary decision agent is the important resource in an organization. Because human capital is difficult to sell the decisionmaker is in a situation like that of proprietor B who cannot sell residual claims on the project.

Proprietors like Mr. A. evaluate investment opportunities according to the maximum wealth or market value rule because they also purchase claims for

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1 Wolfson (1983) documents examples of the dependence of cost functions on organizational form in various forms of oil and gas limited partnerships. In particular, he provides evidence on how the choice of organizational form affects agency costs.
resources to be delivered at time 2 in the open capital market. The restriction of the proprietorship residual claim to an investor like Mr. A is not a binding constraint on his portfolio decisions. Thus, the market interest rate \( r \) on external investments provides the relevant opportunity cost for internal investments. On the other hand, a proprietor like Mr. B is not also a net investor in the outside capital market. The marginal rate of time preference implied by the slope of his indifference curve at \( (C_1^B, C_2^B) \) is higher than the market interest rate, \( r \). Thus, it is rational for proprietor B to assign lower value to future resources generated from internal investment than is implied by the market interest rate on the unrestricted common stocks of open corporations.

If 'diversified' proprietors like Mr. A are sufficient to absorb all the proprietorships that exist in a general equilibrium, the market price for the rights to the transformation function \( F(K; P) \) is \( K_1W_1^* \) and Mr. B sells his rights to the venture to a Mr. A type proprietor. After purchasing residual claims on open corporations in the amount \( R_1^BW_1^* \), Mr. B then consumes \( R_1^B \) at time 1 and \( R_2^B \) at time 2 and achieves utility \( B_j > B_j \).

If 'diversified' proprietors like Mr. A are not sufficient to absorb all the proprietorships that will exist in a general equilibrium, that is, if, like Mr. B, the marginal proprietor in the activity only invests internally, the market price for the transformation function \( F(K; P) \) is less than \( K_1W_1^* \). Proprietors like Mr. B do not use the market value decision rule for decisions and they invest less than open corporations faced with the same investment opportunities.

### 3.2. Partnerships and closed corporations

The analysis extends to partnerships and closed corporations in which residual claims are again generally restricted to decision agents. If all residual claimants in these organizations also invest in the residual claims of open corporations, that is, if they have tastes similar to Mr. A in fig. 1, then in a world of certainty partnerships and closed corporations make the same decisions as open corporations faced with the same investment opportunities. However, partnerships or closed corporations whose residual claimants have consumption preferences like Mr. B do not use the market value decision rule and invest less than an open corporation with the same opportunity set. A partnership or closed corporation with a mix of Mr. A's and Mr. B's, with differing demands for current vs. future resources, faces a difficult contracting problem in making investment decisions. Such conflicts over investment and payout policies are common, for example, in family corporations and partnerships. Unlike open corporations, where all residual claimants agree on the maximum wealth or market value rule for investment decisions, in partnerships and closed corporations investment decision rules that satisfy the interests of all residual claimants require either that all residual claimants are 'diversified' (like Mr. A in fig. 1) or that they have identical tastes.
The residual claims in partnerships and closed corporations are generally restricted to important decision agents and to outsiders acceptable to the important decision agents. The residual claims of these organizations generally specify rules for compensating residual claimants when they retire or otherwise leave the organization. The difficulties in designing valuation processes to substitute for the capital market that continuously revalues the unrestricted residual claim of open corporations means that partnerships and closed corporations will not generally follow the value maximizing decision rule. They will tend to underinvest in assets with long-term payoffs whose current values are not easily established.

We do not expect to see voluntary contractual restrictions on the alienability of residual claims in activities where the capital value problem described above is important, that is, where decisions present major opportunities to substitute between present and future cash flows. This occurs in activities optimally carried out with large quantities of long-term assets that are difficult to value and that are more efficiently purchased by residual claimants rather than rented, for example, plant and equipment, and reputation and goodwill that can be transferred from one generation of residual claimants to the next. For example, organizations in business and financial consulting, like brokerage houses and underwriters, that were partnerships with restricted residual claims are tending to reorganize as open corporations. We hypothesize that this is largely due to changes in the nature of these activities that increase capital value problems, for example, increased demand for wealth from residual claimants to purchase risky assets that are difficult to value, and pressure to transfer the rights to the net cash flows from such assets from one generation of residual claimants to the next.

