

How Regulation and Globalization Affected Organizational Legitimation and
Competition Among Commercial Banks in Singapore, 1840-1994

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Abstract and Summary

Organizational theorists now widely recognize that both institutions and competition play major roles in the evolution of industries and organizational populations. A central research question facing the field concerns how these two phenomena affect each other. Theorists often argue for the primacy of one or the other set of factors and empirical researchers often treat one set as fully exogenous while studying the other. Yet, in most general theoretical analyses, both institutions and competition are regarded as endogenous to long-term organizational evolution. This possibility raises great theoretical and modeling difficulties that require more attention by organizations researchers.

We address these issues here by studying the banking industry in Singapore—an ideal research context because of the development of strong regulations and the presence of diverse international competitors. Historical development of the industry is characterized by the appearance and prevalence of different organizational forms of banks, from early trade-facilitating foreign banks to local Chinese banks to multinational banking corporations. Banking regulations in Singapore are enacted and put into place at various times throughout history. The major regulations impose great restrictions on certain banking activities; these restrictions often apply only to specific organizational forms.

Theoretically, we examine competition as well as the two dominant conceptions of legitimation used in the organizational analysis, constitutive legitimation and sociopolitical legitimation. We formulate hypotheses based on each conception. These efforts include a novel application of the multi-level specification of Hannan et al. (1995) to apply to the various secondary forms of organization within a population. The general argument says that constitutive legitimation operates broadly across all secondary forms while competition works mainly within a form.

Our empirical analysis relies on data we compiled on the 210 commercial banks ever to operate in Singapore from 1840 to 1994. We report here our investigation of organizational founding and mortality. This investigation uses hazard functions to estimate rates of founding and organization-specific rates of mortality. We use covariates representing characteristics of the organization, industry and economy.

In initial analyses, we find strong and significant industry-wide effects of both institutions and competition. For institutions, we find evidence of constitutive legitimation of the banking organizational form as well as increased general stability as a result of establishment of the socio-politically legitimating Monetary Authority of Singapore, the most important regulatory change. For competition, we find that as the banking industry becomes increasingly crowded (with all kinds of competitors), the founding rates of banks decrease and mortality rates increase.

Further analyses show that the effects of both regulations and competition depend on a bank's organizational form in complex ways. Full license banks, which predate much regulatory change, benefit the most from elaborated regulation; the mortality rates of these banks drop significantly with each major change in regulatory structure.

Competition within each organizational form is also stronger than generalized competition throughout the industry (yet constitutive legitimation persists as a general phenomenon). Foreign banks, however, are much more susceptible to competition within their form than are local banks. These findings suggest that the ways regulations were developed and instituted in Singapore banking likely took into account the interests of and protected the existing banking population.

A growing consensus among organizational theorists recognizes that both competition and institutions affect the structures of organizations and organizational populations. This trend is seen clearly in recent empirical research by investigators of two theoretical camps often thought to be in opposition to each other, organizational ecology (Hannan and Freeman, 1977) and institutional theory (Meyer and Rowan, 1977). Organizational ecology is known for the attention it gives to competitive processes among organizations. Yet, ecological studies of organizational vital rates routinely incorporate environmental variables representing legislative and other governmental actions—and these typically show large and strong effects (see, for example, Barnett, 1997 and Hannan et al., 1998). Institutional theory spotlights normative forces operating on organizations and the institutions that generate them. Yet, institutional studies of the diffusion of organizational features usually take into account the location and visibility of organizations in the competitive network; indeed, these factors often play a pivotal role in theoretical predictions (see, for example, Edelman, 1992; Strang and Tuma, 1993; Strang and Meyer, 1993). Consensus over these issues has strengthened so much that the lines between theoretical camps have increasingly become blurred, as evidenced by studies from ecologists which theorize about the effects of regulations (Barnett and Carroll, 1994; Wade et al., 1998) and from institutionalists which investigate organizational founding rates (Dobbin and Dowd, 1997).

General theoretical analyses recognize that although the competitive structure of an industry has much to do with the types of institutions and regulatory structures that develop and evolve within that industry, those very same institutions and regulations shape and change later competition (Hannan and Freeman, 1984; DiMaggio and Powell,

1983; Scott, 1995). In other words, the two phenomena are tightly interrelated and should be regarded as endogenous to an organizational population. Organizational ecology's model of density dependence (Hannan and Carroll, 1992) does view competition and institutional legitimation as endogenous but for many analysts, this model does not go far enough in representing the range of institutional phenomena (Fombrun, 1988; Zucker, 1989; Baum and Powell, 1995). Most other empirical research blending competitive and institutional notions, however, fails to use an endogenous specification—virtually all studies of this kind essentially ignore the issue and treat the institutional variables as exogenous. Given the potential difficulties involved in developing an endogenous specification, such convenient side-stepping might make sense initially as researchers establish the importance of institutional phenomena. But once that importance has been established, there is no excuse for not attempting to build models consistent with theory, however difficult that might prove.

Our goal here is to move research on these issues a small step forward. Toward that end, we examine the evolution of commercial banking in Singapore from its inception in 1840 until 1994. The banking industry of Singapore constitutes a good research context for these issues because it is characterized by strong regulations and by the presence of several distinct organizational forms, including local Chinese banks and multinational banking corporations. The major regulations, which impose great restrictions on certain banking activities, often apply only to specific organizational forms. This fact suggests that the relationship between competition and institutions coheres around organizational forms, a possibility that allows for some subtlety in modeling these phenomena. Our efforts here do not entail a fully endogenous

specification of competition and institutions, but we do go beyond existing research by estimating models of organizational mortality where the two phenomena interact to produce outcomes. We believe that this approach moves closer to representing underlying theoretical notions accurately and that it has broad applicability.

More specifically, this report describes an empirical investigation of organizational founding and mortality among the 210 commercial banks ever to operate in Singapore. Using hazard functions, we estimate organization-specific rates of mortality with covariates representing characteristics of the organization, industry and economy. In initial analyses, we search for industry-wide effects of both institutions and competition. For institutions, we look for evidence of general constitutive legitimation of the banking organizational form (as indicated by density dependence) as well as the effects of establishment of the Monetary Authority of Singapore (MAS) in 1970, the most important regulatory change. For competition, we examine whether the founding rates of banks decrease and their mortality rates increase when the banking industry becomes increasingly crowded (with all kinds of competitors). In further analyses, we explore whether the effects of both regulations and competition depend on a bank's organizational form. To do this, we examine an application of multi-level theories of organizational evolution to organizational forms within a population. Competition within each organizational form is compared to generalized competition throughout the industry, as is constitutive (density-dependent) legitimation. We also examine the effects of regulations on particular organizational forms to see if they are consistent with the idea that their promulgation took into account the interests of, and possibly even protected, the existing banking population.

