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Organizational Legitimacy and the Liability of Newness

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This study explores whether external legitimacy or internal coordination processes more prominently underlie the liability of newness, the higher propensity of younger organizations to die, in a population of voluntary social service organizations. The findings show more support for the external legitimacy than for the internal coordination argument. Indicators show that forms of external legitimacy — the acquisition of a Community Directory listing, the acquisition of a Charitable Registration Number, and board size at birth — all significantly depress organizational death rates, whereas most internal organizational changes are unrelated to death rates. The exception is chief executive change, which lowers death rates, suggesting that chief executive turnover may be adaptive. The lack of institutional support experienced by young organizations is one important reason underlying the liability of newness in organizations. •

INTRODUCTION

In a seminal paper, Stinchcombe (1965) argued that young organizations have a higher propensity to die than old organizations. This liability of newness occurs because young organizations have to learn new roles as social actors, coordinate new roles for employees and deal with problems of mutual socialization of participants, and because of both their inability to compete effectively with established organizations and their low levels of legitimacy. The intuitive appeal of the argument led to its frequent use, but until relatively recently, few empirical studies have addressed the issue.

Of late, the liability of newness thesis has come to occupy an important place in organizational ecology research. As Carroll (1984a) pointed out, three different levels of analysis may be distinguished in organizational ecology — the organizational level (Carroll and Delacroix, 1982), the population level (Hannan and Freeman, 1977; Freeman and Hannan, 1983), and the community level (e.g., Lincoln, 1977, 1979; Astley and Fombrun, 1983; Astley, 1985). At the organizational level, efforts have been made to examine how selection processes operate within organizational populations. One major theoretical argument is that younger organizations are subject to stronger selection pressures and hence have a higher propensity to die.

Empirical studies of the liability of newness display relatively consistent support for the argument. Organizational mortality rates have been found to be negatively related with age in newspaper organizations (Carroll and Delacroix, 1982), in labor unions and semiconductor firms (Freeman, Carroll, and Hannan, 1983), and in retail, wholesale, and manufacturing organizations (Carroll, 1983a). The negative age dependence of death rates persists, despite controlling for liabilities of size (Freeman, Carroll, and Hannan, 1983) and population heterogeneity (Carroll and Delacroix, 1982). Research on voluntary social service organizations (Tucker, Singh, and House, 1984; Tucker et al., 1985a) has demonstrated that, for this population, the death rate increases in the initial years, but the overall pattern of results is consistent with a broad interpretation of the liability of newness, since, with the exception of the early period, the death rate does decline with age.

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In this paper, we explore the processes that underlie the liability of newness in organizations. Partly because of the historical and archival data sources that are typically used by ecological researchers, access to fine-grained organizational process data has been limited in past studies. For this reason, perhaps, an exploration of the processes underlying the liability of newness has not yet appeared in the literature.

We ask here if the higher propensity of young organizations to die is primarily due to external factors such as low levels of legitimacy and the organizations' inability to develop strong exchange relationships with key environmental constituencies or whether it is due to internal processes such as members learning mutual coordination of roles within the organization. An empirically informed understanding of these arguments would help to clarify the relative importance of internal and external processes in explaining the age dependence of death rates in organizational populations and may shed some light on the conditions under which the liability of newness may be more likely to affect an organization's viability.

We develop the theoretical arguments underlying this study in the context of a population of voluntary social service organizations in the metropolitan Toronto area. We emphasize, in particular, how the not-for-profit and voluntary nature of the organizations studied may have a significant impact on the processes underlying the liability of newness.

THEORY

In their initial statement of population ecology theory, Hannan and Freeman (1977) argued that organizations typically have high levels of structural inertia, which makes it difficult for them to make major changes. Consequently, studying selection, rather than adaptation, is a more adequate approach to understanding change in organizational populations. More recently, Hannan and Freeman (1984) have modified their position somewhat, arguing that structural inertia is a consequence of, rather than a precursor to selection processes. Organizations with high reliability, a low variance in performance, and high accountability, the ability to account rationally for organizational actions, are favored by selection processes in organizational populations. High reliability and accountability require that organizational structures be highly reproducible, i.e., relatively stable over time. But highly reproducible structures also generate stronger inertial pressures, thereby making organizations with high structural inertia more favored by selection processes. Reproducibility of structure also increases as organizations grow older, since organizational members take time to learn to trust and cooperate with each other (Stinchcombe, 1965) and learn organization-specific skills and routines (Nelson and Winter, 1982). This implies that older organizations have higher structural inertia and are favored by selection processes, i.e., have lower death rates. According to Hannan and Freeman (1984: 152-157), this is an important aspect of the liability of newness argument.

Although the increasing reproducibility of structure with age arises more from internal organizational processes, some important age-dependent external processes may also underlie the liability of newness. External legitimation is a critical prob-

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lem for young organizations. As organizations grow older, they are more likely to develop stronger exchange relationships with other organizations, become a part of the power hierarchy, and come to have their actions endorsed by powerful collective actors (Stinchcombe, 1968). Thus, older organizations are more likely to be viewed as legitimate. This increases their access to public and official resources, reduces selection pressures, and increases their chances of survival.

The preceding arguments suggest that the liability of newness may arise from both internal organizational and external processes. It seems plausible that if the liability of newness for a population of organizations arises mainly due to the lack of external legitimation, then external factors that increase the legitimacy of an organization, its endorsement by other powerful institutional actors, will alleviate selection pressures on the organization and lower the death rate. Alternatively, external factors that decrease the legitimacy of an organization should intensify selection pressures on the organization and increase the death rate.

On the other hand, the liability of newness for a population of organizations may arise mainly from internal processes such as the coordination of new roles for participants and the development of trust among strangers. If this is the case, then reorganizations or organizational changes that are fundamental enough to bring about the reshuffling of work groups, the hiring of new employees and bringing them into contact with existing employees, revamping of established patterns and routines of work, or revision of lines of communication will reduce the reliability of performance of the organization to that of a young organization. If the liability of newness reflects internal processes, reorganization "... robs an organization's history of survival value" (Hannan and Freeman, 1984: 160) and results in an increase in the death rate. Therefore, studying the relationship of legitimacy-enhancing external factors and internal reorganization with the death rate of organizations should be useful in understanding whether the liability of newness in a population of organizations is primarily due to external or internal processes.

To this point, we have addressed the issue in terms of the extreme cases in which the liability of newness arises primarily from either external or internal processes. More realistically, the two processes may not be independent, and internal reorganization processes may be systematically related to external processes of legitimation. Institutionalization theory (Meyer and Rowan, 1977; Meyer and Scott, 1983; DiMaggio and Powell, 1983; Zucker, 1983) suggests that internal reorganization is often undertaken in an attempt to make the organization isomorphic with the changing institutional environment. This isomorphism with the institutional environment leads, over time, to increased legitimacy and survival of the organization. Thus, processes of internal change may be systematically related to external legitimacy.