In contrast, we hypothesize that when the important asset in an activity is the human capital of existing decision agents, the activity can be efficiently supplied by partnerships with restricted residual claims. This will be true when there are no important patents, specialized assets or technologies to be passed from one generation of partners to the next. It will also be true when the reputation and goodwill that are important in some professional service activities, such as law, public accounting and business consulting, are tied to the human capital currently in the organization. In such cases rather extreme restrictions on residual claims can survive. For example, professional partnership residual claims often limit a partner’s rights in net cash flows to period of service in the organization. [See Fama and Jensen (1983b).]

3.3. Choice of organizational form

Fig. 2 shows a situation in which the contracting costs of the open corporate form are low enough relative to its advantages that it pays the proprietor, Mr. B, to organize the venture as an open corporation. In fig. 2, \( F(K; OC) \) is the
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Fig. 2. Choice of organizational form and investment under certainty when the consumption preferences of the marginal proprietor make it desirable to incur the costs of the open corporate form of organization. The transformation function for the venture as an unlevered proprietorship is \( F(K; P) \) and as an open corporation it is \( F(K; OC) \). The dashed line indicates that an unlevered proprietorship does not issue outside debt on residual claims. \( K^*_P K_1 \) is the optimal investment when undertaken by Mr. B as a proprietorship, and \( K^*_OC K_1 \) is the optimal investment when undertaken by an open corporation. \( K_i W^*_OC \) and \( B_i \) are respectively the value of the rights to the venture and Mr. B's welfare level when the venture is undertaken by an open corporation. \( B_i < B_1 \) is Mr. B's welfare level when the venture is undertaken as a proprietorship. \( K_i W^*_1 \) is the value of the venture when the marginal proprietor in general equilibrium is of type A.

Transformation function for an open corporation undertaking the venture. Mr. B realizes the amount \( K_i W^*_OC \) from sale to the corporation of his rights to the venture and \( K^*_OC K_1 \) is the value maximizing level of investment by the corporation. Mr. B achieves welfare level \( B_3 \) by purchasing shares of other open corporations amounting to \( R_i^B W^*_OC \) and consuming \((R_i^B, R_2^B)\) at times 1 and 2. If Mr. B organized the venture as a proprietorship he would realize utility of \( B_1 < B_3 \) by investing \( K^*_PK_1 < K^*_OC K_1 \).

The open corporate form is optimal for Mr. B in fig. 2 even though the corporate transformation function \( F(K; OC) \) is everywhere below the proprie-

\(^3\)If Mr. B both manages the corporation and owns shares in it, the corporate opportunity set \( F(K; OC) \) depends on Mr. B's stock ownership fraction. Fig. 2 portrays the polar case in which he sells off all his claims on the corporation. Jensen and Meckling (1976) analyze the intermediate cases in which the proprietor maintains both management and stock ownership interests in the corporation.
Mr. B's strong preference for current consumption causes him to incur the costs associated with the open corporate form. The unrestricted alienability and separability of open corporate claims allow him to rearrange his consumption pattern by selling his claims in the capital market and devoting part or all of the proceeds to current consumption. Of course, the corporate form is optimal for Mr. B only if there are no other potential proprietors willing to purchase his rights to the venture for more than $K_1W^*_OC$. In particular, if the marginal proprietorship is 'well diversified' like Mr. A, Mr. B will sell his rights to the venture to Mr. A for $K_1W^*_1 > K_1W^*_OC$.

While the optimal corporate investment level $K^*_OC \cdot K_1$ in fig. 2 maximizes value, $K_1W^*_OC$, conditional on choice of the corporate organizational form, this is obviously not equivalent to the value, $K_1W^*_1$, that could be obtained (at investment level $K^*_1 \cdot K_1$) if the transformation function $F(K; P)$ applied to open corporations as well as to proprietorships. The distance, $W^*_OC \cdot W^*_1$, is what Jensen and Meckling (1976, p. 320) define to be the gross agency costs of the corporate form, the difference between the maximum value attainable if the proprietorship production function were available to the open corporation and the maximum value attainable from the production function actually available to the corporation.

