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Corporate Stability and Economic Growth:
Is What's Good for General Motors Good for America?

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Abstract

What is good for a country's leading corporations is generally not good for the country's overall economy. Turnover in the list of a country's top ten corporations between 1975 and 1996 is associated with faster overall economic growth, faster productivity growth, and (in high income countries) faster capital accumulation. This is critically due to old leading firms declining or disappearing, as well as to new firms arising, and this turnover appears to 'cause' economic growth. We interpret this as consistent with Schumpeter's (1912) theory of creative destruction, and its subsequent formalizations, such as Aghion and Howitt (1992), in which growth entails creative new firms destroying old stagnant ones. Our findings are much stronger in high than low income countries, suggesting that creative destruction plays a greater role in the growth of more developed economies. Creative destruction appears to be more intense where government is smaller, Common Law holds sway, banking systems are smaller, shareholder rights are better protected, and the economy is more open. Only the last is more important in low than high income countries.

Corporate Stability and Economic Growth

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1. Introduction

National economies have landmark corporations. Maersk shipping symbolizes Denmark's maritime history, just as Nokia marks Finland's success in the "new economy." Many, especially the principals of such great corporations, link 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."

A positive link might reflect large corporations prospering because they are well managed and the wealth they create for all their stakeholders spills over to the rest of the economy. D'Cruz and Rugman (2000) and others stress how large firms can coordinate efforts to create and capture economies of scale and scope. Schumpeter (1942), Romer (1986) and others argue that large, quasi-monopolistic firms create and finance the innovation that fuels economy growth. Schumpeter (1942) also proposes that the job security large firms provide lets managers and workers participate in high risk-high return undertakings that would entail unacceptable career risk in smaller firms.

But other plausible arguments link the continuous dominance of the same large firms to economy stagnation. Schumpeter (1912), Aghion and Howitt (1992, 1998), Aghion *et al.* (1999), and others link innovations *per se* to the turnover of dominant firms, making the continuous dominance of a set of great corporations a symptom of stagnation. Nelson and Winter (1982) visualize firms as collections of "routines" that develop slowly and resist change. Routines that fit current economic conditions – institutional constraints, consumer preferences and production technologies – let firms with the right routines prosper. But as economic conditions change,

upstarts with new routines displace past winners that cannot change their routines. Krueger (1974), Helpman and Grossman (2002), and others argue that large established firms might invest political rent-seeking, manipulating their economies' institutions to lock in the *status quo* and block upstarts. Or, welfare maximizing governments might lock in the *status quo* if voters genuinely prefer slow stable growth to faster but more chaotic growth.

Despite their fundamental importance, little empirical work explores these theories. In part, this may be because they apply to the very long run – time measured in generations, not years. Clear empirical tests require reliable data over a sufficiently long term for a sufficient number of economies.

This paper is a first pass at relating large corporate sector turnover to long-run growth. We measure the stability of the large corporate sectors of 44 countries over 1975 to 1996. We use this period because it includes the first and last years for which we had comparable lists of leading companies when we began this project. We relate these indexes to long run growth at the end of this window, gauged by real *per capita* gross domestic product (GDP) growth, capital accumulation, and total factor productivity (TFP) growth from 1990 to 2000. A ten year window smoothes business cycle and transient crisis effects.

Economies whose top 1975 corporations declined more grow faster than other countries with the same initial *per capita* GDP, level of education, and capital stock.[1] Faster productivity growth and capital accumulation are both observed, but the former is more significant. For richer countries, declines in the importance of large old private sector firms drives the result. For poorer countries, turnover involving sometime state own enterprises underlies our findings.

[1] 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.

Low turnover of dominant corporations is related to high government spending, high regulatory barriers to entry, Civil Code legal systems, bank-centered financial systems, weak outside shareholder protection, and lack of openness. Two stage least squares using measures of these factors as instruments suggests they play a role in linking large corporate turnover to growth.

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 and causality issues. Section 5 concludes.

2. Data and Variables

This section describes the raw data used to construct our corporate stability indexes. It then explains the indexes themselves, the growth measures and the other variables central to our empirical tests.

2.1 Corporate Sector Data

Our data are hand 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 spectrum of businesses: privately held companies, publicly held companies, cooperatives, and state controlled enterprises (S.C.E.s).[2] This circumvents sample selection problems due to stock exchanges, and hence listed firms, being less important in some countries than others. Comparisons with annual reports show the 1978 volume to contain mainly1975 figures, so we call this 1975 data. The

[2] We use the term *state controlled enterprise* (S.C.E.) rather than *state owned enterprise* (S.O.E.) because the state may hold a control block without owning the firm outright.

1998/99 volume generally contains 1996 figures, so we call it 1996 data. We choose these years because they are the earliest and latest data available when we began this project.

Our final sample of 44 countries, listed in Table 1, meets the following criteria.

1. The country must appear in both the 1978 and 1998/99 editions of *Principals of International Business*. This eliminates transition economies.

2. We delete small economies whose tenth largest company has fewer than 500 employees and which have less than ten companies whose labor forces are listed in both editions. This removes very small countries from the sample. This is because microstate economies may be fundamentally different from larger countries.

3. We drop countries involved in major wars, including civil wars, between 1975 and 1996.

4. We require data on education levels and the total value of capital assets for each country because these initial conditions are known to affect economy growth, and are needed as controls in our subsequent regression analyses.

5. We require comparable national income accounts data to be available so that we can construct comparable economic growth measures. This limits us to countries included in the Penn World Tables.

[Table 1 about here]

2.2 Measuring the Continued Dominance of Top Corporations

We take each country's top firms to be its ten largest employers. We gauge firm size by employees because this lets us include both public and private firms. The latter typically do not disclose their assets or sales, other common measures of firm size. 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 necessitates controlling for country size in the subsequent analysis.

The next issue is what sorts of firms to include. We exclude enterprises that are not normally included in countries' private sectors: educational services (SIC: 82), health services (SIC: 80), membership organizations (SIC: 86), noncommercial research organizations (SIC: 8733), and government agencies (SIC: 91-97). Beyond this, a degree of judgment is inevitable, for excluding any or all of three other categories of firms might also be reasonable.

Financial sector firms might be excluded. King and Levine (1993) show that capital market development positively affects growth. Including financial companies in our list of dominant firms might capture spuriously the impact of financial system development on growth.

Foreign owned enterprises might be excluded. Multinational subsidiaries are plausibly more affected by global conditions than by their host countries' 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. Hence, including foreign owned enterprises might capture spuriously the impact of openness on growth.

Any firm that was state controlled for any part of our window might be excluded. S.C.E.s 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 S.C.E.s 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.

To deal with these issues, we produce alternative continued dominance indexes based on each of the following lists of top ten firms in 1975 and again in 1996:

- List I – Includes all enterprises: financial and non-financial, domestically controlled and foreign controlled, as well as private sector and state controlled. Privatizations and nationalizations are taken as continuations of the same firm, but S.C.E.s that fail, are taken over, or are broken up are classified as not surviving.
- 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 S.C.E.s. 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, S.C.E.s, and foreign controlled firms.

For each country, we use each list to construct a set of *employee-weighted continued dominance indexes* of the form

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

where L_i is the labor force of the i^{th} largest employer on the relevant list for that country in 1975, and the dirac delta function δ_i is

$$d_i = \begin{cases} 1 & \text{if firm } i \text{ is in the top ten lists for both years} \\ 0 & \text{otherwise} \end{cases} \qquad (2)$$

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

We weigh each firm by its 1975 labor force, rather than that in 1996, to avoid endogeneity problems, although the more recent numbers are probably less error prone. To ensure that the 1975 figures are accurate, we examine old financial statements, adjacent years' *Dun and Bradstreet* data, and detailed corporate histories, and made corrections where necessary. As a robustness check, we use analogous employee-weighted indexes, Φ_{L96}, based on 1996 labor forces. The results are qualitatively unchanged.

As a further robustness check, and to side-step concerns about the accuracy of employee counts, we construct equally weighted indexes based on the same top 10 firm lists. Thus, our *equally weighted continued dominance indexes* are

$$\Phi_E = \frac{1}{10}\sum_{i=1}^{10} d_i \qquad (3)$$

To construct all of these indexes, we must match company names in our 1975 lists with those in our 1996 lists. One complication is the different presentation of some company names in the two volumes. For example, some Malaysian company names contain 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, the Japanese company listed in the 1975 data as *Sumitomo Kinzoku Kogyo KK* is listed under the English translation of its name, *Sumitomo Metal Industries Limited*, in 1996.