1. Commercial Banking in Singapore: A Brief Historical Overview

Figure 1 shows the organizational density of the population of Singapore banks (i.e., the total number of banks in operation in any given year) for the period 1840 to 1994. The density counts are broken down by license type (described below)—full license, restricted license and offshore license.

(Figure 1 about here)

The development of the commercial banking industry in Singapore is typically divided into four distinct phases: (1) early period, 1840-1902; (2) pre-World War II period, 1903-1941; (3) post-World War II period, 1946-1970; and (4) post-Monetary Authority of Singapore Act period, 1971-1994.

Early period, 1840-1902. The history of Singapore dates back to 1819, when a settlement was established on the island by the British. The first bank to set up operations in Singapore was the Union Bank of Calcutta in 1840 (Drake, 1969; King, 1957; Lee 1966, 1990; Tan, 1996). Over the next few decades, other banks from Great Britain, the Netherlands and the United States followed suit, the more prominent being Chartered Bank, Nederlandsche Handel-Maatschappij and First National City Bank of New York (Lee 1966, 1990; Lim, 1967; Mackenzie, 1954; Tan, 1996; Yap, 1967). However, some banks did not remain in operation for long; they were unable to survive the recurrent financial crises of the last few decades of the nineteenth century (Allen and Donnithorne, 1957; Collis, 1965; Lee, 1990; Mackenzie, 1954). By 1902, the population density stood at only 6 (see Figure 1).

Banking during this early period displayed three primary characteristics. First, foreign banks completely dominated Singaporean banking. Second, the major function of

banks was the financing of trade between pan-Malaya and the countries of origin of the banks (Allen and Donnithorne, 1957; Collis, 1965; Drake, 1969; Lee 1966, 1990). Commodity products like pepper, opium and tin formed the bulk of such international trade. Third, banks played an important role in the money supply. As currency standardization was lacking, many banks issued their own banknotes and imported silver coins (Lee, 1966, 1990; Mackenzie, 1954).

Pre-World War II period, 1903-1941. With the 1903 introduction of the silver dollar as the standardized currency, banks stopped issuing their own banknotes (Allen and Donnithorne, 1957; Caine, 1961; Drake, 1969). That year also witnessed the founding of the first local bank, Kwong Yik Bank (Allen and Donnithorne, 1957; Lee, 1966, 1990; Lim, 1967; Tan, 1961; Tan, 1996; Yap, 1967). A number of other local banks emerged over the next four decades, establishing something of a trend (Allen and Donnithorne, 1957; Drake, 1969; Lee, 1966, 1990; Lim, 1967; Short, 1971; Tan, 1961; Tan, 1996). However, this period also saw a steady increase in the number of foreign banks establishing operations in Singapore (Lim, 1967). Some of the foreign banks originated from Asian countries like India, China and Japan (Lee, 1966; 1990). By 1941, total population density had risen to 22 (see Figure 1).

Competition among banks was not intense during this period for several reasons. First, the tin and rubber booms resulted in rapid expansion of the economy (Tan, 1996). Second, the local and foreign banks catered to the needs of different customers (Allen and Donnithorne, 1957; Drake, 1969; Lee, 1990). The local banks served small, local merchants who were reluctant or unable to seek financial assistance from the foreign

banks. In contrast, the foreign banks handled the bigger accounts of both foreign and local merchants, government accounts, and foreign exchange transactions.

Post-World War II period, 1946-1970. During World War II, Japanese forces occupied Singapore from 1942 to 1945. Except for a handful of Japanese banks, most other banks in Singapore suspended their operations during the occupation (Lee, 1990; Tan 1996). After the war, the banks played a vital role in economic reconstruction by giving liberal loans and long-term credit to businesses (Lee, 1966, 1990).

In 1963, British rule came to an end in Singapore, and Singapore became a part of the Federation of Malaysia. As a result, banks in Singapore came under the supervision of the Malaysian central bank, Bank Negara Tanah Melayu (Tan, 1996). When Singapore broke away from Malaysia in 1965 and became an independent country, it legislated its own Banking Act 1965 (Tan, 1996).

The post-World War II period witnessed the founding of a few more local banks and the entry of a number of foreign banks (Lee, 1966, 1990; Lim, 1967). The population density reached a level of 36 by 1970 (see Figure 3).

Post-Monetary Authority of Singapore Act period, 1971-1994. The Monetary Authority of Singapore Act of 1971 marked an important development in the history of the banking industry. The act led to the creation of the Monetary Authority of Singapore (MAS), which performs all the functions of a central bank except that of issuing currency (Lee, 1990; Tan, 1996). The MAS aimed to develop Singapore into an international financial center, and one of its specific strategies was to attract more foreign banks to Singapore.

Prior to 1971, commercial banks operating in Singapore were allowed to offer the whole range of banking services. As the MAS was concerned that the entry of more foreign banks would oversaturate the domestic banking market, it decided to issue other types of bank licenses for the new entrants. Specifically, two types of licenses for specialized banking activities were introduced: restricted licenses in 1971 and offshore licenses in 1973 (Tan, 1996). In contrast, the preexisting banks functioned with full licenses.

Differences among the three types of licenses are summarized as follows:¹

(1) Full license banks

Full license banks transact the whole range of both personal and corporate banking businesses. These include current, savings and fixed deposit accounts, import/export financing, transfer of funds, commercial letters of credit, trust receipts, traveler's checks and currencies. These banks can also provide advice on trade and investment, information on foreign exchange regulations, credit reports, and trade information. In addition, they are allowed to deal in the Asian Dollar Market.² Examples of local full license banks still operating in 1994 include: Bank of Singapore, Chung Khiaw Bank, Far Eastern Bank, Four Seas Bank, Oversea- Chinese Banking Corporation, Tat Lee Bank and United Overseas Bank. Foreign full license banks include: ABN AMRO Bank, Bank of America, Bank of China, Bank Negara Indonesia, Citibank, Hongkong and Shanghai Banking Corporation, and Standard Chartered Bank.

¹ For more information, see Lee, 1990; Tan, 1996.

² The Asian Dollar Market is a system under which banks accept time deposits in terms of the U.S. dollar, Sterling pound, Deutschemark, Swiss franc, Japanese yen or other hard currencies, and lend out the fund for investment and trade, also in terms of those currencies (see Lee, 1971, 1990; Tan, 1996).

(2) Restricted license banks

Restricted license banks are permitted to provide the same range of banking services as those offered by full license banks, except for the following restrictions:

- (i) they are not allowed to accept time deposits of less than Singapore \$250,000;
- (ii) they cannot operate savings accounts; and
- (iii) they are restricted to one location and are not allowed to open new branches in Singapore.

Restricted license banks operating in 1994 were all foreign-owned. They include: American Express Bank, Chiao Tung Bank, Credit Suisse, Deutsche Bank, Habib Bank, Korea Exchange Bank and Sumitomo Bank.

