NOTE TO USERS

This reproduction is the best copy available.

UMI®

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

University of Alberta

Three Essays on Large Corporations and Economic Growth

by

Kathy Shanxiu Fogel ©

A thesis submitted to the Faculty of Graduate Studies and Research in partial fulfillment of the

requirements for the degree of Doctor of Philosophy

in

Finance

Faculty of Business

Edmonton, Alberta
Fall 2004

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Library and Archives Canada

Published Heritage Branch

395 Wellington Street
Ottawa ON K1A 0N4
Canada

Bibliothèque et Archives Canada

Direction du Patrimoine de l'édition

395, rue Wellington
Ottawa ON K1A 0N4
Canada

Your file Votre référence
ISBN: 0-612-95932-5
Our file Notre référence
ISBN: 0-612-95932-5

The author has granted a non-exclusive license allowing the Library and Archives Canada to reproduce, loan, distribute or sell copies of this thesis in microform, paper or electronic formats.

L'auteur a accordé une licence non exclusive permettant à la Bibliothèque et Archives Canada de reproduire, prêter, distribuer ou vendre des copies de cette thèse sous la forme de microfiche/film, de reproduction sur papier ou sur format électronique.

The author retains ownership of the copyright in this thesis. Neither the thesis nor substantial extracts from it may be printed or otherwise reproduced without the author's permission.

L'auteur conserve la propriété du droit d'auteur qui protège cette thèse. Ni la thèse ni des extraits substantiels de celle-ci ne doivent être imprimés ou aturement reproduits sans son autorisation.

In compliance with the Canadian Privacy Act some supporting forms may have been removed from this thesis.

Conformément à la loi canadienne sur la protection de la vie privée, quelques formulaires secondaires ont été enlevés de cette thèse.

While these forms may be included in the document page count, their removal does not represent any loss of content from the thesis.

Bien que ces formulaires aient inclus dans la pagination, il n'y aura aucun contenu manquant.

Canada

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Acknowledgement

I am much indebted to Professor Randall Morck, who gave the initial impulse to this research and whose vision and guidance were invaluable to complete this dissertation. I have learnt so much from his expertise and knowledge, not only in economics and finance, but also in topics such as history, culture, and psychology.

Professors Bernard Yeung and Vikas Mehrotra are also instrumental in developing this dissertation. Exchanging ideas with them are both stimulating and sparkling.

I am also grateful to Stéphane Chrétien, Olubunmi Faleye, Mark Huson, G. Andrew Karolyi, András Marosi, Rolf Mirus, André Plourde, and Thomas Scott, for their valuable suggestions and positive criticisms to improve this dissertation.

Finally, my greatest debts are to Julian Fogel, my loving husband, who always stands by me, and my parents and grandparents, whose give me great encouragement and inspiration. I would also thank Olubunmi Faleye and Rahul Ravi, whose friendship carries me through tough times.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Table of Contents

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

List of Tables

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

CHAPTER ONE

INTRODUCTION

Large business organizations are central to the modern economy and economic growth. Not only do they produce a substantial share of a nation's output, they represent the best corporate practices that enabled their growth. However, Nelson and Winter (1982) argue that currently successful corporate practices frequently become obsolete, and changes in economic conditions require new practices that old firms are incapable of supplying without incurring massive restructuring costs. Meanwhile, the entrepreneurs "do not generally rise out of the old ones but start producing beside them." (Schumpeter, 1934) The young and innovative firms continually rise, displacing old large established firms, who were often successful innovators in the past. This process of "creative destruction", Schumpeter (1912) argues, is the fundamental engine of long-term economic growth.

Olson (1963) stresses that entrepreneur-driven growth is a positive destabilizing force, displacing established elite both economically and socially. An opposing force, however, arises out of the old establishment. The entrenched players use their substantial economic power and political influence to counteract renewal, so as to protect their privileged positions, even at a cost to the rest of society. In particular, Rajan and Zingales (2003) argue that entrenched elites lobby for a weakened financial market to starve new firms of financing and to heighten barriers to entry. Rent-seeking can thus be a serious impediment to growth.

This dissertation studies three issues pertaining to the survival and dominance of large corporations. The second chapter examines the influence of the longevity of large

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

corporations on their host countries' long-term economic growth. The next chapter asks to which extent and by what means markets and institutions in the U.S. cull out non-value-maximizing firms. The fourth chapter studies the relationship between oligarchic family control of large corporate sectors and the quality of government.

The second chapter studies the relationship between economic growth and the continuous dominance of large firms. On the one hand, the longevity of large corporations might be beneficial to economic growth and productivity gains because they are well managed, have abundant resources to finance innovations, and facilitate management risk-taking. On the other hand, the dominance of large firms might result from lack of innovation, high barriers to entry, and economic stagnation. We test the relationship between the longevity of large firms and economic growth empirically using a set of "stability" and "survival" indices. A high value of "stability" indicates that a high proportion of a country's large firms from 1975 were still in the top ten list in 1996, thus measuring the dominance of large firms over that time. A high value of "survival" indicates stability as just defined or that the labor force of a high proportion of large firms grows at least as fast as the total GDP growth from 1975 to 1996. Survival thus measures the prominence of 1975's top firms.

We find that countries whose corporate sectors were less stable grew faster than other countries that had the same initial per capita GDP, level of education, and capital stock. Countries where more of the old large firms lose their prominence produced even more rapid growth. In developed countries, the lack of large firm turnover in the private sector contributes to slower per capita GDP and productivity growth. In developing countries, large firm dominance driven by the presence of continuously dominant state-

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

owned enterprises relates to slower GDP growth, productivity growth, and capital accumulation. We argue that interventionist governments, under-developed financial markets, and capital and trade barriers might be associated with the continuous dominance of large firms. These institutions might be influenced and advanced by the established corporate elites to preserve their social status and economic power. We propose that, if this is prevalent in many countries, it might explain our findings relating continuous dominance of large firms to slower economic growth.

The next chapter examines whether product market competition and the market for corporate control in the U.S. are effective in culling non-value maximizing firms. Studies since Berle and Means (1932) characterize modern corporations in the U.S. by the separation of ownership and control, where shareholders delegate corporate decision making to professional management. However, agency theories, pioneered by Jensen and Meckling (1976), suggest that the potential for divergence and conflicts of interest are high, and that a self-interested manager might engage in value-destroying projects that maximize his private utility even at the cost of public shareholders.

In aggregate, agency problems should not undermine the efficiency gains from specialized management, because firms that do not maximize value (due to excessive agency costs) should die out (Friedman, 1953). The third chapter focuses on the extent to which product market competition and the market for corporate control cull out non-value maximizing firms. We collect financial data, from the late 1970s and late 1980s, for two large cross sections of U.S. public firms, and estimate various firm characteristics that might be subject to evolutionary pressure over the following decade.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

We find that Tobin's q, which measures value maximization, predicts survival.[1] On the other hand, low debt and extensive diversification, both commonly associated with non-value maximizing strategies, also predict most kinds of survival – in other words, a debt level well below the industry average, cross-industry diversification, or international diversification significantly lower the probability of bankruptcy, liquidation, and friendly mergers. However, these non-value maximizing strategies greatly increase the likelihood of hostile takeovers. This distinctive culling mechanism allows the market for corporate control to target a different set of firms that manage to supersede other control mechanisms. For example, although diversified firms might use size and growth as a natural advantage in fending off bankruptcy threats, the possibility of becoming hostile takeovers targets imposes survival pressure. An effective corporate control market is thus crucial to push firms towards value maximization. We argue that regulatory and legal changes that endorsed anti-takeover legislation may render this control function ineffective, which in turn allows undesirable "artful death dodging", and incur substantial survival costs.

The final chapter investigates the relationship between family control of large corporations and the quality of a country's government. Burkart *et al.* (2002) argue that control is likely to be kept within the family where private benefits are high. Dyck and Zingales (2004), Johnson and Mitton (2003), and others show that private control benefits might derive from favorable treatment by influenced politicians. These benefits are high where institutions are weak and rent-seeking is hugely profitable.

This chapter focuses on the relationship between oligarchic family control and four aspects of institutional development and government quality: the efficiency of

[1] "Survival" in the second paper is defined as uninterrupted existence as a publicly traded corporation.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

bureaucracies, the importance of state-controlled businesses, the integrity of governments, and the institutions and outcomes of financial development. I find that family control is more pervasive in countries where bureaucracies are inefficient and corrupted, government directs a large sector of state-owned enterprises, rent-seeking opportunities are likely lucrative, and financial markets are less functional. Poorly developed financial market appears to entail weak property rights for small, public shareholders. These results suggest that concentrated economic power impedes growth by preserving institutions that prohibit entry and growth of young firms.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Bibliography

Berle, Adolph, and Gardiner Means, 1932. *The Modern Corporation and Private Property*. New York: Macmillan.

Burkart, Mike, Fausto Panunzi, and Andrei Shleifer, 2002. Family Firms. NBER Working Paper 8776.

Dyck, Alexander, and Luigi Zingales, 2004. Private Benefits of Control: An International Comparison. *Journal of Finance* 59 (2): 537 – 600.

Friedman, Milton, 1953. The Methodology of Positive Economics. In Essays *in Positive Economics*. University of Chicago Press.

Jensen, Michael, and William Meckling, 1976. The Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure. *Journal of Financial Economics* 3: 305 – 60.

Johnson, Simon, and Todd Mitton, 2003. Cronyism and Capital Controls: Evidence from Malaysia. *Journal of Financial Economics* 67(2): 351 – 82.

Nelson, Richard, and Sidney Winter, 1982. *An Evolutionary Theory of Economic Change*, Cambridge: Harvard University Press.

Olson, Mancur Jr., 1963. Rapid Growth as a Destabilizing Force, *Journal of Economic History*, 23(4): 529 – 52.

Rajan, Raghuram, and Luigi Zingales, 2003. The Great Reversals: The Politics of Financial Development in the 20th Century. *Journal of Financial Economics* 69 (1): 5 – 50.

Schumpeter, Joseph, 1912. *Theorie der Wirtschaftlichen Entwichlung*, Leipzig, Dunker und Humbolt. Translation by R. Opie (1934), *The Theory of Economic Development*. Cambridge, Mass: Harvard University Press.

Schumpeter, Joseph, 1934. *Capitalism, Socialism and Democracy*, London: Harper and Brothers.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

CHAPTER TWO

LARGE CORPORATE SECTOR STABILITY AND ECONOMIC GROWTH[1]

1. Introduction

National economies have landmark corporations. The shipping company, Maersk, symbolizes the Danish economy and its maritime history, just as Nokia is an economic symbol of Finland's success in the "new economy." Many, especially the principals of these great corporations, claim a linkage between an economy's fortunes to those of its landmark firms. Most famously, GM chairman Charles Wilson proclaimed, "What is good for the country is good for General Motors and vice versa." The statement seems to suggest that big corporations' success contributes to the nation's economic performance and a nation's economic performance contribute to the success of big corporations.

We thus ask the operational question – is the continuous dominance of "top" large corporations positively or negatively related to economic growth? Both relations are not without economic foundations.

The positive relationship between the continuous dominance of top firms and economic growth could stem from any of the following possibilities. First, large corporations might exhibit continuous dominance because they are well managed. They are the engines of economic growth because they continuously create wealth for all stakeholders and their positive contributions spill over to the rest of the economy. The

[1] Co-authored with Randall Morck and Bernard Yeung.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

management literature stresses how well-managed large firms have the resources and capabilities to coordinate intra- and inter-firm efforts to create and capture economies of scale and scope.[2] Second, growth often appears to require frequent wealth-creating innovations. Schumpeter (1942) argues that large corporations have the resources to create and finance the commercialization of innovations. Third, the continuous dominance of huge corporations provides a degree of economic stability and security for their managers and workers. This stability creates an environment in which investment in high-risk productivity gains is possible without exposing the managers and workers to unacceptable personal risks. In short, the longevity and prosperity of an economy's great corporations may well be good for economic growth.

But this view is not universal; the continuous dominance of large firms may be associated with stagnation. Certainly, the view that the steady turnover of a country's great corporations is a sign of economic dynamism also has a reputable economic pedigree. First, Schumpeter (1912) argues that innovations *per se* generate new dominant firms over the long run, like Microsoft in the U.S. From this viewpoint, the continuous dominance of a stable cadre of great corporations is a symptom of economic stagnation. Second, Nelson and Winter (1982) argue that a firm is composed of a collection of "routines" which take time to develop and are not easy to change. Routines that best fit current economic conditions prevail and firms with the right routines prosper. As economic conditions – such as preferences, factor supplies, and technology change, new routines are needed. Indeed, upstarts chasing profits establish new routines and may even be agents of change. Firms that are successful in the past often find it difficult and costly to change their routines to fit a changed environment. They may not even be aware of the

[2] See e.g. D'Cruz and Rugman (2000).

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

need to make changes until their performance declines substantially, and that might be too late. New organizations with new routines that best fit the changed economic conditions overtake them. Some of the old firms with old routines may not even survive. Hence, a dynamic economy periodically has new firms with new routines that stimulate growth; while a stagnant economy has old firms that dominate continuously. Third, a continuous dominance of the same top firms may also indicate that those firms are able somehow to preserve the *status quo* and prevent upstarts from displacing them. The possibilities range from innocuous government intervention that raises the hurdle for up-starts to outright collusion between big business and government.

Despite the fundamental nature of these issues and the empirical curiosity, remarkably little is known about the influence of the longevity and health of great corporations on their host countries' long-term economic growth. In part, this may be because the above theories pertain to the very long run, measured in generations rather than years. Consequently, empirical falsification is difficult and awaits reliable data over a sufficiently long term for a sufficient number of economies.

This paper attempts a first pass at relating the stability of an economy's list of leading firms to its long-term economic growth. To this end, we construct a set of corporate stability indices for a large cross section of countries over a twenty-year period from 1975 to 1996. We use this period because it includes the first and last years for which comparable lists of leading companies are available across many countries. We relate these indices to standard measures of economic growth: real per capita gross domestic product (GDP) from 1990 to 2000. A ten-year period is used to smoothen out the effects of business cycles and transient crises. Our purpose is to see whether the

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

continuous dominance of leading firms or their eclipse by other firms is associated with faster growth. Also, we are interested in understanding the underlying reasons for the stability or instability of lists of top corporations.

We find that countries whose corporate sectors were less stable grew faster than other countries with the same initial per capita GDP, level of education, and capital stock.[3] The speedier growth appears to stem from speedier productivity growth and capital accumulation, although the relationship between corporate sector stability and capital accumulation is a bit less significant. For richer countries, the results stem from the lack of turnover in dominant firms in the private sector. For poorer countries, the results are driven by the presence of continuously dominant state-owned enterprises.

Section 2 reviews the construction of our key variables and section 3 presents our key results. Section 4 considers possible political and economic explanations of the findings in section 3. Section 5 concludes.

2. Data

In this section, we first describe the raw data used to construct our stability indexes. We then describe the indexes themselves, the growth measures and the other variables central to our empirical tests.

2.1 Corporate Stability Data

Our data are collected from the 1978 and 1998/99 editions of *Dun & Bradstreet's Principals of International Business*. We use this source because it includes a wide

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

spectrum of businesses: privately held companies, publicly held companies, cooperatives, and state owned enterprises. A comparison with annual reports indicates that the 1978 edition contains 1975 data for the most part, so we refer to it as our 1975 data. The 1998/99 edition generally contains 1996 data, so we refer to it as our 1996 data. We choose these years because they were the earliest and latest data available at the time we began this project.

We select countries according to the following criteria. First, the country must appear in both the 1978 and 1998/99 editions of *Principals of International Business*. Second, we delete small economies whose tenth largest company has fewer than 500 employees and which have less than ten companies listed in both editions. This removes very small countries from the sample. The justification is that extremely small economies are really different from larger more mature economies and we should not mix them. Also, we require for each country the total number of enterprises for which the number of employees is provided to be large enough to allow the construction of our key corporate sector stability variables. Third, comparable *per capita* GDP must be available for both 1990 and 2000. This requirement eliminates countries that were part of the former Soviet Union and Yugoslavia. Fourth, we eliminate countries that experienced prolonged and extensive involvement in war between 1975 and 1996, such as Afghanistan, Ethiopia, and Iraq. Fifth, since we are investigating the relationship between growth and the continuous dominance of large firms, we require data on education levels and the total value of capital assets for each country. These measures

[3] Note that the question of large firm stability is separate from that of optimal firm size. Acs *et al.* (1999) find that US industries containing larger firms show evidence of faster productivity growth. Rapid turnover of large firms need not imply a steady state characterized by a preponderance of small firms.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

are well known initial conditions that affect growth, which we should use as controls in our subsequent regression analyses.

These criteria allow us to calculate stability indexes for a sample of 44 countries.

2.2 Corporate Sector Stability Index Construction

This section describes how we measure the long-run stability of the corporate sector in each country. We gauge the importance of enterprises by the number of people they employ. Using the number of employees to rank firms by size allows us to include public and private firms. (Some private firms do not supply information on assets or sales, other reasonable measures of firm size.) The 1978 and 1998/99 editions of *Dun & Bradstreet's Principals of International Business* provide the names and number of employees for the ten largest employers in each of our 44 countries. If ties occur for the tenth firm, all the ties are included. For small countries, the list of top ten enterprises can include what would be considered "small firms" in larger countries. This fact necessitates controlling for country size in the subsequent analysis.

The next question is the type of firms we want to include in our sample. We first exclude the following: Educational Services (SIC: 82), Health Services (SIC: 80), Membership Organizations (SIC: 86), Noncommercial Research Organizations (SIC: 8733), and Government Agencies (SIC: 91-97). We then consider other types of firms to exclude. One approach is to be all-inclusive. However, it is reasonable to exclude other categories of firms as well.

First, financial sector firms might be excluded. King and Levine (1993) show that capital market development positively affects growth. Including financial companies in

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

our list of dominant firms might capture spuriously the impact of financial market development on growth. Next, foreign-owned enterprises might be excluded. Multinational subsidiaries are plausibly more affected by global conditions than by their host countries' local economic conditions. However, some domestically based firms might also have foreign operations, so this argument is not clear-cut. Countries that open to the global economy admit multinational subsidiaries, and countries that isolate themselves lose multinational subsidiaries. Either could alter their lists of top firms. Sachs and Warner (1995) and others show that openness contributes to economic growth and global convergence. To avoid spuriously capturing the impact of openness on growth, we exclude foreign owned enterprises. We also retain an alternative sample that includes foreign subsidiaries.

Third, any firm that was state-owned for any part of our window might be excluded. State-owned enterprises have different economic motives than purely for-profit commercial organizations. These motives range from the efficient provision of public goods and promotion of new industries to wasteful government activism, bureaucratic entrenchment, and blatant corruption. These motives aggregate to an uncertain effect on growth; though Hayek (1944) and others argue eloquently that their net effect is negative. Regardless of the sign, including state-owned enterprises might capture spuriously the impact of the size of the government on growth. Since import substitution and socialist ideologies induced extensive nationalizations in the 1970s and a resurgence of liberal ideology in the 1990s induced waves of privatizations, this problem may be especially severe during our time window.

In summary, we produce large corporate sector stability indexes for the following

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

lists of top ten firms:

- List I – Includes all enterprises: financial and non-financial, domestically controlled and foreign-controlled, as well as private sector and state-owned.
- List II – List I, but excluding financial sector companies such as banks, insurance companies, and investment banks. We define firms to be financial sector companies if their SIC codes are 60 – 64, as reported in Dunn and Bradstreet's *Principals of International Business.*
- List III – List II, but excluding foreign-owned enterprises. We consider an enterprise to be foreign-controlled if a foreign person holds a stake exceeding twenty percent and is the largest shareholder.
- List IV – List II, but excluding state-owned enterprises. We consider an enterprise to be state-controlled if a government holds a stake exceeding twenty percent and is the largest shareholder.
- List V – The intersection of Lists III and IV; that is, list I excluding financial companies, state-owned enterprises, and foreign-controlled firms.

Our basic *employee-weighted corporate sector stability index* is defined as

$$\Phi_{L75} = \frac{\sum_{i=1}^{10} \delta_i L_i}{\sum_{i=1}^{10} L_i} \qquad (1)$$

where L_i is the labor force employed by the i^{th} largest employer in the country, as listed in *Dun and Bradstreet's Principals of International Business, 1978 edition*, and the Dirac delta function δ_i is defined as

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

$$\delta_i = \begin{cases} 1 & \textit{if firm i is in the top ten lists for both years} \\ 0 & \textit{otherwise} \end{cases} \tag{2}$$

where the largest firms of 1975 are from *Dun and Bradstreet's Principal International Business, 1978 edition.*

We weight each firm by its 1975 labor force to avoid endogeneity in our regressions of growth on the stability index although the more recent numbers are less error prone. Our explorations of detailed corporate histories revealed several apparent data-entry problems with the earlier year. These errors were rectified and the lists of firms adjusted where necessary. Nonetheless, as a robustness check, we also construct analogous employee-weighted stability indexes based on 1996 labor forces, Φ_{L96}. The results are qualitatively not changed.

As a further robustness check, and a way of side-stepping precise accuracy issues surrounding the employee counts, we also construct equally-weighted corporate stability indexes, based on the same top 10 firms. Thus, our *equal-weighted corporate sector stability index* is

$$\Phi_E = \frac{1}{10}\sum_{i=1}^{10}\delta_i \tag{3}$$

To construct these stability indexes, we must match company names in our 1975 data with those in our 1996 data for each country. One complication is the different presentation of some company names in the two editions. For example, some Malaysian company names contained the abbreviation *BHD* in one edition, and the word *Berhad* (Corporation in Malay) in the other. Likewise, the Finnish firm Nokia is listed as *OY NOKIA AB* in one edition and *NOKIA OYJ* in the other. The choice of language sometimes causes mismatches, too. For example, a Japanese company listed in the 1975

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

data as *Sumitomo Kinzoku Kogyo KK* is listed under the English translation of its name, *Sumitomo Metal Industries Limited*, in 1996.

Matching company names in the 1975 and 1996 *Dun and Bradstreet's Principal International Business edition* does not capture all company name changes, for some firms change their names dramatically, yet preserve a continuity of corporate personhood. To uncover such continuity, we therefore research the histories of the ten largest employers in each country. This requires reading histories of big business in each of the countries, scanning through newspaper records, and, in many cases, telephoning archivists of particular companies. Telephone inquiries of bankers, brokers, and finance professors in different countries allowed us to clarify the continuity of all the corporations in our sample. Judgment calls were inevitable, and the precise procedure we use to resolve ambiguous cases is detailed in the Appendix.

2.3 Corporate Survival Indices Construction

We define a country's corporate sector as more stable if its list of top ten firms changes less. Another measure focuses on the *survival* of the old dominant firms. This allows us to capture the possibility that the older generation of leading firms remains healthy and important, but is displaced from the top firm list by newer larger firms.

We define a top ten 1975 firm as having 'survived' as a prominent firm if it remains in the top ten list for 1996 *or* if the growth rate of its labor force in the period at least equals the total GDP growth rate of the economy. That is, we define a country's *employee-weighted top ten corporate survival index* as

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

$$\Omega_{L75}^{GDP} = \frac{\sum_{i=1}^{10} \max[\delta_i, \eta_i] L_i}{\sum_{i=1}^{10} L_i} \quad (4)$$

where L_i is 1975 labor force,

$$\eta_i = \begin{cases} 1 & \textit{if firm i grew at least as fast as GDP in the period} \\ 0 & \textit{otherwise} \end{cases} \quad (5)$$

and δ_i is as in (2).

An equal weighted variant, denoted Ω_E^{GDP}, is also constructed. Our purpose here is to assess whether growth depends on 1975 top ten firms actually disappearing, or only on their being displaced from the top ten lists. If the latter, the top ten 1975 firms might remain prominent, but be eclipsed by new stars. We recognize that growth in the number of employees is a questionable measure of continued prominence, for productivity increases might render reduced labor forces economically efficient. Unfortunately, we are dependent on labor force figures because these are the only numbers available for both public and private firms for a large cross-section of countries in both years. The paucity of listed firms before the 1990s in many countries makes more nuanced measures of continued prominence impracticable.

The 1996 fates of top ten 1975 firms are ascertained first by checking the 1996 Dun and Bradstreet data. Where this is ambiguous, we check company websites, business history books, and biographies of the 1975 principals. Once again, judgment calls are unavoidable. For example, some firms spin off divisions over time. Although the core firm may be smaller in 1996, the aggregation of all successor firms might be large. In general, we follow the fate of the principal successor firm only. In some cases,

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

this is impossible. For example, the Argentine state-owned enterprise Servicios Electricos del Gran Buenos Aires SA (Segba) is one of that country's top ten firms for 1975. In the early 1990s, it split into Edenor and Edusur – with roughly equal numbers of employees going into each. In this example, we take the combined employees of the two successor firms in assigning survival status to the predecessor firm.

We produce stability and survival indexes based on the five different lists of top ten firms for each of 44 countries. For expository convenience and brevity, we report only those based on the maximally and minimally inclusive lists of top firms: Lists I and V. Panel A of Table 1 lists our stability and survival indices for each country. Panel B displays the correlation coefficients between these two sets of indices.

[Table 1 about here]

The interpretation of these indexes is straightforward. For example, using the list based on non-financial, non-government owned and non-foreign owned firms, the top 10 labor-weighted stability index for the United State is $\Phi_{L75} = 0.531$. This means that 53% of the workers employed by the top 10 firms of 1975 worked for firms that remained in the top 10 firms of 1996. The comparable figures for Japan, Sweden, Hong Kong, and Argentina are 59%, 78%, 61% and 39%. The equally weighted index has a similar interpretation: $\Phi_E = 0.6$ for Japan means that 6 of the largest 10 firms in 1975 were still among the largest 10 in 1996. A high value of the stability indexes thus indicates that a high proportion of the 1975 large firms remained in top ten large firm list. A low value

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

indicates that a high proportion of 1975 firms were not dominant firms in 1996. More developed countries generally exhibit less turnover of dominant firms.

The stability indexes based on the maximally and minimally inclusive lists of top firms are quite similar for developed countries. Only Austria has a maximally inclusive index substantially higher – 0.83 v. 0.15. However, among developing countries, the two indexes are often quite different, presumably because state-owned enterprises are more dominant.

Panel B shows the employee-weighted and the equal-weighted stability indices to be highly correlated. Except for Italy and Sweden, most countries' employee-weighted indices slightly exceed their equal-weighted indices. In these two countries, certain continuously dominant firms are particularly "dominant" in employment.

The employee weighted and the equal weighted survival indices are highly correlated. Using the minimally inclusive lists of top firms, which exclude financial, state controlled, and foreign controlled firms, the employee-weighted survival index exceeds the equal-weighted index only slightly except in two Western European countries: Italy and Sweden.

The correlations of the survival indices based on the two lists are all highly positive and significant. Likewise, the correlations between the various survival and stability indices are all very high and statistically highly significant.

The upper panels of Table 2 provide summary univariate statistics for our corporate stability, and corporate survival indexes.

[Table 2 about here]

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

2.4 Measuring Economic Growth

We define *long-term economic growth* as growth in per capita GDP,

$$\Delta \ln(y) = \ln(per\ capita\ GDP_{2000}) - \ln(per\ capita\ GDP_{1990}) \qquad (6)$$

Ideally, we would like to measure economic growth subsequent to, and therefore potentially 'caused by' corporate stability. However, the economic effects we are interested in are thought to operate only over the very long term – generations rather than years. To capture corporate stability over such a period, we use data from 1975 to 1996. This leaves only a short window over which to measure subsequent economic growth. Moreover, this post 1996 window is contaminated by economic crises in Latin American and East Asia at its starting point. To obtain a more meaningful measure of economic growth, we therefore measure each country's real *per capita* gross domestic product (GDP) growth from 1990 to 2000. Data are from the Penn World Tables, Version 6.1.[4] GDP figures are expressed in US dollars at purchasing power parity, and inflation-adjusted to 1996 dollars. In this way, differences in inflation rates and living costs across countries are removed. Since $\Delta \ln(y) \cong \Delta y / y$, we interpret $\Delta \ln(y)$ as a fractional growth rate in *per capita* GDP.

It is also of interest to decompose overall growth into growth due to capital accumulation and growth due to increased total factor productivity (TFP). To do this, we first measure each country's rate of *per capita* physical capital growth, denoted $\Delta\ln(k)$, over the relevant period from 1990 to 2000. To construct $ln(k)$, the logarithm of real *per*

[4] The Penn World Tables are available at the National Bureau of Economic Research website, www.nber.org. Penn World Tables data on total factor productivity and capital accumulation are unavailable after 2000. To maintain comparability with these alternative growth measures, we measure *per capita* GDP growth to 2000 as well.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

capita physical capital stock, we construct a time series of the total stock of physical capital in country i in year t, denoted $K_{i,t}$, by applying the recursive formula

$$K_{i,t+1} = K_{i,t} + I_{i,t} - \delta K_{i,t} \tag{7}$$

where we assume an initial capital stock of zero for 1950, $I_{i,t}$ is aggregate real investment for country i in year t, taken from Penn World Table 6.1, and δ is a depreciation rate of 7% under the perpetual inventory method. Scaling the total real physical capital stock by population gives us the per capital real physical capital stock. This procedure is similar to that used by King and Levine (1994).

We then follow the methodology of Beck, Levine and Loayza (1999), and roughly estimate each country's TFP growth as its growth in its *per capita* GDP minus 0.3 times the growth of its physical capital *per capita*. All relevant data are from the Penn World Tables, Version 6.1[5].

Summary statistics for this variable are shown in the second panel of Table 2. The mean value of 0.22 for $\Delta\ln(y)$ indicates that the typical country's *per capita* GDP rose by about 22% during the decade from 1990 to 2000 in terms of real US dollars at purchasing power parity. Likewise, the average growth in real *per capita* physical capital stock is 26.3% and the average total factor productivity growth is 14.4%. The ranges of these three growth measures are wide: from -8.3% to 62.4% in total growth, from -4.2% to 46.7% in total factor productivity growth, and from -21.7% to 67.4% in growth in real *per capita* physical capital stock.

[5] Caselli (2003) shows our assessment of cross-country growth variation may change non-trivially with more precise measures of the capital share. Still, as long as the capital share is below 40%, most of the variation in income is still explained by TFP. We follow the more popular approach in adopting the capital share to be 0.3.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

3. Results

This section presents our main finding: economic growth is negatively related to large corporate sector stability and survival. In this section, we first present simple correlations between our corporate sector indexes and long-term economic growth. We then turn to regressions analogous to those of Mankiw (1995), but adding corporate sector stability or survival as an additional independent variable. The section concludes with a discussion of the robustness of these results.

3.1. Simple Correlations

Panel B of Table 2 presents the simple correlations between our growth measures and the two sets of corporate stability and survival indices. Corporate stability and survival indices based on maximally inclusive lists of top ten firms are all negatively and significantly correlated with *per capita* GDP growth, total factor productivity growth, and capital accumulation. If we use minimally inclusive lists, which drop financial, foreign owned, and state owned enterprises, the equal-weighted corporate stability indices are negatively correlated with *per capita* GDP growth and total factor productivity growth at 7% and 3% significance, and the equal-weighted corporate survival is negatively correlated with total factor productivity growth at a 4% significance level. Given the small sample sizes, these results invite more elaborate statistical analysis.

3.2 Regressions of Long-Term Economic Growth on Corporate Stability

Economic growth rates are known to be lower for countries that have already achieved higher levels of income, for countries with less educated workforces, and for countries

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

with less extensive capital assets.[6] Table 2 Panel B shows that our corporate sector stability indices are correlated with these initial condition determinants of economic growth. Thus, the simple correlations described above might only reflect determinants of economic growth that are already known. We follow the specification in Mankiw (1995) and regress the growth measures on a corporate stability or survival index controlling for initial income, initial stock of physical capital, and initial stock of human capital.