Mechanically matching names in the 1975 and 1996 volumes also misses companies that deliberately change their names. To correct this, we research the detailed histories of the ten largest employers in each country in both years. This requires reading histories of big business in each of the countries, scanning through newspaper records, and, in many cases, telephoning archivists at particular companies. These efforts, plus telephone inquiries of bankers, brokers, and finance professors in different countries, clarify the identities of all the corporations in our sample. Judgment calls are inevitable, and the procedure used to resolve ambiguous cases is detailed in the Appendix.

2.3 Measuring the Continued Importance of Top Corporations

We wish to see if a stable list of top firms affects economic growth. Our continued dominance index is open to the criticism that rapid growth might create new large firms that displace existing ones, even though the old top firms remain important. To deal with this, we directly gauge the continued importance of old dominant firms. The meaning of 'important' can vary.

One natural approach is to define a 1975 top ten firm as still 'important' in 1996 if it either remains in the top ten list or grew at least as fast as the country's GDP from 1975 to 1996. Another defines 'important' as having grown at least as fast as GDP regardless of the 1996 top ten list. Yet other alternatives define 'important' as retaining at least *n* percent of its 1975 labor force, where *n* can be e.g. 50%, 25%, 10%, or 0%.

All these approaches improve on our continued dominance indexes by taking explicit account of firms eclipsed from the top ten lists, but tracking the economy's growth nonetheless. But compared to the more cleanly defined continued dominance indexes, their disadvantage is that each uses an arbitrary definition of 'important'. All these alternative continued importance indexes yield very similar empirical results. The tables below therefore describe results using the first variant only.

We define a top ten 1975 firm as having 'continued as an important firm' if it remains in the top ten list for 1996 *or* if its labor force grows at least as fast as the economy's total GDP from 1975 to 1996. That is, we define a country's *employee-weighted continued importance index* as

$$\Omega_{L75}^{GDP} = \frac{\sum_{i=1}^{10} \max[d_i, h_i] L_i}{\sum_{i=1}^{10} L_i} \tag{4}$$

where L_i is 1975 labor force,

$$h_i = \begin{cases} 1 \ \textit{if firm i grew at least as fast as GDP in the period} \\ 0 \ \textit{otherwise} \end{cases} \tag{5}$$

and d_i is as in (2). Again, we construct one such index for each variant of the top ten list, plus a set of equally weighted indexes analogous to (3) and denoted Ω_E^{GDP}.

The 1996 fate of each 1975 top ten firm is ascertained first by checking the 1996 Dun and Bradstreet data. These are cross checked against company websites, business history books, and biographies of the 1975 principals. Once again, judgment calls are unavoidable. For example, some firms spin off divisions. Although the core firm may be smaller in 1996, the aggregation of all successor firms might be large. In general, we follow the principal successor firm only. In some cases, this is impossible. For example, the Argentine state controlled 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 case, we take the combined employees of the two successor firms in assigning continued importance to the predecessor firm.

Table I Panel A reports continued dominance and continued importance indexes based on lists I and V for each of our 44 countries. For expository convenience and brevity, we refer to these collectively as our stability indexes.

Interpreting 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 continued dominance index for the United State is Φ_{L75} = 0.531. This means that 53% of the employees of the top 10 firms of 1975 worked for firms that would remain 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: Φ_{E} = 0.6 for Japan means that six of the top ten employers in 1975 were still among the top ten in 1996. More developed countries generally exhibit less turnover of dominant firms.

We generically refer to the continued dominance and continued importance indexes as corporate stability indexes. The stability indexes are all highly positively correlated. Among

developed countries, only Austria has a maximally inclusive continued dominance index, 0.83, substantially different from its minimally inclusive counterpart, 0.15. However, among developing countries, the two often differ more, mainly because of more S.C.E.s in the top ten lists. A similar pattern is evident in the continued importance indexes. The equally weighted and labor weighted minimally inclusive continued dominance indexes are also similar except in Italy and Sweden, whose largest firms are more continually dominant than their other top ten firms. The employee weighted and equally weighted minimally inclusive continued dominance indexes are likewise quite similar, except in Denmark, Israel, Italy and Sweden.

The upper panels of Table 2 Panel A present univariate statistics for our stability indexes.

[Table 2 about here]

2.4 Measuring Economic Growth

Ideally, we would measure economic growth subsequent to, and therefore potentially 'caused by' corporate stability. However, Schumpeter (1912, 1942) and others stress that the economic effects we study operate only over the very long term – time measured in generations rather than years. To augment our data with more time periods would require going further back in time to the mid and early 20th century. This is not possible given available data, so we are limited to cross section regressions. We therefore use our corporate stability indexes, measured over 1975 to 1996, to explain long run growth at that window's endpoint.

Long run growth cannot be measured easily at a point in time, for annual growth rates are contaminated by business cycles and even transient crises. We therefore gauge long term growth using observed growth over a window attached to 1996. Requiring that the window begin at

1996 would let us use past stability to predict future growth – an econometrically desirable temporal arrangement of variables. However, a short window beginning in 1996 generates noisy variables because it is dominated by economic crises years in East Asia and parts of Latin America. A longer window beginning in 1996 is not possible yet, for many countries publish national income accounts data with a lag of several years and these are rendered in comparable form in the Penn World Tables only after further delay. Moreover, a longer window beginning in 1996 would also induce noise, for corporate stability changes in its early years might affect economic growth in its later years.

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

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

from 1990 to 2000 – a ten year window roughly centered on the endpoint of the window over which we gauge large corporate sector stability. Data are from the Penn World Tables, Version 6.1, which include comparable national income accounts figures through 2000.[3] GDP figures are in US dollars at purchasing power parity, and inflation-adjusted to 1996 dollars to remove differences in inflation rates and living costs across countries. Since $\Delta \ln(y) \cong \Delta y / y$, we interpret $\Delta \ln(y)$ as a fractional growth rate in *per capita* GDP.

The Penn World Tables let us 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, $\Delta\ln(k)$, from 1990 to 2000. To estimate *ln(k)* at each endpoint, we assume an initial capital stock of zero for 1950 and construct a time series $K_{i,t}$ of total stock of physical capital in country *i* in year *t* recursively as

$$K_{i,t+1} = K_{i,t} + I_{i,t} - \delta K_{i,t} \qquad (7)$$

[3] The Penn World Tables are available from the National Bureau of Economic Research at www.nber.org.

where $I_{i,t}$ is aggregate real investment for country i in year t, 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 yields *per capita* real physical capital stock. This procedure is similar to that in King and Levine (1994).

We then follow the methodology of Beck, Levine and Loayza (1999) to estimate each country's TFP growth as the growth in its *per capita* GDP minus 0.3 times the growth of its *per capita* physical capital.[4]

The second panel of Table 2 presents summary statistics. The mean of 0.22 for $\Delta \ln(y)$ indicates that the typical country's *per capita* GDP rose by about 22% from 1990 to 2000 in 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 measures are wide: from -8.3% (Venezuela) to 62.4% (Israel) in total growth, from -4.2% (Venezuela) to 46.7% (Israel) in total factor productivity growth, and from -21.7% (South Africa) to 67.4% (Korea) in real *per capita* physical capital accumulation.[5]

3. Findings

Or central finding is that a more stable list of large corporations is associated with slower growth. We first show this with simple correlations and then turn to regressions analogous to the basic models surveyed in Mankiw (1995), but adding corporate stability as an additional independent variable. The section concludes with a robustness discussion.

[4] Caselli (2003) shows that this decomposition of economy growth changes nontrivially if the capital share exceeds 0.3. As robustness checks, we experimented with a range of capital share assumptions. Estimates based on Caselli's methodology and constant assumptions up to 0.4 generate results similar to those shown. We follow the popular approach of setting the capital share to 0.3 in the tables.