(3) Offshore license banks

Offshore license banks focus mainly on banking business outside of Singapore. They can deal in foreign exchange and in the Asian Dollar Market, but are not permitted to offer current, savings or fixed deposit accounts. For banking business within Singapore, offshore license banks are allowed only to transact with other banks and financial institutions. However, they can grant loans to residents, so long as they are worth Singapore \$1,000,000 or more, and are for two years or more. Examples of banks holding offshore licenses in 1994 include: Banque Paribas, Barclays Bank, Daiwa Bank, Morgan Guaranty Trust, Skandinaviska Enskilda Banken, Swiss Bank Corporation and Thai Farmers Bank.

Other strategies implemented by the MAS to further develop Singapore's banking industry included the provision of fiscal incentives such as tax holidays, and the removal of restrictive practices such as the cartel system of fixing interest rates (Tan, 1996). Also, exchange controls were progressively relaxed, leading to complete liberalization in 1978 (Tan, 1996).

The introduction of restricted and offshore banking licenses, as well as other related policies implemented by the MAS, led to a sharp increase in the number of foreign banks in Singapore. The population density rose to 140 by 1994 (see Figure 1); of these 140 banks, 35 held full licenses, 14 had restricted licenses, and 91 held offshore licenses. All of the banks holding either restricted or offshore licenses were foreign-owned; among the banks with full licenses, 22 were foreign and 13 were local.

2. Theoretical Issues Raised by the Historical Development of Singaporean Banking

The historical overview of commercial banking in Singapore describes generally how the organizational population became institutionalized and regulated by the MAS. From a more analytical viewpoint, this history reflects, at various times, the operation of two different legitimation processes often discussed in the organizations literature. The first is constitutive legitimation. It is defined as the process by which an organizational blueprint acquires social fact-like status, that is, becomes the accepted 'natural' way of doing a particular task (Meyer and Rowan, 1977). The second is sociopolitical legitimation. It is defined as the process by which an organizational form gets endorsed by other powerful actors in society, usually those controlling or possessing formal governmental authority (Stinchcombe, 1968).

The two legitimation processes sometimes coincide temporally and operate simultaneously in specific governmental actions but they are conceptually distinct and do not necessarily operate in tandem. Organizations researchers have also developed different ways of looking for evidence of the two processes (although there are occasional differences among researchers and sometimes debate over interpretation). Constitutive legitimation is usually indicated by density dependence in vital rates. Constitutive legitimation is very low in a fledgling organizational population and then rises as the form proliferates and other social actors learn to understand it through interaction. Eventually, enough other actors develop an understanding of the form that it becomes part of the cultural landscape; at this point, further increases in density (the number of organizations in the population) add little to constitutive legitimation. So, the general expectation is that constitutive legitimation increases with organizational population density at a decreasing rate (Hannan and Carroll, 1992).

Sociopolitical legitimation is usually indicated by dummy variables associated with the endorsements received by particular organizations or the timing of governmental actions implying endorsement of particular organizational forms (for example, a legislative act authorizing the right of certain organizations to exist and operate or providing them certain advantageous rights—see Dobbin et al., 1993). Because these endorsements and actions are context-specific, they are almost always identified by historical and institutional analyses of the organizational population (for example, the Wagner Act for American labor unions).

Competition operates within an organizational population in both general and specific ways. Generalized competition reflects the limited material and social resources

available for organizing: when one organization obtains resources it means that they are not available for others even if the surface relation among organizations is cooperative. By this view, all organizations in a population compete with each other although competitive intensity may vary dramatically in different conditions. Indeed, the model of density dependence holds that competition in a new small population is very low but that it increases at an increasing rate as density rises (Hannan and Carroll, 1992). Specific competition also involves the struggle over limited resources. However, the intensity of specific competition depends on organizations' positions in resource space: the closer organizations are to each other, the greater the specific competition. By this view, unions in, say, the construction industry should be more competitive with each other than would be unions in disparate sectors because they are more likely to try to organize the same workers.

Organizational ecology's model of density dependence combines theory about constitutive legitimation and generalized competition into a single set of empirical predictions. Constitutive legitimation and generalized competition are specified as opposing forces: the former enhances organizational life chances while the latter diminishes them. At low levels of density, the legitimation process dominates; at high levels, competition does. Considered together for an entire organizational population, the model makes the well-known density dependence predictions (Hannan and Carroll, 1992):

Hypothesis 1: Reflecting constitutive legitimation and generalized competition, organizational density (the number of organizations) has a nonmonotonic inverted U-shaped relationship with organizational

founding (Hypothesis 1a) and a nonmonotonic U-shaped relationship with organizational mortality (Hypothesis 1b).

An important extension of the theory of legitimation and competition holds that the two processes operate with varying force at different geographical levels of analysis. Constitutive legitimation, in particular, apparently acts on a much broader scale than competition, even transcending strong political and social boundaries (such as those of modern nation-states). Hannan et al. (1995: 513) explain that "cultural images ordinarily flow more freely across social system boundaries than do the material resources used to build and sustain resources." The idea is examined in empirical research by specifying the first-order term of density (associated with legitimation) at a higher level than the second-order term (associated with competition). For instance, Hannan et al. (1995; 1998) find that in European automobile manufacturing, the best density models for all major countries except Britain include a count of all European producers in the first-order term (representing legitimation) and a count of all producers in the focal country in the second-order term (representing competition). Likewise, Bigelow et al. (1997) find that in American automobile manufacturing, the best density models specify constitutive legitimation at the national level and competition at the regional level.

Constitutive legitimation likely possesses generalizing properties beyond the geographical or political. A central issue involves the extent to which other actors in the social system identify and associate (perhaps without active cognition) the form of an organization with a known and understood existing form. In the case of historically renewed populations, such as the free press in Bulgaria after the collapse of the Soviet Union, ability to do this depends in part on collective and institutional memory of an

"erased" form³ (Dobrev, 1996). In modern industries with more ordinary histories, the generalizing process is likely relevant when the population is internally differentiated by technology or resource segment—for example, both mass production breweries and micro breweries might both be regarded generally as breweries, and both full license and offshore license commercial banks in Singapore might be considered as typifications of the bank form. That is, for these populations, constitutive legitimation likely operates for the entire population (because actors cognitively lump together or associate various notions of brewing and banking) but competition operates most strongly within specific segments (because of common customers, suppliers and other resources). If we think of these organizational forms as hierarchically related and regard the differentiated forms as secondary, then we can specify this argument as follows:

Hypothesis 2: Constitutive legitimation operates broadly on all the secondary forms of organization within a population (Hypothesis 2a).

Competition operates more narrowly than constitutive legitimation, exerting greater force among organizations of a given secondary form than among those of the entire population (Hypothesis 2b).