It is possible to distinguish the internally disruptive effects of reorganization from its effects on organizational legitimacy, both of which may affect the death rate. The disruptive effects of reorganization are likely to be immediate and become weaker over time. On the other hand, if reorganization has any

effect on organizational legitimacy, it is unlikely to be immediate and will, most likely, occur after a time lag. An important implication is that if the effect of reorganization is modeled as an immediate jump in the death rate, the internally disruptive effects of reorganization can be separated from the effects of reorganization on organizational legitimacy. Consequently, the effects of external and internal processes on the liability of newness can be disentangled empirically.

Finally, we have some a priori notions about whether internal or external processes would dominate as the basis for the liability of newness in our population of voluntary social service organizations. These organizations operate on a not-for-profit basis, and the majority of members participate voluntarily. Typically, these organizations offer socio-rehabilitative, vocational, cultural, educational, liaison, and referral services. These organizations have ambiguous technologies (Hasenfeld and English, 1974; March and Olsen, 1976) in that there is an incomplete knowledge of cause-effect relationships (Thompson, 1967). Because these organizations are not profit making and offer services, the clarity of output standards is often low, resulting in ambiguous criteria for effectiveness appraisal. Under these conditions, the usual efficiency, output, or process criteria for evaluating organizational effectiveness are inappropriate. Instead, social criteria, like the satisfaction and approval of external constituencies, are used to judge effectiveness (Daft, 1983: 107–108). Therefore, it seems likely that, for our population, lack of external legitimacy will be more important in explaining the liability of newness than will internal processes.

RESEARCH METHODS

Population

Carroll (1984a: 78–80) has identified two different positions in the ecological literature about the definition of organizational populations. One position, attributed to Hannan and Freeman (1977), argues that organizational populations should be defined in the context of the research problem of interest. Hannan and Freeman (1977: 934) claimed “that the populations of interest may change somewhat from investigation to investigation depending upon the analyst’s concern. Populations of organizations referred to are not immutable objects in nature, but are abstractions useful for theoretical purposes.” Populations are aggregates of organizations that have some unit character. In a similar vein, Boulding (1981: 11) suggested that populations are aggregates that conform to a common definition. The primary interest of researchers accepting this position is in theory building and model testing.

The major emphasis of the other position is to develop a science of organizational classification and taxonomy (McKelvey, 1975, 1978, 1982). Developing such an empirical taxonomy would be an important way to identify populations for answering substantive research questions (McKelvey and Aldrich, 1983). Carroll (1984a: 80) suggested that an important contribution of this perspective is to raise the issue of generalizability of research findings.

The approach we have taken is more sympathetic to Hannan and Freeman’s position. The primary emphasis of our research is on theory development and modeling and testing. The orga-

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nizational population studied consists of organizations that are similar in fundamental ways. Our population of study comprises all voluntary social service organizations (VSSO's) that came into existence in metropolitan Toronto, Canada during the period 1970–1980. The rationale for choosing 1970 as a cut-off date was twofold. One, in order to avoid methodological problems due to “left censoring” (Gross and Clark, 1975; Tuma, Hannan, and Groenvelt, 1979) it was necessary to establish a common commencement date for the population. Two, our initial investigations revealed that archival data on VSSO's prior to 1970 were sparse.

We define VSSO's as organizations governed by a board of directors and that operate on a nonprofit basis and are concerned with changing, constraining, and/or supporting human behavior. Similar to other groups of human service organizations, our population of VSSO's is quite diverse. They range from small organizations using only volunteer staff to large, sophisticated organizations employing professional staff and using advanced computer technology. An example of the former is a neighborhood service center, located in an ethnic area of the city populated by mobile communities, which uses volunteers to provide interpretation and settlement services to newly arrived immigrants. An example of the latter is a large, multipurpose agency that offers highly specialized legal, medical, and counseling services performed by professional staff. Some other VSSO's offer sociorehabilitative counseling services to individuals and families and provide referral services that attempt to link consumers to existing services.

Based on federal, provincial, municipal, United Way, and Community Information Centre archives, a list of all VSSO's born during the period of interest was compiled. This list was compared with the Provincial Index of Incorporated Non-Share Corporations (i.e., nonprofit corporations), and all organizations without an incorporation number were eliminated, since formal incorporation was used to establish organizational birth. We also excluded all exclusively government programs, religious groups, and professional associations, since it was unlikely that these organizational units were independent of their founding organizations. Finally, because we were interested in studying only instrumental organizations concerned with changing, constraining and/or supporting human behavior for clients residing within the geographic boundary of metropolitan Toronto, we excluded organizations not meeting these criteria. This resulted in a final population of 389 organizations. In earlier studies, we have reported analyses of birth (Tucker et al., 1985b) and death processes (Tucker, Singh, and House, 1984; Tucker et al., 1985a) for this population.

Data Collection

The data for this research are retrospective and include archival data from secondary sources and primary interview data. The archival data were collected from files, documents, and indexes maintained by the federal, provincial, and municipal levels of government; files, lists, and documents available from local planning, coordinating, and funding agencies (e.g., the United Way, the Community Information Centre); and the annual reports of individual VSSO's. The primary data were collected by means of a structured interview between the chief

operating officer of each organization and trained interviewers. For this study, the structural change data were gathered during the structured interview.

Methodology

The methodology employed in this study was event-history analysis (Tuma, Hannan, and Groenveld, 1979; Carroll and Delacroix, 1982). We analyzed event histories of organizational death. An event history is a data record containing information on the timing of the birth and death of an organization. The program we used to estimate model parameters, RATE (Tuma, 1980), corrects for problems of right censoring and also provides estimates of standard errors that can be used to assess the significance of parameter estimates.

Measurement

Death rate. Prior to dealing with death, we have to establish organizational birth. We define organizational birth as the formal incorporation of an organization. The assumption made is that formal incorporation reflects a strong commitment by the founder(s) to build and maintain an ongoing organization. Organizational death is defined as the organization ceasing to exist as a distinct legal entity. Thus, mergers count as organizational deaths. Since only five mergers occurred in this population, however, they could not be analyzed separately due to the low frequency of their occurrence (see Freeman, Carroll, and Hannan, 1983 for results on mergers).

The death rate of an organization is described by a stochastic function, the hazard function, which gives the instantaneous rate of death of an organization at any instant of its life. The hazard function is given by

$$h(t) = \lim_{\Delta t \rightarrow 0} \frac{\Pr(t, t + \Delta t/t)}{\Delta t}$$

where $h(t)$ is the hazard function, $\Pr(t, t + \Delta t/t)$ is the probability of death between t and $t + \Delta t$, given the organization is alive at age t .

External legitimacy. We use external legitimacy to mean an organization having its actions endorsed by powerful external collective actors (Stinchcombe, 1968) and developing strong relationships with external constituencies. Legitimacy is a conferred status and, as such, is usually controlled by those outside the organization (Pfeffer and Salancik, 1978). It results from a congruence between societal values and organizational actions (Dowling and Pfeffer, 1975; Meyer and Rowan, 1977).

We used three different indicators of legitimacy. A listing in the Community Directory of Metropolitan Toronto was the first indicator. This is an authoritative reference source on acceptable services in the metropolitan area and is frequently consulted by clients and referral services. A dummy variable, which takes the value 1 when the organization is listed in the directory but is 0 otherwise, described this. Later in their lives, some organizations lost the directory listing they had earlier. A new dummy variable, loss of community directory listing, was used, which takes the value 1 for organizations that lost their directory listing and is 0 for organizations that retained their directory listing.