The transformation function for a proprietorship does not always dominate that for an open corporation. This is illustrated in fig. 3 where scale economies cause the transformation function for the open corporation to cross that for the proprietorship. Moreover, in an uncertain world the gains from specialization of riskbearing and decision functions discussed in Fama and Jensen (1983a) can become so large with increasing scale that the open corporate form dominates the proprietorship. In general at each point in time there is a set of transformation functions for each venture, one for each possible organizational form.

At various stages in the life of a venture it may be best carried out under different organizational forms. For example, it might first be organized as a proprietorship and then, with increasing demands for financing risky investments, converted to a partnership or a closed corporation, and then to an open corporation. At a later time, conditions can indicate reconversion to a closed corporation, partnership or even proprietorship form. [See DeAngelo, DeAngelo and Rice (1982) for an analysis of 'going private' transactions in which open corporations are transformed into closed corporations or proprietorships.]

3.4. Investment decisions and choice of organizational form under uncertainty

The general conclusions of the analysis of investment decisions for open corporations, proprietorships, partnerships and closed corporations extend to a multiperiod world in which future payoffs from investment are uncertain. The
Fig. 3. Example of a case in which gains from economies of scale cause the transformation function for a venture when undertaken by an open corporation, $F(K;OC)$, to cross that for the proprietorship, $F(K;P)$. Maximum wealth and utility are obtained by undertaking the venture through the open corporate form and selling outside residual claims to make the value maximizing investment, $K_{OC}$. In this case the proprietor's total initial wealth, $OK_1$, is less than the value maximizing investment level, $K_{OC}$. He cannot make the value maximizing investment even by reducing period 1 consumption to zero. Thus his personal wealth constraint also pushes him to the open corporate form.

'states of the world' model of Debreu (1959) and Arrow (1964) is an illustrative framework. In this model uncertainty is characterized in terms of the possible states of the world that can occur at $t + \tau$. A perfectly competitive and transaction-cost-free capital market for the securities of open corporations fixes a set of prices $p_{s,t+t}$ at time $t$ for a unit of resources to be delivered at time $t + \tau$ if the state of the world realized at $t + \tau$ is $s$. With the appropriate capital market transactions, any set of payoffs across states that has a given market value can be exchanged for any other set of payoffs with the same market value. In this world the residual claimants of open corporations again prefer that investment decisions are evaluated in terms of effects on the market values of their residual claims.
Moreover, graphs like figs. 1 to 3 can be used to describe the tradeoffs of current resources for future resources conditional on a given future state and on organizational form. As in the perfect certainty model, when all the residual claimant-decisionmakers of a proprietorship, partnership or closed corporation are also net purchasers of contingent claims for all possible future states of the world, then these organizations make the same investment decisions as open corporations faced with the same investment opportunities. However, if there are future states in which some residual claimants receive only the resources generated by internal investment, then proprietorships, partnerships and closed corporations tend to invest less than open corporations.

More generally, proprietorships, partnerships and closed corporations tend to invest less than would be implied by the market value rule when the restriction of residual claims to decision agents is binding, that is, when residual claimant-decisionmakers hold more residual claims of an organization than would be implied by portfolio considerations alone. More specific implications of this conclusion require more specific models for determining market values of investment net cash flows.

For example, in the context of the Sharpe (1964)–Lintner (1965) model of capital market equilibrium, a proprietor would generally prefer to sell part of his residual claim to achieve the risk reduction offered by a better diversified portfolio. Such sales imply an alternative organizational form and higher agency costs for delivering outputs. When the costs of an alternative organizational form exceed the benefits from better diversification, the proprietor will tend to hold the scale of investment below that implied by the market value rule. Moreover, the implicit price of risk applied by the proprietor in evaluating investments will tend to exceed the market price of risk used by open corporations, causing the proprietor to invest less in risky projects. In addition, the contribution of a project to the risks of the proprietor's imperfectly diversified portfolio will tend to be greater than the contribution of the same project to the risks of the diversified portfolios of capital market participants. This also causes proprietorships to undertake less investment than open corporations and to choose technologies that reduce project risks measured from the viewpoint of undiversified portfolios. These conclusions also hold for partnerships and closed corporations when the restriction of residual claims to decision makers is a binding constraint on personal portfolio diversification.