Most theory and research on sociopolitical legitimation focuses on how specific organizations and organizational forms get institutionalized. In its usual form, this type of analysis requires historical understanding of the authority structures prevailing over an organizational population, be they governmental, professional or normative. Analysts seek to identify those specific endorsement actions by the authority leading to institutionalization of the organization or organizational form (for example, certification

³ An alternative--but not necessarily contradictory--view takes into account the continued existence of the

of a hospital by Medicare or recognition of acupuncture as an acceptable treatment mode by insurance companies). Theory presumes that institutionalization accords favorable treatment by social actors or other important advantages, often generating more resources. Hypotheses typically link organizational fates to the specific endorsement actions, predicting that particular organizations will show lower mortality rates as a result. Effects of this kind have been successfully identified in a wide variety of organizational and industrial contexts, including voluntary social service organizations (Singh et al., 1986), day care centers (Baum and Oliver, 1991), and newspapers (Miner et al., 1990).

Institutional theorists do not view the endorsement acts of authorities as random or as unrelated to the organizational population. Indeed, a long-standing claim of institutionalists holds that organizations can in varying degrees influence, manage and even control this part of their environment (Perrow, 1986; Fligstein, 1990). If so, then the study of sociopolitical legitimation among organizations would be improved considerably by addressing three limitations of the usual approach. The first limitation is purely technical. Empirical studies of the effects of institutional endorsement acts treat these acts as exogenous in estimation procedures. Yet to the extent that organizations influence the timing and direction of these acts, they are more appropriately regarded as endogenous and modeled as part of a system of equations; failure to do so leads to biased estimates (Hannan and Carroll, 1995). The technical implications of making this shift to simultaneous equations are non-trivial, especially with typical data. The processes potentially represented by the two equations operate at different levels of analysis and at

form in other societies and the speed with which it might be reintroduced (Dobrev, 1996).

vastly different rates (typically generating only a few relevant endorsements over a long period and many vital events).

The second limitation becomes more salient as one ponders solving the first. It comes from the revelation that current institutional theory has very little to say about the processes generating acts of sociopolitical legitimation. Current research practice entails identifying specific relevant acts by assessing their likely beneficial consequences on an organizational population (for example, lower death rates because of greater legal protection or more resources). Theory constructed in this way does not usually contemplate the general causes of the endorsement acts or factors affecting their timing. Indeed, such theory does not often even describe the general characteristics of endorsement acts leading to sociopolitical legitimation, making it difficult for other analysts to develop theory or to connect the research program to other potentially useful areas such as positive political theory. So, even if one could estimate the simultaneous system of equations required to make sociopolitical legitimation endogenous, it would be difficult (based on current argumentation) to specify the variables in the equation predicting endorsement acts. Accordingly, the research problem is underdeveloped theoretically and needs much more attention if sociopolitical legitimation is to be modeled appropriately.

The third limitation is a specific implication of theoretical underdevelopment. It concerns the apparent inconsistency between theoretical foundations used to formulate predictions about the effects of sociopolitical legitimation on organizational foundations on the one hand and organizational mortality on the other. As mentioned above, almost all theory and research on sociopolitical legitimation in this context focuses on effects on

organizational mortality. Virtually every highlighted finding shows a beneficial effect of sociopolitical legitimation—acts of institutional endorsement lower mortality rates of the targeted organizations or organizational forms (see, for example Singh et al., 1986; Baum and Oliver, 1991; Miner et al., 1990). And, because of the presumption that institutional actions are endogenous, the logical inference is that these endorsements are the outcome of a process whereby organizational representatives gain control of relevant authorities and other institutions in order to protect and further their self-interests. Certainly, this is the implicit (if not always explicit) idea behind analyses which make great hay out of the ways endorsed organizations escape the usual vagaries of the competitive marketplace (Granovetter, 1985; Fligstein, 1990; Uzzi, 1996).

The apparent inconsistency arises when the same theoretical strategy is applied to analysis of organizational foundings. For example, Dobbin and Dowd (1997) identify a number of legislative acts that they argue enhanced the sociopolitical legitimation of the railroad organizational form in 19th century Massachusetts. They contend that such legitimating endorsement actions should increase the number of railroad foundings and their empirical analysis demonstrates convincingly that this is indeed the case. What is inconsistent about this? Nothing necessarily (if more theory about institutional actions is advanced). But, as explained above, the usual default background theory about institutional actions ascribes them to rational pursuit of self-interests by existing organizational interests. And, if those interests are powerful enough to allow them to avoid the full force of extant competitors, then it would be very unlikely that those same interests would also sponsor legislation and other actions that in fact make it easier for new competitors to setup and operate (which is how existing organizations typically think

of new entrants to their industry). Furthermore, organizations capable of managing institutional authorities so effectively as to get endorsements that change their life chances should also likely be strong enough to protect themselves from potential new competition. In other words, the same basic (underdeveloped) theoretical logic that analysts use for sociopolitical effects on mortality predicts that foundings should decrease, not rise (this same logic underlies the influential structure-conduct-performance paradigm of industrial organization economics).

We point out this apparent inconsistency because we believe that it shows the great need for a more sophisticated general theory of institutional actions in organizational contexts, not because we believe the prediction about foundings is a stopping point. At this stage, we do not have a theory to advance. But we do believe that the issues raised involve some principles that can be stated. Analysts can check their findings for inconsistencies and attempt to develop plausible theoretical accounts that go beyond the usual logic when necessary:

Hypothesis 3: Reflecting sociopolitical legitimation, regulatory changes creating governmental oversight structures for an organizational population lower rates of organizational mortality (Hypothesis 3a). The effects of sociopolitical legitimation on founding and mortality depend on the forms of organization present during periods of formal enactment and their strength of representation in political decision making (Hypothesis 3b).

3. Data Sources and Variable Construction

We assembled and coded source materials that allowed us to reconstruct organizational life histories of the complete historical population of commercial banks in Singapore from the founding of the first bank until the end of 1994.

The basic sources of data on Singapore banks for the period 1840 to 1972 are Annual departmental reports of the Straits Settlements (Straits Settlements Government, Various years), Annual report on Singapore (Singapore Government, Various years), Colony of Singapore annual report (Singapore Government, Various years), State of Singapore annual report (Singapore Government, Various years), and Singapore year book (Singapore Government, Various years). Supplementary sources of data for this period include Western enterprise in Indonesia and Malaya: A study in economic development (Allen & Donnithorne, 1957), “Monetary systems of the colonies: Malaya” (Caine, 1961), Wayfoong: The Hongkong and Shanghai Banking Corporation (Collis, 1965), Financial development in Malaya and Singapore (Drake, 1969), Money in British East Asia (King, 1957), “The development of commercial banking in Singapore and the states of Malaya” (Lee, 1966), The monetary and banking development of Singapore and Malaysia (3rd ed.) (Lee, 1990), Economic development of modern Malaya (Lim, 1967), Realms of silver: One hundred years of banking in the East (Mackenzie, 1954), “Indigenous banking in an early period of development: The Straits Settlements, 1914-1940” (Short, 1971), Financial markets and institutions in Singapore (8th ed.) (Tan, 1996), “The Chinese banks incorporated in Singapore and the Federation of Malaya” (Tan, 1961), and “Commercial banking in the early days” (Yap, 1967). Data on Singapore banks during the period 1973 to 1994 were gathered from the following sources: A study of commercial banks in Singapore (SGV-Goh Tan, Various years),

Survey of financial institutions in Singapore (Peat Marwick Management Consultants, Various years), and Comparative study of commercial banks in Singapore (S & R Management Services, Various years).