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The issuance of a charitable registration number by Revenue Canada was the second indicator of legitimacy. This registration number is only given out to bona fide charities after an intensive review. One important consequence of having a charitable registration number, in addition to having Revenue Canada's stamp of approval, is that all contributions to the VSSO become tax deductible. This increases the organization's access to resources. Two dummy variables, receipt of charitable registration number and loss of charitable registration number were created, similar to those for community directory listing. By modeling the effects of both the acquisition and loss of community directory listing and charitable registration number, we built quasi-experimental features into the research design, which made for stronger inference.

The third indicator of legitimacy was the size of an organization's board of directors at the time of birth. Earlier research has suggested that creating boards of directors is an important way in which organizations attempt to coopt (Selznick, 1949) important external constituencies. In addition to accessing more resources and developing interfirm commitments, firms use boards of directors to establish legitimacy (Pfeffer and Salancik, 1978: 161) and gain the support of other institutional actors in the external environment.

Internal organizational changes. We were interested in organizational changes that would lead to the reshuffling of work groups and patterns of work, revised lines of communication, or the hiring of significant new employees. Five different kinds of internal change were studied: chief executive change, change in service areas, change in goals, change in client groups served, and change in structure. Chief executive change referred to the succession of the executive head of a VSSO. Change in service areas measured whether the organization had altered the domain in which it offered services, e.g., vocational, rehabilitative, etc. Change in goals measured whether the organization had altered its goals, e.g., information, coordination, advocacy, etc. Change in client groups measured whether the organization had changed its clients, e.g., families, children, elderly, etc. Finally, change in structure measured whether there had been any restructuring in an organization, such as regrouping of work units or a fundamental change in reporting relationships. All change variables were dummy variables coded 1 during the year the change occurred and 0 otherwise.

Descriptive Statistics

Out of our population of 389 organizations, 107, or 28 percent, died during the period of observation, 1970–1982. This indicated that a sufficient number of deaths had occurred in the population to make further parametric analysis meaningful. Of the 389 organizations, 243 (62 percent) did not acquire a community directory listing during their lifetime, but 146 (38 percent) did. Of these 146, 15 (10 percent) were eventually dropped from the community directory. Further, 123 organizations (32 percent) did not acquire a charitable registration number during their lifetime. Of the 266 organizations (68 percent) that did, 65 (24 percent) eventually lost their charitable registration. The board size at birth ranged from 1 to 35 directors. The

mean board size was 7.7, with a standard deviation of 5.4. The modal board size was 3 directors.

Table 1 presents the frequencies for changes in service areas, chief executives, goals, client groups, and structure. Chief executive change was the most frequent, with 190 organizations (49 percent) experiencing at least one change of chief executive, and one organization with as many as 9 changes. Changes in service areas and goals were less frequent, with 43 organizations (11 percent) that underwent at least one service-area change, and 64 organizations (18 percent) that underwent at least one goal change. Very few changes occurred in client groups, with only 8 organizations (2 percent) undergoing changes in clients. By comparison, structural change was relatively frequent, and almost 53 percent of the organizations experienced at least one structural change. However, since the structured interviews were conducted in 1982, by which time 107 VSSO's had already died, it was not possible to collect structural change data for all 389 organizations. After intensive efforts, we were able to conduct interviews in 270 organizations, i.e., 69 percent of the population. Of these 270 VSSO's, 222 were still alive at the time of interview and were 79 percent of all live VSSO's. Forty-eight VSSO's were no longer incorporated at the time of the interviews (45 percent of all dead VSSO's in the study). Thus, we had adequate representation from both live and dead organizations in this group of 270 organizations.

Table 1

Frequencies (%) of Organizational Changes*					
Number of changes	Change in service areas	Change in chief executive	Change in goals	Change in client group	Change in structure
0	346 (88.9)	199 (51.2)	325 (82.5)	381 (97.9)	128 (47.4)
1	29 (7.5)	91 (23.4)	35 (9.0)	6 (1.5)	70 (25.9)
2	6 (1.5)	48 (12.3)	21 (5.4)	2 (.5)	41 (15.2)
3	3 (.8)	24 (6.2)	3 (.8)		19 (7.0)
4	2 (.5)	18 (4.6)	1 (.3)		8 (3.0)
5	2 (.5)	7 (1.8)	3 (.8)		4 (1.5)
6	—	1 (.3)	—		
7	—	—	3 (.8)		
8	1 (.3)	—	—		
9		1 (.3)	1 (.3)		
10			1 (.3)		

*N = 389 except for structural change data. Because data were collected during the interviews, and some organizations had already died, interviews were conducted in only 270 VSSO's.

ANALYSIS AND RESULTS

In earlier studies we have presented more detailed analyses of the age dependence of death rates for this VSSO population (Tucker, Singh, and House, 1984; Tucker et al., 1985a). We began here by fitting parametric models to the death data for our population. Since the Makeham model did not converge to an exact solution when we used RATE (Tuma, 1980) to estimate the model parameters, we used the Gompertz model of the hazard function:

$$h(t) = \exp(\beta_0) \exp(\gamma_0 t), \tag{1}$$

where $\exp(\beta_0)$ gives the constant infant-mortality rate, and the parameter γ_0 gives the rate at which the infant mortality ap-

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proaches the null asymptotic death rate. The Gompertz model is shown in Figure 1. The parameter estimates for this model are shown in row 1 of Table 2.

Figure 1. Gompertz model of hazard function.

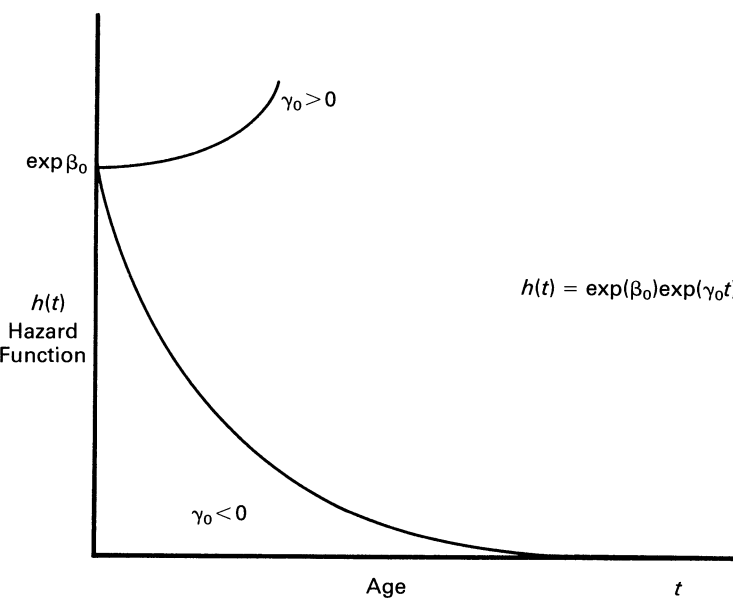


Table 2

Maximum-Likelihood Estimates: Liability of Newness Models, External Legitimacy Covariates*							
Model	β_0	γ_0	γ_1	γ_2	χ^2	d.f.	p
1. Gompertz	-2.966*** (.164)	-.064** (.037)			3.12	1	.07
2. Gompertz, community directory listing in C vector	-2.971*** (.164)	-.031 (.039)	-.080** (.046)		6.27	2	.04
3. Gompertz, charitable registration no. in C vector	-2.976*** (.165)	.015 (.045)	-.113*** (.044)		9.13	2	.01
4. Gompertz, board size at birth in C vector	-2.940*** (.164)	.043 (.048)	-.016*** (.006)		12.82	2	.002
5. Gompertz, directory listing, loss of listing in C vector	-2.944*** (.163)	-.036 (.039)	-.144*** (.055)	.326*** (.075)	20.18	3	.0002
6. Gompertz, charitable reg. no., loss of reg. no. in C vector	-2.977*** (.165)	.015 (.045)	-.110** (.048)	-.007 (.061)	9.14	3	.028

• $p < .10$; •• $p < .05$; ••• $p < .01$.
*Standard errors in parentheses.