Thus, we run regressions of the form

$$\begin{bmatrix} economic \\ growth \\ rate \end{bmatrix} = \beta_0 + \beta_1 \begin{bmatrix} initial \\ income \\ level \end{bmatrix} + \beta_2 \begin{bmatrix} initial \\ physical \\ capital \end{bmatrix} + \beta_3 \begin{bmatrix} initial \\ human \\ capital \end{bmatrix} + \beta_4 \begin{bmatrix} corporate \\ sector \\ index \end{bmatrix} + \varepsilon \qquad (8)$$

where the *economic growth rate* is *per capita* GDP growth, defined above as $\Delta \ln(y) \cong \Delta y / y$; and *corporate sector index* is one of the stability or survival indexes defined above.

The control variables included in (8) are defined as follows.

To capture initial income, we use the logarithm of 1990 *per capita* GDP, denoted $\ln(y)$. Initial physical capital stock is the logarithm of real *per capita* physical capital in 1990. These variables are constructed as described at the end of Section 2. As a proxy for the initial stock of *per capita* human capital in each country, we take the logarithm of the average years of education for people aged 25 or over. These data are from Barro and Lee (2000).

We wish to insure that differences in country size do not affect our results. We therefore redo all our regressions with a measure of country size as yet another independent variable. To gauge country size, we use the logarithm total 1990 GDP,

[6] See e.g. Barro (1991), Mankiw (1995).

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

adjusted to 1996 dollars at purchasing power parity exchange rates, which we denote *ln(Y)*. These data are from Penn World Table 6.1. Thus, the two sets of regressions we run have the forms

$$\Delta \ln(y) = \beta_0 + \beta_1 \ln(y) + \beta_2 \ln(k) + \beta_3 \ln(h) + \beta_4 \Phi + \varepsilon \tag{9}$$

and

$$\Delta \ln(y) = \beta_0 + \beta_1 \ln(y) + \beta_2 \ln(k) + \beta_3 \ln(h) + \beta_4 \ln(Y) + \beta_5 \Phi + \varepsilon \tag{10}$$

The previous section notes that growth can occur either because of capital accumulation or because of total factor productivity (TFP) growth, and that overall growth in *per capita* GDP can be decomposed into two components reflecting these two processes. We therefore also run regressions analogous to (9) and (10), but substituting first total factor productivity growth, denoted ΔTFP, and then capital accumulation, denoted $\Delta ln(k)$, where both variables are as described at the end of Section 2.

Table 3 presents all of these regressions. Panels A and B report full details for regressions using indices based on the least inclusive lists of top ten firms. The equal-weighted stability index, $\Phi_{L.E}$, attracts a significant negative coefficient in regressions explaining both *per capita* GDP growth and total factor productivity growth. That is, a more stable list of dominant corporations is associated with slower economic growth and slower productivity growth.

Table 3 Panel C reports the regression results using stability indices based on each variant list of top ten firms described above. For brevity, it reports only the regression coefficients on those indices. The corporate stability indices, both employee-weighted $\Phi_{L.75}$ and the equal-weighted $\Phi_{L.E}$, are negatively related to per capita GDP growth and to total factor productivity growth. The employee-weighted stability indices based on

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Lists I through IV all attract negative and significant regression coefficients where *per capita* GDP growth or total factor productivity growth is the dependent variable. The equal-weighted stability indices based on Lists III through V behave likewise. The negative relationship of corporate stability with capital accumulation is more tenuous, as only the employee-weighted stability indices based on Lists II and III attract significant negative regression coefficients.

[Table 3 about here]

These relationships are *economically* as well as statistically significant. To save space, and to be conservative, we discuss only the results for indexes based on the minimally inclusive lists of top ten firms, which also have the least significant results. The average coefficient on equal-weighted stability, $\Phi_{L.E}$, in Panel B of Table 3 is -0.285. A one standard deviation increase in the index thus is associated with lowering *per capita* GDP growth by -0.285 x 0.171 or 4.9%. This is approximately 35.6% of the cross-country standard deviation in real *per capita* GDP growth. Similarly, a one standard deviation increase in the equal-weighted stability index is associated with a decline in total factor productivity growth of 34.2% of the standard deviation of that variable.

These estimates indicate that corporate sector stability is associated with growth retarding factors that account for a substantial part of the variation in economic growth across countries.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

3.3 Regressions of Long-Term Economic Growth on Corporate Survival

The corporate stability measures in Table 3 gauge the stability in a country's list of top ten companies over twenty years, and thus are a direct and conservative measure of continuous dominance of leading corporations. However, some leading corporations might be displaced from the top ten list, but still remain prominent. The corporate survival indices, Ω_{L75}^{GDP} and Ω_{E}^{GDP} depicted in Section 2.3, capture the proportion of top ten firms in 1975 that either remain among the top ten firms in 1996 or grow at least as fast as their country's GDP. Table 4 replicates the regressions in Table 3, substituting corporate survival indices for the analogous stability indices.

[Table 4 about here]

Panels A and B report complete regression results using survival indices based on the least inclusive lists of top ten corporations, which exclude financial, foreign controlled, and state controlled firms. The mere survival of these old leading firms is significantly associated with slower growth, slower productivity growth, and slower capital accumulation. The results in Table 4 panels A and B are actually more significant than their counterparts in Table 3.

Table 4 Panel C shows that corporate survival, either employee weighted, Ω_{L75}^{GDP}, or equal weighted, Ω_{E}^{GDP}, defined using any of the five top ten lists, is consistently associated with lower *per capita* GDP growth and total factor productivity growth. Again, the negative regression coefficients are more statistically significant then their counterparts in the stability indices regressions. The survival indices remain weak in

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

explaining capital accumulation, with negative and significant coefficients arising only in using List III (excludes financial and foreign controlled companies) and marginally significant coefficients arising using Lists II (non-financial companies) and V (minimally inclusive – dropping financial, foreign controlled, and state controlled firms).

Likewise, the relationships between the resilience of 1975 top ten firms and both economic growth and productivity growth are more *economically significant* than the analogous effects in Table 3. Again, we focus on the minimally inclusive sample. A one standard deviation increase in the labor-weighted survival index is associated with a *per capita* GDP growth drop of 0.22 x 0.227 or 5%. This is approximately 36.5% of the cross-country standard deviation in real *per capita* GDP growth. Similarly, a one standard deviation increase in the equal-weighted survival index is associated with a *per capita* GDP growth depressed by 47.5% of the standard deviation of that variable. A one standard deviation increases in these same labor or equal-weighted survival indexes is likewise associated with total factor productivity growth reductions of 32.9% or 44.8%, respectively, of the standard deviation of that variable. Also, a one standard deviation increase in these survival indices is associated with *per capita* capital accumulation lower by 27.4% and 32%, respectively, of its standard deviation.

In summary, the regression results above show that continuously dominant large firms (a high corporate stability index) are associated with lower *per capita* GDP growth and lower total factor productivity growth. This pattern is stronger when we gauge the continued prominence of these old leading firms (a high survival index), rather than their continued dominance. That is, the displacement of top ten firms by other firms is

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

somewhat tied to rapid growth. But rapid growth is far more evident in countries where the old top ten firms lose their prominence.

3.4 Rich or Poor?

Interestingly, when we include state-controlled enterprises in the list of dominant firms, the continuous dominance of large corporation (samples II and III) is related to lower capital accumulation. State-controlled enterprises are perhaps more pervasive in developing economies. In such economies whose capital markets are ill developed, stated-controlled enterprises might play a particularly crucial role in development, either positively in overcoming this lacuna, or negatively either by crowding out private investment or by actually impeding capital market underdevelopment. Hence, this finding might primarily reflect negative consequences of the continuous dominance of large state owned enterprises in developing countries.

More generally, Gerschenkron (1962) and others argue that the economic institutions and processes leading to economic growth in rich countries differ qualitatively from those in poor countries that are "catching up" therefore is useful to examine the relationship between growth and corporate sector stability and survival within subsamples of initially rich and poor countries.[7]

Table 5 reproduces the regressions of Tables 3 and 4 for rich and poor country subsamples. We define countries as rich if their *per capita* GDP in 1990 is above the median for the 44 countries in our sample.

---

[7] Acemoglu *et al.* (2000) develop a comprehensive formal model based on Gerschenkron's insight. Our results in this section broadly support their model's validity.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

[Table 5 about here]

Table 5 reports regressions of the form depicted in Equation 12 using stability and survival indexes based on all five lists of top ten corporations. To save space, we report only the regression coefficients of the stability and corporate survival indices.

Within developed countries, slower *per capita* GDP and total factor productivity growth are associated with higher corporate stability and survival indices if the latter are defined using the minimally inclusive lists of top ten firms, which drop financial, foreign-controlled, and state-controlled firms. Capital accumulation is unrelated to either set of indices in rich countries. Including foreign-controlled enterprises generates quite similar results, with only slightly less statistical significance. Including state-controlled enterprises render all the indices entirely insignificant. Thus, for developed countries, the turnover in the dominance and prominence of top non-financial domestically controlled private sector firms is associated with faster growth.

Within developing countries, significant results obtain only if state-owned enterprises are included in the tallying up of the continuous dominance or survival of large corporations. Both corporate sector stability and corporate sector survival are associated with slower real *per capita* GDP growth, total factor productivity growth, and capital accumulation. These results highlight that the continuous dominance of large state-controlled enterprises in poorer countries accounts for the results reported in Table 3 and 4 Panel C based on versions I, II, and III of the top ten firms list. These results also suggest that, in developing countries, the turnover of dominant firms in the private sector does not seem to affect growth.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

3.5 Robustness Tests

These basic results in Tables 3 though 5 survive a battery of robustness checks. Sensible changes in the specification of the regressions and in the definitions of the variables in them generate qualitatively similar results. By this we mean that these changes do not alter the sign, approximate magnitude, or significance of the coefficient on the corporate stability indexes. We also conduct residual diagnostics analyses and find that our results are not affected by outliers. For example, Cook's D and DFFITS tests indicate no outliers. The "student residuals" point only to Ireland as a potential outlier. However, dropping that country from our sample produces qualitatively identical results.

The industrial structure of an economy might matter. Specifically, dependence on natural resources might affect corporate sector stability, survival, and economic growth. Resource abundant countries may have very large natural resources firms that ought to remain large to exploit economies of scale. Yet, for a variety of political and institutional reasons, these countries remain poor (Rodriguez and Sachs, 1999 and Sachs and Warner, 2001). Including the resource dependence measure of Hall and Jones (1999) in our regressions as an additional control variable preserves the rough magnitudes and significance levels of the stability and survival measures.[8]

Our corporate stability variables might have different interpretations in large and small countries, as they might reflect a greater turnover associated with smaller firm size

---

[8] The mining variable in Hall and Jones (1999) is for 1988 "when possible or the closest available year." We follow their procedure to construct an analogous variable using 1975 and 1996 data from the World Development Indicators database. We construct two sets of control for natural resource dependence using fuel, oil, and metals exports over merchandise exports (FOM). The first set includes two variables – the level of FOM in 1975 and its change from 1975 to 1996. The second set is the average of FOM in 1975 and 1996. Including either set of resource dependence controls in our regressions preserves the magnitudes and significance levels of the stability and survival variables in *per capita* GDP and TFP growth regressions.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

in smaller countries. One possibility is to adjust our top ten firms' lists to country size. The absence of good records in many countries makes ascertaining the survival of smaller firms virtually impossible. Therefore, we introduce country size, measured as the logarithm of 1990 GDP in 1996 US dollars (converted at purchasing power parity). Including this does not qualitatively alter our results, nor does including alternate country size measures such as the logarithm of 1990 population or the logarithm of area (in square kilometers).

In a further set of robustness tests, we substitute two alternative productivity growth measures. These are two *per capita* productivity growth measures that consider human capital accumulation, as proposed by Mankiw (1995) and Hall and Jones (1999), respectively. Either of these alternatives reduces the significance of the stability indices, but not of the survival indices.

Next, replacing real GDP *per capita* growth with *per capita* GNI (gross national income) also produces patterns of signs, coefficient size, and statistical significance very similar to those shown in the Tables. GNI can be measured in two ways. The first uses the Atlas Method and converts national currency to current US dollars, and the second converts national dollars to "international dollars" at purchasing power parity. Both measures produce similar results.

Finally, if we measure initial stock of human capital by the logarithm of the average number of years of total education in the male population over 25 in 1990, rather than the the general adult population (on the grounds that males are more likely to be in the work force in many countries), we again obtain qualitatively similar results.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

4. Discussion

While considering different ways of constructing our survival and stability indexes, we pointed out that financial development, openness, and the size of the government sector might all affect both stability and economic growth. We now consider these arguments in more detail to speculate about how each might mediate the relationship between economic growth and the stability or survival of large corporations.

The size of the government sector might plausibly affect the observed relationship between corporate sector stability and survival in a range of related ways. These depend on the benevolence or malevolence of the political elite.

A highly benevolent government might seek low employment or an egalitarian income distribution. If large corporations sustain large numbers of steady middle-income jobs, supporting large corporations might be a means to these ends.[9] Or, a benign government might view general economic stability as a public good.[10] In either case, a benevolent government might act to preserve established large firms even if this slowed growth.

Some governments have "industrial policies" to direct the corporate sector. In the eighties, Japan's success was attributed to such state activism. Beason and Weinstein

---

[9] For example, when the German government bailed out Philipp Holzmann, Finance Minister Hans Eichel declared that "the government has a responsibility to step in if a major German company is about to collapse and cost thousands of people their jobs." (See Edmund Andrews 'Navigating the Economy of a Changing Germany', *New York Times*, December 7, 1999.) The same motive seems to underlie Chancellor Gerhard Schroeder's pressure on German banks to save the jobs of the 22,000 employees of the bankrupt engineering firm Babcock Borsig AG with a $700 to $800 million bailout. (See 'Schroeder Seeks bailout Aid for Bankrupt Firm' *International Herald Tribune*, July 6, 2002, p 11.)

[10] Such beliefs seem to have led the Japanese government to propose a ¥200 billion ($1.90 billion) bailout of Sogo Department Stores, which *Asiaweek* described as part of Japan's long tradition of corporate bailouts designed to minimize "confusion". See Jonathan Sprague and Murakami Mutsuko 'Tokyo's Sogo Shocker - A bailout and a reversal show no policy at all' *Asiaweek*, 26(29), July 28, 2000. Note, however, that *Asiaweek* continues that, to the bewilderment of senior politicians, the bailout was derailed when "[t]he public exploded over the use of their tax money to rescue a poorly managed private company."

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

(1996) and others discredit such views, but support for industrial policies persists in many countries. One reason for this continued support, proposed by Högfeldt (2004), is that large established corporations are convenient channels through which politicians can pursue a variety of social and political objectives. Politicians might protect such corporations to preserve their own power.[11] Another is Krueger's (1993) argument that bureaucracies, once established, lobby effectively for their own survival and growth. Regardless of which explanation is paramount, interventionism can slow growth in a variety of ways. One is that government investment *crowds out* private investment, *as* in neo-Keynesian macroeconomics. Another is that government intervention adds political risk to normal business risks, and so deters corporate investment. A third, due to Djankov *et al.* (2002), stresses how red tape, delays, and other political fixed costs of forestall entry by new firms. All three imply both slow growth and high stability and survival indexes.

Finally, a country's government might be controlled to some extent by its great corporations, and manipulated to their benefit. Stigler (1971) argues that regulated businesses often capture the bureaucrats who regulate them, and whose careers depend on the importance of the firms they oversee. Tullock (1967) argues more generally that returns to political rent-seeking rise with the extent of state interventionism. Morck and Yeung (2004) argue that large, established, family controlled corporate groups are

[11] For example, *Business Week* reports Malaysian Prime Minister Mahathir unapologetic about his government's policy of selecting a handful of wealthy businessmen for privileges and assigning them the role of creating jobs, implementing big projects, and keeping the economy growing. The article quotes Mustapha Mohamed of the Finance Ministry saying "We view Malaysia as a corporation, and the shareholders in the government are companies." and "To the extent you help the bigger guys, the smaller guys benefit." See Sheri Prasso, Mark Clifford and Joyce Barnathan 'Malaysia: The Feud - How Mahathir and Anwar became embroiled in a clash that threatens to send Malaysia into upheaval' *Business Week*, October 28, 1998.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

especially able rent-seekers for a variety of reasons. Again, highly stable large established corporations and slow economy growth ensue.

Fisman and Svensson (2000), Fisman (2001), Fisman and Di Tella. (2001), and others document the first-order importance of political rent-seeking in low-income economies. Recall that the stability and survival indexes that include state-owned enterprises are most useful in explaining slow growth in low-income countries. One interpretation of this finding is that state-owned enterprises are especially conducive to rent-seeking in low income countries, and therefore their continued existence is both more assured and more detrimental to growth.

Another argument for a relationship between corporate sector stability and economy growth turns on financial sector development.[12] Upstarts have less access to financing in an economy with underdeveloped financial institutions and markets. In contrast, large established corporations can use their internal cash flows to fund new investment, even investment that is economically inefficient. Schumpeter (1912, 1939) argues that a well-functioning financial system is a prerequisite for rapid economic growth because it allows innovative entrepreneurs to obtain financing for new firms that carry their wealth-creating ideas to market. King and Levine (1993) present evidence that countries with better developed financial systems do grow faster, and interpret it as supporting this view. Schumpeter (1912) holds that the rise of these innovative new firms necessitates the demise of established, non-innovative firms – a process he dubs *creative destruction*. This reasoning suggests that better functioning financial systems might be associated with faster growth and more corporate turnover.

---

[12] See Khanna and Palepu (2000), La Porta et al. (2000), Levine (2002), Rajan and Zingales (2003), Johnson and Mitton (2003), Morck et al. (2000), Olsen (2000) and others.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Digging deeper, we must ask why financial markets are underdeveloped. La Porta *et al.* (1997a, 1998) argue that the disinterested and efficient enforcement of private property rights is essential to financial sector development. La Porta *et al.* (1997b) argue that some countries fail to protect such property rights for historical and cultural reasons. Alternatively, Morck, Stangeland, Yeung (2000), Rajan and Zingales (2003), Morck, Wolfenzon, and Yeung (2004) and others argue that the insiders of large dominant firms might use their political influence to weaken their countries' financial sectors. This creates a barrier to entry against upstart rivals.

A third argument why our survival and stability indexes might be related to economic growth involves economic openness. Openness encourages countries to specialize according to their comparative advantages, while autarchy requires a more diversified industrial structure. Altering trade protection might raise large corporate sector turnover as either adjustment occurs. Altering capital account barriers might also raise turnover as multinational subsidiaries either enter or exit. Sachs and Warner (1995), among others, show that openness affects economic growth, so the underlying mechanism might conceivably involve top firm turnover.

Again, we have to ask whether openness could be due to corporate sector stability. Politicians might wield protectionism as a tool to protect established corporations from more efficient foreign competitors, as proposed by Morck, Stangeland and Yeung (2000), and Rajan and Zingales (2003). Or alternatively, protectionism might be adopted for purely ideological reasons, and the ensuing corporate stability might be an unintended consequence.

Using historical evidence, Rajan and Zingales (2003) argue that the principals of

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

large established firms in many countries actively pressed governments to hobble national stock markets to deprive potential upstart competitors of capital early in the 20[th] century. This can bring together unusual bedfellows, such as interventionist politicians and seemingly highly principled business leaders attacking ‘speculation’. Large honest governments might thus be amenable, perhaps unknowingly, to fettered stock markets and an entrenched cadre of top corporations. Rajan and Zingales find, however, that openness to the world economy seems to render such business-government cooperation less successful, perhaps because entrepreneurs can obtain financing from abroad or because foreign entrepreneurs can upset the local *status quo*. Others, including Morck *et al.* (2000), draw similar conclusions.

Further work to explore these issues is clearly called for.

5. Conclusions

Economic growth is affected by the turnover of dominant firms. If the continuous dominance of a large firm reflects superior management, such firms could serve as engines of growth. They might also provide the resources and job security for investing in innovations that raise growth. But, high turnover of dominant firms might indicate vibrant creative destruction, and a lack of entrenchment of large corporations.

We shed empirical light on these conflicting arguments. We capture the continuous dominance of large firms from 1975 to 1996 by the proportion of the top ten firms at the beginning of the window that remain among the top ten firms at its end, which we call our *corporate sector stability index*. A past top ten firm that does not remain as a current top ten may nevertheless remain prominent. To capture this, we

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

create a *corporate sector survival index* – the proportion of the top ten firms at the beginning of the window that either remain on the top ten list at its end or grow at least as fast as GDP. We link the corporate stability and corporate survival indices to long-term economic growth based on a 1990 to 2000 window.

We find that, for developed countries, a lack of turnover of large dominant firms in the private sector is negatively associated with growth in *per capita* GDP growth and total factor productivity. For developing countries, the continuous dominance of state-owned enterprises is associated with slower *per capita* GDP growth, total factor productivity growth and capital accumulation. These results survive multiple robustness checks, which include residual diagnostics analyses as well as adding and modifying controls. We believe that the results indicate that the original Schumpeterian idea (1912) is correct, particularly in developed countries. For developing countries, continuous direct involvement of government in commercial organizations seems to be the culprit for slower growth.

There are at least three inferences. One is that interventionist governments, underdeveloped capital markets, and autarky retard economic growth by themselves; and a low turnover of dominant firms is a by-product. Another is that these three factors compromise growth precisely because they preserve the dominance of established large corporations, which leads to a low level of creative destruction. Third, these three institutional features may be championed and engineered by large dominant firms because they preserve the *status quo*; yet, low economic growth is the consequence. If the third inference is correct, a slow turnover of large corporations reflects their economic entrenchment.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Our findings raise the concern that the corporate sectors of some countries might be excessively stable, and that this might retard economic growth. We recognize that further work is needed to clarify the direction of causation in the economics underlying these results. We welcome additional theoretical or empirical work that might cast light upon these issues.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Bibliography

Acemoglu, Daron, Simon Johnson, and James Robinson, 2000. The Colonial Origins of Comparative Development: An Empirical Investigation. National Bureau of Economic Research Working Paper 7771.

Acs, Zoltan, Randall Morck, and Bernard Yeung, 1999. Productivity Growth and Firm Size Distribution. In *Enterpreneurship, Small and Medium Enterprises and the Macroeconomy*, Zoltan Acs, Bo Carlsson and Charlie Karlsson, eds. Cambridge University Press.

Barro, Robert, 1991. Economic Growth in a Cross Section of Countries. *Quarterly Journal of Economics* 106(2): 407-43.

Barro, Robert, and Jong-Wha Lee, 2000. International Data on Educational Attainment: Updates and Implications. Manuscript, Harvard University.

Beason, Richard, and David Weinstein, 1996, Growth, Economies of Scale, and Targeting in Japan (1955-1990), *Review of Economics and Statistics* 78 (2): 286 – 95.

Beck, Thorsten, Ross Levine, and Norman Loayza, 1999. Finance and the Sources of Growth. World Bank Working Paper.

Caselli, Francesco, 2003. The Missing Input: Accounting for Cross-Country Income Differences, in Philippe Aghion and Steven Durlauf, ed(s), *Handbook of Economic Growth*.

D'Cruz, Joseph, and Alan Rugman, 2000. *Multinationals as Flagship Firms - Regional Business Networks*, Oxford University Press, UK.

Djankov, Simeon, Rafael La Porta, Florencio Lopez-de-Silanes and Andrie Shleifer, 2002, The Regulation of Entry, *Quarterly Journal of Economics* 117: 1 – 37.

Fisman, Raymond, and Jakob Svensson, 2000. Are Corruption and Taxation Really Harmful to Growth? Firm-Level Evidence. Columbia University Working Paper.

Fisman, Raymond, and Rafael Di Tella, 2001. Are Politicians Really Paid Like Bureaucrats? National Bureau of Economic Research Working Paper 9165.

Fisman, Raymond, 2001. Estimating the Value of Political Connections. *American Economic Review* 91 (4): 1095 – 102.

Gerschenkron, Alexander, 1962. *Economic Backwardness in Historical Perspective*. Harvard University Press.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Hall, Robert, and Charles Jones, 1999. Why Do Some Countries Produce So Much More Output Per Worker Than Others? *Quarterly Journal of Economics* 114 (1): 83-116.

Hayek, Friedrich, 1944. *The Road to Serfdom.* Chicago: University of Chicago Press.

Hogfeldt, Peter, 2004. The History and Politics of Corporate Ownership in Sweden, National Bureau of Economic Research Working Paper 10641.

Johnson, Simon, and Todd Mitton, 2003. Cronyism and Capital Controls: Evidence from Malaysia. *Journal of Financial Economics* 67 (2): 351 – 82.

Khanna, Tarun, and Krishna Palepu, 2000. Is Group Affiliation Profitable in Emerging Markets? An Analysis of Diversified Indian Business Groups, *Journal of Finance* 55(2): 867-93.

King, Robert, and Ross Levine, 1993. Finance and Growth: Schumpeter Might Be Right. *Quarterly Journal of Economics* 108(3): 717 – 38.

King, Robert, and Ross Levine, 1994. Capital Fundamentalism, Economic Development, and Economic Growth. *Carnegie-Rochester Conference Series on Public Policy* 40 (June) 259-92.

Krueger, Anne, 1993. Virtuous and Vicious Circles in Economic Development, *American Economic Review* 83 (2): 351 – 55.

La Porta, Rafael, Florencio Lopez-de-Silanes, Andrei Shleifer, and Robert Vishny, 1997a. Legal Determinants of External Finance. *Journal of Finance* 52(3): 1131 – 51.

La Porta, Rafael, Florencio Lopez-de-Silanes, Andrei Shleifer, and Robert Vishny, 1997b. Trust in Large Organizations, *American Economic Review* 87(2): 333 – 9.

La Porta, Rafael, Florencio Lopez-de-Silanes, Andrei Shleifer, and Robert Vishny, 1998. Law and Finance. *Journal of Political Economy* 106 (6): 1113 – 56.

La Porta, Rafael, Florencio Lopez-de-Silanes, Andrei Shleifer, and Robert Vishny, 2000. Government Ownership of Banks. National Bureau of Economic Research Working Paper 7620.

Levine, Ross, 2002. Bank-Based or Market-Based Financial Systems: Which is Better? *Journal of Financial Intermediation* 11(4): 398 – 428.

Mankiw, N. Gregory, 1995. The Growth of Nations. *Brookings Papers on Economic Activity* 1995 (1): 275 – 310.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Morck, Randall, David A. Stangeland, and Bernard Yeung, 2000. Inherited Wealth, Corporate Control, and Economic Growth: The Canadian Disease. In R. Morck ed. *Concentrated Corporate Ownership.* National Bureau of Economic Research Conference Volume. University of Chicago Press.

Morck, Randall, and Bernard Yeung, 2004. Family Control and the Rent-Seeking Society. *Entrepreneurship Theory and Practice* 28 (4): 391 – 409.

Morck, Randall, Daniel Wolfenzon, and Bernard Yeung, 2004. Corporate Governance, Economic Entrenchment and Growth. National Bureau of Economic Research Working Paper 10692.

Murphy, Kevin, Andrei Shleifer, and Robert Vishny, 1993. Why is Rent Seeking So Costly to Growth? *American Economic Review* 83(2): 409 – 14.

Nelson, Richard, and Sidney Winter, 1982. *An Evolutionary Theory of Economic Change*, Cambridge: Harvard University Press.

Olson, Mancur Jr., 2000. *Power and Prosperity: Outgrowing Communist and Capitalist Dictatorships.* Basic Books. New York.

Rajan, Raghuram, and Luigi Zingales, 2003. The Great Reversals: the Politics of Financial Development in the Twentieth Century, *Journal of Financial Economics* 69(1): 5-50.

Rodriguez, Francisco, and Jeffrey Sachs, 1999, Why Do Resource-Abundant Economies Grow More Slowly, *Journal for Economic Growth* 4: 277 – 303.

Sachs, Jeffrey, and Andrew Warner, 1995. Economic Reform and the Process of Global Integration, *Brookings Papers on Economic Activity* 1995 (I): 1 – 118.

Sachs, Jeffrey, and Andrew Warner, 2001. The Curse of Natural Resources, *European Economic Review* 45: 827 – 38.

Schumpeter, Joseph, 1912. *Theorie der Wirtschaftlichen Entwichlung*, Leipzig, Dunker und Humbolt. Translation by R. Opie (1934), *The Theory of Economic Development* Cambridge Mass: Harvard University Press.

Schumpeter, Joseph, 1939. *Business Cycles*, New York: McGraw Hill.

Schumpeter, Joseph, 1942. *Capitalism, Socialism and Democracy*, 3rd edition, New York: Harper & Bros.

Stigler, George, 1971. The Theory of Economic Regulation. *Bell Journal of Economics and Management Science* 2: 3 – 21.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Tullock, Gordon, 1967. The Welfare Costs of Tariffs, Monopolies, and Theft. *Western Economic Journal* 5: 224 – 32.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Table 1 Panel A: Corporate Sector Stability and Survival Indexes based on Maximally and Minimally Inclusive Lists of Top Ten Corporations

Maximally inclusive lists include all available enterprises. Minimally inclusive lists exclude financial, foreign controlled, and state controlled enterprises. Corporate sector stability indices, Φ_{L75}, are fractions of 1975 top ten firms still in the top ten in 1996, weighted by each firm's 1975 labor force. Corporate survival indexes Ω^{GDP} are fractions of top ten 1975 firms still in the 1996 top ten *or* having grown at least as fast as total GDP.