3.1. Simple Correlations

Table 2 Panel B presents simple correlations between our growth measures with our continued dominance and continued importance indexes. The maximally inclusive stability indexes are all significantly negatively correlated with *all three* growth measures, save that equally weighted continued dominance is uncorrelated with TFP growth. The minimally inclusive indexes – which drop financial, foreign controlled, and state controlled firms – tell a slightly different story. Total *per capita* GDP growth and TFP growth are also negatively correlated with all the minimally inclusive stability indexes, save the labor weighted continued dominance index. However, capital accumulation is uncorrelated with all four minimally inclusive stability indexes

3.2 Regressions of Long-Term Economic Growth on Corporate Stability

Economic growth rates are known to be higher for countries with lower initial levels of income, more educated workforces, and more extensive capital assets.[6] Table 2 Panel B shows that our corporate sector stability indexes 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 therefore follow Mankiw (1995) and regress the growth measures on a corporate stability index controlling for initial income, initial stock of physical capital, and initial stock of human capital. Thus, we run regressions of the form

[5] Another approach would look analogously at the turnover in each country's list of leading industries. We are pursuing this elsewhere. While this might seem a simpler line of attack, data problems actually make it considerably more complicated.

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

$$\begin{bmatrix} economy \\ growth \\ rate \end{bmatrix} = b_0 + b_1 \begin{bmatrix} initial \\ income \\ level \end{bmatrix} + b_2 \begin{bmatrix} initial \\ physical \\ capital \end{bmatrix} + b_3 \begin{bmatrix} initial \\ human \\ capital \end{bmatrix} + b_4 \begin{bmatrix} corporate \\ stability \\ index \end{bmatrix} + e \qquad (8)$$

where the *economic growth rate* is either *per capita* GDP growth, TFP growth, or capital accumulation and *corporate stability index* is one of the stability indexes, all as defined above.

The control variables in (8) are as follows.

Initial income is the logarithm of 1990 real PPP US dollar *per capita* GDP, ln(y), as in the Penn World Tables. Initial physical capital stock is the logarithm of real *per capita* physical capital in 1990, ln(k), from (7) in 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, ln(h), from Barro and Lee (2000).

We also wish to insure that differences in country size do not affect our results. The top ten firms in a small economy might be smaller in absolute size than those in a large economy; and yet might constitute a larger part of the overall corporate sector. We initially control for this by including country size as a control. To gauge country size, we use the logarithm total 1990 GDP, adjusted to 1996 dollars at purchasing power parity exchange rates, which we denote *ln(Y)*, from Penn World Table 6.1. Thus, the two sets of regressions we run take the forms

$$growth = b_0 + b_1 \ln(y) + b_2 \ln(k) + b_3 \ln(h) + b_4 \Phi + e \qquad (9)$$

and

$$growth = b_0 + b_1 \ln(y) + b_2 \ln(k) + b_3 \ln(h) + b_4 \ln(Y) + b_5 \Phi + e \qquad (10)$$

Table 3 presents regression coefficients.

[Table 3 about here]

Panel A reports full details for regressions using minimally inclusive equal weighted continued dominance indexes. Panel B reports similar details for regressions using the analogous continued importance indexes. The indexes all attract significant negative coefficients in regressions explaining *per capita* GDP and TFP growth. That is, a more stable list of dominant corporations is associated with slower economic growth and slower productivity growth. Remarkably, the mere survival of old leading firms is significantly associated with slower growth, slower productivity growth, and even slower capital accumulation. The results for our continued importance indexes are actually more significant than those for continued dominance!

Panel C reports the regression results using continued dominance or importance indexes based on each variant list of top ten firms described above. For brevity, it reports only the regression coefficients on those indexes. Stability is still generally negatively related to economy growth. The most consistently significant results are that the continued importance of old top firms is negatively associated with both *per capita* GDP growth and TFP growth. The continued dominance of large old firms is also negatively associated with these growth measures, but the coefficients are only significant in seven of the ten specifications. Both stability measures also attract negative coefficients in regressions explaining capital accumulation, but these are significant in less than half the specifications.

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 continued dominance index, Φ_E, in the GDP growth regressions in Panel A 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.

The relationships between the continued importance of 1975 top ten firms and both economic growth and productivity growth are more *economically significant* than the analogous effects for their continued dominance. Again, we focus on the minimally inclusive sample. A one standard deviation increase in the labor-weighted continued importance 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 continued importance 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 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 indexes is associated with *per capita* capital accumulation lower by 27.4% and 32%, respectively, of its standard deviation.

In summary, corporate sector stability accounts for a substantial part of the variation in economic growth across countries. The regressions show the displacement of top ten firms by other firms to be somewhat tied to rapid growth. But rapid growth is most evident in countries whose old top ten firms actually fade in importance.

3.4 Rich or Poor?

Interestingly, including S.C.E.s in the list of dominant firms relates the continuous dominance of large corporation (Lists II and III) to slower capital accumulation (Panel C of Table 3). S.C.E.s

are more pervasive in the top ten lists of lower income economies, whose capital markets are typically ill developed. S.C.E.s might affect growth either by helping bridge this gap or by widening it as they crowd out private investment or otherwise impede financial development. More generally, Gerschenkron (1962) and others argue that economic growth in rich countries differs qualitatively from that in poor countries "catching up." Therefore, we examine the relationship between growth and corporate stability in subsamples of initially rich and poor countries.[7]

[Table 4 about here]

Table 4 reproduces the regressions of Table 3 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.

Among richer countries, slower *per capita* GDP and total factor productivity growth are associated with higher minimally inclusive corporate stability indexes, which include only non-financial private sector domestically controlled firms. Capital accumulation is unrelated to any indexes in rich countries. Including foreign controlled enterprises generates quite similar results, with only slightly less statistical significance. Including S.C.E.s render all the indexes entirely insignificant. Thus, for developed countries, turnover in the dominance and importance of top non-financial domestically controlled private sector firms is associated with faster growth.

Among poorer countries, significant results obtain only if S.C.E.s are *included* in tallying the continued dominance or importance of large corporations. For these countries, labor-

[7] Aghion *et al*. (2004) develop a comprehensive formal model based on Gerschenkron's insight. Our results in this section broadly support their model's validity.

weighted continued dominance and continued importance are both associated with slower real *per capita* GDP growth, total factor productivity growth, and capital accumulation. These results highlight that the stability of large S.C.E.s 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. They also suggest that, in developing countries, the turnover of dominant firms in the private sector seems unrelated to growth.

3.5 Robustness Tests

These basic results in Tables 3 and 4 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.

Residual diagnostics analyses show 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. Generalized White tests also reject heteroskedasticity.

Other versions of the continued importance indexes behave similarly to those shown in the tables. Defining continued 'importance' as a 1975 top ten firm either remaining in the 1996 top ten list or retaining 50%, or 25%, or 10% of its 1975 employment in 1996 generates qualitatively similar results to those described above. So does defining continued 'importance' as retaining 50%, or 25%, or 10% of its 1975 employment in 1996 regardless of the top ten lists for that year. These alternative indexes all capture the extent to which 1975 dominant firms avoid

being marginalized, or disappearing entirely, while the reported indexes capture the extent to which they remain important.[8]

One alternative stability index we constructed does generate qualitatively different results. We developed a continuity of control index, which looks at the family name of each company's top executive in 1975 and 1996. Our idea was to capture the fraction of the top ten corporate sector that remained under the control of the same individuals or families over the two decades. Labor-weighted and equal weighted indexes of continuity of control are uncorrelated with GDP growth, productivity growth, and capital accumulation. One interpretation is that creative destruction requires more than a turnover of top management. A turnover in large corporations, and perhaps in their intangible corporate routines as well as physical assets, is needed. Another is that our continuity of control index is too noisy to be of use because different last names may correspond to continuity if CEOs are replaced by nephews, acolytes, and the like; and that the same last name may correspond to discontinuity if a son's policies differ greatly from his father's. Further research is needed to clarify these issues.

Sensible variants of our control variables yield qualitatively similar results to those shown in the tables.

We control for country size by including the logarithm of total 1990 GDP, our starting point in measuring economy growth. This is because the top ten firms in a small economy might be smaller in absolute size than those in a large economy; and might also constitute a larger part of the overall corporate sector. Excluding this variable leaves our results qualitatively unchanged. So does using the logarithm total 1975 GDP, 1990 population, or the country's area

[8] Since results based on these other versions of the continued importance indexes are similar to those the tables we do not report them to conserve space. These results are available from the authors upon request.

in square kilometers.[9] Another approach, including as an additional control variable the total 1975 labor force of the 1975 top ten firms as a fraction of national population (or GDP) in 1975, also generates qualitatively similar results to those shown.

The industrial structure of an economy might also matter. Specifically, dependence on natural resources might affect corporate sector stability 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) as an additional control variable preserves the rough magnitudes and significance levels of the stability measures.[10]

In a further set of robustness tests, we substitute two alternative productivity growth measures for those used in the tables. Proposed by Mankiw (1995) and Hall and Jones (1999), respectively, these consider human capital as a factor of production. These alternatives reduce the significance of the continued dominance indexes, but not of the continued importance indexes.