On the other hand, suppose a proprietorship's opportunities for risky investment are so good that the proprietor's personal wealth constraint is binding on investment decisions but the scale of the profitable projects is not large enough to warrant the higher costs of the open corporate form. In this case, the proprietor invests all his wealth in the organization, and he can end up with 'too little' risk; that is, the proprietor can desire to invest more in risky projects, but his wealth constraint prevents him from doing so. As a consequence, his implicit marginal price for riskbearing can be less than that
charged by the market. In this case as well, however, a proprietorship invests less than an open corporation faced with the same investment opportunities. This conclusion also holds for partnerships and closed corporations in which the personal wealth of residual claimant-decisionmakers is a binding constraint on decisions.

We can, however, construct situations in which proprietorships invest more than open corporations with the same investment opportunities. For example, suppose technological tradeoffs make it possible for a proprietor to reduce the variance of his undiversified portfolio return by moving to more capital intensive production procedures. Reducing variance that arises because of lack of diversification may then cause the proprietor to undertake more investment than an open corporation that follows the market value rule.

3.5. Debt and related issues

Proprietorships, partnerships and corporations can finance with debt as well as equity. Like other kinds of decisions, different decisions with respect to capital structure (the mix of debt, equity and other kinds of claims) imply different contracting, monitoring, and bonding costs which affect the total costs of delivering outputs with a particular organizational form [Jensen and Meckling (1976)]. The competition for survival among organizational forms pushes each toward capital structures that minimize the total costs of outputs at different levels of activity.

We are concerned here, however, with the effects of capital structure on investment decisions. It is well known that the market value rule for investment decisions is ambiguous when organizations finance in part with debt. [See, for example, Fama and Miller (1972, ch. 4) or Jensen and Meckling (1976).] Is it the wealth of residual claimants, or bondholder wealth or the combined wealth of bondholders and residual claimants which is to be maximized?

A rational bond market prices bonds to reflect the effects of organizational decision rules and the possibility of future changes in rules. In this case, ignoring contracting, monitoring and bonding costs, the current wealth of an open corporation’s residual claimants is maximized when they can guarantee that the rule for future decisions is maximization of the combined wealth of bondholders and stockholders [Fama (1978)]. However, as emphasized by Jensen and Meckling (1976), contracting, monitoring and bonding costs generally cause the costs of a perfect guarantee to exceed the benefits. As a result, deviations from combined wealth maximization can be predicted in some future states. In the terms of this paper, contracts without perfect guarantees

3 Reagan and Stulz (1983) analyze situations in which workers bear 'too little' risk and charge less than the market price for riskbearing.
are optimal because they maximize value on an *ex ante* basis even though in some *ex post* states combined value is not maximized.

There are related issues that warrant mention. Like the debtholders and unlike residual claimants, most agents (labor, raw material suppliers, managers, etc.) contract for fixed promised payoffs or incentive payoffs tied to specific measures of performance. Thus, there are conflicts of interest between these agents and residual claimants which are similar to those between debtholders and residual claimants and which raise the same conflict of interest issues for decision rules.