	Based on Maximally Inclusive List (I) of Top Ten Firms					Based on Minimally Inclusive List (V) of Top Ten Firms			
	Corporate Sector Stability Indexes		Corporate Sector Survival Indexes			Corporate Sector Stability Indexes		Corporate Sector Survival Indexes	
	Φ_{L75}	Φ_{E}	Ω^{GDP}_{L75}	Ω^{GDP}_{E}		Φ_{L75}	Φ_{E}	Ω^{GDP}_{L75}	Ω^{GDP}_{E}
Argentina	0.31173	0.3	0.31173	0.2	Argentina	0.39277	0.3	0.39277	0.3
Australia	0.66851	0.5	0.66851	0.6	Australia	0.73239	0.5	0.73239	0.6
Austria	0.83342	0.6	0.83342	0.5	Austria	0.15181	0.1	0.22772	0.2
Belgium	0.40802	0.3	0.40802	0.3	Belgium	0.53091	0.5	0.53091	0.5
Bolivia	0.74855	0.3	0.74855	0.3	Bolivia	0.18159	0.2	0.27430	0.3
Brazil	0.47057	0.5	0.47057	0.5	Brazil	0.29455	0.3	0.29455	0.3
Canada	0.40118	0.4	0.40118	0.4	Canada	0.57342	0.4	0.57342	0.4
Chile	0.43968	0.4	0.43968	0.4	Chile	0.27919	0.3	0.27919	0.3
Colombia	0.28799	0.2	0.28799	0.2	Colombia	0.60121	0.5	0.60121	0.5
Denmark	0.56300	0.4	0.56300	0.4	Denmark	0.72525	0.4	0.72525	0.4
Finland	0.78035	0.8	0.78035	0.7	Finland	0.57816	0.4	0.57816	0.5
France	0.56400	0.4	0.56400	0.4	France	0.55802	0.4	0.55802	0.4
Germany	0.76277	0.7	0.76277	0.7	Germany	0.73497	0.7	0.73497	0.7
Greece	0.38197	0.3	0.38197	0.3	Greece	0.07193	0.1	0.07193	0.1
Hong Kong	0.60582	0.3	0.60582	0.3	Hong Kong	0.60582	0.3	0.60582	0.3
India	0.12107	0.1	0.12107	0.1	India	0.56486	0.4	0.56486	0.4
Indonesia	0.27813	0.2	0.31485	0.3	Indonesia	0.39913	0.3	0.39913	0.3
Ireland	0.45014	0.3	0.45014	0.3	Ireland	0.39698	0.2	0.39698	0.2
Israel	0.59483	0.6	0.59483	0.6	Israel	0.74440	0.4	0.74440	0.4
Italy	0.76126	0.4	0.76126	0.4	Italy	0.78853	0.3	0.78853	0.3
Japan	0.72527	0.7	0.72527	0.7	Japan	0.59077	0.6	0.59077	0.6
Korea, South	0.45119	0.5	0.45119	0.5	Korea, South	0.34111	0.4	0.34111	0.4

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

(Table 1 Panel A Continued)

	Based on Maximally Inclusive List (I) of Top Ten Firms					Based on Minimally Inclusive List (V) of Top Ten Firms			
	Corporate Sector Stability Indexes		Corporate Sector Survival Indexes			Corporate Sector Stability Indexes		Corporate Sector Survival Indexes	
	Φ_{L75}	Φ_E	Ω^{GDP}_{L75}	Ω^{GDP}_E		Φ_{L75}	Φ_E	Ω^{GDP}_{L75}	Ω^{GDP}_E
Malaysia	0.07326	0.1	0.07326	0.1	Malaysia	0.12253	0.1	0.12253	0.1
Mexico	0.76431	0.5	0.76431	0.5	Mexico	0.62523	0.5	0.62523	0.5
Netherlands	0.79791	0.4	0.83944	0.6	Netherlands	0.84228	0.6	0.84228	0.6
New Zealand	0.20476	0.2	0.20476	0.2	New Zealand	0.06110	0.1	0.24253	0.3
Norway	0.30084	0.3	0.30084	0.3	Norway	0.12190	0.1	0.12190	0.1
Pakistan	0.22827	0.4	0.22827	0.2	Pakistan	0.45168	0.5	0.45168	0.4
Peru	0.45936	0.5	0.45936	0.5	Peru	0.09775	0.1	0.26775	0.2
Philippines	0.25999	0.2	0.25999	0.2	Philippines	0.07253	0.1	0.07253	0.1
Portugal	0.34266	0.2	0.34266	0.2	Portugal	0.08388	0.1	0.08388	0.1
Singapore	0.56019	0.4	0.56019	0.4	Singapore	0.06400	0.1	0.06400	0.1
South Africa	0.52533	0.4	0.57996	0.5	South Africa	0.63257	0.5	0.66960	0.6
Spain	0.46344	0.3	0.46344	0.3	Spain	0.30168	0.3	0.30168	0.3
Sri Lanka	0.07093	0.1	0.07093	0.1	Sri Lanka	0.24317	0.2	0.24317	0.2
Sweden	0.78482	0.5	0.78482	0.5	Sweden	0.78337	0.4	0.78337	0.4
Switzerland	0.79643	0.6	0.83344	0.7	Switzerland	0.83344	0.7	0.83344	0.7
Taiwan	0.39190	0.2	0.39190	0.2	Taiwan	0.62445	0.3	0.62445	0.3
Thailand	0.68630	0.5	0.74212	0.6	Thailand	0.55994	0.4	0.60927	0.5
Turkey	0.20833	0.1	0.20833	0.1	Turkey	0.38338	0.2	0.38338	0.2
United Kingdom	0.23128	0.2	0.23128	0.2	United Kingdom	0.53862	0.4	0.53862	0.4
United States	0.53122	0.5	0.53122	0.5	United States	0.53122	0.5	0.53122	0.5
Uruguay	0.49031	0.3	0.49031	0.3	Uruguay	0.40564	0.2	0.40564	0.2
Venezuela	0.73656	0.4	0.77755	0.5	Venezuela	0.15545	0.2	0.40070	0.4

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Table 1 Panel B Correlations among all Corporate Sector Stability and Survival Indices

	Based on Maximally Inclusive List (I) of Top Ten Firms				Based on Minimally Inclusive List (V) of Top Ten Firms			
	Corporate Sector Stability Indexes		Corporate Sector Survival Indexes		Corporate Sector Stability Indexes		Corporate Sector Survival Indexes	
	Φ_{L75}	Φ_E	Ω^{GDP}_{L75}	Ω^{GDP}_E	Φ_{L75}	Φ_E	Ω^{GDP}_{L75}	Ω^{GDP}_E
List I								
Φ_E	0.794							
	(.00)							
Ω^{GDP}_{L75}	0.998	0.784						
	(.00)	(.00)						
Ω^{GDP}_E	0.845	0.938	0.851					
	(.00)	(.00)	(.00)					
List V								
Φ_{L75}	0.451	0.385	0.456	0.469				
	(.00)	(.01)	(.00)	(.00)				
Φ_E	0.401	0.492	0.411	0.558	0.846			
	(.01)	(.00)	(.01)	(.00)	(.00)			
Ω^{GDP}_{L75}	0.515	0.421	0.524	0.518	0.976	0.827		
	(.00)	(.00)	(.00)	(.00)	(.00)	(.00)		
Ω^{GDP}_E	0.504	0.559	0.520	0.655	0.783	0.943	0.824	
	(.00)	(.00)	(.00)	(.00)	(.00)	(.00)	(.00)	

Samples are countries listed in Table 1. Numbers in parentheses are probability levels for rejecting the null hypothesis of zero correlations coefficients.

Table 2: Main Variables
Panel A: Univariate Statistics

Variable		Mean	Standard Deviation	Minimum	Maximum
Based on Maximally Inclusive List (I) of Top Ten Firms					
Domestic Private Corporate Stability					
Corporate stability index based on top 10 employers, weighted by the 1975 labor force.	Φ_{L75}	0.489	0.218	0.071	0.833
Corporate stability index based on top 10 employers, equally weighted.	Φ_E	0.375	0.170	0.091	0.800
Domestic Private Corporate Survival					
Corporate survival using total GDP growth as benchmark, labor weighted.	Ω^{GDP}_{L75}	0.495	0.223	0.071	0.839
Corporate survival using total GDP growth as benchmark, equally weighted.	Ω^{GDP}_{E}	0.381	0.179	0.100	0.727
Based on Minimally Inclusive List (V) of Top Ten Firms					
Domestic Private Corporate Stability					
Corporate stability index based on top 10 employers, weighted by the 1975 labor force.	Φ_{L75}	0.440	0.243	0.061	0.842
Corporate stability index based on top 10 employers, equally weighted.	Φ_E	0.332	0.171	0.100	0.700
Domestic Private Corporate Survival					
Corporate survival using total GDP growth as benchmark, labor weighted.	Ω^{GDP}_{L75}	0.460	0.227	0.064	0.842
Corporate survival using total GDP growth as benchmark, equally weighted.	Ω^{GDP}_{E}	0.354	0.166	0.091	0.700
Growth Measures					
Growth in per capita GDP in US dollars at PPP, 1990 to 2000	$\Delta\ln(y)$	0.223	0.137	-0.083	0.624
Total factor productivity growth, 1990 to 2000	ΔTFP	0.144	0.100	-0.042	0.467
Capital accumulation rate, 1990 to 2000	$\Delta\ln(k)$	0.263	0.207	-0.217	0.674
Control Variables					
1990 per capita GDP in thousands of US Dollars at PPP	y	12.91	7.587	1.675	26.47
Average years of total education for adults (age > 25, as of 1990)	h	7.053	2.415	2.290	12.00
1990 per capita capital assets in millions of US Dollars at PPP	k	31.37	22.13	1.930	79.05
1990 total GDP in trillions of US Dollars at PPP	Y	0.542	1.075	0.016	6.617

Sample is the 44 countries listed in Table 1.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Table 2 (Continued)
Panel B: Pearson Correlation Coefficients Between Stability and Survival and Growth Variables.

		Using Maximally Inclusive Lists (I)				Using minimally Inclusive Lists (V)			
		Corporate Sector Stability Indexes		Corporate Sector Survival Indexes		Corporate Sector Stability Indexes		Corporate Sector Survival Indexes	
		Φ_{L75}	Φ_E	Ω^{GDP}_{L75}	Ω^{GDP}_E	Φ_{L75}	Φ_E	Ω^{GDP}_{L75}	Ω^{GDP}_E
Growth Measures									
Growth in per capita GDP, 1990 to 2000	$\Delta\ln(y)$	**-0.352** **(.02)**	**-0.263** **(.09)**	**-0.365** **(.02)**	**-0.302** **(.05)**	-0.177 (.25)	**-0.275** **(.07)**	**-0.266** **(.08)**	**-0.382** **(.01)**
Total factor productivity growth, 1990 to 2000	ΔTFP	**-0.295** **(.05)**	-0.188 (.22)	**-0.309** **(.04)**	**-0.250** **(.10)**	-0.223 (.15)	**-0.326** **(.03)**	**-0.290** **(.06)**	**-0.391** **(.01)**
Capital accumulation rate, 1990 to 2000	$\Delta\ln(k)$	**-0.299** **(.05)**	**-0.276** **(.07)**	**-0.305** **(.04)**	**-0.262** **(.09)**	-0.031 (.84)	-0.080 (.61)	-0.120 (.44)	-0.211 (.17)
Control Variables									
Log of 1990 per capita GDP	$\ln(y)$	**0.488** **(.00)**	**0.451** **(.00)**	**0.471** **(.00)**	**0.482** **(.00)**	**0.354** **(.02)**	**0.255** **(.10)**	**0.340** **(.02)**	**0.272** **(.07)**
Log of 1990 per capita capital assets	$\ln(k)$	**0.516** **(.00)**	**0.516** **(.00)**	**0.500** **(.00)**	**0.541** **(.00)**	**0.270** **(.08)**	0.196 (.20)	**0.271** **(.08)**	0.235 (.12)
Log of avg years of total education for adults	$\ln(h)$	**0.343** **(.02)**	**0.393** **(.01)**	**0.324** **(.03)**	**0.422** **(.00)**	**0.313** **(.04)**	0.229 (.14)	**0.318** **(.04)**	**0.285** **(.06)**
Log of 1990 total GDP	$\ln(Y)$	0.090 (.56)	0.223 (.15)	0.091 (.56)	0.244 (.11)	**0.419** **(.00)**	**0.545** **(.00)**	**0.382** **(.01)**	**0.467** **(.00)**

Samples are countries listed in Table 1. Numbers in parentheses are probability levels for rejecting the null hypothesis of zero correlations coefficients.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Table 3: Regressions of Economic Growth on Domestic Private Corporate Stability Indexes

Dependent variables are 1990 to 2000 *per capita* GDP growth, $\Delta\ln(y)$, total factor productivity growth, ΔTFP, and per capita capital accumulation, $\Delta\ln(k)$. ΔTFP is defined as $\Delta TFP = \Delta\ln(y) - 0.3\Delta\ln(k)$. Independent variables are labor or equal-weighted domestic private corporate sector stability indexes (List V), measuring the proportion of top ten firms in 1996 that were top ten firms in 1975. Control variables are the logs of 1990 *per capita* GDP, capital assets *per capita*, average years of education for adults, and total GDP. All financial variables are in 1996 US dollars at purchasing power parity.

Panel A: Labor-weighted Stability Indices		$\Delta\ln(y)$	ΔTFP	$\Delta\ln(k)$	$\Delta\ln(y)$	ΔTFP	$\Delta\ln(k)$
Constant		0.33 (.30)	0.39 (.10)	-0.19 (.70)	0.43 (.42)	0.61 (.12)	-0.58 (.47)
Domestic Private Sector Stability, 1975 labor-weighted	Φ_{L75}	-0.15 (.12)	-0.11 (.13)	-0.15 (.28)	-0.14 (.18)	-0.08 (.26)	-0.19 (.22)
Log of per capita GDP, 1990	$\ln(y)$	0.11 (.41)	-0.04 (.67)	0.49 (.01)	0.11 (.41)	-0.04 (.67)	0.49 (.01)
Log of average years of education	$\ln(h)$	0.17 (.05)	0.15 (.02)	0.08 (.54)	0.17 (.06)	0.14 (.03)	0.09 (.48)
Log of per capita capital assets, 1990	$\ln(k)$	-0.14 (.16)	-0.01 (.88)	-0.42 (.01)	-0.13 (.18)	-0.01 (.91)	-0.42 (.01)
Log of country GDP, 1990	$\ln(Y)$				0 (.81)	-0.01 (.48)	0.02 (.53)
F-Statistic	F	1.72 (.17)	2.02 (.11)	2.28 (.08)	1.35 (.26)	1.7 (.16)	1.87 (.12)
Adjusted R-Squared	R^2	0.063	0.087	0.106	0.04	0.075	0.092
Sample	N	44	44	44	44	44	44

Samples are countries listed in Table 1. Numbers in parentheses are probability levels for rejecting the null hypothesis of zero coefficients.

Panel B: Equal-weighted Stability Indices		$\Delta\ln(y)$	ΔTFP	$\Delta\ln(k)$	$\Delta\ln(y)$	ΔTFP	$\Delta\ln(k)$
Constant		0.38 (.21)	0.42 (.06)	-0.11 (.81)	0.23 (.67)	0.44 (.26)	-0.71 (.38)
Domestic Private Sector Stability, equally weighted	Φ_{LE}	**-0.27 (.04)**	**-0.20 (.02)**	-0.21 (.26)	**-0.30 (.05)**	**-0.20 (.06)**	-0.32 (.16)
Log of per capita GDP, 1990	$\ln(y)$	0.1 (.42)	-0.04 (.62)	0.46 (.01)	0.1 (.43)	-0.04 (.63)	0.46 (.01)
Log of average years of education	$\ln(h)$	0.17 (.05)	0.15 (.02)	0.07 (.56)	0.17 (.05)	0.15 (.02)	0.09 (.46)
Log of per capita capital assets, 1990	$\ln(k)$	-0.13 (.16)	-0.01 (.88)	-0.4 (.01)	-0.13 (.16)	-0.01 (.89)	-0.4 (.01)
Log of country GDP, 1990	$\ln(Y)$				0.01 (.73)	0 (.94)	0.03 (.37)
F-Statistic	F	2.35 (.07)	2.91 (.03)	2.31 (.07)	1.86 (.12)	2.27 (.07)	2.00 (.10)
Adjusted R-Squared	R^2	0.111	0.151	0.109	0.091	0.128	0.105
Sample	N	44	44	44	44	44	44

Samples are countries listed in Table 1. Numbers in parentheses are probability levels for rejecting the null hypothesis of zero coefficients.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Table 3 (Continued)
Panel C: Summary of Regression Coefficients on Corporate Stability.

Regressions are in the form: growth measures = $\beta_0 + \beta_1 \cdot$corporate stability + $\beta_2 \cdot \ln(y)$ + $\beta_3 \cdot \ln(h)$ + $\beta_2 \cdot \ln(k) + \varepsilon$. Dependent variables are 1990 to 2000 *per capita* GDP growth, $\Delta\ln(y)$, total factor productivity growth, ΔTFP, and per capita capital accumulation, $\Delta\ln(k)$. ΔTFP is defined as $\Delta TFP = \Delta\ln(y) - 0.3\Delta\ln(k)$. Independent variables are labor or equal-weighted corporate survival indices, measuring the proportion of top ten firms in 1996 that were top ten firms in 1975. Control variables are the logs of 1990 *per capita* GDP, capital assets *per capita*, and average years of education for adults. All financial variables are in 1996 US dollars at purchasing power parity. Sample includes 44 countries listed in Table 1. Only coefficient estimates on corporate stability (β_1) are shown. Numbers in parenthesis are p-values for rejecting the null hypothesis of zero coefficients.

List I includes all available firms; List II includes all firms from List I except financial firms; List III is List I less financial and foreign controlled firms; List IV is List I excluding financial and state controlled firms; List V is List I excluding financial, foreign controlled and state controlled firms.

List of Top Ten Firms Used		Corporate Stability	$\Delta\ln(y)$ Coeff.	$\Delta\ln(y)$ p-value	ΔTFP Coeff.	ΔTFP p-value	$\Delta\ln(k)$ Coeff.	$\Delta\ln(k)$ p-value
I	Maximally Inclusive	Φ_{L75}	**-0.23**	**(.04)**	**-0.16**	**(.05)**	-0.23	(.15)
		Φ_{LE}	-0.22	(.13)	-0.17	(.11)	-0.18	(.40)
II	Excludes Financial Firms	Φ_{L75}	**-0.25**	**(.02)**	**-0.16**	**(.05)**	**-0.30**	**(.06)**
		Φ_{LE}	-0.20	(.20)	-0.14	(.22)	-0.21	(.36)
III	Excludes Financial and Foreign Controlled Firms	Φ_{L75}	**-0.25**	**(.02)**	**-0.15**	**(.05)**	**-0.31**	**(.05)**
		Φ_{LE}	**-0.28**	**(.06)**	**-0.19**	**(.08)**	-0.29	(.19)
IV	Excludes Financial and State Controlled Firms	Φ_{L75}	**-0.21**	**(.06)**	**-0.16**	**(.04)**	-0.16	(.31)
		Φ_{LE}	**-0.34**	**(.01)**	**-0.27**	**(.01)**	-0.24	(.25)
V	Excludes Financial, State, & Foreign Controlled Firms	Φ_{L75}	-0.15	(.12)	-0.11	(.13)	-0.15	(.28)
		Φ_{LE}	**-0.27**	**(.04)**	**-0.20**	**(.02)**	-0.21	(.26)

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Table 4 Regressions of Growth on Leading Firm Corporate Survival Indexes

Dependent variables are 1990 to 2000 *per capita* GDP growth, $\Delta\ln(y)$, total factor productivity growth, ΔTFP, and per capita capital accumulation, $\Delta\ln(k)$. ΔTFP is defined as $\Delta TFP = \Delta\ln(y) - 0.3\Delta\ln(k)$. Independent variables are labor or equal-weighted survival indices based on minimally inclusive lists (V) of top ten firms, measuring the proportion of top ten 1975 firms that 'survive' in 1996. Survival as a top firm is defined either as growth faster than total GDP growth. Control variables are the logs of 1990 *per capita* GDP, capital assets *per capita*, and average years of education for adults. All financial variables are in 1996 US dollars at purchasing power parity.

Panel A: Labor-weighted Survival Indicies		$\Delta\ln(y)$	ΔTFP	$\Delta\ln(k)$	$\Delta\ln(y)$	ΔTFP	$\Delta\ln(k)$
Constant		0.33 (.29)	0.39 (.09)	-0.2 (.66)	0.36 (.48)	0.55 (.14)	-0.65 (.39)
Survival, defined as growth > *total* GDP growth, 1975 labor-weighted.	Ω_{L75}^{GDP}	**-0.22 (.03)**	**-0.15 (.04)**	-0.23 (.12)	**-0.22 (.04)**	**-0.14 (.08)**	**-0.27 (.09)**
Log of per capita GDP, 1990	$\ln(y)$	0.12 (.34)	-0.03 (.70)	0.5 (.01)	0.12 (.34)	-0.03 (.72)	0.5 (.01)
Log of average years of education	$\ln(h)$	0.18 (.04)	0.15 (.01)	0.09 (.48)	0.18 (.04)	0.15 (.02)	0.1 (.42)
Log of per capita capital assets, 1990	$\ln(k)$	-0.14 (.12)	-0.01 (.83)	-0.42 (.00)	-0.14 (.13)	-0.01 (.83)	-0.43 (.00)
Log of country GDP, 1990	$\ln(Y)$				0 (.94)	-0.01 (.57)	0.02 (.45)
F-Statistic	F	2.47 (.06)	2.68 (.05)	2.69 (.05)	1.92 (.11)	2.18 (.08)	2.24 (.07)
Adjusted R-Squared	R^2	0.12	0.135	0.136	0.097	0.12	0.126
Sample	N	44	44	44	44	44	44

Samples are countries listed in Table 1. Numbers in parentheses are probability levels for rejecting the null hypothesis of zero coefficients.

Panel B: Equal-weighted Survival Indicies		$\Delta\ln(y)$	ΔTFP	$\Delta\ln(k)$	$\Delta\ln(y)$	ΔTFP	$\Delta\ln(k)$
Constant		0.41 (.15)	0.44 (.03)	-0.1 (.82)	0.19 (.68)	0.42 (.22)	-0.77 (.30)
Survival, defined as growth > *total* GDP growth, equal-weighted.	Ω_{E}^{GDP}	**-0.37 (.00)**	**-0.27 (.00)**	**-0.35 (.07)**	**-0.41 (.00)**	**-0.27 (.01)**	**-0.45 (.03)**
Log of per capita GDP, 1990	$\ln(y)$	0.08 (.44)	-0.05 (.50)	0.46 (.01)	0.08 (.49)	-0.05 (.50)	0.44 (.01)
Log of average years of education	$\ln(h)$	0.19 (.02)	0.16 (.01)	0.09 (.44)	0.2 (.02)	0.16 (.01)	0.12 (.33)
Log of per capita capital assets, 1990	$\ln(k)$	-0.12 (.16)	0 (.99)	-0.4 (.00)	-0.12 (.17)	0 (.99)	-0.39 (.00)
Log of country GDP, 1990	$\ln(Y)$				0.01 (.57)	0 (.95)	0.03 (.26)
F-Statistic	F	3.77 (.01)	4.21 (.01)	2.97 (.03)	3.03 (.02)	3.28 (.01)	2.66 (.04)
Adjusted R-Squared	R^2	0.205	0.23	0.155	0.191	0.21	0.162
Sample	N	44	44	44	44	44	44

Samples are countries listed in Table 1. Numbers in parentheses are probability levels for rejecting the null hypothesis of zero coefficients.

Table 4 (Continued)

Panel C: Summary of Regression Coefficients on Corporate Survival.

Regressions are in the form: growth measures = β_0 + β_1*corporate survival + β_2*ln(y) + β_3*ln(h) + β_2*ln(k) + ε. Dependent variables are 1990 to 2000 *per capita* GDP growth, $\Delta\ln(y)$, total factor productivity growth, ΔTFP, and per capita capital accumulation, $\Delta\ln(k)$. ΔTFP is defined as $\Delta TFP = \Delta\ln(y) - 0.3\Delta\ln(k)$. Independent variables are labor or equal-weighted corporate survival indices, measuring the proportion of top ten 1975 firms that 'survive' in 1996. Survival as a top firm is defined either as growth faster than total GDP growth. Control variables are the logs of 1990 *per capita* GDP, capital assets *per capita*, and average years of education for adults. All financial variables are in 1996 US dollars at purchasing power parity. Sample includes 44 countries listed in Table 1. Only coefficient estimates on corporate stability (β_1) are shown. Numbers in parenthesis are p-values for rejecting the null hypothesis of zero coefficients.

List I includes all available firms; List II includes all firms from List I except financial firms; List III is List I less financial and foreign controlled firms; List IV is List I excluding financial and state controlled firms; List V is List I excluding financial, foreign controlled and state controlled firms.

	List of Top Ten Firms Used	Corporate Survival Index	$\Delta\ln(y)$ Coeff.	$\Delta\ln(y)$ p-value	ΔTFP Coeff.	ΔTFP p-value	$\Delta\ln(k)$ Coeff.	$\Delta\ln(k)$ p-value
I	Maximally Inclusive	Ω_{L75}^{GDP}	-0.23	(.03)	-0.16	(.04)	-0.23	(.14)
		Ω_{E}^{GDP}	-0.27	(.06)	-0.22	(.03)	-0.17	(.42)
II	Excludes Financial Firms	Ω_{L75}^{GDP}	-0.25	(.02)	-0.17	(.04)	-0.30	(.06)
		Ω_{E}^{GDP}	-0.28	(.06)	-0.21	(.06)	-0.24	(.28)
III	Excludes Financial and Foreign Controlled Firms	Ω_{L75}^{GDP}	-0.28	(.01)	-0.18	(.02)	-0.34	(.03)
		Ω_{E}^{GDP}	-0.39	(.01)	-0.27	(.01)	-0.41	(.05)
IV	Excludes Financial and State Controlled Firms	Ω_{L75}^{GDP}	-0.22	(.04)	-0.16	(.04)	-0.19	(.23)
		Ω_{E}^{GDP}	-0.35	(.01)	-0.27	(.00)	-0.26	(.19)
V	Excludes Financial, State, & Foreign Controlled Firms	Ω_{L75}^{GDP}	-0.22	(.03)	-0.15	(.04)	-0.23	(.12)
		Ω_{E}^{GDP}	-0.37	(.00)	-0.27	(.00)	-0.35	(.07)

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Table 5: High and Low Income Countries

Panel A: Summary of Regression Coefficients on Corporate Stability and Survival in High-Income Countries.

Regressions are in the form: growth measures = β_0 + β_1*corporate structural change variables + β_2*ln(y) + β_3*ln(h) + β_2*ln(k) + ε. Dependent variables are 1990 to 2000 *per capita* GDP growth, $\Delta\ln(y)$, total factor productivity growth, ΔTFP, and per capita capital accumulation, $\Delta\ln(k)$. ΔTFP is defined as $\Delta TFP = \Delta\ln(y) - 0.3\Delta\ln(k)$. Independent variables are labor or equal-weighted corporate stability indexes, measuring the proportion of top ten firms in 1996 that were top ten firms in 1975, and corporate survival indices, measuring the proportion of top ten 1975 firms that 'survive' in 1996. Survival as a top firm is defined either as growth faster than total GDP growth. Control variables are the logs of 1990 *per capita* GDP, capital assets *per capita*, and average years of education for adults. All financial variables are in 1996 US dollars at purchasing power parity. Sample includes 22 high-income countries, namely, Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Hong Kong, Ireland, Israel, Italy, Japan, Netherlands, New Zealand, Norway, Singapore, Spain, Sweden, Switzerland, United Kingdom, and United States. Only coefficient estimates on corporate stability (β_1) are shown. Numbers in parenthesis are p-values for rejecting the null hypothesis of zero coefficients. List I includes all available firms; List II includes all firms from List I except financial firms; List III is List I less financial and foreign controlled firms; List IV is List I excluding financial and state controlled firms; List V is List I excluding financial, foreign controlled and state controlled firms..

List	Corporate Stability	$\Delta\ln(y)$ Coeff.	p-value	ΔTFP Coeff.	p-value	$\Delta\ln(k)$ Coeff.	p-value	Corporate Survival	$\Delta\ln(y)$ Coeff.	p-value	ΔTFP Coeff.	p-value	$\Delta\ln(k)$ Coeff.	p-value
I	Φ_{L75}	-0.10	(.43)	-0.09	(.42)	-0.04	(.75)	Ω^{GDP}_{L75}	-0.10	(.43)	-0.09	(.43)	-0.05	(.73)
	Φ_{LE}	-0.11	(.47)	-0.12	(.38)	0.02	(.91)	Ω^{GDP}_{E}	-0.10	(.51)	-0.11	(.42)	0.02	(.90)
II	Φ_{L75}	-0.10	(.43)	-0.08	(.46)	-0.07	(.61)	Ω^{GDP}_{L75}	-0.10	(.45)	-0.08	(.49)	-0.07	(.62)
	Φ_{LE}	-0.12	(.43)	-0.10	(.43)	-0.06	(.72)	Ω^{GDP}_{E}	-0.09	(.56)	-0.08	(.58)	-0.05	(.74)
III	Φ_{L75}	-0.09	(.51)	-0.07	(.53)	-0.05	(.71)	Ω^{GDP}_{L75}	-0.14	(.34)	-0.11	(.37)	-0.09	(.54)
	Φ_{LE}	-0.12	(.44)	-0.11	(.43)	-0.04	(.78)	Ω^{GDP}_{E}	-0.16	(.39)	-0.13	(.41)	-0.09	(.64)
IV	Φ_{L75}	-0.18	(.11)	-0.15	(.13)	-0.10	(.38)	Ω^{GDP}_{L75}	**-0.19**	**(.09)**	**-0.16**	**(.10)**	-0.11	(.35)
	Φ_{LE}	-0.23	(.13)	**-0.22**	**(.09)**	-0.04	(.81)	Ω^{GDP}_{E}	-0.23	(.12)	-0.21	(.11)	-0.08	(.61)
V	Φ_{L75}	-0.16	(.12)	-0.13	(.14)	-0.10	(.35)	Ω^{GDP}_{L75}	**-0.21**	**(.05)**	**-0.17**	**(.07)**	-0.13	(.24)
	Φ_{LE}	**-0.23**	**(.10)**	**-0.22**	**(.07)**	-0.06	(.72)	Ω^{GDP}_{E}	**-0.31**	**(.04)**	**-0.28**	**(.03)**	-0.13	(.43)

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Table 5 (Continued)
Panel B: Summary of Regression Coefficients on Corporate Stability and Survival in Low-Income Countries.

Regressions are in the form: growth measures = β_0 + β_1*corporate structural change variables + β_2*ln(y) + β_3*ln(h) + β_2*ln(k) + ε. Dependent variables are 1990 to 2000 *per capita* GDP growth, $\Delta\ln(y)$, total factor productivity growth, ΔTFP, and per capita capital accumulation, $\Delta\ln(k)$. ΔTFP is defined as $\Delta TFP = \Delta\ln(y) - 0.3\Delta\ln(k)$. Independent variables are labor or equal-weighted corporate stability indexes, *measuring the proportion of top ten firms in 1996 that were top ten firms in 1975, and corporate survival indices, measuring the* proportion of top ten 1975 firms that 'survive' in 1996. Survival as a top firm is defined either as growth faster than total GDP growth. Control variables are the logs of 1990 *per capita* GDP, capital assets *per capita*, and average years of education for adults. All financial variables are in 1996 US dollars at purchasing power parity. Sample includes 22 low-income countries, namely, Argentina, Bolivia, Brazil, Chile, Colombia, Greece, India, Indonesia, South Korea, Malaysia, Mexico, Pakistan, Peru, Philippines, Portugal, South Africa, Sri Lanka, Taiwan, Thailand, Turkey, Uruguay, and Venezuela. Only coefficient estimates on corporate stability (β_1) are shown. Numbers in parenthesis are p-values for rejecting the null hypothesis of zero coefficients. List I includes all available firms; List II includes all firms from List I except financial firms; List III is List I less financial and foreign controlled firms; List IV is List I excluding financial and state controlled firms; List V is List I excluding financial, foreign controlled and state controlled firms.

	Corporate	$\Delta\ln(y)$		ΔTFP		$\Delta\ln(k)$		Corporate	$\Delta\ln(y)$		ΔTFP		$\Delta\ln(k)$	
List	Stability	Coeff.	p-value	Coeff.	p-value	Coeff.	p-value	Survival	Coeff.	p-value	Coeff.	p-value	Coeff.	p-value
I	Φ_{L75}	**-0.30**	**(.08)**	**-0.19**	**(.08)**	-0.37	(.22)	Ω^{GDP}_{L75}	**-0.30**	**(.07)**	**-0.19**	**(.06)**	-0.36	(.22)
	Φ_{LE}	-0.14	(.63)	-0.06	(.74)	-0.25	(.61)	Ω^{GDP}_{E}	-0.26	(.30)	-0.20	(.20)	-0.20	(.64)
II	Φ_{L75}	**-0.38**	**(.03)**	**-0.22**	**(.05)**	**-0.52**	**(.09)**	Ω^{GDP}_{L75}	**-0.38**	**(.02)**	**-0.23**	**(.03)**	**-0.51**	**(.10)**
	Φ_{LE}	-0.06	(.86)	0.02	(.93)	-0.24	(.66)	Ω^{GDP}_{E}	-0.30	(.31)	-0.21	(.26)	-0.30	(.56)
III	Φ_{L75}	**-0.38**	**(.02)**	**-0.22**	**(.04)**	**-0.56**	**(.06)**	Ω^{GDP}_{L75}	**-0.35**	**(.02)**	**-0.21**	**(.03)**	**-0.48**	**(.08)**
	Φ_{LE}	-0.29	(.30)	-0.15	(.41)	-0.48	(.34)	Ω^{GDP}_{E}	**-0.39**	**(.07)**	**-0.24**	**(.08)**	-0.50	(.20)
IV	Φ_{L75}	-0.04	(.88)	-0.02	(.88)	-0.04	(.92)	Ω^{GDP}_{L75}	-0.06	(.81)	-0.02	(.88)	-0.12	(.77)
	Φ_{LE}	-0.15	(.64)	-0.08	(.68)	-0.22	(.70)	Ω^{GDP}_{E}	-0.21	(.47)	-0.14	(.45)	-0.23	(.65)
V	Φ_{L75}	0.03	(.86)	0.06	(.63)	-0.08	(.81)	Ω^{GDP}_{L75}	-0.08	(.68)	-0.01	(.90)	-0.21	(.53)
	Φ_{LE}	-0.03	(.89)	0.01	(.93)	-0.16	(.71)	Ω^{GDP}_{E}	-0.22	(.34)	-0.11	(.46)	-0.37	(.36)

CHAPTER THREE

SURVIVAL[1]

"Let the apparent immediate determinant of business behavior be anything at all -- habitual reaction, random choice, or what not. Whenever this determinant happens to lead to behavior consistent with rational informed maximization of returns, the business will prosper and acquire resources with which to expand; whenever it does not, the business will tend to lose resources and can be kept in existence only by the addition of resources from outside. The process of natural selection helps to validate the hypothesis [of maximization of returns] or rather, given natural selection, acceptance of the hypothesis can be based largely on the judgment that it summarizes appropriately the condition for survival"

Milton Friedman (1953, p. 22)

1. Introduction

Economists commonly assume that firms maximize value (or, in a one-period setting, profits). Various alternative theories posit that corporate managers consciously maximize, among other things: growth (Baumol, 1959; Jensen, 1986), insiders' wealth from stock price manipulation (Veblen, 1904), on-the-job consumption (Jensen and Meckling, 1976), and short-term earnings (Porter, 1985; Stein, 1988). Keynes (1935) and others argue that corporate managers are driven by behavioral factors. This list is not exhaustive. The corporate finance literature contains abundant evidence that non-value maximizing decisions are common. But do they matter in the aggregate?