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

[9] One alternative approach is to adjust the compositions of our lists of large firms, however this is operationally difficult because gleaning accurate corporate histories in remote countries is often quite involved and also introduces new elements of arbitrariness. We leave this to possible future research.

[10] 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 variables in *per capita* GDP and TFP growth regressions.

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 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.

4. Institutional Underpinnings

The previous section shows that greater private sector corporate stability is associated with slower economic growth, slower total factor productivity growth, and, albeit less significantly, with less capital accumulation. This is consistent with creative destruction underlying economic growth. It also begs the question of why some countries have more stable large corporate sectors than other countries. Although many factors doubtless matter, we focus on differences in economic institutions, for these have also been related to long term growth. Our finding that, for developing countries, the result is evident only if S.C.E.s are included in tallying corporate continuity raises the possibility that the State may play a role in these differences. Other institutional arguments we consider turn on financial sector development and openness.

To explore these institutional arguments, we test for relationships between variables plausibly related to them and to our stability indexes: $\Phi_{L,75}$, Φ_E, Ω_L^{GDP}, and Ω_E^{GDP}. These tests are regressions of the form

$$\begin{bmatrix} corporate \\ stability \\ index \end{bmatrix} = b_0 + b_1 \begin{bmatrix} initial \\ income \\ level \end{bmatrix} + b_2 \begin{bmatrix} initial \\ physical \\ capital \end{bmatrix} + b_3 \begin{bmatrix} initial \\ human \\ capital \end{bmatrix} + b_4 \begin{bmatrix} institutional \\ development \\ measure \end{bmatrix} + e \quad (11)$$

where the initial income, physical capital, and human capital controls are as in (9) and (10). These regressions use equal and labor weighted continued dominance and continued importance indexes constructed using all five sets of lists. The institutional development variables reflect the three sets of arguments introduced above, and so include measures of the economic role of the government, the development of the financial system, and the country's openness to the global economy.

4.1 The Economic Role of Government

The size of the government sector might plausibly underlie the observed relationship between corporate sector stability 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 the government views the country's large corporations as important providers of steady middle-income jobs that promote these ends, it might intervene to stabilize its large corporate sector.[11] A benign government might view general economic stability as a public good *per se*.[12] Large corporations can also be handy channels through which politicians can effect social and political policies, as in Högfeldt (2004). Politicians, benevolent or self interested,

[11] 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.)

[12] 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."

might protect such corporations to preserve their power.[13] For these or other reasons, benevolent politicians might act to preserve established large firms even if this retards growth.

Regardless of which reason is paramount, state intervention to stabilize large corporations can slow growth in a variety of ways. Government *crowds out* private investment, as in neo-Keynesian macroeconomics. Government intervention adds political risk to normal business risks, deterring investment. Red tape, delays, and other political fixed costs block entry by new firms, as in Djankov *et al.* (2002) Krueger (1974), and Olson (1963, 1982). All three link slow growth to high stability.

Alternatively, a country's government might be controlled to some extent by its great corporations, and manipulated to their benefit – see Hayek (1960). Stigler (1971) argues that large corporations capture the bureaucrats who regulate them, and Beason and Weinstein (1996) and others present evidence of this. Tullock (1967) argues more generally that returns to political rent-seeking rise with the extent of state interventionism.[14] Krueger (1993), Murphy *et al.* (1991, 1993), and others argue that, if governments make rent-seeking more lucrative, firms divert resources to rent seeking and away from real investment, slowing growth.[15] This line of reasoning is consistent with our earlier finding that the stability indexes that include S.C.E.s best explain slow growth in low income countries.[16]

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[13] 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.

[14] Morck and Yeung (2004) argue that large, established, family controlled corporate groups are especially able rent-seekers.

[15] Though Haber *et al.* (2003) argue that government capture by the business elite may be an optimal second best outcome absent the rule of law.

[16] Fisman and Svennson (2000), Fisman (2001), Fisman and Di Tella (2001), Johnson and Mitton (2003), and others document the first-order importance of political rent-seeking in low-income economies.

We gauge the sheer importance of government in the economies of each country with 1975 public sector consumption over GDP, as reported in *World Development Indicators*. As a more nuanced measures of the role of the government in the economy, we also use the 1975 GINI coefficients from Deininger and Squire (1996) and the World Income Inequality database to measure income inequality, a *legal origin indicator* variable set to one for Common Law legal systems and to zero for Civil Code systems, and a measure of red tape barriers to entry. The legal origin indicator is from La Porta *et al.* (1997b), who link Common Law legal origins to better government institutions, especially to an independent judiciary and reduced official corruption. The red tape barrier measure is the logarithm of the "time required to obtain legal status for new business" in days, from Djankov (2002, Table 3). Unfortunately, the last variable is measured as of 1999, and so might be a result of faster growth or corporate sector instability, rather than a cause. We examine it because entry barriers are clearly relevant to our stability measures, but concede that interpreting its coefficients is problematic.

[Table 5 about here]

Panel A of Table 5 shows that higher government consumption is significantly correlated with greater labor weighted stability indexes; but only if they are based on lists IV and V, which exclude financial companies and SCEs. This is consistent with big government favoring the continued dominance of established leading private sector firms. Greater stability is usually not significantly related to income equality, undermining the idea that this might promote egalitarian goals. The coefficients are consistently, though seldom significantly, negative – perhaps hinting that such goals exist, or perhaps that more entrepreneurial economies are less egalitarian. Civil

Code legal systems and longer delays in establishing new businesses legally are also associated with more stable large corporate sectors, but only using indexes based on Lists I, II, or III, which include S.C.E.s.

More stable large corporate sectors are thus associated with Civil Code legal systems and with worse red tape if we include S.C.E.s in our lists of leading companies. Otherwise, only the sheer size of government is related to larger stability indexes.[17]

4.2 Financial Development

Schumpeter (1912, 1939) argues that a well-functioning financial system is a prerequisite for rapid economic growth because it allows innovative entrepreneurial firms to obtain financing. Outside investors' legal rights in disputes with corporate insiders in different countries are highly positively correlated with current financial development measures.[18] King and Levine (1993) present evidence that countries with better developed financial systems do grow faster.[19] Schumpeter (1912) also holds that the rise of these innovative new firms necessitates the demise of established, non-innovative firms – a process he dubs *creative destruction*. This suggests that better functioning financial systems and stronger investor legal rights might be associated with more active creative destruction, and hence with both faster growth and lower corporate stability

[17] In passing, we ask whether corporate sector stability might have laudable social *outcomes*. However, 1996 GINI coefficients are uncorrelated with our stability indexes, as are changes in GINI coefficients from 1975 to 1996. Other equality or social policy outcome measures – unemployment, the variance of the unemployment rate, and indicator variables for various sorts of crises – are also unrelated to our stability indexes. The only exception is hardly breathtaking: 'government crises' are less frequent in rich countries with contemporaneously more stable large corporate sectors. If governments stabilize their large corporate sectors to promote such social goals, these interventions seem of limited success.

[18] See La Porta *et al*. (1997a, 1997b, 1998, 1999, 2000), Levine *et al*. (2003), and others. Rosenthal and Lamoreaux (2004a, 2004b), Aganin and Volpin (2004) and others argue that this cross-country relationship is a recent phenomenon. For overviews, see Glaeser and Goldin (2004) and Morck and Steier (2004).

[19] See also 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.

indexes.[20]

Digging deeper, Rajan and Zingales (2003) ask why, given this, so many countries' financial markets are presently ill developed and their investors ill protected. The disinterested and efficient enforcement of private property rights is essential to financial sector development, and that some countries fail to protect such property rights – perhaps for historical and cultural reasons.[21] Or, the insiders of large dominant firms might use their political influence to weaken their countries' financial sectors.[22] This creates a barrier to entry against upstart rivals, blocks creative destruction, and thus should both retard growth and raise our stability indexes.

To measure financial market development, we use first the sheer size of the financial system and then measures of finer characteristics that reflect its dexterity. Our size measures are 1975 credit to private sector and 1978 stock market capitalization. Both are expressed as fraction of GDP, and are from Beck *et al.* (1999) and the World Development Indicators database. Our measures of the dexterity of the financial system are the creditor and shareholder rights tallies assembled by La Porta *et al.* (1998).[23]

Panel B of Table 5 show that a large banking system (private sector credit is large relative

[20] A related issue, raised by Rajan (1992) and others, is whether bank or stock market development matters more. Beck and Levine (2002) and Levine (2002) present evidence suggesting this is a second order issue. But see also e.g. Maurer and Haber (2004).