Moreover, the observation that most organizational forms settle on contract structures characterized by multiple fixed payoff contracts with varying degrees of default risk and a single residual riskbearing contract, can help explain a common role for debt. In the event of default, debtholders are typically last in the line of priority among agents with fixed payoff contracts. Thus, credible periodic signals from debtholders about the status of the default risks on their contracts can save duplication of monitoring activities by agents with higher priority contracts. Incentives to lower the total monitoring costs imposed on an organization's outputs by its fixed payoff contracts can also explain why organizations purchase and publish signals from outside specialists about the default risks of their debt. Examples are payments for bond rating services and for lines of credit that involve periodic monitoring by banks and other financial intermediaries that specialize in evaluating default risks on fixed payoff contracts.4

Finally, it is well to point out that a theory of optimal capital structure (debt versus equity) would be part of a more general theory of the optimal risk structure of contracts in organizations. Such a theory would explain the allocation of risk among agents in an organization given the agency costs imposed on the organization's activities by the writing, monitoring and bonding of alternative risk structures.

4. Special forms of residual claims

Limited alienability and limited separability of residual claims from roles in the decision process distinguish the restricted residual claims of proprietorships, partnerships and closed corporations from those of open corporations. There are, however, other organizational forms like financial mutuals and non-profits that offer more unique residual claims. In Fama and Jensen (1983b) we explain the special characteristics of the residual claims of these organizations as responses to special characteristics of the activities in which

4See Wakeman (1981) for additional analysis and evidence on the function of bond rating services.
they survive. Now we are more interested in the implications of special characteristics of residual claims for investment decisions.

4.1. Financial mutuals

A common form of organization in financial activities is the mutual. An unusual characteristic of mutuals is that the residual claimants are customers, for example, the policyholders of mutual insurance companies, the depositors of mutual saving banks and the shareholders of mutual funds. However, the important differentiating characteristic of the residual claims of mutuals is that they are redeemable. The decision of the redeemable claimholder to withdraw resources is a form of partial takeover and liquidation which deprives management of control over assets. This control right can be exercised independently by each claimholder. It doesn't require a proxy fight, a tender offer or any other concerted takeover bid.\(^5\)

It is reasonable to assume that no individual financial mutual provides its customer-residual claimants with access to investments that are not available elsewhere. Under these conditions, as in open corporations, the residual claimants of a financial mutual can agree on the maximum wealth or market value rule for decisions.

The redeemable feature of the residual claims, however, limits the kinds of activities in which the mutual format is efficient. In mutuals, assets must be expanded and contracted at low cost in response to purchase or redemption of residual claims. Moreover, redeemability generally means there is no secondary market for residual claims. As a consequence, the assets of mutuals must have easily determined values. Thus, mutuals with redeemable residual claims tend to survive in financial activities where the assets held are primarily the securities of other organizations that are themselves traded at low cost in secondary markets [see Fama and Jensen (1983b)].

In contrast, the capital markets that have evolved for the common stock residual claims of open corporations specialize in establishing market values for uncertain future net cash flows. Thus, common stockholders forego the direct control rights inherent in redeemable residual claims. But active capital markets for common stocks make them more appropriate as residual claims in activities that involve large amounts of assets that are difficult to price, have

\(^5\)John Hetherington and Fischer Black point out that in many cases the policyholders of mutual insurance companies and the depositors of mutual savings banks are creditors rather than residual claimants because they have no way to force payments in excess of the promised interest on the face value of their claims. Hetherington also suggests that in cases where the assets of such organizations exceed the liabilities to creditors and customers there is a pool of ‘unowned’ assets. In an interesting response to this, Wisconsin law provides that all surplus in liquidation of a mutual insurance company goes to the state school fund. These observations do not invalidate our main point. The redeemability of the claims in mutual insurance companies and savings banks is still a powerful control device.
high transactions costs and are more efficiently owned within the organization rather than rented.

4.2. Non-profits

Non-profit organizations are characterized by the absence of residual claims. For example, the ABA-ALI Model Non-Profit Corporation Act used in many states prohibits non-profits from issuing shares or paying dividends.

When the activities of an organization are financed in part through donations, net cash flows are in part due to the resources provided by donors. Contracts that define the share of residual claimants in net cash flows are unlikely to assure donors that their resources are protected against expropriation by residual claimants. Our hypothesis is that the absence of residual claims in non-profits avoids the donor–residual claimant agency problem and explains the dominance of nonprofits in donor-financed activities [see Fama and Jensen (1983b)].