Value maximization is convincingly justified with Milton Friedman's argument that non-value-maximizing firms die out. Non-value maximizing firms die because they

[1] Co-authored with Randall Morck and Bernard Yeung.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

are out-competed in the goods' markets and go bankrupt. They are also subject to a variety of disciplinary actions like hostile takeovers, leveraged buy-outs and friendly mergers (Jensen, 1987). If these evolutionary pressures are economically significant, value maximization may be a justifiable approximation in macroeconomics, despite the broad corporate finance evidence that managers pursue other objectives.

However, the public choice literature presents evidence that inefficient firms can be protected by governments. The finance literature also presents ample evidence of attempts by management to undermine the market for corporate control. If non-value maximizing firms survive as well as, or better than, value maximizers, alternative models of firm behavior may assume macro-economic importance.

The issue goes beyond whether value-maximization is a useful working assumption for finance theory. If market disciplinary forces fail to cull non-value maximization adequately, inefficiency ensues. The survival of non-value maximizing firms means assets may not be allocated to their most productive uses, and that the path of economic growth may be suboptimal. If such "artful death dodging" by firms is possible, economic institutions that permit it warrant study.

The purpose of this paper is to present systematic evidence on the extent to which non-value maximizing firms are culled. In a perfectly competitive economy, proxies for non-value maximizing behavior should be correlated with firm death. In a world where market discipline is lax, such proxies should be insignificant or correlated with survival. Thus, our objective is to undertake a forensic study of US corporations.

Using financial data from the late 1970s and late 1980s for two large cross sections of U.S. firms, we estimate various firm characteristics that might be subject to

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

evolutionary pressure. We then use these estimates to predict corporate survival over the subsequent years. By looking at two periods, we can both ascertain the stability of evolutionary pressures and examine how changing circumstances and institutions might change those pressures.

In conducting our analyses, we control for three industry stress measures: foreign import penetration, the emergence rate of new firms in the industry, and the emergence rate of new sub-industry classifications (four-digit SIC codes) in the firm's three digit industry classification. These variables measure factors that might increase the odds of firm death regardless of managements' behavior.

After controlling for industry stress, we find value maximization as measured by q ratios relative to industry benchmark qs to strongly predict survival. However, controlling for industry stress and relative q ratios we find that low debt and extensive diversification significantly predict survival. Such corporate policies are believed to be associated with agency problems and value destruction.

We break corporate passings into four categories: liquidations, unsuccessful reorganizations, hostile takeovers and leveraged buy-outs (LBOs), and friendly mergers and management buy-outs (MBOs). The determinants of corporate death are broadly similar across different forms of demise with a stark exception. Death by hostile takeovers and LBOs is more likely among firms with low debt and extensive diversification. Despite this, the net odds of death are reduced for firms that pursue these policies to the point where they become value reducing.

This leads us to consider recent changes in the US economy that decrease the likelihood of hostile takeovers. We attempt to estimate "survival costs", the lost value

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

due to more pervasive non-value-maximizing corporate behavior in the absence of hostile takeovers. We conclude that economic institutions can crucially affect the process of economic selection.

The next section discusses our data and methodology. Section three explains our results, and section four provides an economic interpretation. The reader can go directly to section four. Section five concludes.

2. Data and Methodology

Our basic methodology is to run logistic regressions with a binary dummy, coding the firm's fate, as the dependent variable and various firm characteristics as the independent variables of interest. A vector of measures of industry stress, $\boldsymbol{Z}$, $\boldsymbol{q}$ ratios relative to industry benchmarks, and industry benchmark $\boldsymbol{q}$ ratios are all included as control variables. Our goal is to see which elements of a vector, $\boldsymbol{P}$, of firm characteristics that reflect possibly non-value-maximizing management strategies enhance or decrease firms' likelihood of survival. In other words, we want to see how well evolutionary pressures cull non-value maximizing firms. We estimate these data at the beginning of each of two decade-long periods, and then look at survival over each subsequent decade. We compare means and medians of the elements of $\boldsymbol{Z}$, $\boldsymbol{q}$, and $\boldsymbol{P}$ across firms that survived with firms that disappeared, and then with firms that disappeared in various ways. Presumably, $\boldsymbol{q}$ is a function of $\boldsymbol{P}$ and $\boldsymbol{Z}$. We are interested in marginal direct effects on survival of $\boldsymbol{P}$, not indirect effects of $\boldsymbol{P}$ on $\boldsymbol{q(P,Z)}$ and thence on survival. Therefore, we first run OLS regressions of the form:

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

$$P = a_0 + a_1 Z + b_2 q + e \qquad (1)$$

and save the residuals from the above regression as E. We then run binomial logistic regressions of the form:

$$\log(\text{odds of death}) = b_0 + b_1 Z + b_2 q + b_3 E + e \qquad (2)$$

coding survival as 0 and different types of firm demise as 1, to see if elements of the vector E are statistically significant. We report regressions containing only one variable from E at a time, and then run regressions with many variables as robustness checks. The one at a time approach lets each variable display its maximal influence. The multivariate approach controls for interaction, but might subject to multicollinearity problem. We run such regressions using raw data, and then using rank transformations of the independent variables to test robustness and to gauge economic significance. We repeat regression (2) with probit or multinomial logistic regressions, and we find broadly consistent results.

Our approach has the advantage of simplicity, yet it yields results qualitatively similar to those of more complex methodologies. For example, hazard function analyses use information about how many years firms survive, and so might increase the statistical significance of our results. We repeated our analysis using an "accelerated failure time model" and obtained virtually identical patterns of signs and significance.[2] Unfortunately, the timing of firm death is not precise. For example, a firm might be practically dead in 1984, but be delisted in 1985 or even 1986. Not knowing how to treat the noise, we prefer the logits.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Another variant of the hazard function model involves using independent variables in time t to predict the survival of a firm in time $t+n$. This can be done either on a simple cross-section or on a panel. Unfortunately, either technique requires that n be pre-specified. Since different modes of death may occur with different lags, this approach seems inappropriate. If n is too small, we may capture atypical behavior of firms on death row. If n is large, the model becomes similar to a logit.

In summary, we choose our logistic regression approach because it is simple and does not impose artificial constraints.

Defining Corporate Survival

In biology, evolution is Darwinian natural selection: Giraffes do not grow longer necks from stretching to reach tasty leaves, as Darwin's intellectual rival Jean Baptiste Pierre Antoine Lamarck hypothesized. Rather, giraffes have long necks because short-necked giraffes selectively died out. In Darwinian evolution, selective death drives change. In economics, Darwinian and Lamarckian evolution both make intuitive sense. A corporation that radically redesigns itself may be so different that its former self is essentially dead. Such "near death experiences" may stretch short-necked firms' necks without killing them. When distressed firms re-allocate substantial control rights, change their basic organization structures, or shed large fractions of their assets, they are arguably undergoing Lamarckian evolution. We believe the definition of non-survival in economics must be broader than in biology to accommodate both the Darwinian and the Lamarckian nature of economic evolution.

---

[2] See Lawless (1982) for details of this methodology.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

This means economic survival is less easily defined than biological survival. Yet, we need a "bright line" definition to make our study reproducible. We define firm survival as uninterrupted existence as a publicly traded corporation. This may miss some "near death experiences," like radical corporate re-engineering.[3] This is unavoidable, as distinguishing genuine corporate rebirth from window dressing in a clearly objective way is virtually impossible. In contrast, an event that results in the firm disappearing from the stock exchanges is probably justifiably classified as "non-survival."

The definition leads to four modes of corporate death, or – to use a term from forensic medicine, *sequela*.

Only two sequelae are really unambiguously corporate death. **Chapter 7 liquidations** and **hostile takeovers** are clearly corporate deaths in the Darwinian sense. These forms of non-survival involve radical reassignment of asset control and the cessation of corporate routines, which Nelson and Winter (1982) argue are the critical elements that make a firm more than a mere collection of assets. We define a hostile takeover as a takeover where the board rejects the initial bid, even if the firm is ultimately sold to a white knight or undergoes a defensive MBO. We include highly levered takeovers by outsiders, leveraged buyouts (LBOs), as one type of hostile takeovers. These are arguably transactions in a market for corporate control, aimed at radically changing corporate governance (Jensen and Ruback, 1983). White knights and defensive buyouts are both extreme measures that also result in the firm's demise and in radically

[3] We ought to avoid confusing innocuous but non-working corporate strategy from non-value maximizing behavior. A value-maximizing company may have implemented an unfit corporate strategy which leads to poor market results; the firm basically experienced bad luck. Often, a well managed firm can re-bound from such an experience and become profitable again. Such a firm may engage in re-engineering. Sometimes the bad experience can lead to non-survival. Our classification accepts the latter as a non-survivor but avoids accepting the former as a non-survivor.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

new management strategies, though target managers are often treated more generously than in hostile takeovers.

We consider **Chapter 11 bankruptcies** a "near death experience," and so classify them as a sequela. Chapter 11 bankruptcies that later turn into Chapter 7 liquidation are classified as Chapter 7 deaths. Just as hostile takeovers that trigger takeovers by white knights and defensive leveraged buyouts are classified as the more extreme form of death, hostile takeovers, we classify reorganizations that morph into liquidations as the latter more extreme sequela. Some critics of current U.S. bankruptcy procedures, such as Bradley and Rosenzweig (1992), point out that Chapter 11 may be abused by managers and judges to keep comatose firms alive; it protects managers but not investors. Our "eventual delisting" requirement hopefully eliminates some misclassification here, but may not remove all dubious Chapter 11 cases. It may also risk losing some corporations that had genuine "near death experiences", but that avoided formal bankruptcy filings.

We also consider friendly mergers and management buyouts (MBOs) as "near death experiences." They qualify as non-survival since the new organization is usually quite different from the old. However, friendly mergers often leave the target managers in positions of authority in the combined firm, presumably preserving many of the routines that characterized the target and thus rendering the target's death "incomplete". Other friendly mergers reflect founders of target firms retiring and selling control of their firms. Such friendly mergers are arguably indicative of success, not failure. Finally, especially in the 1990s, many friendly mergers are hostile takeovers forced to assume a friendly guise by anti-takeover defenses. In many such mergers, the target managers collect side payments for disarming the target's defenses and then depart from the scene.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Also, some MBOs involve wealthy individuals taking their public firms private. In seven firms of the *1980s* sample and twenty-nine of the *1990s* sample, the individual behind the MBO already had a controlling interest in the public firm, so the observation is dropped. Economic theory implies that privately owned firms should maximize their owners' utility, which is not necessarily the value of the firm.

Since it is not clear we are always dealing with true deaths of corporations, we define a firm that is permanently delisted and that experiences one of these four sequelae as *departed*. We then use the model described by equation (2) to explain overall corporate departures and departures via each of the four sequelae.

The contrast among these relationships casts light on the different evolutionary roles of the various sequelae, and whether they are substitutes or complements. Thus, the contrast may reveal that a type of non-value maximizing behavior reduces the odds of one means of death but increases the odds of another so that overall the behavior cannot increase the net odds of survival.

The Sample

We repeat our analysis twice. We first use a cross section of firm characteristics for 1978 to predict survival through 1992, and then use 1989 firm characteristics to predict survival through 2003, so that the two periods are of equal length. For brevity of exposition, we call the former our *1980s analysis* and the latter our *1990s analysis*, though the endpoints of the prediction periods do not correspond precisely to the decades.

We use 1978 as a starting point for three reasons. First, major changes in disclosure rules took effect that year. Earlier data are much sparser, and so are much less

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

comparable to data in 1989. Second, the coverage of Compustat is quite limited until the late 1970s. Third, this date allows a business cycle trough at the beginning of our prediction period. The National Bureau of Economic Research lists business cycle troughs in 1980 and 1982. We end the prediction period in 1992 because the National Bureau of Economic Research lists 1991 as a business cycle trough. Thus, the prediction period for the first analysis includes slow growth periods on either end sandwiching a boom, merger wave, and market crash. The 1989 starting point is chosen to allow a similar pattern in the second prediction period – slow growth periods in the early 1990s and at the turn of the century (the National Bureau of Economic Research lists business cycle troughs in 1991 and 2001) sandwiching the boom, merger wave, and dot.com bubble collapse of the late 1990s.

Thus, both prediction periods include both boom and bust years, and both have periods of alleged investor irrationality. However, the two periods differ in that governance considerations are thought to drive much of the M&A in the 1980s, while technology economies of scale appear more important in 1990s deals. Also, state anti-takeover laws are ubiquitous by the 1990s, making hostile takeovers much more difficult than in the 1980s. Thus, one key cause of corporate death, the hostile takeover, is largely eradicated by the second analysis.

We construct the 1980s analysis sample beginning with the firms listed in the National Bureau of Economic Research Financial Master file (Hall, 1988) as in business in 1978, which corresponds to the full cross-section of Compustat coverage that year, and compare them with Compustat's listings for 1994.[4] All missing firms' deletion dates and

[4] The NBER Manufacturing Sector master File contains estimates of the market values of firms' debts, assets, inventories, etc. These are produced from COMPUSTAT data. To be included in our sample, a

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

deletion codes on Compustat's Research file are noted. Deletion codes list the reason the company was dropped from Compustat as a liquidation, bankruptcy, merger, leveraged buy-out, going-private transaction (management buy-out), name change, etc. This information is crosschecked with the *Directory of Obsolete Securities* and the *Wall Street Journal Index* and, where necessary, corrected. Our final 1980s sample contains 1,276 firms: 702 that survived until 1992 and 574 that did not. Of the latter, 38 firms were liquidated, 23 went bankrupt under chapter 11 and were permanently delisted, 119 were taken over in hostile raids, 29 underwent L.B.O.s, 330 underwent friendly mergers, and 35 underwent M.B.O.s.

We construct the 1990s sample by repeating this procedure using 1989, rather than 1978, as the starting point and measuring survival until 2003, rather than 1992. The result is a final dataset containing 4,272 firms. Since Compustat's coverage of small firms is much more complete in the latter period, this sample may not be fully comparable with that of the 1980s analysis. We therefore sort the 1989 firms by number of employees and delete the lower tail of this distribution so as to render the average number of employees in the 1978 and 1989 samples identical. This leaves us with 2,205 firms: 1,156 that survived until 2003 and 1,049 that did not. Of the latter, 27 firms were liquidated, 93 went bankrupt under Chapter 11 and were permanently delisted, 90 were taken over in hostile raids, 6 underwent L.B.O.s, 814 underwent friendly mergers, and 19 underwent M.B.O.s. We partition the sample to perform different statistical tests. When we examine the importance of each mode of demise separately, we use pair-wise

firm's net worth in the NBER Manufacturing Sector Master must also be positive in 1976, 1977 and 1978, and basic accounting data must also be available in all three years.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

combinations of the subsample of firms that survived with each subsample of exanimate firms. When we look at overall death rates, we use the full sample.

Industry Stress Measures

Industries under pressure, all else equal, may have different survival rates from placid industries. Firms in industries subjected to more intense international competitive pressure are less likely to survive if product market discipline is effective. The same applies to firms in industries subject to stronger domestic competition, and firms in industries undergoing rapid change. We therefore consider three industry structural change measures as control variables in our logistic regressions.

The first is the **net export strength of the industry**. We use this variable as a measure of international competitive pressure on an industry. It is defined as industry exports minus imports, and is calculated at the 4-digit SIC code level. For our 1980s analysis, we define a firm's industry as its primary SIC code in Standard and Poor's Industrial Manual for 1978. For our 1990s analysis, we define a firm's industry as its primary industry in the same source for 1989. Industry exports and imports are from the *U.S. Bureau of Census - U.S. Exports and Imports* data for four-digit SIC codes. For our 1980s analysis, we calculate average exports less imports for 1977 through 1981, the set of available data in the year-range closest to ideal for this study. For our 1990s analysis, we use data for 1987 through 1989. Industries where trade data are absent are assigned a zero trade balance on the assumption that they involve the production of non-traded goods.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Our second and third competitive pressure variables are motivated by Jovanovic and MacDonald (1994).[5] Variable number two is the **growth in the number of firms in an industry**, again at the 4 digit SIC code level. We interpret this variable as measuring increases in domestic competition, although we fully understand that this is not the entire picture. For our 1980s analysis, we count the number of firms listed as in each industry in the *Standard and Poor's Register of Corporations, Directors and Executive,* Vol. 3 in 1976 and again in 1979, and then calculate the fractional change.[6] For our 1990s analysis, we use the analogous data for 1987 to 1989.

Our third structural change variable is the **change in the number of four digit industries in a three-digit industry**. This measure distinguishes rapidly changing sectors from staid sectors. This variable uses 1976 and 1979 data from *Standard and Poor's Register of Corporations, Director and Executives* for our 1980s analysis, and 1987 and 1989 data for our 1990s analysis.

We expect industry net export strength to have a positive effect on firm survival, and the other two variables to have negative impacts on survival odds.

Value Maximization Measures

We use two value maximization measures, the firm's **relative *q* ratio**, its *q* minus the mean *q* ratio for its three-digit industry, and the **industry mean *q* ratio**. Positive (negative) deviation from industry average is taken to indicate that a firm is a better (worse) value maximizer than its peers. This may reflect better management, though

---

[5] Jovanovic and MacDonald (1994) present theoretical results and empirical evidence from the U.S. tire industry that an increased number of firms heralds a shake-out. See pp.330 and 331.

[6] Data for 1976 are from the Standard and Poor's Register of Corporations, Directors and Executives for 1977, data for 1979 are in the 1980 volume.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

better luck is also a possibility. In our *1980s analysis*, our q ratios are average q's for 1976 through 1978, taken from the National Bureau of Economic Research Corporate Sector Master File. In our *1990s analysis*, our q ratios are constructed from Compustat data for 1987 to 1989 using the same procedure that generates the National Bureau of Economic Research Corporate Sector Master File. The qs are adjusted to reflect market values of debt, inflation and depreciation of property, plant and equipment, differences in inventory valuation, and other accounting problems that affect simple market to book ratios (Hall, 1988). We recognize that q ratios, no matter how craftily adjusted, are imperfect measures of value. We discuss how remaining shortcomings in our q ratios might influence our results below.

Corporate Strategy Measures

We use the following variables as proxies for various corporate strategies that may be non-value-maximizing. We explain possible interpretations for each as we present our findings. Since some industries may have different normal levels of these variables than others, we use both **relative to industry norm** and **industry norm** versions of each variable. We are interested in management's discretionary policies that raise income, so the former is the focus of our investigation.

Short-Term Performance Measure

To measure short-term profitability, we use **operating cash flows over net book equity**. Operating cash flows is taken before depreciation, but after interest costs and taxes. Operating cash flows over book equity is a three-year average from 1976 to 1978 for our

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

1980s analysis, and from 1987 to 1989 for our *1990s analysis*. For robustness checks, we use operating cash flows over assets, averaging over the same years, and also are from COMPUSTAT.

Financial Policy Measures

We examine two leverage measures: **total debt divided by net capital stock**[7], and **long-term debt divided by the same number**. To measure dividend payout we use **dividend yield** (dividends per share over year end share price) and a **payout ratio** (total dividend payments over net cash flows). For our *1980s analysis*, these variables are all three-year averages over 1976, 1977 and 1978. For the *1990s analysis*, averages over 1987, 1988, and 1989 are used. Data are from Standard and Poor's COMPUSTAT. Debt numbers are adjusted for interest rate changes to approximate market values, and are from the National Bureau of Economic Research Financial Master File for the *1980s analysis*, and are constructed from Compustat using the same techniques for the *1990s analysis*.

Size and Growth Measures

To measure firm size for our *1980s analysis*, we use **total number of employees** averaged from 1976 to 1978. We also calculate **growth rates in number of employees** over three years from fiscal year 1975 to fiscal year 1978. Data are from COMPUSTAT. For our *1990s analysis*, we use comparable data for 1987 to 1989.

Investment Strategy Measures

[7] Net capital stock is the sum of the net value of plant, inventories, and investments in unconsolidated subsidiaries and intangibles plus other investments. All numbers are adjusted for inflation. See Hall (1988).

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

We measure three kinds of investment, **capital expenditures, research and development spending** and **patents granted**. The first two are normalized by dividing by net capital stock. Three-year averages are used – again from 1976 to 1978 for the *1980s analysis*, and from 1987 to 1989 for the *1990s analysis.* Data are from COMPUSTAT. Where R&D is not reported, but all other financial data are available, R&D expenditure is assumed to be negligible. Patent data are available for all our firms from the National Bureau of Economic Research Financial Master File for our *1980s analysis*. Patent data for the *1990s analysis* are from Hall *et al.* (2001).

Diversification

To measure how diversified a firm is we use the **total number of 3 digit industries** in which the firm operates, and the **number of foreign subsidiaries** it operates. We also obtain the **total number of 4 digit industries** in which it operates for robustness checks. For our *1980s analysis*, the former two are calculated using *Standard and Poor's Industrial Manual* for 1979.[8] The latter two are from the *Directory of International Affiliates* for 1979. For our *1990s analysis*, these variables are constructed from Compustat Industry Segment data for 1989.

We also use the **standard deviation of the firm's stock return**, calculated as above with data from 1976 through 1978 and for 1987 through 1990 as a risk taking measure.

[8] We use 1979 data because the volume containing 1978 data are unavailable in our library. See Griffin and Karolyi (1998) on the independence of country risk from industry risk.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

3. Findings

Table 1 presents univariate statistics and sample sizes. By construction of the second sample, the two samples have the same mean number of employees per firm. The average net-export strength of US industries is lower in the second, while no clear pattern is evident in the number of firms per industry or the number of sub-industries per industry. Industry average *q* ratios are higher in the second period, and average operating income is lower. Debt ratios are higher in the latter period, as are firm growth rates, but dividends are lower. Capital expenditure is unchanged, but both research and development spending and patent applications are lower in the latter cross-section. Finally, firms are much less diversified in 1989 than in 1978 – both industrially and geographically; however our diversification data for the two periods are from different sources and may not be comparable, so this must be interpreted with caution.

[Table 1 about here]

The left half of the A panels of each subsequent table displays univariate statistics for *1980s analysis* variables for firms that survived, for all departed firms, and for firms that departed via each sequela. The numbers in parentheses in the A panels are probability levels for rejecting the null hypotheses of equal means for departed firms and firms that survived. The left most pairs of tests contrast all departed firms with all surviving firms, the other pairs of *p*-levels are probability levels for rejecting the null hypotheses of equal means for firms departing via a given sequela and firms that survived. The left half of B panels contains similar information for the *1990s analysis*.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

The right half of Panels A and B contains coefficients on the same variables for our 1980s and 1990s analyses, respectively from logit regressions of the form of equation (2). In considering the valuation and corporate strategy variables, it is important to distinguish circumstances beyond managers' control from situations created by managers' decisions. To do this approximately, we decompose these variables into two parts: - the variable minus an industry benchmark, and the industry benchmark itself.

We interpret the divergence of a variable from the benchmark as indicative of firm-specific management strategies. The benchmark plausibly represents a mix of industry-wide common strategies and industry effects beyond the control of management.

Industry Stress and Survival

Table 2 investigates the effects of three types of industry stress on firm survival.

[Table 2 about here]

Trade pressure reflects evolutionary pressure associated with America's shifting comparative advantage. Overall, there is no decrease in departed firms associated with export strength, suggesting that trade advantages exert little evolutionary pressure on the average large US firm. However, when we look at specific sequelae, the situation is more nuanced. In the 1980s, intermittent evidence points to trade pressure culling firms *via* Chapter 7 liquidations and hostile takeovers. These results are consistent with other evidence, such as Morck *et al.* (1989), that hostile takeovers were focused on uncompetitive industries in the 1980s. In the 1990s, Chapter 11 bankruptcies are more

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

common where trade pressure is stronger, and this effect is starker in the logits. Higher trade pressure is associated with more deaths *via* friendly mergers. However, this effect is absent in the logits.

Recall that the sample of firms used in the *1990s analysis* contains only larger firms, so as to be comparable to the *1980s analysis* sample. When we repeat the *1990s analysis* using all firms in Compustat for which data are available, we find trade pressure linked to significantly higher incidences of Chapter 11. However, this effect is not large enough to render trade pressure a significant determinant of overall corporate death.

Growth in the number of firms in the industry measures the extent of domestic competitive pressure. The logits show that such competitive pressure leads to Chapter 11 bankruptcies in the 1980s, and to friendly mergers in both the 1980s and 1990s. The higher mortality due to bankruptcies and friendly mergers causes an overall higher incidence of departed firms in industries where the growth of new firms is large. Using the larger sample of 1990s firms spanning all of Compustat generates very similar results.

Growth in the number of four digit industries in a firm's three digit industry is taken as measuring pressure due to structural change in each industry. Structural change is associated with a greater incidence of Chapter 11 reorganization in the 1980s, but with a lower incidence of the same sequela in the 1990s. Structure change is also associated with an increased incidence of friendly mergers and management buy-outs in the 1990s. When we look at overall survival rates, we see higher death rates associated with higher structural change pressure only in the 1990s. Using the larger sample of 1990s firms spanning all of Compustat generates virtually identical results.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

In our subsequent tables, all logit regressions include these industry characteristics as control variables. This is because we are primarily interested in how effective the economy is at culling firms whose strategies deviate from value maximization. These variables measure effects that, to a large extent at least, are outside the control of managers. We therefore wish to exclude effects associated with them.

Value Maximization and Survival

Table 3 shows that lower q ratios in the *1980s analysis*, both absolute and relative to industry means, are highly statistically significantly related to higher probabilities of firm demise over all and in all forms, save that the mean q of merged firms is not statistically different than that of surviving firms. When q ratios are included, along with the industry competitive pressure variables from Table 2, logit regressions show that low q ratios continue to predict all forms of firm demise except Chapter 11 bankruptcy and takeovers. The results for the *1990s analysis* are markedly different. The level of the q ratio is statistically insignificant throughout, but a low q ratio relative to industry average q ratios predicts death, both overall and in all ways save friendly mergers.

[Table 3 about here]

If we use the full sample of *1990s analysis* firms, which includes small firms of the sort not followed by Compustat in the 1980s, the results are broadly similar. However, both q and q relative to industry become insignificant predictors of Chapter 7 and Chapter

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

11 bankruptcies and low q relative to a firm's industry now predicts demise by friendly merger as well as the other sequelae.

We repeat the above analysis using the rank transformation of the variables to obtain robustness checks (results not shown) and to gauge economic significance. The effect of q is economically significant. In the rank logit regressions predicting the overall odds of firm death, falling from the seventy-fifth to the twenty-fifth percentile in the distribution of q ratios relative to industry averages raises the probability of corporate death from 29% to 38% in the 1980s sample and from 53% to 59% in the 1990s sample.[9] Most of the action in the 1980s is from increased probabilities of takeovers, an 6% rise, and mergers, a 11% rise. In the 1990s, going from seventy-fifth to twenty-fifth percentile is associated with an 18% increase in the probability of liquidations, a 15% increase in that of hostile takeovers, and a 15% rise in that of bankruptcies. Although the effects on other forms of death are statistically significant, this change in q results in negligible probability changes. Our results are consistent with micro-economists' intuition that value maximization strongly promotes survival, and with corporate finance intuition that the market for corporate control is an important culling mechanism of non-value-maximizing firms.

Thus, higher q ratios are associated with lower overall odds of death and lower odds of death by Chapter 7 and friendly mergers in the 1980s. In the 1990s, the effect of higher q ratios on overall death rates is only intermittently significant and involves lower odds of all forms of death save friendly mergers, which are the most important sequela in

---

[9] To calculate this number, we solve for the probability of death with all variables at their medians save the variable in question. It is first assumed to be at its lowest quartile and then at its highest. The difference between the two probabilities is 10%. Subsequent probability changes are estimated similarly.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

this period. Thus, value maximization was clearly a survival trait in the 1980s, but the evidence that this remains so in the 1990s is only intermittent.

Current Cash Flow Strategy and Survival

Popular business writers perfervidly allege that shareholders are myopic, and that managers "pander" to shareholders fixation on short-term share price maximization at the expense of a firm's long-term good.[10] The results from Table 3, discussed above, appear inconsistent with this. The allegation suggests firms with relatively high current stock values should tend not to survive, which is not observed.

More sophisticated versions of the myopia story posit managers rather than shareholders as myopic and focused on current earnings at the expense of the firm's long-term good. For example, managers' compensation may be tied to accounting earnings. Thus, non-value maximizing behavior by managers causes high current earnings. It is also possible that high current earnings might cause non-value-maximizing behavior. Jensen (1986) suggests that firms with cash flow in excess of their investment needs often squander money on unprofitable projects. Regardless of the direction of causality, the implication is a negative correlation between long-term survival and accounting earnings. In contrast, Stein (1988) argues that managers use high earnings as an efficient signal to investors, and that high current earnings might thus be related to firm health.

[Table 4 about here]

---

10 Researchers have constructed plausible theories that would explain such behaviour, see e.g. Stein (1988), but empirical evidence of shareholder myopia is scant.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

The simple means of operating cash flows in Table 4 show survivors with cash flows not statistically significantly different to those of all types of exanimate firms in the 1980s analyses. The only exceptions are that firms culled by hostile takeovers. In the 1990s, firms that underwent Chapter 11 bankruptcies, Chapter 7 liquidations, and hostile takeovers all have earnings well below industry benchmarks, which we interpret as reflecting managers' firm-specific strategies.

The logits show higher industry average cash flows lowering the total odds of survival in the 1980s analysis once industry competitive pressure and value maximization variables are included as controls. This is mainly because such high cash flows attract friendly mergers. In contrast, in the 1990s analysis, high cash flows relative to industry benchmarks significantly lower the overall odds of death and the odds of bankruptcies and liquidations.

The effects of cash flows on survival are economically significant. In the rank logit regressions predicting the overall odds of firm death, going from the 25th to the 75th percentile in the distribution of cash flows relative to industry averages raises the probability of corporate death by 2% in the 1980s, and this comes from a 5% increase in the probability of friendly mergers and a 4% decline in hostile takeovers. The probability of the overall departure rate declines by 6% going from the lowest quartile to the highest in the 1990s, mostly coming from a 16% decline in the probability of Chapter 7 liquidations and a 9% decline in the probability of hostile takeovers.

Thus, high cash flows unrelated to value maximization raised the odds of death in the 1980s, but lowered them in the 1990s. Those mechanisms that worked against the

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

survival of high cash flow firms in the 1980s switched to culling low cash flow firms in the 1990s.