[21] La Porta et al. (1997a, 1997b, 1998), Stulz and Williams (2003), and others.

[22] See Morck, Stangeland, Yeung (2000), Pagano and Volpin (2001), Rajan and Zingales (2003), Perotti and Volpin (2004), Morck, Wolfenzon, and Yeung (2004), and others.

[24] La Porta et al. (1998) index creditor rights from zero to four, assigning one point each when: (1) the country imposes restrictions, such as creditors' consent or minimum dividends to file for reorganization; (2) secured creditors are able to gain possession of their security once the reorganization petition has been approved (no automatic stay); (3) secured creditors have first priority on distribution of proceeds from asset sales of a bankrupted firm; and (4) management does not have to stay pending the resolution of a reorganization. Their shareholder right index ranges from zero to six, assigning one point each when: (1) proxy vote by mail is allowed; (2) shareholders are not required to deposit their shares prior to the General Shareholders' Meeting; (3) cumulative voting or proportional representation of minorities in the board of directors is allowed; (4) an oppressed minority mechanism exists; (5) the minimum percentage of share capital that entitles a shareholder to call for an Extraordinary Shareholders' Meeting is less than or equal to 10 percent, and (6) shareholders have preemptive rights that can only be waved by a shareholders' vote.

to GDP) is associated with greater equally weighted stability indexes, regardless of which lists are used. In contrast, stock market size is unrelated to stability. Yet creditor rights appear unimportant, while shareholder rights are associated with reduced stability indexes based on any lists that include SECs.

That a large banking system is associated with a more stable large corporate sector is consistent with other work. For example, Morck and Nakamura (1999) and Morck *et al.* (2000) argue that Japanese banks use their corporate governance influence to induce stability, rather than growth and dynamism, in that country's large corporations because their primary concern is the timely repayment of loans, rather than firm value maximization. Likewise, Perotti and von Thadden (2003) argue that economies whose median voter values stability more, as a way of protecting her human capital investment, are biased towards bank as opposed to stock market development, because banks act in this way.

Our shareholder rights measures are for the 1990s, rather than for 1975, and thus might measure effects, rather than causes of large corporate sector stability. For example, countries with large state controlled sectors in 1975 might have enacted shareholder rights so that privatizations would fetch more for their treasuries. However, La Porta *et al.* (1997a, 1997b) argue that shareholder rights are strongly correlated with Common Law legal origin, which did not change. The finding in Panel A that Common Law systems are associated with reduced stability when S.C.E.s are included in compiling those indexes suggests that S.C.E.s are less durable in Common Law countries, which provide stronger shareholder rights. One possibility is that governments in these countries may be more prone to privatize S.C.E.s when their social purposes cease, and these firms are then taken over, merged, or permitted to fail. Civil Code

countries, with weaker shareholder rights, may find privatization less remunerative, and so hold on to their S.C.E.s.

4.3 Openness to the Global Economy

Trade openness encourages firms to specialize according to their countries' comparative advantages, while capital account openness lets domestic firms access capital from a broader range of investors. Standard trade and investment theories imply that either form of openness should enhance growth. From 1975 through 1996, most economies grew far more open, and this appears to have induced more rapid growth.[24] Lower stability indexes might thus reflect increasing openness forcing corporate sector adjustments to changing comparative advantage, capital costs, and competitive pressures.

Politicians might wield protectionism as a tool to protect established corporations from more efficient foreign competitors.[25] Or, protectionism might be adopted for purely ideological reasons, and the ensuing corporate stability might be an unintended consequence. Regardless, openness seems to limit rent-seeking more generally, for Rajan and Zinglaes (2003) argue that the principals of large established firms were less successful at restricting entry by hobbling financial systems in more open countries. This might be because politicians' ability to serve special interests is more restricted in more open economies.[26] If openness correlates with reduced rent seeking and easier entry by new firms, it should also correlate with higher growth and lower stability indexes.

[24] See Sachs and Warner (1995), Henry (2000a, 2000b, 2003), Bekaert *et al*. (2004), and others. But see also Edison *et al*. (2002).
[25] See Krueger (1993), Morck *et al*. (2000), Johnson and Mitton (2003), Rajan and Zingales (2003), and others.
[26] *Ibid*.

We capture trade openness with exports plus imports over GDP and capital account openness with foreign direct investment inflow over GDP. Panel C of Table 6 shows less trade and capital account openness corresponding to greater stability of leading private sector firms (lists IV and V).[27]

4.4 Rich and Poor Countries

The pattern in Panel A of Table 6 is almost entirely due to high income countries. In addition, we find that red tape costs and delays are associated with greater stability indexes in high income countries even if we used sample IV and V (no financial companies and S.C.E.s) in compiling those indexes. Restricting the regressions in Panel A to low income countries yields few significant coefficients, but consistently negative signs on government size – big governments are (insignificantly) associated with less stability in their large corporate sectors. Red tape is associated (again insignificantly) with more instability and turnover if the indexes include only private sector firms. When lists of top firms include a broader range of enterprises, no clear pattern of signs remains. Greater 1975 inequality is significantly associated with less subsequent stability of large firms, but only if those indexes include S.C.E.s.

The positive relationship between the banking system's size and high stability indexes is due to high income countries, and is not present in low income countries at all. The link between greater shareholder rights and lower large corporate sector stability when those indexes include S.C.E.s is significant in high and low income countries alike. Recall that the analogous

[27] Nevertheless, the result on trade openness is weak. Our trade openness variable is for 1975. The impact of openness on stability could stem from both the level of openness and the increase in openness. The former is positively related to 1975 trade openness while the latter could behave in the opposite manner. Hence, the two forces could offset each other. We included change in trade openness from 1975 to 1996 as a right hand side variable, overlooking endogeneity. We still found little significance for both the change and the initial level of trade openness.

relationship with legal origin is significant only in high income countries. One interpretation of this is that Civil Code countries with extensive state-controlled sectors boosted shareholder rights so privatized S.C.E.s would fetch higher prices when sold to public shareholders.

In contrast, the pattern in Panel C, which reveals greater large private sector instability and turnover in more open countries, is due almost entirely to low income countries. Trade and capital account openness are uncorrelated with our indexes in high income countries, but the patterns evident in panel C are statistically significant in low income countries. Protectionism appears more important to large corporate sector stability in low income countries.

4.5 Further Robustness Checks

Residual diagnostics tests show that our results are not driven by outliers, and heteroskedasticity problems are rejected in generalized White tests.

If we substitute other variables likely to capture the same effects as those used, we obtain similar results. For example, using government spending instead of government consumption, or cost of obtaining legal status for a new business as fraction of per capita GDP in 1999 instead of number of days of delay, yields results qualitatively similar to those in Panel A of Table 6. Using total domestic credit over GDP, rather than total credit to the private sector over GDP yields similar results to those shown in Panel B. Using the modified index of trade openness recommended by Frankel (2000) generates results similar to those in Panel C[28].

[28] Frankel (2000) points out that smaller countries are naturally more dependent on trade than larger ones, and so recommends "imports over GDP minus all foreign countries' GDP over world GDP." Intuitively, in a world without border, imports over GDP should equal foreign production over world production. If imports are higher than this, the economy is more open.

4.6 The Direction of Causality

The previous discussion shows that corporate sector stability is associated with a range of preexisting economy characteristics. Although using our continued importance index as well as our continued dominance index mitigates endogeneity and reverse causality problems, we can now return to this issue better armed.

[Table 6 about here]

Table 6 displays two stage least squares (2SLS) regressions analogous to those in Table 3. In the first stage, we regress a stability index on all the mid 1970s characteristics of the economy used in Table 5: government size, GINI coefficient, Common Law legal origin, banking system size, stock market size, capital account openness (FDI), and trade openness. Coefficients with p-levels below 15% are set to zero using a stepwise algorithm. In a few cases in Panel C, no explanatory variables meet this criterion, so we predict stability with the explanatory variable whose coefficient has the lowest p-level in a bivariate regression. All of this lets us calculate predicted stability indexes for each country based on information available in the mid 1970s. In the second stage, we rerun the regressions in Table 4 using these predicted indexes rather than the actual indexes.