The parameter estimates of the Gompertz hazard function showed a significant infant mortality and a significant and negative γ_0 , supporting the liability of newness argument. But the chi-square likelihood-ratio test showed the Gompertz model to be a marginally significant improvement ($p = .07$) over a con-

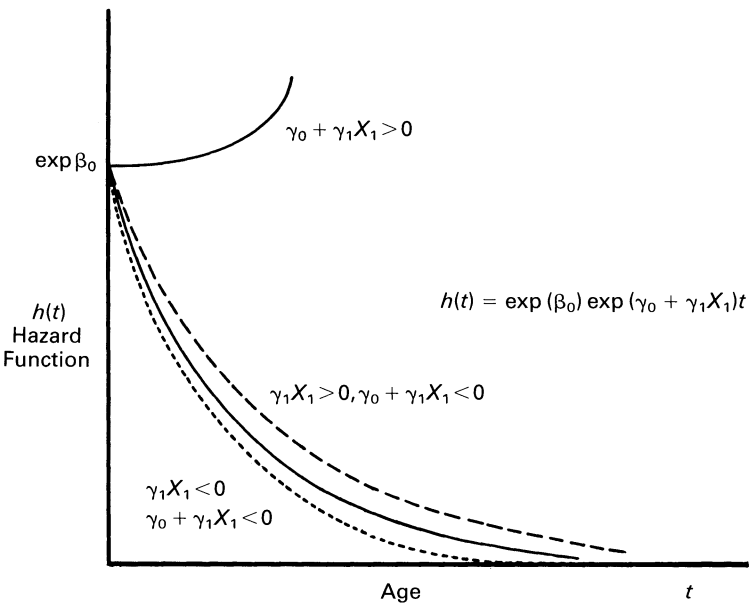
stant rate model, which weakened the earlier support for the liability of newness. Overall, the liability of newness thesis was supported, albeit weakly.

External legitimacy. The effects of the acquisition of a community directory listing and a charitable registration number on the hazard of death were estimated by introducing them as covariates into the Gompertz model. Since most VSSO's did not get a community directory listing or a charitable registration number until they were a few years old, it was inappropriate to assume that differences in death rates due to these factors would occur mainly through differences in infant mortality, i.e., the B (or β) vector. Instead, because these were life-cycle-related variables, it seemed theoretically more appropriate to model their effects in the speed at which the age dependence of death rate declines, i.e., the C (or γ) vector (Freeman, Carroll, and Hannan, 1983: 699). We estimated models of the form:

$$h(t) = \exp(\beta_0) \exp(\gamma_0 + \gamma_1 X_1)t, \tag{2}$$

where X_1 is a dummy variable which is unity for community directory listing and charitable registration number, respectively, and zero otherwise, and the coefficient γ_1 measures the impact of the exogenous variable on the rate of decline of the age dependence. Figure 2 illustrates the model with covariates in the speed-of-adjustment parameter. A negative value of $\gamma_0 + \gamma_1 X_1$ and $\gamma_1 X_1$ reflects a reduction in the death rate related with the exogenous variable.

Figure 2. Gompertz model with covariates in γ (C) vector.



The parameter estimates for the model in equation (2) are shown in rows 2 and 3 of Table 2. Organizations that were listed in the community directory had a significantly lower death rate than organizations that were not, since γ_1 ($-.080$) was negative and significant, and $\gamma_0 + \gamma_1 X_1$ ($-.111$, for $X_1 = 1$) was also negative. There was still a significant infant mortality, and the chi-square likelihood-ratio test showed the model to be

a significant improvement over a constant-rate model ($p = .04$). Interestingly, the constant liability of newness parameter, γ_0 , though still negative, declined to insignificance as a result of the introduction of community directory listing as a covariate.

The results were similar for the acquisition of a charitable registration number. The model was a significant improvement ($p = .01$) over a constant-rate model, and organizations with a charitable registration number had a significantly lower death rate than organizations that did not, since γ_1 ($-.113$) was negative and significant and $\gamma_1 + \gamma_1 X_1$ ($-.098$, for $X_1 = 1$) was negative too. The age-dependence parameter, γ_0 , though still negative, was not significant.

Some other interesting insights are gained by writing the models for the hazard function separately for organizations that acquired community directory listing and organizations that did not. Thus,

$$\begin{aligned} h(t) &= \exp(-2.971\bullet\bullet\bullet) \exp(-.031 - 0.080\bullet\bullet)t, \text{ if a community} \\ &\quad \text{directory listing was acquired, i.e., } X_1 = 1 \\ h(t) &= \exp(-2.971\bullet\bullet\bullet) \exp(-.031)t, \text{ if a community directory} \\ &\quad \text{listing was not acquired, i.e., } X_1 = 0. \\ &\quad (\bullet\bullet p < .05; \bullet\bullet\bullet p < .01) \end{aligned}$$

Since the γ_0 parameter is not significantly different from zero for the model, one implication of the results is that those organizations that are unable to get a community directory listing have a hazard of death that does not decline with age but stays relatively constant over time. On the other hand, for those organizations that get a listing in the community directory, there is a significant declining age dependence of death rate.¹ The results for getting a charitable registration number are similar, as can be seen from Table 2. This interactive effect of external legitimacy and age on the death rate suggests that, at least for this population, aging alone is not enough to overcome the liabilities a young organization encounters. Rather, the endorsement of powerful collective actors, which accords the organization initial external support, helps reduce the death rate as the organization ages. This may be because the external support makes it easier for organizations to build strong exchange relationships with yet other organizations and permits greater access to resources, and this becomes increasingly easier as organizations age. These advantages are, however, not available to organizations that do not acquire external support. Our findings suggest two minor revisions to earlier theorizing and empirical results on the liability of newness (Carroll and Delacroix, 1982; Freeman, Carroll, and Hannan, 1983; Hannan and Freeman, 1984). First, the pattern of liability of newness is not invariant and constant for all organizations in a population. Second, the high initial death rate does not automatically decline with age for all organizations, but its decline can be facilitated by the organization's gaining external legitimacy.