Capital Structure Strategy and Survival

A series of papers in corporate finance, beginning with Jensen (1986), finds a positive correlation between debt and firm value. Thus, firms that under-lever ought to be systematically culled. Yet, low leverage avoids bankruptcy and plausibly increases a firm's odds of survival.

The simple means and medians in Table 5 show high debt loads raising the odds of death overall in both the 1980s and 1990s. High debt relative to industry benchmarks, which we attribute to firm-specific managerial strategies, contributes to death by attracting merger offers and Chapter 11 in both samples. In the 1990s, high debt relative to industry benchmarks is also leading to Chapter 7 liquidations. actually associated with lower odds of Chapter 11.

[Table 5 about here]

Logits show that high levels of debt unrelated to value maximization and industry problems are a survival disadvantage. This relationship is more evident in the 1990s, with low debt corresponding to low odds of bankruptcies, liquidations and friendly mergers. Low debt appears to be related to higher odds of hostile takeovers in the 1990s, but the relationship is not statistically significant at conventional levels.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

These relationships are economically significant. Going from the lowest to the highest quartile of total debt over assets, relative to industry benchmarks, increases the overall probability of death by 4% in the 1980s analysis. This is mainly due to a 6% rise in the probability of a friendly merger and a 4% drop in the probability of a hostile takeover. The effects of debt on overall survival are similar in the 1990s: going from the highest to the lowest quartile of firm-specific debt over asset decreases the overall odds of death by 5%. Specifically, a 26% decrease in the probability of bankruptcy, an 18% decrease in the probability of liquidation are observed going from the highest to lowest quartile. However, lower debt does not protect firms from hostile takeovers: the probabilities of hostile takeovers increase 8%. The pattern is similar when long-term debt is used, but the probability changes are smaller.

Thus, abnormally low debt is a survival trait despite the literature arguing that US firms are often underleveraged due to agency problems. Hostile takeovers appear to be the only culling mechanism that might select against firms with abnormally low debt.

Payout Strategy and Survival

Dividends, according to finance theory, should equal a firm's free cash flow after it has funded all available value increasing investment projects. Tax economists have long argued that firms ought not to pay dividends, as dividends are a tax disadvantaged way of returning money to investors. However, others argue that transparent and steady dividend payouts are necessary to check agency problems. Jensen (1986) and others find that many firms retain free cash flow, even if this destroys value. Fama and French (2001) report that U.S. firms grew steadily less inclined to pay out dividends over the

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

latter decades of the twentieth century, perhaps indicating that tax economists are more influential than agency theorists, or at least that their message is more palatable to corporate managers. Thus, whether efficient culling should select for or against firms paying large dividends is unclear. Certainly, all else equal, keeping dividends low creates cash and asset cushions, and plausibly reduces the odds of bankruptcy.

Table 6 reveals a robust relationship between higher dividends, both industry average and relative, and lower overall odds of death. Higher dividends lower the odds of both Chapter 7 and Chapter 11 bankruptcy, and also those of friendly mergers. Only hostile takeovers select against high dividend payers.

[Table 6 about here]

The relationship between payout policies and survival rate is economically significant. Going from the 25^{th} to the 75^{th} percentile of dividend rate relative to industry benchmark decreases the overall probability of firm demise by 5% in the 1980s and by 10% in the 1990s. This mainly comes from a decrease in the probability of a friendly merger, 8% in the 1980s and 9% in the 1990s. The probability of a hostile takeover increases with higher dividends, at a probability of 10% in the 1980s and 6% in the 1990s.

Thus, high dividends are a survival trait overall. While high dividends increase the odds of becoming a hostile target, the reduction in the odds of other forms of death more than compensates.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Size and Growth Strategies and Survival

Baumol (1959), Donaldson (1990), Jensen (1986), and many others argue that corporate managers maximize growth rather than shareholder value. One justification for this, propounded by Jensen (1986) is that large firms are better platforms for the careers of highflying executives. Jensen and Murphy (1990) and others show that larger firms pay better, and larger firms arguably also provide more secure tenure to professional managers. Overall, we might therefore expect a culling of firms that grow too rapidly, or that have done so (and hence are too large). But the opposite might also be true for at least two reasons. First, as Jovanovič (1982) points out, larger firms are often older, and have thus passed many market tests. Second, larger firms wield greater political influence and may be able to adapt their institutional environments to suit themselves, much as humans adapt their environment to promote their own survival.

Table 7 shows that larger firms, both by industry average size and size relative to industry average, experience fewer firm deaths – both overall and via each sequela. Since the logit controls fail to change these results much, they are plausibly unrelated to value maximization.

[Table 7 about here]

Table 7 shows little evidence of selective pressure against firms that maximize growth rather than value. Culling only occurs in friendly mergers in the 1980s and in Chapter 7 in the 1990s, though these effects are too small to matter in the overall death rates.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

It is also economically significant. In the rank logits, a rise from the lowest to the highest quartile in size relative to industry benchmark decreases the probability of death by 6% in the 1980s and 14% in the 1990s. This is mainly due to an 8% drop in the probability of a merger in the 1980s and a 15% drop in the same sequela in the 1990s. That of a hostile takeover increases by 7% in the 1980s and decreases by 4% in the 1990s. That of a liquidation falls by 17% in the 1990s.

Thus, sheer size seems a survival advantage, both *per se* and after controlling for value maximization and industry stress. Abnormally rapid growth seems to attract little selective pressure overall, and is associated with increased incidences of certain forms of death.

Investment Strategies and Survival

The corporate finance literature contains papers arguing for both overinvestment and underinvestment relative to value maximizing levels. Overinvestment theories are akin to those positing growth maximization and excess earning retention, which we discussed above. Underinvestment theories stress the high cost of external capital due to information gaps and essentially argue that firms are liquidity constrained. Both may be true, and the empirical debate as to which is most important under what circumstances is at present unresolved. Here, however, we are interested only in effects of over- or underinvestment on survival odds.

The means in Table 8 link death to higher levels of capital expenditure, but this is mainly an industry effect in the 1990s. Chapter 11 and friendly mergers are the main causes of death when firms pursue faster capital accumulation than their industry peers.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

The logits show that excessive investment after controlling for value maximization (and industry stress) reduces survival rates in the 1990s. Much of the culling again appears in Chapter 11 and friendly mergers. On the other hand, lower than average capital expenditures leads to hostile takeovers in the 1990s.

[Table 8 about here]

The means in Table 8 show high industry R&D contributing to survival in the 1980s - by deterring both forms of bankruptcy and hostile takeovers. In contrast, having fewer patents than other firms in the same industry is a decided disadvantage, contributing to all forms of death. One interpretation of this is that the linkage between research inputs (R&D spending) and research outputs (patents) was unclear in the 1980s, and that achievement matters more than effort. In the 1990s, patents below industry norms contributes to death by both forms of bankruptcy and mergers, while patents above industry benchmarks attracts hostile takeovers.

Going from the lowest to the highest percentile in the number of patents granted raises the overall survival odds by 6% in the 1980s and 9% in the 1990s. The effect mainly comes from a 6% reduction in the probability of friendly mergers in the 1980s and an 11% reduction in the same sequela in the 1990s.

Diversification, Risk and Survival

Lang and Stulz (1994) and a large related literature relates diversification to depressed firm value, and event studies such as Morck *et al.* (1990) and Daley *et al.* (1997) confirm

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

that diversification causes at least part of this depression. It follows that value maximizing firms should focus on their core businesses.[11] Yet diversified firms ought to be more stable since fluctuations in their divisions' earnings due to industry shocks ought to cancel out to some extent. This interdivisional co-insurance should insulate diversified firms from bankruptcy to some extent.

The means in Table 9 show that increased cross industry diversification is only weakly linked to higher survival odds in the 1980s, but is consistently significantly predictive of survival in the 1990s. The odds of both forms of bankruptcy and of a friendly merger are elevated for firms that are more industrially diversified. However, industrial diversification raises the odds of a hostile takeover in the 1980s and has mixed effects on those odds in the 1990s. Diversification is perhaps more clearly associated with survival in the 1990s because hostile takeovers and LBOs are much less likely overall in the latter decade.

[Table 9 about here]

The logits indicate an overall survival advantage to being in an industry where most firms are well diversified in the 1990s only, and an overall survival edge to being more diversified than industry peers in both decades. Again, diversification protects against all forms of death save hostile takeovers and LBOs in both decades, although in the 1990s it is mainly an industry effect.

---

[11] See Lang and Stulz (1994).

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

International geographical diversification has broadly similar effects. Geographic diversification protects against Chapter 11 bankruptcy and mergers in both decades. In the 1990s, it protects against all save hostile takeovers, which seem invited by abnormal geographic diversification, especially in the logits.

Since both industrial and geographic diversifications are, in part, risk reduction strategies, it is of interest to measure managers' risk tolerance directly by estimating the volatility of each firm's stock returns. Since many of the risks affecting companies, such as demand and technology shocks, are beyond managers' control, it makes sense to focus here on firm-specific risk, which is more likely to reflect managers' decisions. Departed firms have higher levels of firm-specific risk in the 1980s, but lower levels of risks in the 1990s. In the logits, lower firm-specific risk is significantly associated with hostile takeovers in the 1980s. In contrast, high industry risk in the 1990s increases the overall odds of hostile takeovers, but high firm-specific risks reduce the odds of bankruptcy or attracting a merger or MBO.

These effects are economically significant. Going from the lowest to the highest quartile of three-digit industry codes relative to main industry benchmarks decreases the overall probability of death by 4% (8% for the 1990s). This is mainly due to a 7% drop in the probability of being absorbed in a friendly merger (9% for the 1990s). The probabilities of bankruptcy and liquidation all fall by less than 0.1% in the 1980s, and fall by 2% and 3%, respectively, for the 1990s. These declines are offset by a 13% rise in the probability of a hostile takeover in the 1980s. If four-digit codes are used instead, the pattern is virtually identical. The economic significance of international diversification is similar to that of inter-industry diversification. Going from the lowest to the highest

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

quartile in number of foreign subsidiaries relative to industry norms lowers the overall probability of death by 5% in the 1980s and 4% in the 1990s. Again, this is mainly due to a 6% decline in the probability of being absorbed in a friendly merger in the 1980s and a 6 % decline in the probability of liquidation in the 1990s. The probability changes in the logits using number of countries in which the firm is active are similar in magnitude.

When the standard deviation of a firm's stock return relative to industry norms falls from the highest quartile to the lowest, the probability of a hostile takeover rises by 3% in the 1980s and falls by 10% in the 1990s. The effect on bankruptcy, although statistically significant, is economically small: a drop in probability of less than 0.1% in the 1980s. In the 1990s, higher standard deviation increases all forms of corporate death, and the effect is economically significant: going from the lowest quartile to the highest the probabilities of liquidation, hostile takeovers, and mergers increase by 7%, 10%, and 7%, respectively.

Survival Costs

Our findings raise the question whether market discipline in the US economy is rigorous enough. Our results point to hostile takeovers as a unique institution for disciplining non-value maximizing survivors. Antitakeover legislation and management entrenchment devices, by emasculating the takeover, may facilitate "artful death dodging" strategies, and lead to substantial "survival costs".

What loss in capital value would occur if takeovers had been banned in our sample period, so that "artful death dodging" were more widespread. In this section, we consider ways of estimating this figure.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

One way is to compare the average Tobin's q of 0.79 for our takeover targets, with 0.91 for survivors. If takeovers were eliminated, our surviving firms could have diversified more, and this would have been reflected in lower qs. If our 702 survivors' qs dropped to 0.79 from 0.91, a Δq of -0.12, given that the average replacement costs of their assets is 901 million, the "survival costs" inflicted on the economy amount to $108 billion in 1979 dollars. (In 1996 dollars, this is about $234 billion.) This is a conservative estimate, since in the absence of takeovers and LBOs, firms might well diversify until their *q*s were substantially less than 0.79. Also, if they could have diversified more, some firms that died by other means might have survived.

In the 1990s sample, the average q of the 1156 survivors is 1.57, and the average q of the ones taken-over is 1.45. A 0.12 drop in q should hostile takeover be eliminated would result in a value loss of about $329 billion in 1989 dollars ($461 billion in 2000 dollars, an amount just over the total social security payment of $444 billion[12]), given the average replacement costs of $2738 million for the survivors.

4. Caveats and Robustness Checks

Some qualifications of our results are in order. First, we use a limited set of industry stress controls. Second, our *q* ratios are certainly an imperfect measure of value creation. Third, our strategy variables are certainly measured with error.

As robustness checks, we dropped firms that disappeared during the initial five years of each of the two subperiods. This is to remove firms that are already in the throws of death when we estimate our cross sectional firm characteristics. Regressions

[12] Data are from US Census Bureau.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

over these samples yield qualitatively similar results to those shown. To avoid the obverse problem that non-value maximizing firms might disappear quickly, rendering the first five years important economically, we show results for the larger samples in the tables.

The next set of robustness checks involves running the logits using the full sample of the 1990s, instead of the truncated sample to match the mean number of employees of the 1980s. This set of logits yields qualitatively similar results.

A third robustness check is done by truncating the full sample of the 1990s to match the median employee number of the 1980s, instead of matching the mean. Regression coefficients of the logits are similar in signs and patterns to the ones shown in the tables.

Another alternative to the logits presented in the tables above, each of which contains the industry stress measure, industry average and firm-specific q ratios, and an industry average value and firm specific value for a single strategy variable, is to run a logistic regressions containing many strategy variables each. This is problematic, for logistic regressions are especially vulnerable to multicollinearity problems. Consequently, we regard the specifications in the tables as more useful. Nonetheless, when we include representative variables from each of the individual tables in the same logit, we find broadly similar results to those shown, though significance levels are often attenuated.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

5. Conclusions

Economists commonly hypothesize that firms following economically inefficient strategies, notably value maximization, should be selected against, making economic efficiency a useful approximation to the real world, even though some firms clearly deviate from it. We find that high average q ratios are strongly predictive of firm survival, consistent with this premise. Since higher average q ratios are, by construction, a general measure of managers' success at increasing firm value, these results are consistent with this premise.

However, this premise further implies that strategy measures unrelated to value maximization ought to be selected neither for nor against. For example, current cash flows ought to have little impact on survival once value maximization is controlled for, as in the logits. Yet higher than industry normal cash flows are a survival trait in the 1980s and lower than industry norm cash flows are a survival trait in the 1990s.

Indeed, strategies associated with depressed firm values ought to be selected against. The most surprising thing about our findings is the lack of correspondence between survival and corporate strategies that are widely thought to deviate from value maximization. Jensen (1986) and others argue that many US firms are under-levered because managers dislike the uncertainty that accompanies high levels of debt. Yet low debt, not high debt, is clearly a survival trait. Lang and Stulz (1994) and Morck *et al.* (1990) argue that diversification destroys value. Yet we find that diversification is a survival trait. Donaldson (1990), Baumol (1959), and Jensen (1986) argue that growth maximization often appeals to managers more than value maximization, but we find no

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

evidence that excessive growth is systematically selected against, and large size – the result of growth – is clearly a survival trait.

Either widely accepted views about these strategies are misconceived, or evolutionary pressures in the corporate world do not select against deviations from value maximization, in contradiction to the assertion by Friedman (1953) in the introductory quote.

The theoretical and empirical relationships between value maximization and some other corporate strategies are less clear-cut. In these cases, our results can provide another approach to thinking about these strategies. For example, we find that higher dividend payments are associated with lower odds of corporate death. Thus, evolutionary selection seems aligned with theories that link higher dividends to better governance, such as signaling models and free cash flow considerations. Tax theories that argue for lower dividends as better governance seem misaligned with selection, though takeovers specifically seem to select against firms with high dividends.

When we consider different culling mechanisms, we find that the market for corporate control, and the hostile takeover especially, exerts selective pressures different from those exerted by other culling mechanisms. While other modes of death are associated with high debt, low dividends, small size, and a lack of diversification, hostile takeovers are associated with low debt, high dividends, large size, and a high degree of diversification. The market for corporate control thus seems more able to cull firms pursuing what are widely regarded as non-value maximizing, and seems closer to the sort of evolutionary selection Friedman (1953) envisions. This is consistent with the view espoused by Manne (1965) and others that mergers, especially hostile takeovers, are

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

particularly useful at removing management whose strategies deviate from value maximization.

Since many states adopted anti-takeover legislation by the 1990s, and many firms established anti-takeover defenses, such as staggered boards, poison pills, and the like, hostile takeovers are substantially less common in the 1990s analysis than in the 1980s. Table 1 shows that 148 firms, or about twelve percent of the sample, were taken over in the 1980s analysis. In contrast, only 96 firms, or four percent of the much larger sample are taken over in the 1990s analysis. Hartzell (2004) argues that bidders in the 1990s adapted to these defenses by negotiating side-deals, or golden parachutes, with target managers. This means that many of the transactions that appear to be friendly mergers in the 1990s would have been hostile in the 1980s. It seems not implausible that the curtailing of hostile takeovers in the 1990s substantially reduced selection against non-value maximizing firms.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Bibliography

Baumol, William, 1959. *Business Behavior, Value and Growth*, New York: Macmillan.

Bradley, Michael, and Michael Rosenzweig, 1992. The Untenable Case for Chapter 11, *Yale law Journal* 101(5): 1043 – 95.

Daley, Lane, Vikas Mehrotra, and Ranjini Sivakumar, 1997. Corporate Focus and Value Creation: Evidence from Spinoffs. *Journal of Financial Economics* 45(2): 257 – 81.

Donaldson, Gordon, 1990. Voluntary Restructuring: The Case of General Mills. *Journal of Financial Economics* 27 (1): 117 – 41.

Griffin, John, and Andrew Karolyi, 1998. Another Look at the Role of the Industrial Structure of Markets for International Diversification Strategies. *Journal of Financial Economics* 50(3): 351 – 74.

Fama, Eugene, and Kenneth French, 2001. Disappearing Dividends: Changing Firm Characteristics or Lower Propensity to Pay? *Journal of Financial Economics* 60 (1): 3 – 43.

Friedman, Milton, 1953. The Methodology of Positive Economics. In *Essays in Positive Economics*. University of Chicago Press.

Hall, Bronwyn, 1988. The Manufacturing Sector Master File. National Bureau of Economic Research mimeograph.

Hall, Bronwyn, Adam Jaffe, and Manuel Trajtenberg, 2001. The NBER Patent Citation Data File: Lessons, Insights and Methodological Tools, NBER Working paper 8498.

Hartzell, Jay, 2004. What's In It for Me? CEOs Whose Firms Are Acquired. *Review of Financial Studies* 17(1): 37 – 61.

Jensen, Michael, 1986. Agency Costs of Free Cash Flow: Corporate Finance and Takeovers, *American Economic Review* 76 (2): 323 – 29.

Jensen, Michael, 1987. The Takeover Controversy: Analysis and Evidence, In Coffee, John, Louis Lowenstein, and Susan Rose-Ackerman ed(s), *Takeovers and Contests for Corporate Control,* Oxford University Press.

Jensen, Michael, 1993. Modern Industrial Revolution, Exit, and the Failure of Internal Control Systems, *Journal of Finance* 48 (3): 831– 80.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Jensen, Michael, and Kevin Murphy, 1990. Performance Pay and Top Management Incentives, *Journal of Political Economy* 98: 225 – 64.

Jensen, Michael, and Richard Ruback, 1983. The Market for Corporate Control: The Scientific Evidence, *Journal of Financial Economics* 11 (1-4): 5 – 50.

Jensen, Michael, and William Meckling, Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure, *Journal of Financial Economics* 3 (4): 305 – 60.

Jovanovic, Boyan, 1982. Selection and the Evolution of Industry, *Econometrica* 50: 649 – 70.

Jovanovic, Boyan, and Glenn MacDonald, 1994. The Life Cycle of a Competitive Industry, *Journal of Political Economy* 102 (2): 322 – 47.

Keynes, John Maynard, 1935. *The General Theory of Employment, Interest and Money.* London: Harcourt, Brace & Co.

Lang, Larry, and Rene Stulz, 1994. Tobin's q, Corporate Diversification, and Firm Performance, *Journal of Political Economy* 102 (6): 1248 – 80.

Lawless, Jerald, 1982. *Statistical Models and Methods for Lifetime Data.* John Wiley and Sons.

Manne, Henry, 1965. Mergers and the Market for Corporate Control, *Journal of Political Economy* 73: 110 – 20.

Morck, Randall, Andrei Shleifer, and Robert W. Vishny, 1989. Alternative Mechanism of Corporate Control, *American Economic Review* 79: 842 – 52.

Morck, Randall, Andrei Shleifer, and Robert Vishny, 1990. Do Managerial Objectives Drive Bad Acquisitions? *Journal of Finance* 45 (1): 31 – 48.

Nelson, Richard, and Sidney Winter, 1982. *An Evolutionary Theory of Economic Change*, Cambridge: Harvard University Press.

Porter, Michael, 1985. *Competitive Advantage.* New York: Free Press.

Stein, Jeremy, 1988. Takeover Threats and Managerial Myopia, *Journal of Political Economy* 96 (1): 61 – 80.

Veblen, Thorstein, 1904. *The Theory of Business Enterprise.* New York: Charles Scribner's Sons.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Table 1 Summary Statistics

Panel A. Survival Category Variables

Sequelae	Details	1980s Sample 1979 to 1992		1990s Sample 1990 to 2003	
Chapter 7	Bankrupt and liquidated	38	3%	27	1%
Chapter 11	Bankrupt and reorganized	23	2%	93	4%
Taken Over	Board recommended against tendering or highly levered takeover by outsiders	148	12%	96	4%
Merger	Board recommended tender or highly levered takeover by management	365	29%	833	38%
Departed	Total of all the above	574	45%	1049	48%
Survived	Firms that underwent none of the above	702	55%	1156	52%
Total	Firms listed at the beginning of the interval	1276		2205	

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Panel B. Cross Section Variables

Cross Section Variables	Mean 1978	Mean 1989	Median 1978	Median 1989	Standard Deviation 1978	Standard Deviation 1989	Minimum 1978	Minimum 1989	Maximum 1978	Maximum 1989
Firm average no. of employees [a,b]	10.72	10.72	2.735	2.486	23.52	26.03	0.012	0.500	207.7	223.8
Number of 3-digit industries [a]	3.829	1.740	3.000	1.000	2.591	1.157	1.000	1.000	12.00	10.00
Number of 4-digit industries [a]	4.705	1.783	4.000	1.000	3.369	1.205	1.000	1.000	12.00	10.00
net export strength of US 4 digit industry [a]	0.011	-0.025	0.000	0.000	0.086	0.121	-0.410	-1.038	0.350	0.234
growth in no. of firms in 4 digit industry [c]	0.273	0.235	0.004	0.011	1.307	0.436	-0.948	-1.000	9.125	2.000
growth in no. of 4 digit industries in 3 digit ind. [c]	0.008	0.236	0.000	0.000	0.152	0.501	-0.333	-0.667	2.500	2.000
Industry average Tobin's q ratio [a]	0.827	1.565	0.805	1.463	0.267	0.487	0.369	0.714	1.575	4.364
Tobin's q ratio, relative to industry averages [a]	0.013	0.001	-0.065	-0.119	0.516	0.878	-1.503	-4.309	2.940	7.793
industry av. cash flow/assets net of debt [a]	0.296	0.197	0.287	0.187	0.082	0.074	0.129	-0.279	0.573	0.709
cash flow/assets net of debt, rel. to ind. [a]	0.020	0.000	-0.007	-0.012	0.207	0.172	-0.582	-1.410	2.796	1.034
industry av. total debt over net PP&E [a]	0.252	0.346	0.248	0.322	0.063	0.141	0.069	0.002	0.514	1.205
total debt over net PP&E, rel. to ind [a]	-0.004	0.000	-0.016	-0.033	0.159	0.259	-0.408	-1.008	0.713	1.383
industry av. long-term debt over net PP&E [a]	0.190	0.284	0.184	0.254	0.047	0.125	0.011	0.000	0.339	1.084
long-term debt over net PP&E, rel. to ind. [a]	0.000	0.000	-0.008	-0.032	0.131	0.230	-0.329	-0.952	0.745	1.236
industry av. dividend rate on common stock [a]	0.022	0.018	0.021	0.013	0.011	0.015	0.000	0.000	0.061	0.074
dividend rate on common stock, rel. to ind. [a]	0.001	0.000	-0.002	-0.003	0.024	0.018	-0.068	-0.078	0.080	0.120
industry average payout ratio [a]	0.658	0.095	0.683	0.070	0.179	0.070	0.072	0.000	1.000	0.595
payout ratio, rel. to ind. [a]	0.027	0.000	0.134	-0.024	0.380	0.137	-0.994	-0.841	0.982	0.999
Average no. of employees for firms in the same primary industry [a,b]	11.32	10.79	6.869	6.886	10.78	11.53	0.867	0.876	50.94	110.1
Average no. of employees rel. to firms in the same primary industry [a,b]	0.554	-0.077	-2.795	-3.270	38.09	25.42	-65.53	-157.5	809.9	221.5
industry average growth in employees [c]	0.157	0.251	0.142	0.174	0.119	0.336	-0.200	-0.469	0.683	3.585
growth in employees, rel. to ind. [c]	0.019	0.002	-0.008	-0.076	0.295	1.112	-1.324	-4.490	2.146	12.11
industry av. capital expenditure over assets [a]	0.084	0.082	0.080	0.074	0.025	0.038	0.031	0.010	0.184	0.340
capital expenditure over assets, rel. to ind. [a]	0.002	0.000	-0.005	-0.009	0.047	0.058	-0.114	-0.273	0.301	0.511
industry average R&D over assets [a]	0.024	0.019	0.016	0.003	0.024	0.028	0.000	0.000	0.096	0.094
R&D over assets, rel. to ind. [a]	0.000	0.000	-0.002	0.000	0.034	0.026	-0.112	-0.130	0.311	0.335
industry average patents granted [a]	14.23	5.638	6.222	1.100	18.38	9.792	0.000	0.000	142.5	105.9
patents granted, rel. to ind. [a]	0.683	-0.017	-2.778	-0.296	52.86	25.51	-247.7	-127.1	818.0	276.6
Average no. of 3-digit ind. codes for firms in the same primary industry [a]	3.774	1.754	3.630	1.655	1.044	0.571	1.455	1.000	7.750	4.167
No. of 3-digit industry codes rel. to firms in the same primary industry [a]	0.063	-0.005	-0.556	-0.158	2.683	1.104	-8.000	-6.333	9.467	6.974
Average no. of 4-digit ind. codes for firms in the same primary industry [a]	4.619	1.799	4.553	1.736	1.309	0.590	1.500	1.000	9.250	4.667
No. of 4-digit industry codes rel. to firms in the same primary industry [a]	0.097	-0.005	-0.800	-0.200	3.501	1.155	-9.000	-6.333	9.500	7.115
industry average no. of foreign subsidiaries [a]	4.305	0.652	2.909	0.500	4.102	0.578	0.000	0.000	39.50	2.667
foreign subsidiaries, rel. to primary ind. av. [a]	0.138	-0.001	-1.571	-0.091	12.57	0.887	-79.00	-3.000	152.6	3.692
Ind. av. standard deviation of stock return [c]	0.398	0.122	0.388	0.123	0.091	0.025	0.120	0.050	0.764	0.218
standard dev. of stock return, rel. to ind. [c]	-0.010	0.000	-0.025	-0.007	0.156	0.045	-0.456	-0.147	0.719	0.265

Samples are 1,276 firms for 1978 and 2,205 for 1989 for all variables except standard deviation of stock return, where the samples are 1,258 and 2,160.

a. Three year averages, 1976 to 1978 for 1978 cross section or 1987 to 1989 for 1989 cross section.

b. In thousands.

c. From 1976 to 1978 for 1978 cross section or from 1987 to 1989 for 1989 cross section.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Table 2. Survival of Public Companies: Industry Stress Variables

Panel A: Sequela 1979-1992	Survivor	Departed	Chapter 11	Chapter 7	Taken Over	Merged	Departed	Chapter 11	Chapter 7	Taken Over	Merged
net export strength of US 4 digit industry, 76-78	0.013	0.007	-0.006	**-0.025**	**-0.003**	0.016	-0.794	-0.306	**-4.892**	**-2.975**	0.370
		(.23)	(.50)	**(.00)**	**(.01)**	(.62)	(.24)	(.90)	**(.01)**	**(.01)**	(.63)
growth in no. of firms in 4 digit industry, 76-78	0.286	0.258	0.888	0.295	0.204	0.236	-0.025	**0.169**	-0.038	-0.084	-0.027
		(.70)	(.28)	(.97)	(.44)	(.52)	(.57)	**(.07)**	(.75)	(.29)	(.61)
growth in no. of 4 digit industries in 3 digit ind., 76-78	0.006	0.012	**0.112**	0.032	-0.005	0.011	0.198	**1.609**	0.257	-1.487	0.228
		(.46)	**(.09)**	(.28)	(.12)	(.63)	(.60)	**(.02)**	(.77)	(.18)	(.57)
Panel B: Sequela 1990-2003											
net export strength of US 4 digit industry, 87-89	-0.027	-0.022	-0.055	-0.016	-0.024	-0.019	0.226	**-0.975**	0.763	0.072	0.491
		(.36)	(.13)	(.18)	(.82)	(.11)	(.53)	**(.10)**	(.71)	(.93)	(.23)
growth in no. of firms in 4 digit industry, 87-89	0.2	**0.273**	0.295	0.307	**0.27**	**0.27**	**0.320**	**0.661**	0.491	0.286	**0.289**
		(.00)	(.13)	(.34)	**(.10)**	**(.00)**	**(.00)**	**(.00)**	(.27)	(.27)	**(.01)**
growth in no. of 4 digit industries in 3 digit ind., 87-89	0.204	**0.271**	**0.133**	0.284	0.288	**0.284**	**0.155**	**-0.595**	0.125	0.221	**0.207**
		(.00)	**(.09)**	(.39)	(.16)	**(.00)**	**(.10)**	**(.04)**	(.75)	(.30)	**(.03)**

Numbers in parentheses below means in the left half of Panels A and B are probability levels for t-tests rejecting the null hypothesis that the mean in question is equal to the mean for survivors. T-tests assuming unequal variances are used where an F test rejects the hypothesis of equal variances. Logit regressions in the right panels are of the form: log(odds of death) = $b_0 + b_1 Z + e$. Only Coefficient estimates on Z are shown in the table. Numbers in parentheses in the right panels are probability levels for chi-square tests rejecting the null hypothesis that the logistic coefficient in question is zero.

Table 3. Survival of Public Companies: Corporate Strategies Regarding Value Maximization, Controlling for Industry Stress Variables

Panel A: Sequela 1979-1992	Survivor	Departed	Chapter 11	Chapter 7	Taken Over	Merged	Departed	Chapter 11	Chapter 7	Taken Over	Merged
Industry average Tobin's q ratio, 76-78	0.842	**0.809**	0.768	**0.738**	**0.800**	0.823	**-0.492**	-0.974	**-1.575**	-0.41	**-0.46**
		(.03)	(.20)	**(.02)**	**(.09)**	(.27)	**(.03)**	(.31)	**(.05)**	(.27)	**(.09)**
Tobin's q ratio, relative to industry averages, 76-78	0.071	**-0.059**	-0.005	**-0.088**	**-0.011**	**-0.079**	**-0.544**	-0.382	**-0.868**	-0.294	**-0.643**
		(.00)	(.53)	**(.01)**	**(.06)**	**(.00)**	**(.00)**	(.44)	**(.07)**	(.12)	**(.00)**
Panel B: Sequela 1990-2003											
Industry average Tobin's q ratio, 87-89	1.536	**1.596**	1.567	1.583	1.575	**1.602**	**0.173**	0.003	-0.38	0.03	**0.182**
		(.00)	(.55)	(.69)	(.44)	**(.00)**	**(.06)**	(.99)	(.43)	(.90)	**(.06)**
Tobin's q ratio, relative to industry averages, 87-89	0.032	**-0.032**	**-0.231**	**-0.351**	**-0.122**	0.01	**-0.082**	**-0.504**	**-0.772**	-0.225	-0.025
		(.09)	**(.00)**	**(.02)**	**(.09)**	(.60)	**(.10)**	**(.01)**	**(.02)**	(.12)	(.64)

Numbers in parentheses below means in the left Panels are probability levels for t-tests rejecting the null hypothesis of a mean equal to that for survivors. T-tests assuming unequal variances are used where an F test rejects the hypothesis of equal variance in means tests. Logistic regressions in the right panels are of the form: log(odds of death) = b0 + b1 ***Z*** *+ b2* ***q*** *+ e. Industry stress variables Z are described in Table 2. Only coefficient estimates on* ***q*** *is shown. Numbers in parentheses in the right panels are probability levels for chi-square tests rejecting the null hypothesis that the logistic coefficient in question is zero.*

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Table 4. Survival of Public Companies: Corporate Strategies Regarding Short-term Profits Maximization, Controlling for Industry Stress and Value Maximization.