Panel A of Table 7 shows a clear pattern, although significance levels vary. Greater predicted corporate sector stability implies slower growth, especially slower total factor productivity growth. The pattern occurs for stability indexes constructed from lists including S.C.E.s, foreign firms, and financial firms; and for indexes based only on private domestic nonfinancial firms. If lists containing S.C.E.s are used, labor weighted indexes are more

significant, whereas if lists based only on private sector, domestic, nonfinancial firms are used, the equal weighted indexes perform better.

Panel B shows that, in rich countries, large corporate sector stability *implies* low growth, low productivity growth, and low capital accumulation. These patterns are especially significant for indexes based on lists of large private sector firms, but near conventional significance levels even when S.C.E.s are included – and surpass them in predicting low capital accumulation.

Panel C shows that corporate sector stability is generally a poor predictor of growth in low income countries. The notable exception is if the indexes are based on List II (private sector firms and S.C.E.s) or III (private sector domestic firms and S.C.E.s). Including financial institutions (List I) or dropping S.C.E.s (Lists IV and V) shrouds the relationship. Other than that, our indexes and growth measures are at best tenuously linked in low income countries, and we are reluctant to divine too much from panel C.

Cook's D statistics identify Ireland as an outlier in the regressions of panel B (though not in Panel A). Dropping it preserves the pattern of signs shown in the panel, and either improves the p-levels or leaves them unchanged throughout. Heteroskedasticity is rejected in the regressions of all three panels.

Instrumental variables techniques such as that used in Table 7 are vulnerable to a range of statistical criticisms. If we abstract from these, as is common in the literature, we can conclude that large corporate sector turnover 'causes' economic growth.

Less ambiguous approaches to determining the direction of causality, such as Granger Sims tests, require panel data. A panel of higher frequency stability data is unlikely to be useful. Schumpeter (1912) argues that creative destruction acts over the very long term –generations, not years. A useful panel of data would require augmenting our data with stability indexes for cross

sections of countries in the 1950s, 1930s, and 1910s. Gathering and cleaning our existing lists of firms was a monumental task, and repeating this for earlier periods is beyond the scope of this study. We hope to pursue this in future research.

Despite these limitations, Table 6 is instructive in that it shows the size of government, the nature of the legal system, the development of the financial system, and economic openness to be intimately related to turnover in a country's list of leading corporations. This underscores the likely importance of the underlying institutional explanations discussed above for why different countries' lists of leading firms are more or less stable, and thus validates the exercise of Table 5. That these explanations are broadly consistent with creative destruction, and further swing the weight of evidence towards large corporate sector turnover 'causing' growth.

However, evidence of causation in one direction need not preclude concurrent reverse causality, or latent factors that 'cause' both turnover and growth. Regressions similar to those in Table 6, but including the residual component of the stability indexes as well as the predicted components, confirm this. The components of the indexes *not predicted* by government characteristics, financial development, and openness also intermittently statistically significantly predict economic growth – especially in continued importance index regressions analogous to Panel A and an apparently random smattering of regressions for low income countries. This could reflect any or all of several things. Our instrumental variables might fail to capture all the variation in stability due to institutional factors. Or stability might 'cause' slow growth through other channels. Or slow growth might also 'cause' stability. Or some other latent effect may 'cause' both. We are reluctant to fish randomly for variables to add to Tables 5 and 6, but welcome additional institutional or other explanations that might suggest other useful instruments.

5. Conclusions

Countries whose rosters of leading corporations change less from 1975 through 1996 exhibit lower economic growth and total factor productivity growth in the 1990s. This effect is most evident in higher income countries, where stable lists of leading corporations also correlate with reduced capital accumulation in the 1990s. This effect is not due to new behemoths arising to push aside the still prosperous giants of 1975. It is due at least as much to old ones waning as to new ones waxing.

A list of large corporations that changes less from 1975 to 1996 is associated with a larger government sector in 1975, a Civil Code legal system, and higher barriers to entry against new firms. Higher corporate sector stability is also associated with a larger banking system and with weaker legal protection for outside shareholders. Openness to the global economy in 1975 correlates with reduced stability in a country's lists of top corporations.

Inferring the direction of causation is difficult. However, two-stage least squares regressions suggest that large corporate sector stability 'causes' growth in high income countries.

These results support Schumpeter's (1912) thesis that economic growth over the very long term requires a process of creative destruction, in which new corporate giants continually rise up to defeat old behemoths. This is especially true in developed countries. For developing countries, continuous direct involvement of government in commercial organizations seems a prime suspect for slowing growth. These results also validate efforts to formalize and extend Schumpeter (1912), such as Aghion and Howit (1997). While we cannot speak to their validity in other time periods or in more specific industry or country subsamples, alternative approaches

that model growth in the tradition of Schumpeter (1942) as due to innovation by large established firms, such as Romer (1986), appear less generally important in recent decades.

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 alternative interpretations of our findings and additional theoretical or empirical work that might cast light upon these issues.

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Table 1 Panel A: Stability Indexes Using 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. Continued dominance indexes are fractions of 1975 top ten firms still in the top ten in 1996, weighted by 1975 employees, Φ_{L75}, or equally, Φ_E. Continued importance indexes are fractions of top ten 1975 firms still in the 1996 top ten *or* having grown at least as fast as total GDP, weighted by 1975 employees, Ω_{L75}^{GDP}, or equally, Ω_E^{GDP}.

Continued	Maximally Inclusive Top 10 List (I)				Minimally Inclusive Top 10 List (V)			
	Dominance		Importance		Dominance		Importance	
	Φ_{L75}	Φ_E	Ω_{L75}^{GDP}	Ω_E^{GDP}	Φ_{L75}	Φ_E	Ω_{L75}^{GDP}	Ω_E^{GDP}
Argentina	0.31173	0.3	0.31173	0.2	0.39277	0.3	0.39277	0.3
Australia	0.66851	0.5	0.66851	0.6	0.73239	0.5	0.73239	0.6
Austria	0.83342	0.6	0.83342	0.5	0.15181	0.1	0.22772	0.2
Belgium	0.40802	0.3	0.40802	0.3	0.53091	0.5	0.53091	0.5
Bolivia	0.74855	0.3	0.74855	0.3	0.18159	0.2	0.27430	0.3
Brazil	0.47057	0.5	0.47057	0.5	0.29455	0.3	0.29455	0.3
Canada	0.40118	0.4	0.40118	0.4	0.57342	0.4	0.57342	0.4
Chile	0.43968	0.4	0.43968	0.4	0.27919	0.3	0.27919	0.3
Colombia	0.28799	0.2	0.28799	0.2	0.60121	0.5	0.60121	0.5
Denmark	0.56300	0.4	0.56300	0.4	0.72525	0.4	0.72525	0.4
Finland	0.78035	0.8	0.78035	0.7	0.57816	0.4	0.57816	0.5
France	0.56400	0.4	0.56400	0.4	0.55802	0.4	0.55802	0.4
Germany	0.76277	0.7	0.76277	0.7	0.73497	0.7	0.73497	0.7
Greece	0.38197	0.3	0.38197	0.3	0.07193	0.1	0.07193	0.1
Hong Kong	0.60582	0.3	0.60582	0.3	0.60582	0.3	0.60582	0.3
India	0.12107	0.1	0.12107	0.1	0.56486	0.4	0.56486	0.4
Indonesia	0.27813	0.2	0.31485	0.3	0.39913	0.3	0.39913	0.3
Ireland	0.45014	0.3	0.45014	0.3	0.39698	0.2	0.39698	0.2
Israel	0.59483	0.6	0.59483	0.6	0.74440	0.4	0.74440	0.4
Italy	0.76126	0.4	0.76126	0.4	0.78853	0.3	0.78853	0.3
Japan	0.72527	0.7	0.72527	0.7	0.59077	0.6	0.59077	0.6
Korea	0.45119	0.5	0.45119	0.5	0.34111	0.4	0.34111	0.4
Malaysia	0.07326	0.1	0.07326	0.1	0.12253	0.1	0.12253	0.1
Mexico	0.76431	0.5	0.76431	0.5	0.62523	0.5	0.62523	0.5
Netherlands	0.79791	0.4	0.83944	0.6	0.84228	0.6	0.84228	0.6
New Zealand	0.20476	0.2	0.20476	0.2	0.06110	0.1	0.24253	0.3
Norway	0.30084	0.3	0.30084	0.3	0.12190	0.1	0.12190	0.1
Pakistan	0.22827	0.4	0.22827	0.2	0.45168	0.5	0.45168	0.4
Peru	0.45936	0.5	0.45936	0.5	0.09775	0.1	0.26775	0.2
Philippines	0.25999	0.2	0.25999	0.2	0.07253	0.1	0.07253	0.1
Portugal	0.34266	0.2	0.34266	0.2	0.08388	0.1	0.08388	0.1
Singapore	0.56019	0.4	0.56019	0.4	0.06400	0.1	0.06400	0.1
South Africa	0.52533	0.4	0.57996	0.5	0.63257	0.5	0.66960	0.6
Spain	0.46344	0.3	0.46344	0.3	0.30168	0.3	0.30168	0.3
Sri Lanka	0.07093	0.1	0.07093	0.1	0.24317	0.2	0.24317	0.2
Sweden	0.78482	0.5	0.78482	0.5	0.78337	0.4	0.78337	0.4
Switzerland	0.79643	0.6	0.83344	0.7	0.83344	0.7	0.83344	0.7
Taiwan	0.39190	0.2	0.39190	0.2	0.62445	0.3	0.62445	0.3
Thailand	0.68630	0.5	0.74212	0.6	0.55994	0.4	0.60927	0.5
Turkey	0.20833	0.1	0.20833	0.1	0.38338	0.2	0.38338	0.2
United Kingdom	0.23128	0.2	0.23128	0.2	0.53862	0.4	0.53862	0.4
United States	0.53122	0.5	0.53122	0.5	0.53122	0.5	0.53122	0.5
Uruguay	0.49031	0.3	0.49031	0.3	0.40564	0.2	0.40564	0.2
Venezuela	0.73656	0.4	0.77755	0.5	0.15545	0.2	0.40070	0.4