We used these data to determine dates of entry and exit for each organization from the banking industry in Singapore. Given the lack of detail in the sources, these variables are precise only to the year of events, not exact dates.

Firm and organizational characteristics were recorded for each bank for each year of operation. The sources allowed us to code the following variables:

Age. This variable indicates the number of years for which a commercial bank has operated in Singapore.

Local. A commercial bank in Singapore is either local- or foreign-owned. This dummy variable is coded as 1 if a bank is local, and as 0 if it is foreign.

Full. A bank in Singapore holds one of three possible banking licenses: full, restricted or offshore. This dummy variable is coded as 1 if a bank holds a full license, and as 0 if it holds a restricted or offshore license.

Restricted. This dummy variable is coded as 1 if a bank has a restricted license, and as 0 if it has a full or offshore license.

Offshore. This dummy variable is coded as 1 if a bank's license is offshore, and as 0 if its license is either full or restricted.

Full local. This dummy variable is coded as 1 if a bank holds a full license and is local-owned; it is coded as 0, otherwise.

Full foreign. This dummy variable is coded as 1 if a bank has a full license and is foreign-owned; it is coded as 0, otherwise.

The most important omission from this set of firm and organizational characteristics is a measure of size. Unfortunately, reliable and systematic measures of bank size are available only for the period 1973 to 1994, an observation window that would unduly limit the analysis.

The bank data also allowed us to construct a number of annual time-varying variables about the structure of the organizational population. These include:

Density. This variable measures the contemporaneous total population density. It indicates the total number of commercial banks in Singapore in a particular year. This variable and the other density variables described below are lagged one year to ensure exogeneity.

Density at founding. This variable indicates the total population density at the time of an organization's entry into the Singapore banking population. Its value remains fixed for each organization.

Full density. This variable measures the contemporaneous density for the subpopulation of full license banks. It indicates the number of full license banks in Singapore in a particular year.

Offshore density. This variable measures the contemporaneous density for the subpopulation of offshore license banks. It indicates the number of offshore license banks in Singapore in a particular year.

For the institutional environment, we constructed a set of period effect dummies corresponding to the different epochs of banking norms and regulation noted in the historical overview. These include:

1903-1994. This dummy variable takes on the value of 1 for the period 1903 to 1994, and 0 for all other years. As described above, 1903 was a landmark year for the banking industry in Singapore because it saw the introduction of a standardized currency and the founding of the first local bank.

1946-1994. This dummy variable is coded as 1 for the period 1946 to 1994, and as 0 for all other years. As explained above, 1946 marked the beginning of the post-World War II era, which witnessed the involvement of banks in economic reconstruction, and a steady entry of new players (both local and foreign) into the Singapore banking industry.

1971-1994. This dummy variable takes on the value of 1 for the period 1971 to 1994, and 0 for all other earlier years. As reviewed above, 1971 represented the start of the contemporary epoch of commercial banking in Singapore. The introduction of restricted and offshore banking licenses that year opened the industry to many new foreign players over the next two decades.

We also collected data on the socioeconomic environment for commercial banking in Singapore. The variables that we use in the analysis include:

Population. This variable measures the size of the human population in Singapore in a particular year.

Exports. This variable indicates the dollar value of Singapore's exports in a particular year.

Imports. This variable indicates the dollar value of Singapore's imports in a particular year. This variable and the exports variable reflect the general economic

conditions in Singapore; they are used in place of GNP, as Singapore's GNP figures are only available for the more recent decades.

Data on Singapore's population, exports and imports were compiled from the following:

Annual departmental reports of the Straits Settlements (Straits Settlements Government,

Various years), Annual report on Singapore (Singapore Government, Various years),

Colony of Singapore annual report (Singapore Government, Various years), State of

Singapore annual report (Singapore Government, Various years), and Singapore year

book (Singapore Government, Various years). We interpolated the data for those years in which information was not available.

4. Models and Estimation

Our goal is to explain the evolution of the organizational population of commercial banks in Singapore by estimating models of entry and exit rates. We do so with standard modeling frameworks for these problems. We regard firm entries and exits as rare events governed by stochastic processes with transition rates. The transition rate of event occurrence is defined as:

$$r(t) = \lim_{t' \rightarrow t} \frac{\Pr(t \leq T < t' | T \geq t)}{t' - t}.$$

We estimate models that specify the rate as a function of time t and a vector of covariates, A , measuring organizational and environmental characteristics:

$$r(t) = f(t, A).$$

For entries, we regard the organizational population as the unit at risk for experiencing events. We specify that entries follow a counting process that starts after the first event. We treat each subsequent entry as an event or transition (see Hannan and

Carroll, 1992, for a full explanation). Because the source data for entries are precise only to the year (and there are multiple events in some years), we cannot determine waiting times between all events. So, for estimation, we use aggregated event-count data that record the number of events in a given year. After exploratory analysis showing that the event counts are overdispersed (meaning that the variance in counts is greater than the mean, thus violating an assumption of the simpler Poisson distribution), we assume that event counts follow a negative binomial distribution (see Barron, 1992). We estimate the effects of covariates using maximum likelihood techniques in the statistical package, STATA.

For exits, we consider the organization as the unit at risk and estimate models of firm-specific exit rates. Because organizational death and exit rates typically show age dependence but the form of that dependence varies widely (Hannan et al., 1998), we use a piece-wise constant rate model that allows the rate to vary nonmonotonically with age. This model is

$$r(t) = \exp\{\alpha_t + A\alpha\} \text{ if } t \in I_t$$

where α_t is a constant associated with the t^{th} time period, A is a vector of covariates measuring organizational and environmental characteristics, and α is a vector of estimated coefficients assumed not to vary across periods. Exploratory analysis revealed that a good-fitting parsimonious specification of this model uses periods with ages (in years) of 0.0-7.0, 7.0-10.0, 10.0-25.0 and >25.0. We estimate the effects of covariates in models with this period specification with maximum likelihood procedures using the TDA package (Blossfeld and Rohwer, 1995). In all models reported here, we constrain the effects of covariates to be constant across periods; that is, the effects of covariates are

proportional with respect to age. As is conventional, covariates are measured annually and treated as time varying in the analysis by artificially censoring organizational lifetimes each year and updating values.