We next modeled the effect on the death rate of the size of an organization's board of directors at birth. We used the model in equation (2) and introduced the board size at birth as a covariate into the C vector.² The results are reported in Table 2, row 4. The overall model of the hazard function was a significant improvement over a constant-rate model ($p = .002$) based on the chi-square likelihood-ratio test. There was still a significant infant mortality, and, as before, the γ_0 parameter for liability of

1
Technically, a more precise interpretation of this result is that organizations exhibit a constant, age-independent death rate until a community directory listing is acquired by some. At this point, the death rate declines with age for these organizations, whereas organizations that do not acquire a community directory listing exhibit an age-independent death rate. This was pointed out by Howard Aldrich.

2
Since the exogenous variable of interest was the board size at birth, it was also feasible to estimate the effect of board size on the infant mortality. The results were similar to the reported results. Board size significantly lowered the overall hazard of death, lending support to our expectations.

newness was insignificant. Board size had a significant negative effect on the rate-of-adjustment parameter ($\gamma_1 = -.016$), i.e., organizations with larger boards had lower death rates than organizations with smaller boards, which was as expected, based on the theory.

Next, we modeled the effects of the loss of the community directory listing and loss of the charitable registration number on the hazard of death. The model used was an extension of the model in equation (2):

$$h(t) = \exp(\beta_0) \exp(\gamma_0 + \gamma_1 X_1 + \gamma_2 X_2)t, \tag{3}$$

where X_1 is either acquisition of a community directory listing or a charitable registration number, and X_2 is the loss of a community directory listing or a charitable registration number, respectively. The results are reported in Table 2, rows 5 and 6. The estimates for the loss of a community directory listing show that the model was a significant improvement over a constant-rate model ($p = .0002$). Loss of a community directory listing had a significant positive impact on the rate-of-adjustment parameter ($\gamma_2 = .326$). Whereas most parameter estimates for this model were directionally similar to the model for acquisition of a community directory listing, an interesting departure was that the overall rate of adjustment parameter ($\gamma_0 + \gamma_1 X_1 + \gamma_2 X_2$) was positive for organizations that acquired and then lost a community directory listing. This becomes clearer by writing the estimated models of the hazard function separately for different groups of organizations. Thus,

$$h(t) = \exp(-2.944\bullet\bullet\bullet) \exp(-.036)t, \text{ for organizations that did not acquire a community directory listing } (X_1 = 0, X_2 = 0)$$

$$h(t) = \exp(-2.944\bullet\bullet\bullet) \exp(-.036 - .144\bullet\bullet\bullet)t, \text{ for organizations that acquired a community directory listing and retained it } (X_1 = 1, X_2 = 0)$$

$$h(t) = \exp(-2.944\bullet\bullet\bullet) \exp(-.036 - .144\bullet\bullet\bullet + .326\bullet\bullet\bullet)t, \text{ for organizations that acquired and lost a community directory listing } (X_1 = 1, X_2 = 1) (\bullet\bullet\bullet p < .01).$$

Consistent with the earlier results, organizations that did not acquire a community directory listing were subject to a constant hazard of death that did not change with age. Acquiring a community directory listing significantly reduced this hazard of death and also caused a declining age dependence of the death rate ($\gamma_0 + \gamma_1 = -.180$). Further, the loss of the community directory listing not only significantly increased the death rate, it also changed the nature of age dependence of the death rate from a declining pattern to an increasing one ($\gamma_0 + \gamma_1 + \gamma_2 = .146$). This suggested that the loss of the community directory listing was even more hazardous than not having acquired it at all, since the overall hazard of death increased with age for organizations that lost their directory listing, compared with a constant hazard of death for those that did not acquire it at all.

We modeled the loss of the charitable registration number analogously, but the results (row 6, Table 2) showed that losing the charitable registration did not have a significant impact on the rate-of-adjustment parameter for the hazard of death. However, the overall model was still a significant improvement over a constant-rate model, and there was still an overall declining age dependence of the death rate ($\gamma_0 + \gamma_1 + \gamma_2 = -.102$) for organizations that acquired and later lost their charitable registration.

Table 3

Predicted Death Rates of VSSO's				
Age (in years)	Death rate A	Death rate B	Death rate C	Death rate D
0	.052	.052	.052	.052
1	.048	.044	.046	.061
2	.045	.037	.042	.071
3	.043	.031	.038	.082
4	.040	.026	.035	.094
5	.037	.021	.032	.109
6	.035	.018	.029	.126
7	.033	.015	.026	.146
8	.031	.012	.024	.169
9	.029	.010	.022	.196
10	.027	.009	.020	.227
11	.026	.007	.018	.262
12	.024	.006	.016	.304
13	.023	.005	.015	.351

A: All organizations.
B: Organizations that acquired and retained a community directory listing.
C: Organizations that acquired and retained a charitable registration number.
D: Organizations that acquired but later lost a community directory listing.

In Table 3 we present the predicted death rates for organizations at different ages, for illustrative purposes. Four sets of death rates are calculated based on the respective estimated parametric models of the hazard function. The first set of death rates is for all organizations, the second set is for all organizations that acquired and retained a community directory listing, the third set is for all organizations that acquired and retained their charitable registration number, and the fourth set is for organizations that acquired but subsequently lost their community directory listing.³ The predicted death rates show that these groups are dramatically different from each other. Whereas it took thirteen years for the death rate to decline to .023 if all organizations were considered as one group, it took only five years for the death rate to decline to this level among organizations that retained their community directory listing, and nine years for organizations that retained their charitable registration number. Thus, being listed in the community directory was the surest way to attenuate the liabilities of newness in this population. At age 13, organizations that were still in the community directory (death rate B) had the lowest death rate (.005), organizations that had retained their charitable registration number (death rate C) had a death rate three times this size (.015), and organizations that lost their listing in the community directory (death rate D) had a death rate *seventy* times as large (.351)! These results reinforce the substantive importance of treating these groups of organizations separately.

Up to this point, all three indicators of legitimacy have been modeled separately. It seemed plausible that these variables would be correlated, and so it was important to model them simultaneously in order to correct for specification errors. Further, till now we have modeled the acquisition and loss of a community directory listing and a charitable registration number as two separate dummy variables and examined the impact of only the first acquisition and the first loss on the death rate. It is possible that an organization could acquire and lose, say, a community directory listing more than once. In order to ac-

3 We did not compute predicted death rates for organizations that did not acquire a community directory listing and organizations that did not receive a charitable registration, since their coefficients for age dependence were not significant.

count for these arguments more realistically we modeled all three indicators of legitimacy simultaneously and, with the exception of board size, treated them as time-varying covariates. We still used board size at birth, because the board size data during later years of a VSSO's life were not fully and reliably available.