Table 1 Panel B Correlations among all Corporate Sector Stability Indexes

Continued	Maximally Inclusive Top 10 List (I) Dominance		Importance		Minimally Inclusive Top 10 List (V) Continued		Dominance	
	Φ_{L75}	Φ_{E}	Ω_{L75}^{GDP}	Ω_{E}^{GDP}	Φ_{L75}	Φ_{E}	Ω_{L75}^{GDP}	Ω_{E}^{GDP}
List I								
Φ_{E}	0.794 (.00)							
Ω_{L75}^{GDP}	0.998 (.00)	0.784 (.00)						
Ω_{E}^{GDP}	0.845 (.00)	0.938 (.00)	0.851 (.00)					
List V								
Φ_{L75}	0.451 (.00)	0.385 (.01)	0.456 (.00)	0.469 (.00)				
Φ_{E}	0.401 (.01)	0.492 (.00)	0.411 (.01)	0.558 (.00)	0.846 (.00)			
Ω_{L75}^{GDP}	0.515 (.00)	0.421 (.00)	0.524 (.00)	0.518 (.00)	0.976 (.00)	0.827 (.00)		
Ω_{E}^{GDP}	0.504 (.00)	0.559 (.00)	0.520 (.00)	0.655 (.00)	0.783 (.00)	0.943 (.00)	0.824 (.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					
Continued Dominance Indexes					
Continued dominance index based on top 10 employers, weighted by the 1975 labor force.	Φ_{L75}	0.489	0.218	.0709	0.833
Continued dominance index based on top 10 employers, equally weighted.	Φ_{E}	0.375	0.170	.0909	0.800
Continued Importance Indexes					
Continued importance index using total GDP growth as benchmark, labor weighted.	Ω_{L75}^{GDP}	0.495	0.223	.0709	0.839
Continued importance index using total GDP growth as benchmark, equally weighted.	Ω_{E}^{GDP}	0.381	0.179	0.100	0.727
Based on Minimally Inclusive List (V) of Top Ten Firms					
Domestic Private Continued dominance					
Continued dominance index based on top 10 employers, weighted by the 1975 labor force.	Φ_{L75}	0.440	0.243	.0611	0.842
Continued dominance index based on top 10 employers, equally weighted.	Φ_{E}	0.332	0.171	0.100	0.700
Domestic Private Continued importance					
Continued importance using total GDP growth as benchmark, labor weighted.	Ω_{L75}^{GDP}	0.460	0.227	.0640	0.842
Continued importance using total GDP growth as benchmark, equally weighted.	Ω_{E}^{GDP}	0.354	0.166	.0909	0.700
Growth Measures					
Growth in per capita GDP in US dollars at PPP, 1990 to 2000	$\Delta\ln(y)$	0.223	0.137	-.0827	0.624
Total factor productivity growth, 1990 to 2000	ΔTFP	0.144	0.100	-.0415	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	.0161	6.617

Sample is the 44 countries listed in Table 1.

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

Index of …		Maximally Inclusive Top 10 List (I)				Minimally Inclusive Top 10 List (V)			
		Continued Dominance		Continued Importance		Continued Dominance		Continued Importance	
		Φ_{L75}	Φ_{E}	Ω_{L75}^{GDP}	Ω_{E}^{GDP}	Φ_{L75}	Φ_{E}	Ω_{L75}^{GDP}	Ω_{E}^{GDP}
Growth Measures									
Per capita GDP growth, '90 to '00	$\Delta\ln(y)$	**-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 TFP growth, '90 to '00	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, '90 to '00	$\Delta\ln(k)$	**-0.299 (.05)**	**-0.276 (.07)**	**-0.305 (.04)**	**-0.262 (.09)**	-.0309 (.84)	-.0796 (.61)	-0.120 (.44)	-0.211 (.17)
Control Variables									
Log of '90 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 '90 per capita capital	$\ln(k)$	**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 over 25 pop. av. years of schooling	$\ln(h)$	**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 '90 total GDP	$\ln(Y)$	.0902 (.56)	0.223 (.15)	.0907 (.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

Table 3: OLS 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 sector stability indexes (List V). 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: Details of Regressions Using Equal-weighted Minimally Inclusive Continued Dominance Indexes

		$\Delta\ln(y)$	ΔTFP	$\Delta\ln(k)$	$\Delta\ln(y)$	ΔTFP	$\Delta\ln(k)$
Constant		0.382 (.21)	0.416 (.06)	-0.111 (.81)	0.229 (.67)	0.441 (.26)	-0.707 (.38)
Continued Dominance, equal-weighted	Φ_E	**-0.269 (.04)**	**-0.205 (.02)**	-0.212 (.26)	**-0.300 (.05)**	**-0.201 (.06)**	-0.316 (.16)
Log of per capita GDP, 1990	$\ln(y)$	.0970 (.42)	-.0419 (.62)	0.463 (.01)	.0961 (.43)	-.0417 (.63)	0.459 (.01)
Log of average years of education	$\ln(h)$	0.168 (.05)	0.146 (.02)	.0736 (.56)	0.174 (.05)	0.145 (.02)	.0942 (.46)
Log of per capita capital assets, 1990	$\ln(k)$	-0.129 (.16)	-.00941 (.88)	-0.397 (.01)	-0.130 (.16)	-.00915 (.89)	-0.403 (.01)
Log of country GDP, 1990	$\ln(Y)$				.00675 (.73)	.00109 (.94)	.0261 (.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	.0908	0.129	0.105
Sample	N	44	44	44	44	44	44

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

Panel B: Details of Regressions Using Equal-weighted Minimally Inclusive Continued Importance Indicies

		$\Delta\ln(y)$	ΔTFP	$\Delta\ln(k)$	$\Delta\ln(y)$	ΔTFP	$\Delta\ln(k)$
Constant		0.412 (.15)	0.442 (.03)	-.0984 (.82)	0.194 (.68)	0.424 (.22)	-0.765 (.30)
Continued Importance, equal-weighted.	Ω_E^{GDP}	**-0.373 (.00)**	**-0.269 (.00)**	**-0.345 (.07)**	**-0.407 (.00)**	**-0.272 (.01)**	**-0.451 (.03)**
Log of per capita GDP, 1990	$\ln(y)$	.0845 (.44)	-.0539 (.50)	0.461 (.01)	.0780 (.49)	-.0544 (.50)	0.441 (.01)
Log of average years of education	$\ln(h)$	0.189 (.02)	0.160 (.01)	.0942 (.44)	0.198 (.02)	0.161 (.01)	0.122 (.33)
Log of per capita capital assets, 1990	$\ln(k)$	-0.120 (.16)	-.000887 (.99)	-0.396 (.00)	-0.118 (.17)	-.000782 (.99)	-0.392 (.00)
Log of country GDP, 1990	$\ln(Y)$				.00996 (.57)	.000831 (.95)	.0304 (.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	0.230	0.155	0.191	0.210	0.162
Sample	N	44	44	44	44	44	44