We have mentioned several times the general issue of endogeneity of legitimation processes. For constitutive legitimation, the logic of the model of density dependence deals with this issue. Constitutive legitimation is inferred from the effects of density, which is itself endogenous (because density is a function of foundings/entries and deaths/exits). Estimation of this system is usually accomplished by using a lagged value of density, which is determined exactly by prior events and appropriately treated as exogenous. That is, the models of founding/entry and mortality are in essence a model of density—there is no need to specify another model.

By contrast, the typical study of sociopolitical legitimation ignores this issue and treats legitimation-inducing acts of legislation (and the like) as exogenous. If (as much theory suggests) organizations influence the timing and direction of these acts, then it is more appropriate that they be considered endogenous and modeled accordingly (Hannan and Carroll, 1995). But this is a nontrivial step to make because with typical cases, the two processes operate at different levels of analysis (the organizational and the institutional) and at vastly different rates (typically with the one generating many vital events over a long period and the other only a few relevant acts of sociopolitical legitimation). As mentioned above, there is also a lack of theory for specifying the missing equation. Consequently, we cannot offer now a general solution for this problem. But we do go further than most previous research by formulating arguments (Hypothesis 3) that recognize the problem and build in complexity to the extent that current theory allows.

For testing, this entails estimating models that make sociopolitical legitimation interactive with other variables, thus allowing sociopolitical legitimation to exert both direct and indirect effects.

5. Findings

Table 1 provides descriptive statistics on the complete commercial banking population in Singapore. It shows that of the 210 banks operating at one time or another during the observation period, over half initiated activities after the establishment of the MAS in 1971. It also shows that local banks are dominated by foreign banks in terms of density and that the most common license found is for offshore banking. These numbers illustrate the dramatic changes in the size and structure of the organizational population over history.

(Table 1 about here)

Table 2 presents estimates of the event-count model of entries. The first two equations predict the total number of bank entries, the next three concern foundings of full license banks and the last two are for foreign banks. Because other types of banks do not appear early enough, they do not get exposed to sufficient institutional change to warrant estimation of effects of sociopolitical legitimacy.

(Table 2 about here)

Model 2-1 in Table 2 shows significant nonmonotonic effects of density, suggesting that constitutive legitimation operates in a way consistent with Hypothesis 1a. Model 2-2 shows a strong positive effect of the 1971 period dummy associated with sociopolitical legitimation (in equations not shown, the other two period dummies did not

show significant effects when entered individually). However, the significant effect of this variable does not diminish the effects of density.

Full license bank foundings show the expected pattern of form-specific density dependence, as Model 2-3 indicates (the second-order term is nearly significant at .05 level). Moreover, the effect of the 1971 dummy is negative, thus conforming to our expectations about institutional change protecting established interests (Hypothesis 3b). Model 2-4 provides a test of Hypothesis 2 by specifying the legitimation component of density for all banks and the competition component only for full license banks. The estimates do not show much support for the hypothesis; however, the reversal of signs for the only significant term here suggests that the model is misspecified. Model 2-5 suggests that the problem occurs because total and full license densities operate in opposing ways. Here, full license density plays a legitimating role while the density of other (later) banks has a competitive effect. Note also that the 1971 dummy becomes positive in this model.

As Model 2-6 shows, the foreign bank form also shows form-specific density dependence in the expected pattern. The effects of the 1971 institutional changes are significant as well, exerting a positive effect. The last model in the table, 2-7, shows the estimates of the multilevel specification which pertains to Hypothesis 2. These estimates conform to expectations: the effect of total density is positive and significant while the form-specific term is negative and significant. Establishment of the MAS in 1971 continues to be associated with a rise in foundings.

Table 3 shows estimates of basic models of organizational mortality for all commercial banks in Singapore. The first model shown depicts a pattern of age

dependence that proves to be robust: although age generally exerts a strong negative effect, it also shows a slight rise in the second period (between ages of 7 and 10 years). Density variables all have their expected signs: first-order density is negatively associated with mortality, second-order density is positively associated, and density at founding is positively associated. But only the second-order density term is statistically significant. The environmental variables measuring Population, Imports and Exports do not add anything significant to the model. Model 3-2 shows that including the two sets of dummies for organizational form (local versus the omitted foreign category and restricted and offshore versus the omitted full license category) improves the model and makes the first-order density term statistically significant (even though the individual dummies are not themselves significant). These findings show some evidence for the operation of constitutive legitimation as predicted by Hypothesis 1b.

(Table 3 about here)

The remaining models in Table 3 suggest a more complex story. Model 3-3 shows that the effects of organizational form arise mainly because of differences between offshore license banks and others—the mortality rate is significantly higher for these banks. However, mortality of all banks is lower from 1971 to 1994—after establishment of the MAS. This effect, which is large and significant, provides strong support for Hypothesis 3a concerning sociopolitical legitimation. (Note also the continued significance of the density variables associated with constitutive legitimation.) Because of the preponderance of offshore license banks—especially after 1971—we think that a more complex pattern of period effects and density dependence might underlie the relationships shown in this model. Model 3-4 suggests that this is indeed the case: it

shows that offshore banks may have a lower rate (the coefficient is not positive but not significant) once competition within that form is taken into account (indicated by the strong significant interactive form-density term). This model also suggests the overall lower rate in the post-1971 period might be compositional, due to the presence of so many offshore banks. (Note also the diminished significance of the total density effects.)

Since offshore and restricted banks do not appear until the last period, these forms are never exposed to the earlier periods hypothesized to have lower sociopolitical legitimacy. And because there are so many cases of these kinds in the data, their inclusion in analysis makes it difficult to detect period effects on the one form old enough to be exposed to all the sociopolitical changes: the full license banks. Consequently, we temporarily restrict the sample to only full license banks (and within-form density) in order to isolate these cases and to look for evidence of Hypothesis 3a (about sociopolitical legitimation). Model 3-5 reports these estimates. It provides substantial support to Hypothesis 3a. Full license banks, which are the only organizational form present during the institutionalization of commercial banking, experience strong and significant drops in mortality in each of the demarcated periods. These declines are strongest in the earlier periods and continue to accumulate through the MAS period. We build on this finding below when using the complete data set again by incorporating period effects that are interactive with the full license bank dummy.

The first set of models in Table 4 is designed primarily to test Hypotheses 2a and 2b, which argue that constitutive legitimation operates more broadly (across all secondary forms) within the population than does competition. The general structure of these models specifies the first-order density term (associated with constitutive

legitimation) as a function of all types of commercial banks while the second-order density term (associated with competition) applies only to the particular organizational form of the bank (that is, the form dummy is multiplied by the form-specific density variable). Because the number of restricted license banks is very low (and there are no deaths observed for this form), we focus on the full and offshore license banks.