We used a more general form of the model in equation (3) to estimate the parameters. To model the time-varying covariates, we considered the life span of each organization to be made up of multiple one-year spells, each spell being artificially "right censored," except in the year the organization died. The model was of the form:

$$h(t) = \exp(\beta_0) \exp(\gamma_0 + \gamma_1 X_1 + \gamma_2 X_2 + \gamma_3 X_3)t, \tag{4}$$

where X_1 and X_2 are time-varying variables for a community directory listing and a charitable registration number, respectively, which take the value 1 *in each year* the organization has a community directory listing or a charitable registration number, and 0 otherwise, and X_3 is the board size at birth. Knowing the values of the covariates, we were able to estimate the impact of each covariate on the death rate, taking into account the time-varying status of the community directory listing and the charitable registration number. The overall model was significant compared to a constant rate model ($\chi^2 = 28.22$, 4 d.f., $p = .00001$), and the parameter estimates were (standard errors in parentheses):

$$h(t) = \exp(-3.486^{***}) \exp(.210^{***} - .108^{***} \text{COMDIR} - .079^{**} \text{CHAREG} - .012^{***} \text{BOARD})t$$

(.180)
(.043)
(.045)
(.038)

(.005)
(**p<.05; ***p<.01).

The results showed clear support for our earlier inferences. Modeling the multiple indicators of legitimacy simultaneously, using community directory listing and charitable registration number as time-varying covariates, still confirmed the view that the support of the institutional environment had a significant negative impact on the death rate. An interesting departure from the earlier results was that the γ_0 parameter was significant and positive! Based on this finding, we have to qualify our observations about the nonsignificant liability of newness parameter and interpret them cautiously.

Finally, in order to rule out alternative explanations for the above results, we incorporated some control variables into the analysis. Another way to interpret the need for including realistic control variables is that population heterogeneity is a strong alternative explanation to a true age dependence of death rate (Carroll, 1983b; Freeman, Carroll, and Hannan, 1983). The population may be heterogeneous, and even though each sub-population has an age-independent death rate, the overall analysis could reveal a spurious declining death rate.

In an earlier study, we had found that death rates were significantly influenced by the organizational form at founding and by periods of resource munificence and scarcity (Tucker et al., 1985a). Accordingly, we included dummy variables for specialist and generalist organizations to account for differences in organizational form at the time of founding. Resource munificence and scarcity, in the context of our population, were

indicated by time-varying dummy variables for two historical periods, the Opportunities for Youth (OFY) period and the Provincial Restraint (RES) period. During OFY, which began in 1971 and ended in 1975, the federal government made available large sums of money aimed at stimulating youth employment. During RES, the period 1976–1980, the provincial government significantly cut back funding available for VSSO's. Prior research has also shown the importance of the impact of density on selection processes (Brittain and Freeman, 1980). Based on this, we included the number of VSSO's each year during 1970–1982 as another time-varying control variable. Another significant control variable is organizational size at founding (Freeman, Carroll, and Hannan, 1983). However, for this population of voluntary organizations, the usual indicators of size such as number of staff or yearly budget figures were not available. The only variable that carried any size-related information was the board size at birth, already used earlier as a measure of external legitimacy. We argued that in the early stages of a VSSO's life the board members have to do most of the work, since the other volunteers would not yet form a significantly large group in the organization. We used the model in equation (4) and added dummy variables for specialism, generalism, and time-varying variables for resource munificence, scarcity, and density. The model was significant compared to a constant rate model ($\chi^2 = 83.45$, 9 d.f., $p = .00$), and the parameter estimates were (standard errors in parentheses):

$$\begin{aligned} h(t) = & \exp(-4.056^{***}) \exp(1.917^{***} - .115^{***} \text{COMDIR} \\ & (.228) \quad (.599) \quad (.048) \\ & -.087^{**} \text{CHAREG} - .010^{**} \text{BOARD} \\ & (.040) \quad (.005) \\ & -.026 \text{SPEC} - .067 \text{GEN} - .071 \text{OFY} + .250^{***} \text{RES} \\ & (.043) \quad (.063) \quad (.179) \quad (.068) \\ & -.003^{***} \text{DENS} t \\ & (.001) \\ & (**p < .05; ***p < .01). \end{aligned}$$

The only control variables that had a significant impact on the death rate were resource scarcity and density. As one might expect, during periods of resource scarcity, organizations had higher death rates. But, contrary to what may have been expected based on competition arguments, density had a negative effect on death rates. Most importantly, however, the inclusion of these control variables did not significantly alter the impacts on death rates of community directory listing, charitable registration number, and board size at birth. Our earlier inference that organizations supported by the institutional environment have lower death rates was still valid. As we had found in the previous model when all the legitimacy indicators were modeled together, the γ_0 parameter was significant and positive, underscoring the need to qualify our earlier observations about the liability of newness.

To summarize, modeling the impact of three indicators of legitimacy — a listing in the Community Directory of Metropolitan Toronto, acquisition of a Charitable Registration number, and board size at birth — on the hazard of death showed strong support for the position that organizations with external legitimacy have lower death rates.⁴ Whereas organizations without external legitimacy have either a constant hazard of death that does not decline with age or an increasing one, externally legiti-

4 Although, as argued above, it is more appropriate to model life-cycle-related variables such as community directory listing in the γ vector, we think that for the multiple-spells models used in our analysis, it may be equally appropriate to model the covariates in either the β or γ vectors. This is because in a model with multiple one-year spells, the β parameter is no longer strictly an estimate of infant mortality. To ensure that our results were not artifactually created by modeling covariates in the γ vector, we estimated another model in which all the covariates and control variables were modeled in the β term. The results were similar to the findings reported here. Community directory listing, charitable registration number, and board size at birth still significantly reduced the death rate, ruling out this argument.

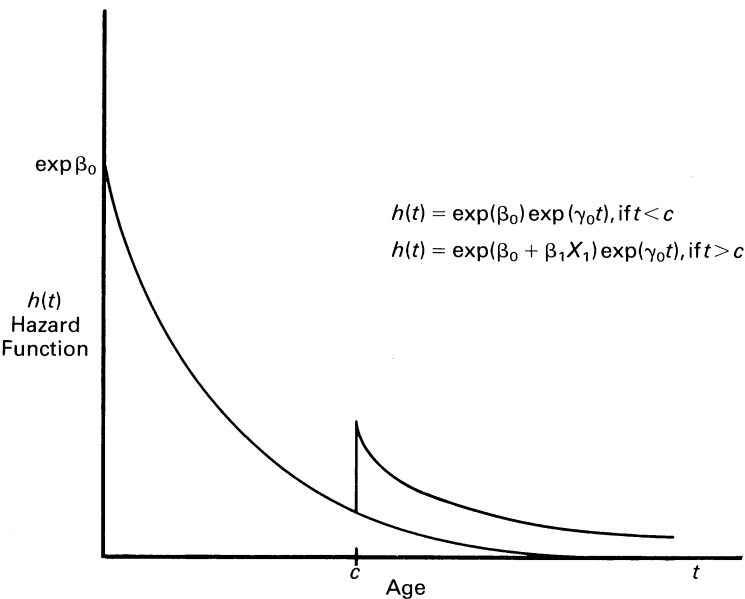
mated organizations have a generally declining age dependence of death rate. There is also some evidence that loss of external legitimacy increases the hazard of death. These results suggest two elaborations of previous theorizing on the liability of newness. First, the liability of newness in organizational populations may not be invariant across all organizations. Depending on external legitimacy, a factor unique to organizational history, the pattern of liability of newness can vary. Second, aging alone may sometimes not be enough to overcome the liability of newness. The acquisition of external legitimacy can significantly accelerate this process. Finally, some organizations that do not acquire external legitimacy may not overcome their liabilities of newness at all. These findings were generally not altered by incorporating the organizational form at the time of founding, patterns of resource scarcity and munificence, and population density as control variables. However, the liability of newness parameter became positive and significant, suggesting the need for cautious interpretation of our findings.