Given that there are no residual claimants in non-profits, there seems to be a puzzle about whose interests are to be satisfied in resource allocation decisions. From the broader viewpoint of organizational survival, however, the investment problem is part of the general problem of combining available technologies, characteristics of residual claims (including the absence thereof), and techniques for controlling agency problems so as to allow a given type of organization to deliver an activity's outputs at lower prices. Without the analytical crutch provided by residual claimants, criteria for optimal investment decisions in non-profits must be viewed in terms of the more general competition for survival among non-profits and between non-profits and other organizational forms that could engage in the same activities. The key to the analysis is in the economics of donations.

Donations can substitute for the resources provided by residual claimants to bond fixed payoff contracts and to purchase assets that are optimally owned rather than rented. From a survival viewpoint the advantage of donations over resources provided by residual claimants is that donors forego claims on the monetary returns earned on their donations. This tends to allow the organization to deliver its products at lower prices. Donations can mean that a non-profit survives even when it is otherwise less cost effective than a for-profit organization in the production and delivery of the goods and services demanded by customers.

An individual non-profit survives by competing successfully for customers and donations. In part this means developing internal control mechanisms to assure donors that the resources they provide are not easily expropriated by internal agents. Survival also means providing products that donors wish to subsidize and customers wish to buy and internal rules for allocating resources that conform to the tastes of donors and customers. To a large extent, then, we
look to the donors for the criteria for optimal investment decisions in non-profits.

Consider first a non-profit with donors that provide periodic subsidies. The organization’s internal agents appeal to donors for increased current contributions for capital projects that will lower current and future costs and substitute for future donations. In effect, the non-profit presents its donors with the option of paying now for the capital investments or paying the stream of costs that will be incurred later if the investments are not undertaken. If the donors have diversified portfolios, they evaluate the alternatives presented by the non-profit in terms of the tradeoffs of current for future resources available in the outside capital market. They choose the alternative with the lowest market value of costs since this minimizes the market value of the donations needed to carry out the non-profit’s activities and maximizes the market value of donor portfolio holdings available for other uses, including consumption in the form of increased current and future donations to this or other non-profits.

For example, in an Arrow–Debreu states model, donors with portfolios that provide payoffs in all future states price out the future cost savings of a non-profit’s capital projects with the relevant state contingent claim prices. When the market value of the cost savings exceeds the cost of the investments, the donors are willing to sell off portfolio assets to substitute current for future donations because this increases the value of wealth remaining for other uses. On the other hand, when the market value of future cost savings is less than the current cost of a non-profit’s capital projects, donors will advise internal agents that the capital projects are best foregone since equivalent current wealth invested in the outside capital market generates more resources for absorbing future costs than are saved with the projects.

The reasoning of the donors becomes clearer to the decision agents of a non-profit when the donors prepay donations and the non-profit itself acquires a diversified endowment portfolio. Then cost saving capital projects should be substituted for endowment portfolio investments only when the future benefits of the capital projects are greater than the future returns promised by investing the resources for the capital projects in portfolio investments. In other words, the opportunity costs signalled by endowment portfolio investments lead the internal agents of non-profits to evaluate cost saving capital projects according to the same maximum wealth or market value rule which is optimal for open corporations and financial mutuals.

The market value rule for investment decisions also properly accounts for donor preferences for the types of activities they are willing to subsidize. The market value rule says that a non-profit should engage in new activities, or expand the scale of existing activities, or lower product prices to elicit higher donations, as long as the current market value of incremental current and future revenues, from both donations and the sale of products, exceeds the current market value of incremental current and future costs. Decisions made
in this way properly balance the tastes of donors (i.e., equate marginal rates of substitution) for the resources donors provide to subsidize a non-profit's activities with the generalized consumption opportunities provided by donor investments in diversified portfolios. Because of the incentives created by donations, application of the market value rule in donor non-profits yields different decisions than application of the market value rule by an otherwise identical open corporation (which could not obtain donations) in the same activity.