Panel A: Sequela 1979-1992	Survivor	Departed	Chapter 11	Chapter 7	Taken Over	Merged	Departed	Chapter 11	Chapter 7	Taken Over	Merged
Industry average cash flow over assets, 76-78	0.295	0.296	0.287	0.281	0.287	0.302	**1.871**	1.9	1.942	0.048	**2.638**
		(.94)	(.65)	(.31)	(.24)	(.25)	**(.05)**	(.61)	(.49)	(.98)	**(.02)**
firm cash flow over assets, rel. to ind. avg., 76-78	0.026	0.011	0.028	-0.01	**-0.002**	0.018	0.141	0.418	-0.363	-0.596	0.311
		(.19)	(.97)	(.15)	**(.08)**	(.52)	(.63)	(.62)	(.74)	(.34)	(.34)
Panel B: Sequela 1990-2003											
Industry average cash flow over assets, 87-89	0.196	0.197	0.184	0.186	0.203	0.199	0.209	-2.416	-2.676	1.47	0.453
		(.65)	(.29)	(.45)	(.37)	(.42)	(.73)	(.12)	(.38)	(.34)	(.49)
firm cash flow over assets, rel. to ind. avg., 87-89	0.011	**-0.012**	**-0.102**	**-0.13**	**-0.019**	0.003	**-0.751**	**-3.423**	**-3.308**	-0.875	-0.316
		(.00)	**(.00)**	**(.01)**	**(.08)**	(.24)	**(.00)**	**(.00)**	**(.00)**	(.18)	(.27)

Numbers in parentheses below means in the left panels are probability levels for t-tests rejecting the null hypothesis of a mean equal to that for survivors. T-tests assuming unequal variances are used where an F test rejects the hypothesis of equal variance in means tests. Logit regressions in the right panels are of the form: log(odds of death) = b0 + b1 ***Z*** *+ b2* ***q*** *+* ***b3 E*** *+ e.* ***E*** *is the residual of OLS regressions of the form:* ***P****=a0+a1****Z****+a2****q****+e. Industry stress variables* ***Z*** *are described in Table 2. Value maximization variables* ***q****s are described in Table 3.* ***P*** *is a set of two corporate policy variables – one an industry average and the other the deviation from that average. Numbers in parentheses are probability levels for* χ^2 *tests rejecting the null hypothesis that the logit coefficient in question is zero.*

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Table 5. Survival of Public Companies: Strategies Regarding Capital Structure, Controlling for Industry Stress and Value Maximization.

Panel A: Sequela 1979-1992	Survivor	Departed	Chapter 11	Chapter 7	Taken Over	Merged	Departed	Chapter 11	Chapter 7	Taken Over	Merged
industry avg. total debt over assets, 76-78	0.247	**0.257**	**0.284**	**0.275**	0.256	**0.254**	**2.758**	**8.764**	**6.345**	**2.394**	**2.078**
		(.00)	**(.01)**	**(.01)**	(.11)	**(.06)**	**(.00)**	**(.00)**	**(.01)**	**(.10)**	**(.05)**
total debt to assets, rel. to ind., 76-78	-0.011	**0.004**	**0.108**	-0.029	-0.023	**0.012**	0.476	**3.951**	-0.903	-0.667	**0.736**
		(.08)	**(.00)**	(.51)	(.44)	**(.02)**	(.19)	**(.00)**	(.43)	(.28)	**(.08)**
industry avg. long-term debt over assets, 76-78	0.187	**0.193**	0.199	0.198	**0.194**	**0.192**	**2.802**	7.29	4.038	2.938	**2.276**
		(.02)	(.24)	(.19)	**(.10)**	**(.08)**	**(.02)**	(.11)	(.25)	(.13)	**(.10)**
long-term debt to assets, rel. to ind., 76-78	-0.006	0.006	0.038	**-0.043**	-0.005	**0.013**	0.547	2.32	**-2.796**	-0.12	**0.908**
		(.11)	(.12)	**(.09)**	(.94)	**(.02)**	(.21)	(.11)	**(.06)**	(.87)	**(.07)**
Panel B: Sequela 1990-2003											
industry avg. total debt over assets, 87-89	0.339	**0.354**	0.361	0.344	0.356	**0.353**	**0.777**	1.255	0.693	0.794	**0.731**
		(.01)	(.22)	(.79)	(.31)	**(.02)**	**(.02)**	(.12)	(.65)	(.30)	**(.03)**
total debt to assets, rel. to ind., 87-89	-0.012	**0.013**	**0.116**	**0.098**	-0.051	0.007	**0.41**	**1.966**	**1.731**	-0.553	**0.3**
		(.02)	**(.00)**	**(.10)**	(.15)	(.11)	**(.01)**	**(.00)**	**(.01)**	(.22)	**(.09)**
industry avg. long-term debt over assets, 87-89	0.278	**0.292**	0.287	0.277	0.29	**0.293**	**0.942**	0.883	0.251	0.725	**0.998**
		(.01)	(.53)	(.99)	(.40)	**(.01)**	**(.01)**	(.33)	(.88)	(.40)	**(.01)**
long-term debt to assets, rel. to ind., 87-89	-0.011	**0.011**	**0.059**	0.046	-0.043	**0.011**	**0.442**	**1.431**	1.298	-0.616	**0.436**
		(.03)	**(.02)**	(.19)	(.17)	**(.04)**	**(.02)**	**(.00)**	(.12)	(.23)	**(.03)**

Numbers in parentheses below means in the left panels are probability levels for t-tests rejecting mean equal to that for survivors. T-tests assume unequal variances where an F test rejects equal variances at 5% or less. Logit regressions in the right panels are of the form: $\log_2(\text{odds of death}) = b_0 + \mathbf{b_1 Z} + \mathbf{b_2 q} + \mathbf{b_3 E} + e$ *where* **Z** *is a vector of the industry stress variables in Table 2,* **q** *contains the two q ratio variables in Table 3, and* **E** *is the residual of OLS regressions of the form:* $\mathbf{P} = a0 + a1\mathbf{Z} + a2\mathbf{q} + e$. **P** *is a set of two corporate policy variables – one an industry average and the other the deviation from that average. Each pair of coefficients reflects a single logit regression. Only the pairs of coefficients of* **E** *are shown in each panel that represents different logistic regressions. Numbers in parentheses are probability levels for* χ^2 *tests rejecting the null hypothesis that the logit coefficient in question is zero.*

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Table 6. Survival of Public Companies: Strategies Regarding Dividend Payout, Controlling for Industry Stress and Value Maximization.

Panel A: Sequela 1979-1992	Survivor	Departed	Chapter 11	Chapter 7	Taken Over	Merged	Departed	Chapter 11	Chapter 7	Taken Over	Merged
industry avg. dividend rate on common stock, 76-78	0.022	**0.021**	0.022	0.022	0.023	**0.021**	**-16.824**	-35.904	-27.047	-1.253	**-20.955**
		(.07)	(.79)	(.70)	(.52)	**(.01)**	**(.00)**	(.13)	(.11)	(.90)	**(.00)**
dividend rate on common stock, rel. to ind., 76-78	0.002	**-0.001**	**-0.011**	**-0.006**	**0.009**	**-0.003**	**-6.056**	**-34.685**	**-17.447**	**9.728**	**-10.964**
		(.03)	**(.01)**	**(.04)**	**(.01)**	**(.00)**	**(.01)**	**(.00)**	**(.02)**	**(.01)**	**(.00)**
industry avg. payout ratio, 76-78	0.664	0.651	**0.599**	0.638	0.68	**0.644**	**-0.62**	**-2.411**	-1.232	0.375	**-0.739**
		(.21)	**(.09)**	(.39)	(.27)	**(.09)**	**(.06)**	**(.05)**	(.20)	(.51)	**(.05)**
payout ratio rel. to ind., 76-78	0.024	0.03	**-0.231**	0.04	**0.131**	0.004	0.097	**-1.722**	0.108	**0.898**	-0.037
		(.79)	**(.00)**	(.81)	**(.00)**	(.42)	(.52)	**(.00)**	(.81)	**(.00)**	(.83)
Panel B: Sequela 1990-2003											
industry avg. dividend rate on common stock, 87-89	0.019	**0.016**	**0.012**	**0.012**	0.018	**0.017**	**-7.103**	**-73.972**	**-69.127**	-1.524	-3.665
		(.00)	**(.00)**	**(.00)**	(.30)	**(.01)**	**(.03)**	**(.00)**	**(.02)**	(.85)	(.28)
dividend rate on common stock, rel. to ind., 87-89	0.002	**-0.002**	**-0.006**	**-0.006**	0.004	**-0.002**	**-10.904**	**-39.627**	**-36.635**	6.135	**-10.883**
		(.00)	**(.00)**	**(.04)**	(.21)	**(.00)**	**(.00)**	**(.00)**	**(.02)**	(.26)	**(.00)**
industry avg. payout ratio, 87-89	0.1	**0.089**	**0.079**	0.08	0.089	**0.091**	**-1.245**	**-5.885**	-5.213	-1.859	-0.846
		(.00)	**(.02)**	(.16)	(.06)	**(.01)**	**(.07)**	**(.01)**	(.17)	(.33)	(.25)
payout ratio rel. to ind., 87-89	0.005	**-0.005**	**-0.025**	-0.025	0.026	**-0.005**	**-0.546**	**-2.382**	-2.348	0.987	**-0.592**
		(.10)	**(.05)**	(.28)	(.16)	**(.09)**	**(.09)**	**(.03)**	(.22)	(.16)	**(.08)**

*Numbers in parentheses below means are probability levels for t-tests rejecting mean equal to that for survivors. T-tests assume unequal variances where an F test rejects equal variances at 5% or less. Logit regressions in the lower panels are of the form: log(odds of death) = $b_0 + b_1 \mathbf{Z} + b_2 \mathbf{q} + b_3 \mathbf{E} + e$ where **Z** is a vector of the industry stress variables in Table 2, **q** contains the two q ratio variables in Table 3, and **E** is the residual of OLS regressions of the form: **P**=a0+a1**Z**+a2**q**+e. **P** is a set of two corporate policy variables – one an industry average and the other the deviation from that average. Each pair of coefficients reflects a single logit regression. Only the pairs of coefficients of **E** are shown in each panel that represents different logistic regressions. Numbers in parentheses are probability levels for χ^2 tests rejecting the null hypothesis that the logit coefficient in question is zero*

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Table 7. Survival of Public Companies: Strategies Regarding Firm Size and Growth, Controlling for Industry Stress and Value Maximization.

Panel A; Sequela 1979-1992	Survivor	Departed	Chapter 11	Chapter 7	Taken Over	Merged	Departed	Chapter 11	Chapter 7	Taken Over	Merged
industry avg. number of employees, 76-78	11.898	**10.61**	10.354	9.336	11.563	10.372	**-0.018**	**-0.112**	**-0.087**	-0.003	**-0.023**
		(.03)	(.30)	(.16)	(.73)	(.03)	**(.00)**	**(.04)**	**(.02)**	(.74)	**(.00)**
no. of employees rel. to industry, 76-78	4.264	**-3.982**	**-8.867**	**-7.179**	**-0.144**	**-4.897**	**-0.015**	**-0.099**	**-0.073**	-0.003	**-0.019**
		(.00)	**(.00)**	**(.00)**	**(.06)**	(.00)	**(.00)**	**(.02)**	**(.02)**	(.30)	**(.00)**
industry avg. growth in number of employees, 76-78	0.161	0.152	0.159	0.149	**0.142**	0.156	0.005	3.095	2.585	-0.841	-0.081
		(.19)	(.95)	(.56)	**(.08)**	(.50)	(.99)	(.17)	(.15)	(.40)	(.91)
growth in no. of employees rel. to industry, 76-78	0.021	0.016	0.043	-0.003	-0.008	0.026	0.241	0.215	-0.05	-0.173	**0.405**
		(.76)	(.81)	(.62)	(.28)	(.79)	(.24)	(.76)	(.93)	(.61)	**(.09)**

Panel B: Sequela 1990-2003	Survivor	Departed	Chapter 11	Chapter 7	Taken Over	Merged	Departed	Chapter 11	Chapter 7	Taken Over	Merged
industry avg. number of employees, 87-89	11.497	**10.02**	10.139	13.92	12.534	**9.59**	**-0.015**	**-0.111**	-0.019	0.004	**-0.018**
		(.00)	(.20)	(.34)	(.46)	**(.00)**	**(.00)**	**(.00)**	(.47)	(.65)	**(.00)**
no. of employees rel. to industry, 87-89	3.232	**-3.723**	**-8.474**	**-11.116**	**-4.015**	**-2.919**	**-0.015**	**-0.101**	**-0.041**	**-0.011**	**-0.013**
		(.00)	**(.00)**	**(.00)**	**(.00)**	**(.00)**	**(.00)**	**(.00)**	**(.04)**	**(.03)**	**(.00)**
industry avg. growth in number of employees, 87-89	0.235	**0.267**	0.258	0.348	0.286	**0.264**	0.167	0.227	-0.493	0.246	0.123
		(.02)	(.44)	(.41)	(.15)	**(.06)**	(.21)	(.48)	(.42)	(.47)	(.39)
growth in no. of employees rel. to industry, 87-89	-0.005	0.009	-0.03	**1.376**	**-0.178**	-0.01	0.016	0.037	**0.329**	-0.208	-0.002
		(.78)	(.83)	**(.08)**	**(.00)**	(.92)	(.68)	(.70)	**(.00)**	(.27)	(.96)

*Numbers in parentheses below means in the left panels are probability levels for t-tests rejecting mean equal to that for survivors. T-tests assume unequal variances where an F test rejects equal variances at 5% or less. Logit regressions in the right panels are of the form: log(odds of death) = $b_0 + b_1\mathbf{Z} + b_2\mathbf{q} + b_3\mathbf{E} + e$ where **Z** is a vector of the industry stress variables in Table 2, **q** contains the two q ratio variables in Table 3, and **E** is the residual of OLS regressions of the form: **P=a0+a1Z+a2q+e**. **P** is a set of two corporate policy variables – one an industry average and the other a deviation from that average. Each pair of coefficients reflects a single logit regression. Only the pairs of coefficients of **E** are shown in each panel that represents different logistic regressions. Numbers in parentheses are probability levels for χ^2 tests rejecting the null hypothesis that the logit coefficient in question is zero.*

Table 8. Survival of Public Companies: Strategies Regarding Investment, Controlling for Industry Stress and Value Maximization.

Panel A: Sequela 1979-1992	Survivor	Departed	Chapter 11	Chapter 7	Taken Over	Merged	Departed	Chapter 11	Chapter 7	Taken Over	Merged
industry avg. capital exp. over assets, 76-78	0.085	0.083	0.088	**0.074**	0.084	0.084	-0.755	**15.303**	**-15.943**	0.9	-1.578
		(.25)	(.69)	**(.01)**	(.72)	(.42)	(.77)	**(.07)**	**(.08)**	(.83)	(.59)
capital expenditure over assets, rel. to industry, 76-78	0.003	0.001	0.013	0.001	0.002	-0.001	0.901	5.828	2.105	0.74	0.43
		(.33)	(.56)	(.77)	(.81)	(.17)	(.49)	(.17)	(.63)	(.72)	(.78)
industry avg. R&D over assets, 76-78	0.025	0.022	**0.014**	**0.012**	**0.02**	0.025	-0.137	**-28.046**	**-29.842**	-6.795	4.697
		(.11)	**(.04)**	**(.00)**	**(.02)**	(.73)	(.96)	**(.08)**	**(.03)**	(.20)	(.18)
R&D over assets, rel. to industry, 76-78	0	0.001	0.004	-0.002	-0.001	0.002	2.408	5.227	-4.369	-0.695	**3.554**
		(.70)	(.60)	(.54)	(.68)	(.48)	(.17)	(.53)	(.65)	(.83)	**(.07)**
industry avg. no. of patents, 76-78	14.892	13.416	14.756	**9.919**	13.232	13.77	**-0.006**	-0.097	-0.039	-0.003	-0.007
		(.15)	(.97)	**(.09)**	(.30)	(.37)	**(.09)**	(.11)	(.12)	(.65)	(.12)
no. of patents rel. to industry, 76-78	7.031	**-7.082**	**-14.988**	**-7.91**	**-3.283**	**-8.037**	**-0.009**	**-0.104**	**-0.033**	**-0.005**	**-0.01**
		(.00)	**(.00)**	**(.00)**	**(.00)**	**(.00)**	**(.00)**	**(.05)**	**(.10)**	**(.08)**	**(.00)**

Panel B: Sequela 1990-2003	Survivor	Departed	Chapter 11	Chapter 7	Taken Over	Merged	Departed	Chapter 11	Chapter 7	Taken Over	Merged
industry avg. capital exp. over assets, 87-89	0.08	**0.086**	**0.089**	0.09	0.081	**0.086**	**3.338**	**6.978**	5.331	-1.464	**3.275**
		(.00)	**(.07)**	(.27)	(.65)	**(.00)**	**(.00)**	**(.01)**	(.25)	(.64)	**(.01)**
capital expenditure over assets, rel. to industry, 87-89	0.001	-0.002	0.001	-0.009	**-0.018**	0	-0.607	1.395	-0.774	**-7.4**	-0.188
		(.27)	(1.00)	(.48)	**(.00)**	(.73)	(.43)	(.44)	(.83)	**(.00)**	(.82)
industry avg. R&D over assets, 87-89	0.019	0.019	0.018	0.01	0.022	0.019	-2.858	-3.871	**-20.952**	1.802	**-3.028**
		(.80)	(.90)	(.12)	(.21)	(.82)	(.09)	(.42)	**(.04)**	(.66)	**(.09)**
R&D over assets, rel. to industry, 87-89	0	0	-0.004	-0.001	0.003	0.001	1.563	-8.055	-3.22	4.685	1.805
		(.61)	(.14)	(.90)	(.35)	(.49)	(.34)	(.11)	(.76)	(.19)	(.31)
industry avg. no. of patents, 87-89	6.049	**5.186**	4.559	**2.231**	**8.189**	**5.005**	**-0.011**	**-0.2**	**-0.391**	**0.016**	**-0.014**
		(.04)	(.19)	**(.00)**	**(.06)**	**(.01)**	**(.02)**	**(.00)**	**(.02)**	**(.05)**	**(.01)**
no. of patents rel. to industry, 87-89	1.58	**-1.777**	**-4.632**	**-2.328**	1.7	**-1.842**	**-0.006**	**-0.17**	**-0.287**	0	**-0.007**
		(.00)	**(.00)**	**(.00)**	(.97)	**(.00)**	**(.00)**	**(.00)**	**(.04)**	(.90)	**(.01)**

Numbers in parentheses below means in the left panels are probability levels for t-tests rejecting mean equal to that for survivors. T-tests assume unequal variances where an F test rejects equal variances at 5% or less. Logit regressions in the right panels are of the form: log(odds of death) = $b_0 + b_1 \mathbf{Z} + b_2 \mathbf{q} + b_3 \mathbf{E} + e$ where ***Z*** *is a vector of the industry stress variables in Table 2,* ***q*** *contains the two q ratio variables in Table 3, and* ***E*** *is the residual of OLS regressions of the form:* ***P=a0+a1Z+a2q+e***. ***P*** *is a set of two corporate policy variables – one an industry average and the other a deviation from that average. Each pair of coefficients reflects a single logit regression. Only the pairs of coefficients of* ***E*** *are shown in each panel that represents different logistic regressions. Numbers in parentheses are probability levels for χ^2 tests rejecting the null hypothesis that the logit coefficient in question is zero.*

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

TABLE 9. Survival of Public Companies: Strategies Regarding Diversification, Controlling for Industry Stress and Value Maximization.

Panel A: Sequela 1979-1992	Survivor	Departed	Chapter 11	Chapter 7	Taken Over	Merged	Departed	Chapter 11	Chapter 7	Taken Over	Merged
avg. no. of 3-digit ind. codes for firms in the same primary ind, 78	0.205	**-0.11**	**-1.651**	**-1.204**	**0.977**	**-0.34**	-0.081	**-0.415**	0.137	0.023	**-0.166**
		(.04)	**(.00)**	**(.00)**	**(.00)**	**(.00)**	(.14)	**(.09)**	(.38)	(.79)	**(.01)**
no. of 3-digit ind. codes rel. to firms in the same primary ind, 78	3.801	3.74	3.59	4.105	3.879	**3.656**	**-0.055**	**-0.409**	**-0.22**	**0.092**	**-0.093**
		(.31)	(.34)	(.17)	(.41)	**(.03)**	**(.01)**	**(.00)**	**(.00)**	**(.00)**	**(.00)**
avg. no. of foreign subsidiaries for firms in the same primary ind, 78	0.667	0.635	**0.489**	**0.385**	**0.793**	0.641	**-0.031**	**-0.238**	-0.064	0.025	**-0.059**
		(.19)	**(.00)**	**(.00)**	**(.04)**	(.32)	**(.05)**	**(.06)**	(.27)	(.25)	**(.00)**
no. of foreign subsidiaries rel. to firms in the same primary ind, 78	0.049	**-0.056**	**-0.216**	**-0.215**	0.021	**-0.042**	**-0.015**	**-0.151**	-0.037	-0.002	**-0.024**
		(.01)	**(.00)**	**(.04)**	(.78)	**(.02)**	**(.01)**	**(.05)**	(.20)	(.78)	**(.00)**
industry avg. stock return standard deviation, 76-78	0.12	**0.124**	**0.137**	**0.135**	0.124	**0.122**	1.019	1.988	1.469	-1.054	1.183
		(.00)	**(.00)**	**(.00)**	(.17)	**(.05)**	(.34)	(.64)	(.62)	(.57)	(.32)
stock return standard deviation rel. to industry, 76-78	-0.005	**0.005**	**0.035**	**0.016**	**0.004**	**0.001**	0.107	**5.442**	0.964	**-2.483**	0.294
		(.00)	**(.00)**	**(.07)**	**(.05)**	**(.00)**	(.85)	**(.02)**	(.51)	**(.02)**	(.65)
Panel B: Sequela 1990-2003											
avg. no. of 3-digit ind. codes for firms in the same primary ind, 89	4.559	**3.995**	3.152	**3.395**	4.765	**3.798**	**-0.129**	**-0.774**	**-1.303**	**0.336**	-0.104
		(.01)	(.12)	**(.10)**	(.59)	**(.00)**	**(.09)**	**(.00)**	**(.01)**	**(.06)**	(.20)
no. of 3-digit ind. codes rel. to firms in the same primary ind, 89	1.041	**-0.967**	**-2.661**	**-1.625**	0.628	**-1.439**	**-0.131**	**-0.435**	-0.541	-0.015	**-0.111**
		(.00)	**(.00)**	**(.07)**	(.75)	**(.00)**	**(.01)**	**(.01)**	(.13)	(.89)	**(.03)**
avg. no. of foreign subsidiaries for firms in the same primary ind, 89	0.105	**-0.127**	**-0.16**	**-0.14**	0.069	**-0.146**	**-0.175**	**-1.825**	**-1.445**	**0.422**	-0.11
		(.00)	**(.00)**	**(.09)**	(.77)	**(.00)**	**(.03)**	**(.00)**	**(.00)**	**(.02)**	(.21)
no. of foreign subsidiaries rel. to firms in the same primary ind, 89	1.793	**1.712**	**1.43**	**1.477**	1.886	**1.731**	**-0.211**	**-0.421**	-0.383	-0.055	**-0.221**
		(.00)	**(.00)**	**(.01)**	(.14)	**(.02)**	**(.00)**	**(.01)**	(.15)	(.54)	**(.00)**
industry avg. stock return standard deviation, 87-89	1.838	**1.756**	**1.448**	**1.499**	1.947	**1.776**	**-0.17**	**-1.803**	**-1.451**	**0.423**	-0.105
		(.00)	**(.00)**	**(.00)**	(.09)	**(.02)**	**(.03)**	**(.00)**	**(.00)**	**(.02)**	(.21)
stock return standard deviation rel. to industry, 87-89	0.109	**-0.131**	**-0.173**	**-0.164**	0.066	**-0.147**	**-0.198**	**-0.423**	-0.399	-0.055	**-0.204**
		(.00)	**(.00)**	**(.08)**	(.74)	**(.00)**	**(.00)**	**(.01)**	(.13)	(.52)	**(.00)**

*Numbers in parentheses below means in the left panels are probability levels for t-tests rejecting mean equal to that for survivors. T-tests assume unequal variances where an F test rejects equal variances at 5% or less. Logit regressions in the right panels are of the form: log(odds of death) = $b_0 + b_1 \mathbf{Z} + b_2 \mathbf{q} + b_3 \mathbf{E} + e$ where **Z** is a vector of the industry stress variables in Table 2, **q** contains the two q ratio variables in Table 3, and **E** is the residual of OLS regressions of the form: $\mathbf{P} = a0 + a1\mathbf{Z} + a2\mathbf{q} + e$. **P** is a set of two corporate policy variables – one an industry average and the other a deviation from that average. Each pair of coefficients reflects a single logit regression. Only the pairs of coefficients of **E** are shown in each panel that represents different logistic regressions. Numbers in parentheses are probability levels for χ^2 tests rejecting the null hypothesis that the logit coefficient in question is zero.*

CHAPTER FOUR

OLIGARCHIC FAMILY CONTROL AND THE QUALITY OF GOVERNMENT

1. Introduction

Family control of the large corporate sectors is ubiquitous in many countries and across all levels of economic development[1]. This paper presents new data on the ownership structures of the largest ten corporations or business groups in forty-one countries. I show that the proportion of this sector controlled by wealthy families is inversely related to subsequent economic growth. Furthermore, variables measuring the quality of government are related to the prevalence of family control. A handful of wealthy and established business families control more of the largest firms in countries whose governments are more bureaucratic and more interventionist. These countries also lack well-developed economic institutions such as shareholder rights protection to facilitate external financing in both the domestic and international markets.

Burkart *et al.* (2002) argue that founding families choose to preserve control within the family if institutions are weak and the private benefits of control are high. Dyck and Zingales (2003) find that these private control benefits are larger in countries where statutory protection of minority shareholders is weaker. Johnson *et al.* (2000) dub the self-dealing transactions of controlling shareholders "tunneling", which includes transfer pricing, excessive executive compensation, and dilutive share issues. Bebchuk *et al.* (2000) show how controlling shareholders can use pyramids, cross-holding and dual class shares to transfer wealth from minority shareholder and extract private control

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

benefits at the expense of outside investors. Doidge *et al.* (2004) show that firms cross-listed in the U.S. are worth significantly more because controlling shareholders of these firms cannot extract as many private control benefits compared to those controlling shareholders of firms not listed in the U.S.

Private control benefits may also derive from nepotism and political connections (Morck *et al.*, 2000, Hellman *et al.*, 2000, and Morck and Yeung, 2003). Fisman (2001) shows that the stock prices of Suharto-connected firms fell sharply at the news of Suharto's health problems. Faccio *et al.* (2001) show that controlling shareholders of East Asian corporations obtained extensive access to "related party loans", which facilitate expropriation of minority shareholders. Johnson and Mitton (2003) find that Malaysia introduced capital controls to benefit politically connected firms at the time of the Asian financial crisis. Dyck and Zingales (2004) show that poorer tax enforcement greatly increases the private benefit of control.

Agency costs related to private benefit extraction might be one important reason that stock markets generally discount family controlled firms relative to their peers run by professional managers[2]. Perez-Gonzalez (2001) finds that heir-controlled firms underperform professional managers in an array of operating measures. Faccio (2003) show that politically-connected firms underperform despite easier access to debt financing, lower taxation, and stronger market power. Morck *et al.* (2000) show that heir-controlled Canadian firms exhibit low financial performance, low R&D spending, and

---

[1] See La Porta *et al.* (1999a) for twenty-seven high and middle-income countries, Claessens *et al.* (2000) for nine East-Asian countries, Khanna and Palepu (1997) for India, Wiwattanakantang (2001) for Thailand, Valadares and Leal (undated) for Brazil, etc.

2 Anderson and Reed (2003) show that family firms in the S&P 500 perform better than other firms; however they include new entrepreneurial firms like Dell and Microsoft among family firms. Amit and

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

low rate of patent fillings. However, if rent-seeking by these families is sufficiently lucrative, they might be able to extract extensive private benefits and still leave public shareholders a high return. Thus these firms might actually provide shareholders with higher returns in countries with weaker institutions. Consistent with this, Khanna and Rivkin (1999) show that group affiliation yields superior performance in India, Indonesia and Taiwan. They propose that large family-controlled corporate groups add value because they let firms bypass corrupt or otherwise poorly functioning markets for goods, capital, and labor.

This may well be correct, but an economic dominance of large family-controlled corporate groups, even composed of firms that pay shareholders a solid return, may nonetheless impede development. If political rent-seeking pays for these returns and the private benefits the controlling family extracts are large, institutional development might be seriously retarded.

Morck and Yeung (2004) argue that the dominance of a few very wealthy families over the large corporate sector is likely to inspire a general lack of trust in a country's institutions. Hellman *et al.* (2000) show that pervasive state capture, where politicians sell individualized protection of property rights, causes a much higher degree of insecurity of general property rights and weaker overall firm performance in many transition economies. They also show that, even though some influential firms enjoy higher growth rates, the overall growth rate of the business sector is much lower. Murphy *et al.* (1991) argue that a high return from rent-seeking diverts resources and talents away from real investments. Murphy *et al.* (1993) argue that lobbying and

---

Villalonga (2004) show that their result only holds for such firms, and that inherited family firms underperform.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

corruption obstruct innovation and productivity gains. Rajan and Zingales (2003) argue that entrenched elites lobby for a weakened financial market to starve new firms of financing and to heighten the entry barrier.

Previous studies suggest social, economic, and legal factors to explain the prevalence of family ownership, or concentrated ownership in a broader sense, of large corporations. For example, La Porta *et al.* (1997a, 1999) attribute ownership and control concentration to basic features of a country's legal system, especially those resulting in weak protection for outside investors' property rights. Roe (2003) argues that block ownership exists to responds to and counterbalances strong labor unions. Morck and Yeung (2004) argue that firms controlled by oligarchic families are generally adept rent-seekers who thrive in societies with low trust levels and corruption.

This paper shows that family control of large corporate sectors is inimical to growth, and that governments play an active role in shaping corporate ownership structure. Family control is more pervasive in countries with more inefficient and more interventionist governments. Multivariate analysis further suggests that the frequency of price controls, the extent of red tape, and the lack of shareholder protection are the dominating factors that link government quality to corporate control structure. Price controls indicate the extent of government power. Red tape speaks to the efficiency in bureaucracies. The lack of shareholder protection points to poor institutions that adversely affect financial market development (La Porta et al, 1998).

These findings are broadly consistent with Krueger (1974), who argues that government intervention in economic activities creates large political rents; North (1981),

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

who argues against government interventionism; and Rauch (1995) and Mauro (1995), who argue that inefficient bureaucracy and corruption are bad for growth.

The next section describes the data and defines family control and other variables used in the paper. Section 3 presents the main results of the paper. Section 4 concludes.