(Table 4 about here)

Model 4-1 provides strong support for Hypotheses 2a and 2b. It shows, as predicted, that total density exerts a strong negative effect on bank mortality while form-specific density squared exerts a positive effect. All these density effects except the interactive second-order full term are statistically significant and serve to improve model fit. Model 4-2 shows that the pattern continues and improves when the period effects on the full license banks (consistent with Hypothesis 3a) are incorporated: the interactive second-order full term becomes statistically significant.

The other equations in Table 4 attempt to refine the models by building in distinctions between foreign versus local ownership status for the full license banks. (All offshore license banks are foreign.) Model 4-3 suggests that full foreign banks experienced greater competition (indicated by the significance of the full foreign interaction term) as well as different responses to the periods. Model 4-4 shows the same patterns when the period effects are specified slightly differently. Finally, Model 4-5 decomposes the interactive full competition term into foreign and local components. It shows clearly that the strength of the within-form competitive effect varies by foreign-local status for full license banks. Foreign full license banks experience stronger competitive effects than do local banks, as indicated by the terms interacting full license

bank density with the bank status. In fact, the competitive effect is almost three times stronger (coefficients of .262 versus .090).

6. Discussion

The analysis reported here attempts to stimulate discussion about the various forms of legitimation in organizational populations and how they interact with competitive processes. In the context of commercial banking in Singapore, we find strong evidence of the simultaneous operation of both constitutive legitimation and sociopolitical legitimation. Constitutive legitimation shows itself through density dependence in vital rates and we find strong effects in the expected directions for both founding processes and organizational mortality. Sociopolitical legitimation exerts its influence through specific legislative actions. We find that both founding rates and mortality rates shifted at the time major actions were undertaken, especially the massive regulatory reform associated with the establishment of the MAS in 1971.

Despite the importance of both legitimation processes for the banking population of Singapore, organizational theorists will not find these particular results surprising. Indeed, numerous prior studies report evidence of both kinds, even if one or the other process is highlighted theoretically. The novel aspects of this study hinge on two extensions of the underlying theories. The first extension, articulated in Hypothesis 2, suggests that secondary forms of organization derive their constitutive legitimation from the entire population but that competition is from the other secondary forms. This argument, which generalizes Hannan et al.'s (1995) theory of geographical proximate populations to organizational forms, implies a multilevel specification of density dependence where the first-order term (associated with constitutive legitimation)

measures total population density and the second-order term (associated with competition) measures secondary or subpopulation density. Our analysis of bank foundings in Singapore shows strong support for the hypothesis when applied to foreign banks but not for full license banks. For organizational mortality, we also find support. Here, however, the multilevel specification works best when applied to license distinctions in form, in particular to offshore and full license banks. Furthermore, the patterns continue to conform even with further breakdowns of local-foreign status in the full license banking form. Our estimates show that full service banks derive legitimation from the entire bank population but that competition occurs mainly within classes of local and foreign full license banks.

The second theoretical extension discussed here is much more difficult. It concerns development of models where sociopolitical legitimation takes on an endogenous role, as most theories assume it should. Yet the obstacles to achieving this goal are formidable, given the lack of relevant theory and inherent difficulties of estimation. Our efforts here are intended more to stimulate interest in the problem and to direct attention towards it than to announce a breakthrough. Nonetheless, we believe that it does constitute a small step in the right direction to estimate models that interact organizational form and the dummies for sociopolitical legitimation, as we have done here. If nothing else, this kind of effort might be seen as an avenue toward the greater theoretical sophistication that will eventually be needed. As a starting point, we propose that any interactive effects detected be evaluated as the outcome of political processes that might be expected to generate protection of established interests. By this view, established forms, if they have sufficient political representations and influence, would

likely not allow new entrants that might compete directly but they might allow others of secondary forms. Likewise, legislative acts that affect mortality by, say, insulating the form from direct competition, might get enacted in ways that protect established forms more than subsequent ones. We recognize that these ideas (articulated in Hypothesis 3b) are abstract and vague enough not to be fully falsifiable but they do provide guidelines for interpretation and might lead to better theory.

The empirical findings reported here show some value in this approach. For foundings, the onset of the MAS does increase founding substantially. But the new banks allowed in all have offshore or restricted licenses; they do not compete in the local market with the full license banks operating at the time of the MAS's establishment.⁴ This can be seen most clearly in the mortality analysis, where the best-fitting models posit competition within specific secondary forms.

For mortality, the evidence points even more strongly in the expected direction. The period dummies show their most pronounced effects on the earliest and longest lived organizational form, the full license bank. Moreover, these banks benefit enormously by each subsequent act—their death rates fall precipitously with each new period.

The supporting evidence does not stop there. One would expect that local banks might have more influence on the development of a national regulatory system than would foreign banks. Indeed, the estimated competitive effect for full license local banks is far lower than the comparable effect for foreign banks. This means that every new full license bank puts far greater competitive pressure on foreign banks than on local banks. The evidence is consistent with a view that sociopolitical legitimation often reflects the

protection of entrenched interest as much as altruistic promulgation of an organizational form.

⁴ We know this by simple inspection of the figures. The data do not allow direct tests for foundings because of the limited number of observation years after the MAS.

Figure 1. Density of Commercial Banks by License Type

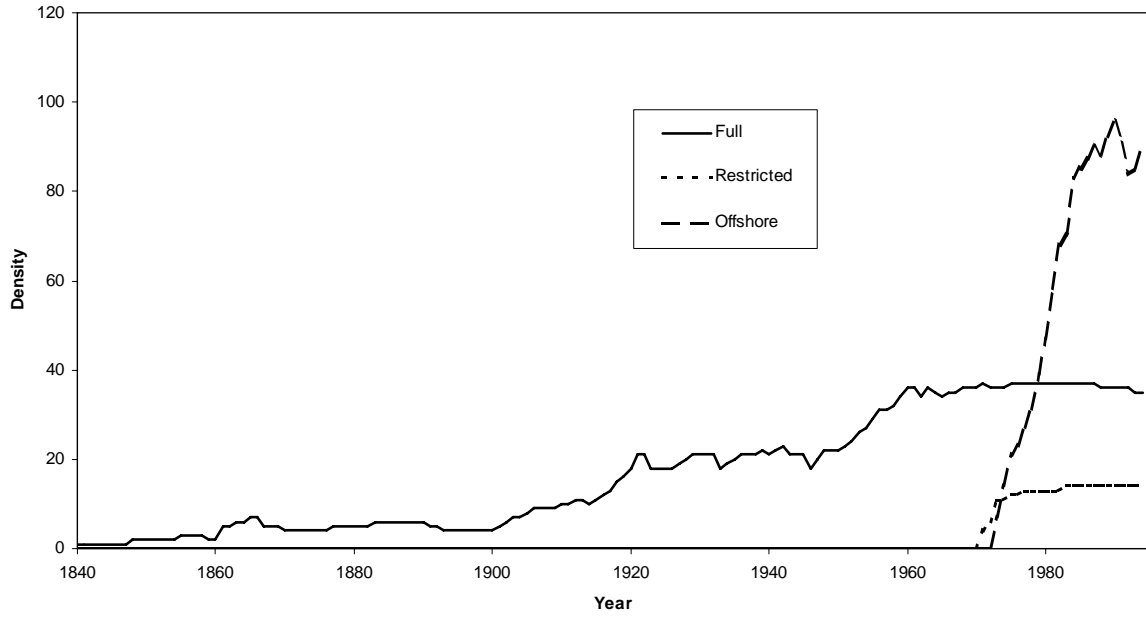


Table 1. Descriptive Statistics for Data on Singaporean
Commercial Banks, 1840 -1994