Internal organizational changes. We next modeled the impact of internal organizational changes on the hazard of death. Five different organizational changes — change in service areas, change in chief executive, change in goals, change in client groups and change in structure — were considered. As discussed earlier, in order to separate the internally disruptive aspects of these organizational changes from their indirect effect on the hazard of death mediated by legitimacy, it was necessary to model the impact of change as an instantaneous jump in the death rate. This was done by estimating models of the form (also see Carroll, 1984b):

$$\begin{aligned} h(t) &= \exp(\beta_0) \exp(\gamma_0 t), \text{ if } t < c \\ h(t) &= \exp(\beta_0 + \beta_1 X_1) \exp(\gamma_0 t), \text{ if } t > c, \end{aligned} \tag{5}$$

where c is the time at which an organizational change occurs, t is the age variable, and $X_i, i = 1, \dots, 5$, are dummy variables

Figure 3. Gompertz model with internal organizational change (c) in the β (B) vector.



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which are unity if the specific change occurs, and 0 otherwise. The two different models are applicable depending on whether the change has occurred or not. A graphic representaiton of this model is shown in Figure 3.

Although the model above, for simplicity, only accounts for a single occurrence of change, multiple occurrences were considered by using a model similar to equation (4) with multiple spells and time-varying covariates. Knowing the years in which internal organizational changes had occurred, we were able to estimate the impact of each of the five separate changes on the death rate, taking the multiple instances of each change into account simultaneously. The results for the impact of internal organizational changes on the hazard of death are presented in Table 4.

Table

Maximum-Likelihood Estimates:
Liability of Newness Models, Internal Organizational Change Covariates (Multiple-Spells Models)*

Model	β_0	β_1	γ_0	χ^2	d.f.	p
1. Gompertz, change in service areas in B vector	-2.960*** (.164)	-.854 (.715)	-.061* (.037)	4.39	2	.11
2. Gompertz, change in chief executive in B vector	-3.445*** (.184)	-.750** (.385)	.062** (.033)	8.22	2	.016
3. Gompertz, change in goal areas in B vector	-2.983*** (.164)	-1.106* (.715)	-.051* (.037)	5.05	2	.08
4. Gompertz, change in client group in B vector	-2.954*** (.163)	.104 (1.005)	-.068*** (.037)	3.53	2	.12
5. Gompertz, change in structure in B vector†	-4.085*** (.281)	-.140 (.472)	.055 (.047)	1.45	2	.48
6. Gompertz, change in goals and structure in B vector†	-4.089*** (.277)	-5.725 (31.67)	.054 (.047)	1.97	2	.37

*p < .10; **p < .05; ***p < .01.
*Standard errors in parentheses.
†N = 270.

For changes in service areas (row 1) the overall model was not a significant improvement over a constant-rate model based on the chi-square likelihood-ratio test. Thus, it was not meaningful to examine parameter estimates further. The pattern of results was generally similar for changes in client groups and structure (rows 4 and 5). However, the model for changes in chief executive officer was a significant improvement over a constant-rate model (p = .016). Interestingly, there was a significant increasing age dependence of death rate, and chief executive change, instead of being internally disruptive and corresponding to a jump in the death rate, significantly lowered the death rate. This implies that there is some empirical merit in theories that suggest that replacing chief executives is an important way in which organizations adapt to changing environments (Pfeffer and Salancik, 1978; House, Singh, and Tucker, 1985). Finally, the model for changes in goals was only a marginal improvement over a constant-rate model (p = .08). Goal change significantly lowered the hazard of death, suggesting weak support

for the adaptive effects of goal change, since the overall model was not significant.

Before concluding that the liability of newness in this population arises more from external processes, we investigated the impact of structural change on the death rate further. Hannan and Freeman (1984: 160) argued that change in structure coupled with change in goals is more likely to correspond to a higher death rate than structural change alone. Table 4, row 6 presents the results for changes in structure and goals and their impact on the death rate. Like the results for structural change, the overall model was not significant, so this alternative explanation was ruled out.

As we had done before for the legitimacy variables, we estimated the parameters for a model in which all the internal changes were modeled simultaneously. The multiple-spells model was analogous to the one in equation (5) except for multiple exogenous variables. The model used was:

$$h(t) = \exp(\beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4) \exp(\gamma_0 t), \tag{6}$$

where the exogenous variables were change in service areas, change in client groups, changes in goals, and chief executive change, respectively, and the variables were defined as earlier.⁵ The model was significant compared to a constant rate model ($\chi^2 = 18.19$, 5 d.f., $p = .003$), and the parameter estimates were (standard errors in parentheses):

$$h(t) = \exp(-3.422^{**} + 0.358^{***} \text{CHSERVICE} - 7.326 \text{CHCLIENT} \\ (.181) \quad (.137) \quad (98.53) \\ - 7.368 \text{CHGOAL} - .726^{**} \text{CHCEO}) \cdot \exp(.061^{**} t) \\ (24.99) \quad (.385) \quad (.033)$$

$$(**p < .05; \quad ***p < .01).$$

These results were generally similar to the earlier findings. Changes in client groups and goals had no impact on the death rate, but change in chief executive lowered the death rate. However, one departure from the earlier results was the significant positive effect of change in service areas on the death rate. Although this may be interpreted as partial support for the origin of the liability of newness in internal processes, we are inclined to be cautious at this point because when the impact of change in service areas on the death rate was modeled alone, the result was not significant. Our speculation is that this unexpected result may have been produced by some systematic relationship between the different changes. A suppressor relationship (Cohen and Cohen, 1975: 87–91) with one of the other changes is indicated and needs to be investigated further.

Finally, we incorporated control variables into the analysis in order to rule out some alternative explanations. We included organizational form at founding and the board size at birth, and resource munificence, scarcity, and population density as time-varying covariates. An exact solution was not obtained for this model using RATE. The parameter estimates for this model, though not strictly interpretable, were similar to the model without the control variables. However, a reduced model in which only organizational form and board size at birth were controlled for fitted the data adequately compared to a constant rate model ($\chi^2 = 37.47$, 8 d.f., $p = .00$), and the parameter estimates were (standard errors in parentheses):

5 We were unable to estimate the effects of structural change in this model because structural change data were only available for a smaller subsample of 270 organizations.

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$$h(t) = \exp(2.856^{***} + .415^{***}CHSERVICE - 18.53CHCLIENT \\ (.274) \quad (.140) \quad (2903) \\ - 18.61CHGOAL - .721^{**}CHCEO + .123SPEC \\ (724.5) \quad (.387) \quad (.214) \\ - .491^{*}GEN - .084^{***}BOARD) \cdot \exp(.066^{**}t) \\ (.324) \quad (.026) \quad (.033) \\ (*p<.10; **p<.05; ***p<.01).$$

As can be seen from the parameter estimates above, the earlier findings remained unchanged by the inclusion of control variables.