2. Data and Methodology

This section describes the raw data, the construction of the family control variables, and all the other variables used in the paper.

2.1. Raw Data

Dun & Bradstreet *Principal International Business* 1998/99 is the data source, covering a wide range of enterprises including state-owned enterprises, privately-owned firms, publicly-traded firms, and foreign subsidiaries. I exclude countries that do not report more than 30 firms, as well as countries whose tenth largest firms do not hire more than 500 employees. This removes very small countries. Countries that have experienced prolonged wars are also excluded from the sample.

Extensive research is conducted to locate the ultimate owners of each firm that hired more than 500 employees by using information gathered from multiple sources including the Internet (Google searches, online data bases such as Hoover's online, and firms' websites), library resources, databases (Worldscope, SDC, and Dun & Bradstreet), media coverage such as Forbes, and academic research papers. Most Arabic, African, and all East European countries are removed from the sample because ownership information on their largest corporations is unavailable. Banks are also excluded from the

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

sample because even when privately owned they are usually tightly controlled and regulated by governments[3].

A variety of ownership types are present in the data, showing either dispersed ownership, or showing controlling shareholders as being wealthy families, governments, trust organizations, or banks. A 20% cut-off is used to assign majority ownership and control rights to firms and pyramids, since a 51% ownership of shares is not necessary to assign control rights in most cases because a single dominant shareholder can exert effective control when all other shareholders are small. I classify a firm as family controlled if members of a single family collectively own more than 20% of the votes and control a greater stake than any other shareholders, and more than one member in the family occupy top executive positions. The same 20% rule applies to government-controlled firms or corporate groups[4]. Organizations are classified as widely held if no owner controls more than 20% of the vote and small distant shareholders elect the board and appoint CEOs. Dispersed ownership structure is common among large corporations in the United States and the United Kingdom, and among agricultural and retail cooperatives in Europe and Oceanic countries.

Based on the names of the ultimate owners of each firm, I consolidate firms into corporate groups. The employees of subsidiaries are added to those of the parents, and the employees of firms belonging to the same families and control pyramids are summed

---

[3] A case in point is from Korea as documented by Nam (2004). The Korean government still tightly controls commercial banks in which the government has no or very few shares. Even though the chaebols such as Samsung and Hyundai are the largest shareholders of these banks, the government somehow successfully took over the control rights of the banks and left no governance power to even the largest shareholders.

[4] Governments partially privatized SOEs in response to social, economical, or political pressure. For example, the Argentinian government retains 20% of the ex-state oil giant YPF and remains the largest shareholder after privatization. In this case, YPF is still considered state-owned.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

up for the family group. The final numbers for the conglomerates are double-checked across multiple sources to ensure accuracy and avoid double counting.

The final sample includes 41 countries for which I am confident in the ownership information of the largest corporate groups. This sample includes mostly high- or middle-income countries where detailed ownership information on firms, both private and public, is accessible to the public through the Internet and other library resources. The average per capita GDP in 1996 among the sample countries is $15,270 and the median is $16,464.

For each of the forty-one countries, the largest ten domestically owned non-government corporate groups are selected based on the total number of employees of each conglomerate in 1996. These largest ten groups are chosen because businesses in many countries are concentrated in the hands of a few wealthy families. For example, the Wallenberg family of Sweden controlled 40% of the Stockholm Stock Exchange's $265 billion market capitalization in the late 1990s[5]. It is prohibitively expensive to include more than ten groups in many countries, because the size and importance of groups drop dramatically after a handful of very large groups. Coverage of ownership information on these small and less known groups is scant and less reliable.

2.2. Family Control Indices Construction

Based on the list of the largest ten domestic conglomerates ranked by number of employees, an *employee-weighted family control index* is calculated as:

[5] BusinessWeek February 22, 1999.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

$$D_V = \frac{\sum_{i=1}^{10} \theta_i L_i}{\sum_{i=1}^{10} L_i} \quad (1)$$

where L_i is the total number of employees of the i^{th} largest conglomerate in the country in 1996, and $\theta_i = 1$ if the conglomerate is majority-controlled by a wealthy family, and $\theta_i = 0$ otherwise.

An *equally-weighted family control index* is calculated to side-step accuracy issues surrounding the employee counts and consolidation, and is defined as:

$$D_E = \frac{1}{10} \sum_{i=1}^{10} \theta_i \quad (2)$$

The interpretation of the family control indices is straightforward. The employee-weighted family ownership index is the total employment of all family controlled conglomerates divided by the total employment of the largest ten conglomerates in the domestic private sector of each country. The equally-weighted family ownership index is simply the total number of conglomerates controlled by wealthy families divided by ten. In Chile, Greece, Malaysia, Mexico, Pakistan, Peru, Philippines, Thailand, Turkey, and Venezuela, all of the largest ten corporate groups are family controlled. Only in Japan none of the largest ten groups are family controlled.

Subsidiaries of large multinational corporations (MNCs) play important roles in open economies such as Austria, Chile, Peru, and the Philippines. For these countries, the list of the largest ten firms differs drastically compared to that of the largest domestic firms. Thus, another set of family control indices, $\boldsymbol{P_V}$ for employee-weighted and $\boldsymbol{P_E}$ for equally-weighted, are calculated based on the largest ten non-government firms both domestically and foreign owned. The proportions of largest family firms among similar-

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

sized businesses are much smaller in countries such as Austria, Brazil, Chile, New Zealand, Peru, Philippines, Thailand and Venezuela, when subsidiaries of MNCs are included in the largest ten list of firms or groups.

The four family control indices are, not surprisingly, highly correlated with each other. The average correlation coefficient is 0.908 and highly statistically significant.

Table I lists the values of the four family control indices.

[Table I about here]

2.3. Other Variables

Other variables are collected from sources including the World Development Indicators, the World Economic Forum, Freedom House, the Fraser Institute, the Heritage Foundation, Business Environment Risk Intelligence (BERI) and previous academic publications such as Botero *et al.* (2003) and LLSV (1998). These variables measure the levels of social and economic development, the quality of institutions and governments, the degree of government ownership in enterprises, the development of financial markets, and labor rights. This section briefly reviews the definition, country coverage, and the source of each variable. Sample varies as country coverage of each data source varies.

Measures of Social and Economic Development

Six indicators of social and economic development are used. First, "GDP per capita" is the logarithm of real per capita GDP in 1996 using purchasing power parity

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

adjusted exchange rates. It provides an overall measure of the level of economic advancement in 1996. The data are from the Penn World Tables 6.1, available at the NBER data site. "GDP growth" is growth in the real GDP per capita from 1996 to 2000, defined as the logarithm of 2000 real GDP per capita minus the logarithm of 1996 real GDP per capita. The next two variables are from the World Development Indicators, published by the World Bank. "Health care" is measured by the infant mortality rate, the number of infant death per 1000 live births. "Education" is measured by the adult illiteracy rate, the percentage of people 15 years or older who cannot read and write a short, simple statement about their everyday life. These variables are both for 1996.

In addition, I use Gini coefficients to measure "income inequality" among the entire population. Data is collected from the World Income Inequality Database (WIID), developed by the United Nations Development Programme. The detailed description of this data is available from Deininger and Squire (1996). Gini coefficients based on high-quality income or expenditure data for all national population are used in this paper. The most recent data available for the 41 sample countries is 1994. If data for 1994 is not available, the most recent data point, as far back as 1989, is used, thus the year of the data varies from 1989 to 1994. Gini coefficients are obtained by this method for 31 countries in the sample. Gini coefficient data from WIID for 1989 to 1994 is not available for Argentina, Austria, France, Germany, Greece, Ireland, Israel, South Korea, Switzerland or Turkey.

Lastly, an infrastructure quality index from BERI is used to measure the adequacy of physical infrastructure in a country. The index is based on a survey of a panel of professionals with many years of experience in that country. The index value ranges from

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

zero to ten, with a higher value signifying more adequate physical infrastructure. This variable is available for 39 countries in the sample, but missing for Hong Kong and New Zealand.

In addition, two measures for the success of large firms are used. The first one, "employees of the largest ten", is based on the largest ten domestically-owned non-government conglomerates in each country in 1996, as described in section 2.1, defined as the total number employed by the largest ten conglomerates divided by the total labor force of 1996. The second, "sales of the largest twenty" from LLSV(1997b), is the total sales of the largest twenty publicly listed firms divided by the GNP of that country in 1994.

Measures of Bureaucracy and Regulatory Burden

For bureaucracy, I use three variables: "bureaucratic delays", from BERI, measures the level of red tape, with higher values indicating less red tape; "bureaucratic quality", from ICRG, assigns higher scores to governments that maintain "autonomy from political pressure" and have "strength and expertise to govern without drastic changes in policy or interruptions in government services"; and "competence of public personnel", from the Global Competitiveness Report, is a survey on the question "whether public sector personnel are more competent than their private sector counterparts", with answers from 1 (strongly disagree) to 7 (strongly agree).

Four variables are used to measure regulatory burden: "fair regulation" taken from LLSV(1998); "entry regulation" from Djankov et. al (2001) defined as the log of time it takes to obtain legal status for a new business; "the frequency of price control" ranges

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

from zero to ten, zero being the most frequent price control; and "freedom to compete" from World Competitiveness Report.

Measures of Bureaucrats in Business

Government ownership in enterprises is based on a dataset that includes the largest ten domestically-owned enterprises or business groups in each country in 1996. This dataset differs from the previous dataset used to calculate family control in that it includes all domestically owned firms, both privately held and government enterprises. The equally-weighted index, S_E, is the number of enterprises majority-owned by the government divided by ten, while the employee-weighted index, S_V, is the total number of employees hired by the government controlled enterprises divided by the total number of employees of the largest ten enterprises or conglomerates.

Government ownership in banks is taken from LLSV(2000) and uses the percentage of banks and commercial banks owned by the government. SOE investment as a percentage of the total domestic investment and SOE output as a percentage of the GDP are obtained from the World Bank and are averaged over 1978 to 1991.

Political Rent-Seeking

The risk of expropriation and repudiation of contracts are taken from LLSV (1998), with higher values indicating lower risks. Indices measuring the protection of property rights, the efficiency of the judiciary system, tax compliance, business regulations, bureaucracies and corruption are collected from LLSV(1999a) with higher values indicating institutional setup more friendly to private businesses and fair competition.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

The corruption index from LLSV (1998) measures the average level of government corruption between 1982 and 1995. The index ranges from zero to ten with higher values indicating less corruption in governments.

Financial Market Institutions and the Availability of Financing

I rely on LLSV (1998) for indices measuring shareholders' rights, creditors' rights and accounting standards. Shareholders' rights range from zero to six, and creditors' rights from zero to four, with higher values signifying more rights and protection for shareholders and creditors, and stricter accounting disclosure rules.

Credit available to the private sector as a percentage of GDP in 1996 is used to capture the size of the banking sector. The total value of shares traded during the year 1996 as a percentage of GDP is used to measure the size of the stock markets. These data are taken from the World Development Indicators. The next three variables are from the Global Competitiveness Report and capture the ease of obtaining financing for new firms. The first, "venture capital", measures the availability of venture capital to finance new businesses. It ranges from one to seven, with higher values indicating more readily available venture capital funds. The second, "existence of hostile takeovers" (through share purchases in the stock market), assumes a higher value when managers should be more concerned with the possibility of hostile takeovers. The third variable captures the degree of difficulty to start a new bank. A higher value of this variable means that regulation is reasonable and entry is fairly easy.

The next five variables account for the availability of international capital flows. "Capital restriction" is the number of types of capital restrictions, out of a maximum of

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

12, that a country had in 1996. "Capital openness" measures the difficulty for foreign investors to hold domestic portfolios, and ranges between zero to one, with one being that it is impossible to hold a domestic portfolio. The next three variables are "gross private capital flows as a percentage of GDP", "gross FDI as a percentage of GDP", and "net inward FDI as a percentage of GDP". They are all from the World Development Indicators.

Labor Rights

The labor rights variables are taken from Botero *et al.* (2003). "Union density" is the percentage of total labor force affiliated with labor unions. Indices measuring social security protection, labor protection from labor and employment laws, and unions' power in collective bargaining, workers' participation in management, and collective disputes all assume higher values for better labor protection and union power.

3. Main Results

This section presents the main results of the paper. First, it considers where family control is more common. Next, the relations between family control and various measures of government quality and behaviors are examined. These relations are quantified using Pearson's correlation and partial correlation tests, the latter controlling for the variation in a country's development stages using the log of 1996 *per capita* GDP. Finally, multivariate analysis is used to determine which factors are the most crucial to the relationship between family control and governments.

Table II presents the summary statistics of the main variables.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

[Table II about here]

Where is family control more common?

The top panel of Table III relates the level of family control among nations' largest corporate groups with indicators of social and economic development. The correlation coefficients suggest that when wealthy families control more of the largest firms, the economy tends to be poorer, grows slower, and provides less adequate public health, education, and infrastructure. A higher level of family control is also associated with higher Gini coefficients, meaning that income is less evenly distributed among the entire population.

[Table III about here]

The importance of large firms is measured by the total number of employees hired by the largest ten groups as a percentage of the labor force, or by the total sales of the largest twenty listed firms as a percentage of GNP. The bottom panel shows that the importance of large firms is negatively and significantly correlated with the extent of family control. The more top firms controlled by wealthy families, the smaller those firms are relative to the economy.

Khanna and Rivkin (1999) provide evidence that affiliation with family-controlled groups in India, Indonesia and Taiwan results in superior corporate performance. But my results, based on a sample of forty-one countries, suggest that superior corporate performance need not translate into larger economies of scale. Family control of large

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

corporations seems associated with smaller scales of operation in those corporations. Chandler (1994), La Porta *et al.* (1997b) and others stress the importance of an economy's ability to support very large corporations to its sustained economic development.

Bureaucracies and Regulatory Burden

Effective competition from young and innovative firms requires ease of entry and a light regulatory burden. De Soto (1989) shows that, in many developing countries, bureaucracy and business regulation are so costly, especially to new entrants, that many businesses are forced to operate underground. He argues that regulatory and bureaucratic costs affect large, established business groups much less than small upstart companies. That is, these costs serve as a barrier to entry, penalizing small or new firms and protecting large or established ones. Djankov *et al.* (2003) find large differences in the regulatory costs of entry across countries. They show that the costs of entry, in terms of the numbers of days, the number of procedures and the money required to register a business are heftier in countries with higher corruption, and that the primary beneficiaries of entry regulation are politicians and bureaucrats.

The top panel of Table IV shows that higher levels of family control are associated with inferior quality of bureaucracies characterized by higher levels of red tape, less autonomy from political pressure, and less competent public personnel. All three measures are statistically significantly related to family control of the large corporate sector, even after controlling for 1996 per capita GDP.

[Table IV about here]

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

The next panel relates family control to measures of business freedom in a competitive market place. Variables used include the extent of regulation, the frequency of price controls, the freedom to compete, and the number of days required to legally register a business. The relations between family control and all four measures of lack of marketplace freedom are consistently significant, indicating a more heavily regulated business environment and a higher cost of entry where family control is higher. Partial correlations controlling for the log of GDP *per capita* in 1996 convey the same story.

In summary, more family control of a nation's largest firms is associated with higher obstacles against young firms trying to rise and compete. There are two possible explanations. First, family firms might have a competitive advantage in dealing with large bureaucracies and heavy regulations. Second, wealthy families might use their power to institute government policies that block competition and preserve the *status quo*. These two explanations need not be mutually exclusive – both could be valid simultaneously. Economic theory suggests that both explanations may indicate sub-optimal outcomes, as Schumpeter (1912) argues that economic growth requires constant rejuvenation through a continual emergence of new firms with new technologies. This is also consistent with the view that bureaucracy and excessive regulation only create rent-seeking opportunities that maximize the bribes and profits for small groups of cronies, as in Murphy *et al.* (1991, 1993), Botero *et al.* (2003), and others.

Bureaucrats in Business

The findings or La Porta *et al.* (1999) and others reflect a growing consensus that government operated businesses perform less well than the private sector. Nonetheless,

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

the World Bank (1994) reports that state-owned enterprises still account for a large share of investments and outputs in many countries. Governments seem inevitably to become important business partners with private firms, and the degree of public ownership thus may greatly influences how private businesses choose to organize themselves. Morck and Yeung (2004) propose that concentrated ownership in the hands of a few very wealthy families make sense where the state is an active business partner because members of a powerful business family are more capable of developing long-term relationships with politicians than managers hired for a few years by a group of diffuse shareholders. In fact, Faccio (2002) shows that many of a country's leading politicians are members of the same powerful families that control their largest firms. If rent seeking by these families motivates the scale and scope of direct government involvement in the corporate sector, we should expect a positive relationship between the importance of SOEs and the prevalence of family control among the largest business groups.

Table V reports correlations between family control and various measures of the extent of government ownership as well as the investments and output of state owned enterprises. The first two indices in Panel A capture the extent of government control among the largest domestically owned businesses, whereas the next three indices depict an overall picture of SOE activities in the economy. Note that the EFW SOE index assumes a lower value when there are more SOE activities. More family control is associated with more SOEs in all three measures. Controlling for 1996 *per capita* GDP reduces the magnitude of the correlation coefficients, but the significance remains in most cases.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

[Table V about here]

There is much anecdotal evidence that politicians direct loans from state banks to their favorite firms. Inefficiency can ensue where governments use these powers to finance politically desirable, but economically wasteful projects. La Porta *et al.* (2001) show that government ownership of banks is associated with slower subsequent financial development and slower subsequent growth in productivity. Panel B shows that family control of large business groups and state ownership of banks are positively related.

In summary, Table V shows a strong link between family control and measures of governments' involvement in business activities.

Political Rent-Seeking

A predatory government faces a commitment problem: if it is strong enough to protect property rights, it is also strong enough to abrogate them to its own benefit. Investment does not take place where private investors lack confidence about the security of their property rights. Haber *et al.* (2002) argue that predatory governments tend to resolve the commitment problem through "limited commitments", which promise respect for the property rights of a reduced set of favored economic actors. This greatly increases the return to opportunistic rent-seeking activities, which divert valuable resources to profitable but unproductive uses. "Limited commitments" also make family control necessary to protect the interests of the firms. Hellman, *et al.* (2000) show that new firms in many transition countries purchase advantage from the state through private payments to politicians, and these firms in turn receive individualized protection of their property

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

rights. The first panel of Table VI confirms that family control is more prevalent among large firms where governments do not respect private property rights and contracts.

[Table VI about here]

Panel B links family control with various variables measuring government integrity and efficiency. The first four indices measure official respect for the rule of law, the absence of official corruption, the efficiency of judiciary system, and tax compliance. These indices range from one to ten, with higher values indicating less corruption and greater respect for the law and tax code. Family control is negatively and significantly correlated with all four measures of government integrity. After controlling for *per capita* GDP, judicial corruption and tax avoidance remain significant factors relating to family control.

The next two variables measure connections between firms and governments. The first is from Faccio (2003) and indicates the percentage of firms closely connected to a top government official, such as a minister or MP. The second evaluates the extent to which governments generally pick winners in awarding subsidies and grants. A higher score indicates that government subsidies are directed at future winners. Family control seems more dominant in countries where political connections are more widespread, and where government subsidies have a higher chance of landing on future losers. Both pieces of evidence point to a prevalence of political rent-seeking in these countries.

Olson (1963, 1982) argue that political rent-seeking retards growth because entrenched elites lobby to preserve institutions. It starves real investments of capital

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

where rewards to rent-seeking activities are higher than to entrepreneurial pursuits (Krueger, 1974). Moreover, the high returns from bribing and lobbying politicians would attract a country's most talented individuals to rent-seeking activities, rather than improving productivity and output (Murphy *et al.* 1991). The strong link between family control and rent-seeking opportunities suggest that established business families might be part of the circular problem of corruption and low growth described by Morck and Yeung (2004).

Financial Markets

The development of financial markets plays a critical role in nations' economic growth (King and Levine, 1993; Levine and Zervos, 1998). However, Rajan and Zingales (2003) argue that financial market development seems purposely depressed in many countries. Olsen (1963, 1982) argues that extensive political rent-seeking impedes growth, and Rajan and Zinglaes (2003) further argue that corporate elites might favor a weakened financial system because this would starve new firms of financing, and prevent the rise of new competition that might lead to the demise of their incumbent firms. Similarly, Morck *et al.* (2000) and Johnson and Mitton (2003) show that ineffective financial markets serve the interests of dominant families by limiting entry from upstarts. It follows that more family control of large corporations might be associated with weaker financial markets.

Table VII gauges three aspects of the availability of external financing: the legal protection available to shareholders and creditors, financing from domestic sources, and financing from the international capital markets.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

[Table VII about here]

Panel A relates family control of nations' largest business groups to measures of shareholder and creditor protection and accounting disclosure rules. Higher family control is associated with poorer shareholder rights and accounting standards. The relationship is stronger after controlling for country difference in stage of development. Creditor rights appear unimportant to family control.

Panel B relates family control to types of financing available domestically: through borrowing, share issues and venture capital financing. Supplies of capital from domestic sources are less adequate where wealthy families control more large firms. The relationship disappears once *per capita* GDP is controlled for. The underdevelopment of the domestic market might just be a reflection of a market still in development. The prevalence of family control is also associated with higher barriers to entry against new banks. The last variable in this panel measures whether control of corporate assets can be contested through hostile takeovers. The possibility of hostile takeovers is significantly lower where wealthy families control more of the large corporate sector.

Panel C measures capital market openness and financing from international capital flows. Greater family control of the large business sector is associated with less open capital markets, as measured by the number of types of restrictions and by an overall index. The dominance of wealthy families is also related to smaller private capital flows and foreign direct investment, measured in terms of gross and net inflows.

Overall, the results in Table VII suggest that external financing, both domestic and international, is low in countries where a few wealthy families control the largest

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

businesses. One possibility is that wealthy families do not like competition, and they suppress the growth of small firms by lobbying for a weak financial market and tight capital controls.

Labor Rights

Roe (2003) argues that the strength of labor unions determines corporate ownership structure in Western Europe. Ownership concentrates to a handful of large shareholders in order to counter-balance the power of the union. Using the dataset on the regulation of labor assembled by Botero *et al.* (2003), I test Roe's hypothesis with a larger sample of countries.

[Table VIII about here]

Family control indices are negatively correlated with union density, defined as the percentage of the total labor force associated with labor unions. This relationship becomes positive but insignificant after controlling for *per capita* GDP. More extensive family control is also associated with worse old age, health and unemployment benefits. Again, the relationship disappears after controlling for *per capita* GDP. Countries with more extensive family control do provide better worker protection through labor and employment laws. Controlling for *per capita* GDP results in smaller coefficients that are still statistically significant at conventional levels.

3.2. Multiple Regressions

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

In the previous sections, higher family control is shown to correlate with heavier bureaucracies, more government intervention through regulation, higher government ownership of enterprises, poorer investor protection, and weaker financial markets. In this section, stepwise regressions are first used to find the single best explanatory variable among the variables that significantly relate to family control. Next, other variables that strongly correlate with family control in the previous section are added, one at a time, to the regression, with family control as a dependent variable. The log of *per capita* GDP always present as a control variable. Thus, the regressions are of the form:

$$\text{family control} = \beta_0 + \beta_1 * \mathbf{Vs} + \beta_2 * \mathbf{V_I} + \beta_3 * \log(GDP_{96}) + \varepsilon$$

where **Vs** is the variable stepwise picks as the best explanatory variable, and $\mathbf{V_I}$ is a variable significantly related to family control in the previous sections. **Vs** and $\mathbf{V_I}$ run a "horse-race", the one with stronger influence to the dependent variable winning the race.

[Table IX about here]

[Table X about here]

Stepwise regressions suggest "bureaucratic delays" when the dependent variable is the equally-weighted family control index based on the domestic private sector, D_E, or the value-weighted index based on the domestic private sector, D_V, or the equally-weighted index based on the private sector including foreign-controlled firms, P_E. Stepwise suggests "the frequency of price controls" as the best explanatory variable when

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

the dependent variable is the value-weighted index based on the private sector, P_V. Table IX and X show, unsurprisingly, that "red tape" and "price controls" remain significant after another variable is added to the regression.

The frequency of price controls measures how often governments fix prices to control economic activities. Price controls generally require sellers to sell at less-than-market prices, which causes a shortage, or induces buyers to consume more than they normally would. With price controls, the government effectively takes over the resource allocation function of the free market, and the market is inevitably distorted once information discovery and communication channels are blocked.

"Bureaucratic delays (red tape)" and "the frequency of price controls" are both significant if both are put in the same regression. This seems reasonable because these two variables capture two distinct aspects of government: the nature of its intervention – benign or corrupt – and the extent of its power. Regressions 9A.2 and 9B.2 suggest that both are related to the extent of family control.

The index measuring the protection of shareholder rights is significant in 9A.1, 9A.2 and 9A.3, after controlling for red tape and the log of 1996 per capita GDP. Shareholder protection is an important factor even after bureaucracy and the level of economic development are accounted for. This result is consistent with La Porta *et al* (1998), that concentrated ownership in large public companies is associated with poor protection of small shareholders.

Overall, the result suggests that government inefficiency, interventionism, and poor protection of shareholder rights are the paramount factors relating to the extent of family controls.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

4. Conclusions

This paper shows that countries with more extensive family control over their large corporate sectors tend to grow more slowly than other countries at the same initial level of incomes. This supports contentions advanced in various forms by Bebchuk *et al.* (2000), Faccio (2003), Haber (2002), Krueger (1974, 2002), Morck *et al.* (2000), Morck and Yeung (2004), Olson (1963, 1982), Rajan and Zingales (2003), and others who argue that highly concentrated economic power is bad for growth.

I find that family control is more prevalent in the large corporate sectors of countries whose bureaucracies are less efficient, whose governments direct more economic activities, whose political rent-seeking opportunities are likely more lucrative, and whose financial markets are less functional. The last appears to entail weak property rights for outside shareholders.

These findings support more detailed arguments, along the lines of those advanced by Shleifer and Vishny (1994), to explain why concentrated economic power should have this effect. They argue that many countries operate some form of "crony capitalism", in which those close to political authorities gain privileged access to government favors. These favors generally have large economic value, such as preferential access to credits, preferential treatment in taxes, the granting of import licenses, and the awarding of government contracts. Murphy *et al.* (1991, 1993) argue that such high returns to investing in political connections can starve genuine investments of capital. Morck and Yeung (2004) argue that wealthy families controlling groups of large, established corporations are likely to excel at political rent-seeking.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Shleifer and Vishny (1994) and Krueger (2002) argue that cronyism engenders several layers of capital misallocation. Politicians misallocate capital across firms by directing it towards firms run by those they favor. Politically connected insiders controlling those companies then misallocate capital within their firms by investing it in value destroying projects. Finally, all of this attracts corrupt politicians to public service, which likely impedes efficient capital allocation within the public sector itself.

Finally, Khanna and Palepu (1997), Khanna and Rivkin (1999), Khanna and Palepu (2000a), Khanna and Palepu (2000b), Khanna (2000c), and others find that large firms belonging to corporate groups controlled by extremely wealthy families tend to outperform independent firms across a range of developing countries. Juxtaposed against the findings of this paper, this implies that extremely wealthy firms control the best performing large firms in the worst performing economies. This is consistent with these firms' performance being superior because of lucrative political rent-seeking, which destroys wealth for the economy as a whole.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Bibliography

Amit, Raffi and Belén Villalonga. 2004. How do family ownership, management, and control affect firm value. Harvard Business School Working Paper.

Anderson, Ronald, and David Reed, 2003. Founding Family Ownership and Firm Performance: Evidence from the S&P 500. *Journal of Finance* 58: 1301-29.

Baumol, William J. 1990. Entrepreneurship: Productive, Unproductive, and Destructive. *Journal of Political Economy* 98 (5: part 1): 893-921.

Bebchuk, Lucian, 1999. A Rent-Protection Theory of Corporate Ownership and Control. NBER Working Paper 7203.

Bebchuk, Lucian, Reinier Kraakman, and George Triantis. 2000. Stock Pyramids, Cross Ownership and Dual Class equity: The Mechanisms and Agency Costs of Separating Control from Cash Flow Rights. In R. Morck ed. *Concentrated Corporate Ownership.* National Bureau of Economic Research Conference Volume. University of Chicago Press.

Bertrand, Marianne, Paras Mehta, and Sendhil Mullainathan. 2002. Ferreting Out Tunneling: An application to Indian Business Groups. *Quarterly Journal of Economics* 117(1): 121-148.

Botero, Juan, Simeon Djankov, Rafael La Porta, Florencio Lopez-de-Silanes and Andrei Shleifer, 2003. "The Regulation of Labor," NBER Working Paper #9756.

Burkart, Mike, Fausto Panunzi and Andrei Shleifer, 2002. Family Firms. NBER Working Paper 8776.

Chandler, Alfred. 1994. *Scale & Scope: The Dynamics of Industrial Capitalism* Harvard University Press.

Claessens, Stijn, Simeon Djankov, and Larry H.P. Lang. 2000. The Separation of Ownership and Control in East Asian Corporations, *Journal of Financial Economics* 58 (1-2): 81-112.

De Long, Bradford, and Andrei Shleifer, 1993. Princes and Merchants: European City Growth Before the Industrial Revolution. *Journal of Law and Economics* 36: 671-702.

De Soto, Hernando, *The Other Path: the Invisible Revolution in the Third World*, 1989. New York: Harper & Row Publishers.

Deininger, Klaus, and Lyn Squire, 1996. Measuring Income Inequality: a New Database. World Bank Economic Research Group.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Demsetz, Harold, and Keneth Lehn. 1985. The Structure of Corporate Ownership: Causes and Consequences. *Journal of Political Economy* 93 (6): 1155-77.

Desai, Mihir, Alexander Dyck, and Luigi Zingales, 2003. Corporate Governance and Taxation. Unpublished Mimeo.

Djankov, Simeon, Rafael La Porta, Florencio Lopez-de-Silanes and Andrei Shleifer, 2002. The Regulation of Entry. *Quarterly Journal of Economics*, 117: 1-37.

Doidge, Craig, G. Andrew Karolyi, and Rene Stulz, 2004. Why are Foreign Firms Listed in the U.S. Worth More? *Journal of Financial Economics* 71: 205 – 38.

Dyck, Alexander, and Luigi Zingales, 2004. Private Benefits of Control: An International Comparison. *Journal of Finance* 59 (2): 537-600.

Dyck, Alexander, 2001. Ownership Structure, Legal Protections and Corporate Governance. In Alexander Dyck ed. *Annual World Bank Conference on Development Economics 2000*, 291-330.

Faccio, Mara, 2003. Politically Connected Firms – Can They Squeeze the State? University of Notre Dame Working Paper.

Faccio, Mara, Larry Lang, and Leslie Young, 2001. Debt and Expropriation. Working Paper.

Fisman, Raymond, 2001. Estimating the Value of Political Connections. *American Economic Review* 91 (4): 1095 – 102.

Haber, Stephen, Noel Maurer, and Armando Razo, 2002. Sustaining Economic Performance under Political Instability: Political Integration in Revolutionary Mexico. In Haber ed. *Crony Capitalism and Economic Growth in Latin America: Theory and Evidence*. Hoover Institution Press, Stanford, California.

Hellman, Joel, Geraint Jones, and Daniel Kaufmann, 2000. Seize the State, Seize the Day: State Capture, Corruption and Influence in Transition. World Bank Policy Research Working Paper 2444.

Johnson, Simon, Rafael La Porta, Florencio Lopez-de-Silanes, and Andrei Shleifer. 2000. Tunneling. *American Economic Review* 90(2): 22 – 27.

Johnson, Simon, and Todd Mitton, 2003. Cronyism and Capital Controls: Evidence from Malaysia. *Journal of Financial Economics* 67 (2): 351 – 82.

King, Robert, and Ross Levine, 1993. Finance and Growth: Schumpeter Might Be Right. *Quarterly Journal of Economics* 108(3): 717 – 38.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Khanna, Tarun, and Jan Rivkin, 1999. Estimating the Performance Effects of Networks in Emerging Markets. Academy of Management Best Paper Proceedings.