No. of Commercial Banks Ever to Appear 1840-1994	210
Founded before 1903	13
Founded 1903-1945	27
Founded 1946-1970	24
Founded in 1971 and after	146
Local Banks	19
Foreign Banks	191
Full License Banks	67
Restricted License Banks	14
Offshore License Banks	129
Observed Bank-Years	4168
Observed Mortality Events	69
1970	
Total Commercial Banks	37
Local full license	11
Foreign full license	26
Foreign restricted	0
Foreign offshore	0
1994	
Total Commercial Banks	132
Local full license	13
Foreign full license	22
Foreign restricted	14
Foreign offshore	83

Table 2. Estimates of Event-Count Models of Bank Entries
(Standard errors shown in parentheses)

	Model 2-1 All Bank Entries	Model 2-2 All Banks Entries	Model 2-3 Full License Banks	Model 2-4 Full License Banks	Model 2-5 Full License Banks	Model 2-6 Foreign Bank Entries	Model 2-7 Foreign Bank Entries
Constant	-1.71* (.212)	-1.31* (.214)	-1.80* (.352)	-.906* (.191)	-1.79* (.355)	-1.42* (.219)	-1.47* (.226)
Total Density	.080* (.008)	.046* (.012)		-.019 (.017)			.034* (.011)
Total Density Sq/100	-.041* (.006)	-.026* (.006)					
Full Density			.122* (.044)		.121* (.044)		
Full Density Sq/100			-.225 (.115)	.133* (.051)	-.223 (.115)		
Total Density (exc. Full)					-.052 (.030)		
Foreign Density						.041* (.015)	
Foreign Density Sq/100						-.026* (.009)	-.023* (.007)
Period after 1971		1.47* (.379)	-1.75* (.695)	-1.31 (.912)	.035 (.804)	2.01* (.432)	1.91 (.432)
Overdispe rion	-1.63* (.530)	-2.32* (.739)	-15.3 (954)	-17.0 (6683)	-12.7 (566)	-2.09* (.714)	-2.08* (.703)
log L	-181.7	-174.6	-121.1	-124.4	-118.0	-160.3	-159.7
d.f.	4	5	5	5	6	5	5

* $p \leq .05$

Table 3. Estimates of Models of Organizational Mortality for Banks
(Standard errors shown in parentheses)

	Model 3-1 (All Banks)	Model 3-2 (All Banks)	Model 3-3 (All Banks)	Model 3-4 (All Banks)	Model 3-5 (Full Only)
Age: $0 \leq u < 7$	-2.97* (.412)	-2.84* (.380)	-3.15* (.401)	-3.25* (.407)	-3.94* (.552)
$7 \leq u < 10$	-2.61* (.427)	-2.58* (.406)	-2.89* (.456)	-3.03* (.463)	-4.34* (.757)
$10 \leq u < 25$	-2.87* (.365)	-2.80* (.342)	-3.08* (.401)	-3.20* (.407)	-4.42* (.592)
$25 \leq u$	-4.33* (.562)	-4.50* (.616)	-4.37* (.588)	-4.44* (.589)	-5.61* (.707)
Density	-.064 (.042)	-.059* (.016)	-.044* (.020)	-.034 (.021)	
Density squared	.043* (.021)	.041* (.010)	.037* (.011)	.020 (.013)	
Full Density					.227* (.090)
Density at founding	.005 (.006)	-.002 (.007)			
Local dummy		-.306 (.474)			
Restricted dummy		-15.1 (737.)			
Offshore dummy		.096 (.631)	1.22* (.566)	-4.77 (2.68)	
Period after 1903					-3.47* (1.44)
Period after 1946					-4.27* (1.46)
Period after 1971			-2.22* (1.15)	-.809 (1.02)	-.869* (.684)
Population	-.0006 (.077)				
Imports	-.001 (.002)				
Exports	-.0008 (.002)				
Offshore X Offshore Density				.074* (.032)	
log L	-324.4	-319.0	-320.9	-317.5	-154.1
d.f.	10	10	8	9	8
No. spells	4168	4168	4168	4168	2545
No. events	69	69	69	69	32

* $p \leq .05$

Table 4. Estimates of Multi-Form Density Models of Organizational Mortality for All Banks (Standard errors shown in parentheses)

	Model 4-1	Model 4-2	Model 4-3	Model 4-4	Model 4-5
Age: $0 \leq u < 7$	-3.63* (.324)	-3.57* (.432)	-5.29* (.824)	-4.04* (.406)	-4.52* (.522)
$7 \leq u < 10$	-3.39* (.391)	-3.35* (.487)	-5.07* (.862)	-3.84* (.462)	-4.31* (.569)
$10 \leq u < 25$	-3.55* (.332)	-3.57* (.437)	-5.30* (.866)	-4.06* (.420)	-4.54* (.541)
$25 \leq u$	-4.84* (.539)	-4.79* (.624)	6.57* (1.02)	-5.29* (.622)	-5.78* (.711)
Offshore Dummy	-2.54* (1.29)	-2.36 (1.32)		-2.16 (1.34)	-1.94 (1.38)
Total Density	-.017* (.007)	-.020* (.008)	-.017 (.009)	-.016* (.008)	-.013 (.008)
Offshore X Offshore Density Sq	.0007* (.0002)	.0007* (.0002)	.0006* (.0001)	.0007* (.0002)	.0006* (.0002)
Full Serv X Full Service Density Sq	.0002 (.0004)	.0055* (.0022)	.0059* (.0020)	.0032* (.0014)	
Full Serv X After 1903		-1.51 (.888)		-3.15* (1.27)	
Full Serv X After 1946		-5.28* (2.00)	-6.86* (2.00)	-5.21* (1.69)	-4.28* (1.32)
Full Serv X After 1971		-.479 (.754)			
Full Foreign Dummy			1.57 (.978)		
Full Foreign Dummy X After 1903			-3.42* (1.29)		-3.77* (1.37)
Full Local X Full Density					.090* (.036)
Full Foreign X Full Density			.093* (.063)	.146* (.059)	.262* (.080)
log L	-319.4	-312.8	-309.9	-309.7	-309.4
d.f.	8	10	11	11	11
No. spells	4168	4168	4168	4168	4168
No. events	69	69	69	69	69

* $p \leq .05$

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