5. Summary

This paper analyzes the relations between the characteristics of the residual claims of different organizational forms and rules for investment decisions. The analysis indicates that decision rules for open corporations, financial mutuals and non-profits can be modeled with the market value rule popular in the financial economics literature. On the other hand, decision rules for proprietorships, partnerships and closed corporations cannot in general be modeled by the market value rule.

5.1. Open corporations

The least restricted residual claims in common use are the common stocks of open corporations. When common stock prices reflect relevant available information and when common stocks are traded without transaction costs in a perfectly competitive capital market, the consumption streams that a stockholder can realize in future periods are constrained only by current wealth. The interests of stockholders are then served by investment decisions that maximize the current market value of their wealth. Market value, of course, reflects all costs, including the agency costs in the decision process.

5.2. Financial mutuals

It is reasonable to assume that no individual financial mutual provides access to investments that are not available elsewhere. Thus, as in open corporations the residual claimants of a financial mutual agree on the maximum wealth or market value rule.

The redeemable feature of the residual claims, however, limits the kinds of assets that are easily accommodated within the mutual framework. Assets must be expanded and contracted at low cost in response to purchase and redemption of residual claims. Moreover, because redeemability preempts the development of a secondary market for residual claims, the assets that are varied in response to purchases and redemptions must have values that are easily determined. These considerations largely limit the assets of financial mutuals to
the securities of other organizations that are themselves traded in secondary markets. In contrast, the common stockholders of open corporations forego the direct control rights inherent in redeemable residual claims, but active capital markets for common stocks make them more appropriate as residual claims in activities that involve large amounts of assets that are difficult to price, have high transaction costs, and are more efficiently owned within the organization rather than rented.

5.3. Non-profits

When donors hold diversified portfolios or when non-profits hold diversified endowment portfolios, optimal decisions in non-profits also conform to the market value rule. However, donations affect both the way the market value rule is applied and the decision opportunities available to non-profits. In a non-profit, the market value of revenues to be balanced against costs includes the marginal donations that are generated by an activity. Because the existence of residual claims chokes off any potential supply of donations, this source of revenue is irrelevant in open corporations. On the other hand, since a non-profit cannot use residual claims to raise wealth to bond fixed payoff contracts or to finance the purchase of risky assets, non-profits are limited to activities where the supply of donations or internally generated funds are sufficient to replace resources that would otherwise be provided by residual claimants.

5.4. Proprietorships, partnerships and closed corporations

The decision agents in open corporations, financial mutuals and non-profits are generally professionals whose interests are not identical to those of residual claimants or donors. We contend in Fama and Jensen (1983a) that the resulting agency problems are controlled in all these organizations by decision systems that separate the management (initiation and implementation) and control (ratification and monitoring) of important decisions.

The proprietorships, partnerships and closed corporations observed in small scale production and service activities take a more direct approach to controlling agency problems in the decision process. The residual claims of these organizations are implicitly or explicitly restricted to decision agents. This restriction avoids costs of controlling agency problems between decision agents and residual claimants, but at the cost of inefficiency in residual riskbearing, and a tendency toward underinvestment. As a result proprietorships, partnerships and closed corporations will not generally follow the market value decision rule.

The limited personal wealth of the residual claimants in proprietorships, partnerships and closed corporations can cause these organizations to invest less in capital projects than open corporations faced with the same opportuni-
ties. Moreover, the residual claimants in proprietorships, partnerships and
closed corporations forego optimal portfolio diversification so that residual
claims and decisionmaking can be combined in a small number of agents. With
limited diversification, it is generally optimal for residual claimants to under-
value claims on future cash flows relative to the market value rule. Finally, the
restricted alienability generates uncertainty about whether a residual claimant
can capture the full value of his claims against future cash flows when he leaves
the organization. As a consequence, the residual claimant—decision agents of
proprietorships, partnerships and closed corporations tend to choose lower
levels of investment in plant, equipment, etc., that reduce future production
costs, and they choose different technology than when residual claims allow
unrestricted risksharing arrangements. These organizations survive in the face
of such inefficiency when the agency costs that are avoided by restricting
residual claims to decision agents exceed the higher costs induced by foregone
investments and inefficiency in residual riskbearing.

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