Khanna, Tarun, and Krishna Palepu, 1997. Why Focused Strategies May be Wrong for Emerging Markets. *Harvard Business Review* 75 (4): 41-51.

Khanna, Tarun, and Krishna Palepu, 2000a. Is Group Affiliation Profitable in Emerging Markets? An analysis of Diversified Indian Business Groups. *Journal of Finance* 55 (2): 867-91.

Khanna, Tarun, and Krishna Palepu, 2000b. Emerging Market Business Groups, Foreign Investors, and Corporate Governance. In R. Morck ed. *Concentrated Corporate Ownership*. National Bureau of Economic Research Conference Volume. University of Chicago Press.

Khanna, Tarun, 2000c. Business Groups and Social Welfare in Emerging Markets: Existing Evidence and Unanswered Questions. *European Economic Review* 44 (4-6): 748-61.

Krueger, Anne. 1974. The Political Economy of the Rent-Seeking Society. *American Economic Review* 64 (3): 291-303.

Krueger, Anne, 2002. Why Crony Capitalism is Bad for Economic Growth. In Stephen Haber ed. *Crony Capitalism and Economic Growth in Latin America: Theory and Evidence*. Hoover Institution Press.

La Porta, Rafael, and Florencio Lopez-de-Salinas, 1999. The Benefits of Privatization: Evidence from México. *Quarterly Journal of Economics* 114 (4): 1193 – 1242.

La Porta, Rafael, Florencio Lopez-de-Salinas, Andrei Shleifer and Robert Vishny. 1997a. Legal Determinants of External Finance. *Journal of Finance* 52 (3): 1131-1150.

La Porta, Rafael, Florencio López-de-Silanes, Andrei Shleifer and Robert Vishny. 1997b. Trust in large organizations. *American Economic Review* 87(2): 333 – 9.

La Porta, Rafael, Florencio Lopez-de-Salinas, Andrei Shleifer and Robert Vishny. 1998. Law and Finance. *Journal of Political Economy* 106 (6): 1113-57.

La Porta, Rafael, Florencio Lopez-de- Silanes, and Andrei Shleifer. 1999a. Corporate Ownership Around the World. *Journal of Finance* 54(2): 471-517.

La Porta, Rafael, Florencio Lopez-de-Silanes, Andrei Shleifer and Robert Vishny, 1999b. The Quality of Government. *Journal of Economics, Law and Organization* 15: 222-279.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

La Porta, Rafael, Florencio Lopez-de- Silanes, and Andrei Shleifer, 2000a. Investor Protection and Corporate Governance. *Journal of Financial Economics* 58 (1-2): 3-27.

La Porta, Rafael, Florencio Lopez-de-Silanes, Andrei Shleifer, and Robert Vishny, 2000b. Government Ownership of Banks. National Bureau of Economic Research Working Paper 7620.

Levine, Ross and Sara Zervos, 1998. Stock Markets, Banks, and Economic Growth. *American Economic Review* 88 (3): 537 – 58.

Mauro, Paolo, 1995. Corruption and Growth. *Quarterly Journal of Economics* 110: 681-712.

Morck, Randall, David A. Stangeland, and Bernard Yeung, 2000. Inherited Wealth, Corporate Control, and Economic Growth: The Canadian Disease. In R. Morck ed. *Concentrated Corporate Ownership.* National Bureau of Economic Research Conference Volume. University of Chicago Press.

Morck, Randall and Bernard Yeung, 2004. Family Control and the Rent-Seeking Society. *Entrepreneurship Theory and Practice* 28 (4): 391 – 409.

Morck, Randall, Michael Percy, Gloria Tian and Bernard Yeung. 2003. The Rise and Fall of the Widely Held Firm in Canada. NBER Conference on the History of Corporate Ownership: The Rise and Fall of Great Business Families.

Murphy, Kevin M., Andrei Shleifer, and Robert W. Vishny 1993. Why is Rent-Seeking Costly to Growth? *American Economic Review* 83 (2): 409-414.

Murphy, Kevin M., Andrei Shleifer, and Robert W. Vishny. 1991. The Allocation of Talent: Implications for Growth. *Quarterly Journal of Economics* 106(2): 503-30.

Nam, Il Chong, 2004. Recent Developments in the Public Enterprise Sector of Korea. In *Governance, Regulation, and Privatization in the Asia-Pacific Region*, University of Chicago Press.

Nenova, Tatiana. 2003. The Value of Corporate Votes and Control Benefits: A Cross-Country Analysis. Harvard University Economics Working Paper.

North, Douglass, 1981. Growth and Structural Change. New York, NY: Norton.

North, Douglass, 1990. Institutions, Institutional Change and Economic Performance. Cambridge University Press.

Olson, Mancur Jr. 1963. Rapid Growth as a Destabilizing Force, *Journal of Economic History* 23 (4): 529-52.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Olson, Mancur Jr. 1982. *The Rise and Decline of Nations*. New Haven: Yale University Press.

Pérez-González, Francisco. 2001. Does Inherited Control Hurt Firm Performance? Unpublished Manuscript. Columbia University.

Rajan, Raghuram, and Luigi Zingales, 2003. The Great Reversals: The Politics of Financial Development in the 20th Century. *Journal of Financial Economics* 69 (1): 5 – 50.

Rauch, James, 1995. Bureaucracy, Infrastructure, and Economic Growth: Evidence from U.S. Cities During the Progressive Era. *American Economic Review* 85: 968-79.

Roe, Mark, 2003. Political Determinants of Corporate Governance, Oxford University Press.

Shleifer, Andrei, and Robert Vishny, 1994. Politicians and Firms. *Quarterly Journal of Economics*, 109 (4): 995 – 1025.

Stulz, René. 1988. Managerial Control of Voting Rights: Financing Policies and the Market for Corporate Control. *Journal of Financial Economics* 20: 25-54.

Schumpeter, Joseph A. 1912. Theorie der Wirtschaftlichen Entwichlung, Leipzig, Dunker und Humbolt. Translation by R. Opie (1934) published as The Theory of Economic Development: An Inquiry into Profits, Capital, Credit, Interest, and the Business Cycle. Cambridge Mass: Harvard University Press.

Valadares, Silvia Mourthe, and Ricardo Pereira Câmara Leal, Undated. Ownership and Control Structure of Brazilian Companies. Universidade Federal do Rio de Janeiro working paper.

Wiwattanakantang, Yupana, 2001. Controlling Shareholders and Corporate Value: Evidence from Thailand, *Pacific Basin Finance Journal* 9: 323 – 62.

World Bank, 1994. *Bureaucracts in Business: The Economics and Politics of Government Ownership.* World Bank Policy Research Report, Oxford University Press.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Table I. Family Control Indices

Family control indices are based on the largest ten conglomerates in the private sector, and are calculated as the fraction of firms that are majority-controlled by wealthy families in 1996. D_V and D_E are based on the largest ten domestically owned firms and are labor-weighted and equally weighted, respectively. P_V and P_E are based on the largest ten conglomerates including foreign subsidiaries, and are labor-weighted and equally weighted, respectively. Sample includes 41 countries.

	D_V	D_E	P_V	P_E		D_V	D_E	P_V	P_E
Argentina	0.852	0.7	0.749	0.6	Mexico	1.000	1.0	0.887	0.9
Australia	0.061	0.1	0.000	0.0	Netherlands	0.198	0.3	0.198	0.3
Austria	0.839	0.8	0.588	0.6	New Zealand	0.391	0.5	0.141	0.2
Belgium	0.895	0.9	0.738	0.7	Norway	0.334	0.5	0.286	0.4
Brazil	0.913	0.9	0.551	0.5	Pakistan	1.000	1.0	1.000	1.0
Canada	0.415	0.6	0.415	0.6	Peru	1.000	1.0	0.324	0.5
Chile	1.000	1.0	0.530	0.6	Philippines	1.000	1.0	0.681	0.7
Colombia	0.852	0.8	0.732	0.7	Portugal	0.960	0.9	0.869	0.7
Denmark	0.063	0.1	0.063	0.1	Singapore	0.158	0.3	0.000	0.0
Finland	0.250	0.3	0.250	0.3	South Africa	0.568	0.5	0.555	0.5
France	0.382	0.4	0.382	0.4	South Korea	0.614	0.5	0.614	0.5
Germany	0.066	0.1	0.066	0.1	Spain	0.468	0.5	0.414	0.4
Greece	1.000	1.0	0.959	0.9	Sweden	0.732	0.6	0.732	0.6
Hong Kong	0.427	0.7	0.367	0.6	Switzerland	0.145	0.3	0.145	0.3
India	0.963	0.9	0.917	0.8	Taiwan	0.728	0.7	0.655	0.6
Indonesia	0.699	0.9	0.651	0.8	Thailand	1.000	1.0	0.727	0.6
Ireland	0.279	0.2	0.279	0.2	Turkey	1.000	1.0	1.000	1.0
Israel	0.786	0.7	0.786	0.7	United Kingdom	0.159	0.2	0.159	0.2
Italy	0.671	0.5	0.671	0.5	United States	0.188	0.1	0.188	0.1
Japan	0.000	0.0	0.000	0.0	Venezuela	1.000	1.0	0.703	0.7
Malaysia	1.000	1.0	0.948	0.9					

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Table II. Summary Statistics of the Main Variables

		N	Mean	Std Dev	Minimum	Maximum
Family Control of the Private Sector						
% of family control of the largest ten conglomerates in the domestic private sector, employee-weighted	D_V	41	0.611	0.351	0.000	1.000
% of family control of the largest ten conglomerates in the domestic private sector, equally-weighted	D_E	41	0.622	0.327	0.000	1.000
% of family control of the largest ten conglomerates in the private sector, employee-weighted	P_V	41	0.510	0.309	0.000	1.000
% of family control of the largest ten conglomerates in the private sector, equally weighted	P_E	41	0.507	0.280	0.000	1.000
State Ownership Indices						
State ownership index based on the largest ten domestically owned conglomerates of 1996, labor-weighted.	S_L	41	0.394	0.275	0.000	0.885
State ownership index based on the largest ten domestically owned conglomerates of 1996, equally-weighted.	S_E	41	0.392	0.257	0.000	0.900
Sample Characteristics						
1996 real per capita GDP at PPP	y	41	15,270	7,900	1,952	29,194

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Table III. Family Control and Social Economic Development

This table reports correlation coefficients between family control indices and various measures of social economic development and variables measuring the success of large firms. Numbers in parenthesis are probability levels for the null hypothesis that the correlation coefficients are zero.

	Family Control Indices				N
	D_V	D_E	P_V	P_E	
Panel A: Social & Economic Development					
Economic Development: log of real per capita GDP of 1996 at PPP.	**-0.712** **(.00)**	**-0.710** **(.00)**	**-0.627** **(.00)**	**-0.655** **(.00)**	41
Economic Growth: real GDP per capita growth, 1996-2000	**-0.268** **(.09)**	**-0.319** **(.04)**	-0.177 (.27)	-0.246 (.12)	41
Income Distribution: higher GINI coefficient indicates less equally distributed income.	**0.405** **(.01)**	**0.404** **(.01)**	0.240 (.13)	0.232 (.15)	41
Quality of Health: log of average infant mortality rate (70-95)	**0.738** **(.00)**	**0.726** **(.00)**	**0.646** **(.00)**	**0.660** **(.00)**	39
Quality of Infrastructure: higher score indicates roads, air, ports, telecom, and power better meets business needs.	**-0.680** **(.00)**	**-0.621** **(.00)**	**-0.601** **(.00)**	**-0.552** **(.00)**	38
Quality of Education: higher score indicates education more sufficiently meets the needs of a competitive economy.	**-0.419** **(.01)**	**-0.344** **(.03)**	**-0.426** **(.01)**	**-0.375** **(.02)**	38
Panel B: Success of Large Firms					
Employees of the largest ten domestic conglomerates as % of total labor force, 1996	**-0.463** **(.00)**	**-0.402** **(.01)**	**-0.359** **(.02)**	**-0.286** **(.07)**	40
Sales of the largest twenty publicly listed firms as % to GNP, 1994	**-0.515** **(.00)**	**-0.530** **(.00)**	**-0.449** **(.01)**	**-0.443** **(.01)**	35

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Table IV. Family Control and Bureaucracies and Regulatory Burdens

The left panel reports correlation coefficients between family control indices and various measures of bureaucracy, barriers to entry, and government intervention in markets. The right panel reports partial correlation coefficients controlling for the log of 1996 per capita GDP at PPP. Numbers in parenthesis are probability levels for the null hypothesis that the correlation coefficients are zero.

	Simple Correlations				Partial Correlations Controlling for log of 1996 per capita GDP				N
	D_V	D_E	P_V	P_E	D_V	D_E	P_V	P_E	
Panel A: Bureaucracy									
Higher score indicates lower level of red tape, avg. 1972 to 95	**-0.780** (.00)	**-0.754** (.00)	**-0.704** (.00)	**-0.703** (.00)	**-0.484** (.00)	**-0.390** (.02)	**-0.428** (.01)	**-0.349** (.03)	39
Higher score indicates autonomy from political pressure.	**-0.746** (.00)	**-0.772** (.00)	**-0.633** (.00)	**-0.686** (.00)	**-0.437** (.00)	**-0.497** (.00)	**-0.298** (.06)	**-0.373** (.02)	41
Higher score indicates public sector personnel are more competent than their private sector counterparts.	**-0.653** (.00)	**-0.563** (.00)	**-0.594** (.00)	**-0.548** (.00)	**-0.454** (.00)	**-0.303** (.06)	**-0.403** (.01)	**-0.325** (.04)	40
Panel B: Regulatory Burdens									
Higher score indicates better and fair business regulation.	**-0.477** (.00)	**-0.459** (.00)	**-0.440** (.01)	**-0.459** (.00)	-0.081 (.63)	-0.051 (.76)	-0.095 (.57)	-0.103 (.54)	39
Frequency of Price control	**-0.686** (.00)	**-0.606** (.00)	**-0.678** (.00)	**-0.602** (.00)	**-0.460** (.00)	**-0.326** (.05)	**-0.455** (.00)	**-0.308** (.06)	40
Freedom to compete in the private market, 1995	**-0.339** (.05)	**-0.363** (.04)	**-0.299** (.09)	**-0.288** (.10)	-0.003 (.99)	-0.057 (.76)	-0.078 (.67)	-0.052 (.78)	33
Log of the time it takes to obtain legal status of a new business.	**0.623** (.00)	**0.593** (.00)	**0.581** (.00)	**0.564** (.00)	**0.377** (.02)	**0.326** (.04)	**0.350** (.03)	**0.308** (.05)	41

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Table V. Family Control and Bureaucrats in Business

The left panel reports correlation coefficients between family control indices and various measures of government ownership in enterprises, banks, the relative size of SOEs, and the quality of governments when dealing with businesses. The right panel reports partial correlation coefficients controlling for the log of 1996 per capita GDP at PPP. Numbers in parenthesis are probability levels for the null hypothesis that the correlation coefficients are zero.

	Simple Correlations				Partial Correlations Controlling for log of 1996 per capita GDP				N
	D_V	D_E	P_V	P_E	D_V	D_E	P_V	P_E	
Panel A: Government Ownership of Enterprises									
% of SOEs in 1996's largest ten conglomerates, employee-weighted	0.579 (.00)	0.548 (.00)	0.562 (.00)	0.524 (.00)	0.346 (.03)	0.295 (.06)	0.354 (.03)	0.284 (.08)	41
% of SOEs in 1996's largest ten conglomerates, equally-weighted	0.570 (.00)	0.542 (.00)	0.582 (.00)	0.539 (.00)	0.356 (.02)	0.310 (.05)	0.400 (.01)	0.326 (.04)	41
EFW SOE in the economy index	-0.505 (.00)	-0.427 (.01)	-0.576 (.00)	-0.502 (.00)	-0.302 (.07)	-0.187 (.26)	-0.430 (.01)	-0.322 (.05)	40
SOE investment/GDP, avg. 1978-91	0.441 (.01)	0.453 (.01)	0.496 (.00)	0.513 (.00)	0.120 (.51)	0.119 (.51)	0.257 (.15)	0.242 (.18)	34
SOE output/GDP, avg. 78-91	0.356 (.06)	0.388 (.04)	0.391 (.04)	0.442 (.02)	0.236 (.24)	0.277 (.16)	0.294 (.14)	0.352 (.07)	28
Panel B: Government Ownership of Banks									
% of banks governments owned	0.566 (.00)	0.519 (.00)	0.630 (.00)	0.596 (.00)	0.332 (.04)	0.254 (.12)	0.461 (.00)	0.400 (.01)	39
% of commercial banks government owned	0.513 (.00)	0.469 (.00)	0.583 (.00)	0.547 (.00)	0.297 (.07)	0.227 (.17)	0.425 (.01)	0.366 (.02)	39

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Table VI. Family Control and Political Rent-Seeking

The left panel reports correlation coefficients between family control indices and various measures of political rent-seeking. The right panel reports partial correlation coefficients controlling for the log of 1996 per capita GDP at PPP. Numbers in parenthesis are probability levels for the null hypothesis that the correlation coefficients are zero.

	Simple Correlations				Partial Correlations Controlling for log of 1996 per capita GDP				N
	D_V	D_E	P_V	P_E	D_V	D_E	P_V	P_E	
Panel A: Dealing with Governments									
Higher score indicates lower risk of expropriation.	**-0.738** **(.00)**	**-0.728** **(.00)**	**-0.616** **(.00)**	**-0.645** **(.00)**	**-0.338** **(.04)**	**-0.318** **(.06)**	-0.166 (.33)	-0.185 (.27)	40
Higher score indicates lower risk of repudiation of contracts.	**-0.725** **(.00)**	**-0.716** **(.00)**	**-0.599** **(.00)**	**-0.630** **(.00)**	**-0.294** **(.07)**	**-0.272** **(.09)**	-0.126 (.44)	-0.149 (.36)	41
Panel B: Corruption and Rent-Seeking									
Higher value indicates more respect for rule of law	**-0.664** **(.00)**	**-0.633** **(.00)**	**-0.588** **(.00)**	**-0.601** **(.00)**	-0.117 (.48)	-0.030 (.86)	-0.101 (.54)	-0.077 (.64)	40
Higher score indicates less corruption in governments, avg. 1982-95.	**-0.702** **(.00)**	**-0.688** **(.00)**	**-0.607** **(.00)**	**-0.613** **(.00)**	-0.253 (.12)	-0.216 (.18)	-0.172 (.29)	-0.130 (.42)	41
Higher score indicates judiciary systems are more efficient.	**-0.661** **(.00)**	**-0.644** **(.00)**	**-0.618** **(.00)**	**-0.598** **(.00)**	**-0.295** **(.07)**	-0.263 (.11)	**-0.301** **(.06)**	-0.235 (.15)	40
Higher score indicates low levels of tax avoidance.	**-0.649** **(.00)**	**-0.577** **(.00)**	**-0.646** **(.00)**	**-0.589** **(.00)**	**-0.368** **(.02)**	-0.239 (.15)	**-0.437** **(.01)**	**-0.329** **(.04)**	39
% of firms connected to a minister, MP, and close relationships.	0.215 (.20)	**0.267** **(.10)**	**0.281** **(.09)**	**0.298** **(.07)**	0.020 (.91)	0.099 (.56)	0.148 (.38)	0.165 (.33)	38
Higher score indicates that government subsidies are directed at future winners.	-0.219 (.17)	-0.162 (.32)	**-0.330** **(.04)**	**-0.270** **(.09)**	-0.068 (.68)	0.015 (.93)	-0.239 (.14)	-0.158 (.34)	40

Table VII. Family Control and Financial Markets

The left panel reports correlation coefficients between family control indices and various measures of investors' protection, the availability of domestic financial and the international capital flows. The right panel reports partial correlation coefficients controlling for the log of 1996 per capita GDP at PPP. Numbers in parenthesis are probability levels for the null hypothesis that the correlation coefficients are zero.

	Simple Correlations				Partial Correlations Controlling for log of 1996 per capita GDP				N
	D_V	D_E	P_V	P_E	D_V	D_E	P_V	P_E	
Panel A: Investors' Protection									
Higher value indicates more shareholder rights.	-0.247 (.13)	-0.224 (.16)	-0.202 (.21)	-0.191 (.24)	**-0.389** **(.01)**	**-0.355** **(.03)**	**-0.289** **(.07)**	**-0.283** **(.08)**	40
Higher value indicates more rights for creditors at bankruptcy.	-0.078 (.64)	-0.025 (.88)	0.030 (.86)	0.042 (.80)	-0.141 (.40)	-0.066 (.69)	0.013 (.94)	0.028 (.87)	39
Higher value indicates stricter accounting disclosure rules.	**-0.580** **(.00)**	**-0.536** **(.00)**	**-0.431** **(.01)**	**-0.424** **(.01)**	**-0.360** **(.03)**	**-0.297** **(.08)**	-0.190 (.27)	-0.182 (.29)	37
Panel B: Availability of Domestic Financing									
Credit available to private sector, % of GDP, 1996.	**-0.525** **(.00)**	**-0.472** **(.00)**	**-0.468** **(.00)**	**-0.457** **(.00)**	-0.241 (.15)	-0.152 (.36)	-0.202 (.22)	-0.171 (.31)	40
Total value of stock traded as % of GDP, 1996.	**-0.309** **(.05)**	-0.229 (.15)	-0.222 (.17)	-0.152 (.35)	-0.116 (.49)	0.004 (.98)	-0.027 (.87)	0.082 (.63)	40
Higher value indicates venture capital is more readily available.	**-0.511** **(.00)**	**-0.463** **(.00)**	**-0.428** **(.01)**	**-0.397** **(.01)**	-0.203 (.22)	-0.118 (.48)	-0.158 (.34)	-0.087 (.60)	40
Higher value indicates ease to start a new bank.	-0.254 (.11)	-0.246 (.13)	**-0.313** **(.05)**	-0.258 (.11)	-0.222 (.18)	-0.209 (.21)	**-0.290** **(.08)**	-0.219 (.19)	40
Higher value indicates higher possibility of hostile takeovers.	**-0.582** **(.00)**	**-0.543** **(.00)**	**-0.487** **(.00)**	**-0.475** **(.00)**	**-0.383** **(.02)**	**-0.318** **(.05)**	**-0.282** **(.09)**	-0.252 (.13)	40
Panel C: International Capital Flows									
Number of types of capital restrictions out of 12.	**0.567** **(.00)**	**0.510** **(.00)**	**0.564** **(.00)**	**0.510** **(.00)**	0.126 (.45)	0.020 (.91)	0.250 (.13)	0.131 (.43)	39
Capital openness measure (higher value indicates more restrictions.)	**0.559** **(.00)**	**0.536** **(.00)**	**0.551** **(.00)**	**0.499** **(.00)**	0.191 (.25)	0.153 (.36)	0.246 (.14)	0.134 (.42)	39
Gross private capital flows as % of GDP	**-0.370** **(.02)**	**-0.345** **(.03)**	**-0.367** **(.02)**	**-0.381** **(.02)**	-0.0635 (.70)	-0.0113 (.95)	-0.109 (.52)	-0.103 (.54)	39
Gross foreign direct investment as % of GDP, 1996	**-0.503** **(.00)**	**-0.408** **(.01)**	**-0.557** **(.00)**	**-0.502** **(.00)**	-0.236 (.17)	-0.0609 (.72)	**-0.356** **(.03)**	-0.253 (.14)	37
Inflow of foreign direct investment as % of GDP, avg. 76-96	-0.243 (.18)	-0.165 (.37)	**-0.3285** **(.07)**	**-0.333** **(.06)**	-0.109 (.56)	0.02375 (.90)	-0.241 (.19)	-0.246 (.18)	32

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Table VIII. Family Control and Labor Rights

The left panel reports correlation coefficients between family control indices and various measures of labor rights. The right panel reports partial correlation coefficients controlling for the log of 1996 per capita GDP at PPP. Numbers in parenthesis are probability levels for the null hypothesis that the correlation coefficients are zero.

	Simple Correlations				Partial Correlations Controlling for log of 1996 per capita GDP				N
	D_V	D_E	P_V	P_E	D_V	D_E	P_V	P_E	
Union Density and Labor Rights									
% of total labor force affiliated with labor unions.	**-0.288** **(.07)**	**-0.328** **(.04)**	-0.200 (.21)	-0.247 (.12)	0.139 (.39)	0.069 (.67)	0.191 (.24)	0.146 (.37)	41
Higher index value indicates better social security protection of old age, health and unemployment.	**-0.408** **(.01)**	**-0.455** **(.00)**	**-0.333** (.03)	**-0.377** (.02)	0.104 (.52)	0.014 (.93)	0.126 (.44)	0.086 (.60)	41
Higher index indicates better labor protection with labor & employment laws.	**0.456** **(.00)**	**0.446** **(.00)**	**0.378** **(.01)**	**0.359** **(.02)**	**0.317** **(.05)**	**0.301** **(.06)**	0.219 (.17)	0.186 (.25)	41
Higher index value indicates more workers participation in management.	0.086 (.59)	0.048 (.77)	0.046 (.78)	0.008 (.96)	0.054 (.74)	-0.001 (.99)	0.004 (.98)	-0.049 (.76)	41
Higher index indicates more collective bargaining power.	0.244 (.12)	0.158 (.32)	0.170 (.29)	0.110 (.49)	0.201 (.21)	0.077 (.64)	0.100 (.54)	0.018 (.91)	41
Higher index indicates more rights in collective disputes.	**0.308** **(.05)**	**0.287** **(.07)**	0.235 (.14)	0.231 (.15)	0.075 (.65)	0.043 (.79)	0.010 (.95)	-0.010 (.95)	41
Higher index indicates more protection in collective bargaining, participation in management and collective dispute.	**0.258** **(.10)**	0.186 (.24)	0.179 (.26)	0.126 (.43)	0.158 (.33)	0.053 (.74)	0.061 (.71)	-0.016 (.92)	41

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Table IX. Multiple Regressions with "Red-Tape" as an Independent Variable.

Regressions are in the form: family control = $\beta_0 + \beta_1$ * red tape + β_2 * various institution variable + β_3 * log(GDP96) + ε. The dependent variable in Panel A is D_V, in Panel B is D_E, and in Panel C is P_E. Numbers in parentheses are probability levels for t-test rejecting the null hypothesis of zero coefficients.

Panel A	9A.1	9A.2	9A.3	9A.4	9A.5	9A.6	9A.7
Constant	1.93 (.01)	2.14 (.00)	2.21 (.00)	1.75 (.02)	2.87 (.00)	2.69 (.00)	2.29 (.00)
Red Tape	**-0.14 (.02)**	**-0.12 (.02)**	**-0.14 (.02)**	**-0.15 (.01)**	**-0.14 (.01)**	**-0.13 (.02)**	**-0.15 (.02)**
time to obtain legal status	0.06 (.17)						
frequency of price control		**-0.06 (.02)**					
SOE in top 10 domestic firms			0.22 (.25)				
risk of expropriation				**-0.1 (.06)**			
shareholder rights					**-0.06 (.04)**		
possibility of hostile takeovers						-0.06 (.15)	
labor and employment laws							0.08 (.43)
log of 1996 per capita GDP	-0.09 (.35)	-0.06 (.51)	-0.1 (.28)	0.05 (.68)	-0.14 (.12)	-0.12 (.22)	-0.11 (.26)
F-Statistic	20.62 (.00)	23.9 (.00)	20.12 (.00)	21.42 (.00)	21.99 (.00)	19.99 (.00)	19.49 (.00)
Adjusted R^2	0.608	0.65	0.601	0.623	0.63	0.606	0.593
Sample	39	38	39	38	38	38	39

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

[Table IX, continued]

Panel B	9B.1	9B.2	9B.3	9B.4	9B.5	9B.6	9B.7
Constant	2.21 (.00)	2.44 (.00)	2.46 (.00)	2.18 (.00)	3.18 (.00)	2.96 (.00)	2.52 (.00)
Red Tape	**-0.09 (.08)**	**-0.09 (.07)**	**-0.09 (.10)**	**-0.11 (.03)**	**-0.09 (.07)**	**-0.09 (.09)**	-0.09 (.11)
time to obtain legal status	0.06 (.16)						
frequency of price control		**-0.05 (.05)**					
SOE in top 10 domestic firms			0.27 (.15)				
risk of expropriation				-0.07 (.15)			
shareholder rights					**-0.06 (.02)**		
possibility of hostile takeovers						-0.06 (.17)	
labor and employment laws							0.13 (.17)
log of 1996 per capita GDP	-0.14 (.12)	-0.12 (.18)	-0.16 (.08)	-0.04 (.71)	-0.2 (.02)	-0.17 (.07)	-0.17 (.06)
F-Statistic	19.06 (.00)	20.42 (.00)	19.14 (.00)	18.59 (.00)	21.56 (.00)	18.19 (.00)	18.99 (.00)
Adjusted R^2	0.588	0.612	0.589	0.588	0.625	0.582	0.587
Sample	39	38	39	38	38	38	39

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

[Table IX, continued]

Panel C	9C.1	9C.2	9C.3	9C.4	9C.5	9C.6	9C.7
Constant	1.78 (.01)	1.88 (.00)	1.88 (.00)	1.88 (.01)	2.42 (.00)	2.01 (.00)	2.01 (.00)
Red Tape	-0.08 (.11)	-0.07 (.13)	-0.07 (.18)	**-0.10 (.05)**	**-0.08 (.09)**	**-0.09 (.09)**	**-0.09 (.09)**
time to obtain legal status	0.04 (.34)						
frequency of price control		**-0.04 (.07)**					
SOE in top 10 domestic firms			0.25 (.14)				
risk of expropriation				-0.03 (.57)			
shareholder rights					**-0.04 (.10)**		
possibility of hostile takeovers						-0.03 (.43)	
labor and employment laws							0.04 (.66)
log of 1996 per capita GDP	-0.1 (.21)	-0.08 (.31)	-0.12 (.15)	-0.07 (.54)	-0.14 (.09)	-0.1 (.27)	-0.12 (.18)
F-Statistic	13.17 (.00)	14.57 (.00)	14.12 (.00)	12.35 (.00)	14.06 (.00)	10.73 (.00)	12.67 (.00)
Adjusted R^2	0.49	0.524	0.509	0.479	0.514	0.441	0.479
Sample	39	38	39	38	38	38	39

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Table X. Multiple Regressions with "Price Controls" as an Independent Variable.

Regressions are in the form: family control = $\beta_0 + \beta_1$ * price controls + β_2 * various institution variable + β_3 * log(GDP96) + ε. The dependent variable is P_V. Numbers in parentheses are probability levels for t-test rejecting the null hypothesis of zero coefficients.

	10.1	10.2	10.3	10.4	10.5	10.6	10.7
Constant	1.8 (.01)	1.52 (.02)	1.78 (.00)	2.09 (.00)	2.32 (.00)	2.1 (.00)	2.17 (.00)
frequency of price control	**-0.06 (.01)**	**-0.06 (.02)**	**-0.06 (.01)**	**-0.07 (.00)**	**-0.07 (.01)**	**-0.07 (.01)**	**-0.07 (.00)**
time to obtain legal status	0.05 (.24)						
Red Tape		**-0.1 (.05)**					
SOE in top 10 domestic firms			**0.32 (.06)**				
risk of expropriation				-0.02 (.75)			
shareholder rights					-0.02 (.54)		
possibility of hostile takeovers						-0.02 (.68)	
labor and employment laws							0.03 (.70)
log of 1996 per capita GDP	-0.12 (.07)	-0.02 (.86)	-0.11 (.07)	-0.11 (.26)	-0.15 (.03)	-0.12 (.09)	-0.14 (.03)
F-Statistic	14.63 (.00)	15.42 (.00)	16.19 (.00)	13.62 (.00)	13.83 (.00)	11.97 (.00)	13.72 (.00)
Adjusted R^2	0.512	0.539	0.539	0.499	0.503	0.464	0.495
Sample	40	38	40	39	39	39	40