In summary, the overall burden of the evidence from models in which we estimated the impact of internal organizational changes on the hazard of death is that these changes are not accompanied by a sudden increase in the death rate.⁶ The exception is the effect of service-area change, which needs to be interpreted carefully. Contrary to the theory, changes in chief executive reduce the hazard of death, suggesting adaptive rather than internally disruptive consequences of these organizational changes. In a separate study, we are attempting to study the relationship between organizational changes and organizational survival (Singh, House, and Tucker, 1985) and explore adaptive and ecological arguments further.

DISCUSSION

In this paper we have presented some initial results from an investigation of the processes that may underlie the liability of newness for a population of voluntary social service organizations. The basic theoretical thrust was to investigate whether the liability of newness in a population arises primarily from external or internal processes, by examining their impact on the hazard of death.

The results consistently suggest that the acquisition of external legitimacy corresponds to a significant reduction in the hazard of death. Taking the indicators of legitimacy explicitly into account one at a time also makes the age dependence of death rates become insignificant.⁷ Organizations that are not externally legitimated have either a constant hazard of death that does not decline with age or an increasing pattern. But externally legitimated organizations continue to display a pattern of declining age dependence of death rates. There is also some evidence that the loss of external legitimacy not only corresponds to an increase in the death rate but that it changes the declining age dependence of death rates to an increasing age dependence. The negative impact of indicators of external legitimacy on the death rate persists, despite controlling for organizational form at birth and resource scarcity, munificence, and population density patterns over time.

On the other hand, most internal organizational changes do not correspond to an increase in the death rate, although we have some evidence for a positive effect of service-area change on the death rate, which needs to be interpreted cautiously. To the contrary, there is some evidence that chief executive change corresponds to reductions in the death rate. Therefore, the empirical evidence strongly seems to support the position that the liability of newness for this organizational population reflects more the low levels of legitimacy of young organizations and

6 Similar to the analyses carried out for external legitimacy variables, we estimated a model in which the internal change covariates and control variables for organizational form and board size at birth were modeled in the γ term in order to rule out modeling artifacts as an alternative explanation. The results were again similar to the model with covariates in the β term, confirming that the results were not an artifact of modeling the covariates in the β vector.

7 This finding must, of course, be interpreted carefully, since there was only a modest liability of newness in this population to begin with. It may be the case that in populations where the pattern is stronger, modeling the acquisition of legitimacy explicitly will not reduce the liability of newness to insignificance. Moreover, in more complex models with the control variables, the liability of newness parameter was usually significant and positive, suggesting that this result is not stable over different model specifications.

their lack of supportive exchange relationships with other significant organizations.

The preceding treatment has implicitly assumed throughout that the acquisition of external legitimacy leads causally to reductions in the death rate of the VSSO's. An important alternative explanation that bears discussion is that organizations that survive early death are more likely to acquire legitimacy. The agencies that dispense credentials may tend to accredit organizations that have a lower hazard of death, i.e., have lived longer. If it is true, this argument would imply that our preceding analysis has the cause-effect relationship backwards.

The key test of this alternative argument is an empirical one, because, if it is valid, the acquisition of a community directory listing and a charitable registration number should be more likely in older, longer-lived organizations. However, for our population, the empirically observed pattern of legitimacy acquisition did not support this argument. We estimated Makeham models of the rate of acquisition of a community directory listing and a charitable registration number as functions of age. The model for community directory listing was significant ($\chi^2 = 26.25$, 2 d.f., $p = .00$) and the estimates were (standard errors in parentheses):

$$r(t) = \exp(-11.34) + \exp(2.019^{\bullet\bullet\bullet}) \exp(-.185^{\bullet\bullet\bullet}t) \quad (\bullet\bullet\bullet p < .01).$$

(29.92) (.125) (.039)

The model for charitable registration number was also significant, ($\chi^2 = 45.47$, 2 d.f., $p = .00$), and the estimates were (standard errors in parentheses):

$$r(t) = \exp(-11.34) + \exp(-1.085^{\bullet\bullet\bullet}) \exp(-.201^{\bullet\bullet\bullet}t).$$

(50.01) (.087) (.033)

Thus, an analysis of the rate of acquisition of a community directory listing and a charitable registration number as a function of age showed, interestingly, that the rate was highest in young organizations, i.e., there was a negative age dependence! Organizations either acquired these indicators very early, or the likelihood declined over time. These findings help rule out this alternative explanation for our results.

It is interesting to compare our results with other studies and to speculate whether the findings of our study may be generalizable to other organizational populations. To the best of our knowledge, no other studies have attempted to study empirically the impact of external and internal organizational processes on the hazard of death, although Hannan and Freeman (1984) recently put a strong theoretical emphasis on the impact of organizational changes on organizational mortality. In one study, Carroll and Delacroix (1982) studied the impact of exogenous economic variables such as peaks and troughs of the industrial cycle and aggregate economic indicators on newspaper death rates in Argentina and Ireland. They found significant effects of these exogenous variables on the death rate, and the liability of newness persisted. However, this study was not strictly comparable, since their external indicators cannot justifiably be related to external legitimacy. Indeed, their research questions were quite different.

It may be that if processes of external legitimacy are modeled explicitly, similar results would be observed for other populations. This is, of course, an empirical question to be addressed

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in future research, and we cannot claim that based on the findings of this study. But it seems reasonable to assert that external legitimacy would be a more important process underlying age dependence of death rates for organizations that have ambiguous technologies and unclear goals (March and Olsen, 1976; DiMaggio and Powell, 1983). An example of such a population would be educational organizations (Weick, 1976). Further research is needed to address the question of the generalizability of our findings to other populations.

This study has some specific implications for organizational ecology research. In a departure from earlier work, this study suggests that the liability of newness may not apply uniformly to all organizations in a population and that it may not be invariant across organizations. Starting with modest support for the liability of newness, we found some evidence that the acquisition of legitimacy attenuates the liability of newness. This suggests that attempts by organizations that lead to their becoming externally legitimated, either by changes in formal structure (Meyer and Rowan, 1977) or any other means, can significantly alter the liability of newness. Opposed to an invariant law-like status for the liability of newness, our study suggests an external contingency view. The liability of newness does exist in organizational populations, but it is not constant or uniform across all organizations. It is variable and is contingent on factors such as external legitimacy.

There are also some general implications for organizational research. First, our study suggests one way to bring together some ideas from ecological theory and the institutional perspective (Meyer and Rowan, 1977; DiMaggio and Powell, 1983; Meyer and Scott, 1983; Zucker, 1983). Both views of organizational change have considerable promise (Pfeffer, 1982), and it would be useful to reconcile them. Based on this study and earlier research, it seems quite clear that an important way in which selection processes operate within populations is through differential death rates of organizations. Our study suggests that the support of the institutional environment can dramatically alter the selection pressures experienced by young organizations. This opens up the interesting possibility that organizational actions that are conducive to obtaining institutional support may have a significant adaptive impact on organizational survival. Second, recent empirical tests of institutional ideas have primarily focused on the wide and rapid diffusion of administrative innovations in institutionalized environments (Rowan, 1982; Tolbert and Zucker, 1983). Our study addresses another central question in institutionalization theory, the relationship between organizational legitimacy and organizational survival, and finds support for predictions consistent with the institutional view.

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