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

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

Regressions are of the form: growth measure = b_0 + b_1* stability index + b_2*ln(*y*) + b_3*ln(*h*) + b_4*ln(*k*) + e. Dependent variable is 1990 to 2000 *per capita* GDP growth, Dln**(*y*), total factor productivity growth, D*TFP*, or per capita capital accumulation, D**ln**(*k*). D*TFP* is D**ln**(*y*) – 0.3D**ln**(*k*). Independent variables are labor or equal-weighted corporate stability indexes measuring either the proportion of '75 top ten firms still in the top ten in '96, F , or the proportion of '75 top ten firms still in the top ten in '96 or growing no slower than GDP from '75 to '96, O. Control variables are the logs of '90 *per capita* GDP, capital assets *per capita*, and average years of education for adults. All financial variables are in '96 US dollars at purchasing power parity. Only coefficient estimates on corporate stability (b_1) are shown. 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		Continued dominance	D**ln**(*y*) Coef.	p-val.	D*TFP* Coef.	p-val.	D**ln**(*k*) Coef.	p-val.	Continued importance	D**ln**(*y*) Coef.	p-val.	D*TFP* Coef.	p-val.	D**ln**(*k*) Coef.	p-val.
I	Maximally Inclusive	Φ_{L75}	**-0.227**	**(.04)**	**-0.157**	**(.05)**	-0.232	(.15)	Ω_{L75}^{GDP}	**-0.228**	**(.03)**	**-0.159**	**(.04)**	-0.229	(.14)
		Φ_{E}	-0.225	(.13)	-0.170	(.11)	-0.183	(.40)	Ω_{E}^{GDP}	**-0.265**	**(.06)**	**-0.215**	**(.03)**	-0.166	(.42)
II	No Financial Firms	Φ_{L75}	**-0.251**	**(.02)**	**-0.161**	**(.05)**	**-0.302**	**(.06)**	Ω_{L75}^{GDP}	**-0.254**	**(.02)**	**-0.165**	**(.04)**	**-0.297**	**(.06)**
		Φ_{E}	-0.198	(.20)	-0.136	(.22)	-0.207	(.36)	Ω_{E}^{GDP}	**-0.281**	**(.06)**	**-0.208**	**(.06)**	-0.240	(.28)
III	No Financial or Foreign Controlled Firms	Φ_{L75}	**-0.247**	**(.02)**	**-0.153**	**(.05)**	**-0.312**	**(.05)**	Ω_{L75}^{GDP}	**-0.279**	**(.01)**	**-0.179**	**(.02)**	**-0.335**	**(.03)**
		Φ_{E}	**-0.277**	**(.06)**	**-0.190**	**(.08)**	-0.290	(.19)	Ω_{E}^{GDP}	**-0.392**	**(.01)**	**-0.270**	**(.01)**	**-0.408**	**(.05)**
IV	No Financial or State Controlled Firms	Φ_{L75}	**-0.209**	**(.06)**	**-0.160**	**(.04)**	-0.164	(.31)	Ω_{L75}^{GDP}	**-0.220**	**(.04)**	**-0.162**	**(.04)**	-0.193	(.23)
		Φ_{E}	**-0.341**	**(.01)**	**-0.269**	**(.01)**	-0.241	(.25)	Ω_{E}^{GDP}	**-0.350**	**(.01)**	**-0.271**	**(.00)**	-0.263	(.19)
V	No Financial, State, or Foreign Controlled Firms	Φ_{L75}	-0.151	(.12)	-0.105	(.13)	-0.153	(.28)	Ω_{L75}^{GDP}	**-0.220**	**(.03)**	**-0.151**	**(.04)**	-0.231	(.12)
		Φ_{E}	**-0.269**	**(.04)**	**-0.205**	**(.02)**	-0.212	(.26)	Ω_{E}^{GDP}	**-0.373**	**(.00)**	**-0.269**	**(.00)**	**-0.345**	**(.07)**

Sample is the 44 countries listed in Table 1. Numbers in parenthesis are p-values for rejecting the null hypothesis of a zero coefficient.

Table 4: High and Low Income Countries

Panel A: Summary of OLS Regression Coefficients on Corporate Stability Indexes in High Income Countries.

Regressions are of the form: growth measures = b_0 + b_1*corporate structural change variables + b_2*ln(*y*) + b_3*ln(*h*) + b_4*ln(*k*) + e. Dependent variables are 1990 to 2000 *per capita* GDP growth, Dln**(*y*), total factor productivity growth, D*TFP*, and per capita capital accumulation, D**ln**(*k*). D*TFP* is defined as D*TFP* = D**ln**(*y*) – 0.3D**ln**(*k*). Independent variables are labor or equal-weighted continued dominance indexes, measuring the proportion of top ten firms in 1996 that were top ten firms in 1975, and continued importance indexes, measuring the proportion of top ten 1975 firms that 'survive' in 1996. 'Importance' 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. Only coefficient estimates on corporate stability (b_1) are shown. 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..**

		D**ln**(*y*)		D*TFP*		D**ln**(*k*)			D**ln**(*y*)		D*TFP*		D**ln**(*k*)	
.is	**Continued dominance**	**Coeff.**	**p-value**	**Coeff.**	**p-value**	**Coeff.**	**p-value**	**Continued importance**	**Coeff.**	**p-value**	**Coeff.**	**p-value**	**Coeff.**	**p-value**
I	Φ_{L75}	-0.103	(.43)	-.0903	(.42)	-.0433	(.75)	Ω_{L75}^{GDP}	-0.102	(.43)	-.0882	(.43)	-.0455	(.73)
	Φ_{E}	-0.110	(.47)	-0.115	(.38)	.0179	(.91)	Ω_{E}^{GDP}	-0.101	(.51)	-0.108	(.42)	.0209	(.90)
II	Φ_{L75}	-0.104	(.43)	-.0828	(.46)	-.0692	(.61)	Ω_{L75}^{GDP}	-.0965	(.45)	-.0768	(.49)	-.0658	(.62)
	Φ_{E}	-0.121	(.43)	-0.104	(.43)	-.0558	(.72)	Ω_{E}^{GDP}	-.0916	(.56)	-.0752	(.58)	-.0547	(.74)
III	Φ_{L75}	-.0861	(.51)	-.0712	(.53)	-.0495	(.71)	Ω_{L75}^{GDP}	-0.137	(.34)	-0.110	(.37)	-.0890	(.54)
	Φ_{E}	-0.119	(.44)	-0.106	(.43)	-.0441	(.78)	Ω_{E}^{GDP}	-0.158	(.39)	-0.132	(.41)	-.0887	(.64)
IV	Φ_{L75}	-0.178	(.11)	-0.148	(.13)	-0.102	(.38)	Ω_{L75}^{GDP}	**-0.193**	**(.09)**	**-0.159**	**(.10)**	-0.113	(.35)
	Φ_{E}	-0.235	(.13)	**-0.223**	**(.09)**	-.0389	(.81)	Ω_{E}^{GDP}	-0.232	(.12)	-0.208	(.11)	-.0800	(.61)
V	Φ_{L75}	-0.156	(.12)	-0.127	(.14)	-.0982	(.35)	Ω_{L75}^{GDP}	**-0.209**	**(.05)**	**-0.169**	**(.07)**	-0.134	(.24)
	Φ_{E}	**-0.233**	**(.10)**	**-0.217**	**(.07)**	-.0550	(.72)	Ω_{E}^{GDP}	**-0.315**	**(.04)**	**-0.276**	**(.03)**	-0.130	(.43)

Sample includes 22 high-income countries: 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. Numbers in parentheses are probability levels for rejecting the null hypothesis of zero coefficients.

Table 4 (Continued)
Panel B: Summary of OLS Regression Coefficients on Corporate Stability in Low-Income Countries.

Regressions are of the form: growth measures = b_0 + b_1*corporate structural change variables + b_2*ln(*y*) + b_3*ln(*h*) + b_4*ln(*k*) + e. Dependent variables are 1990 to 2000 *per capita* GDP growth, Dln**(*y*), total factor productivity growth, D*TFP*, and per capita capital accumulation, D**ln**(*k*). D*TFP* is defined as D*TFP* = D**ln**(*y*) – **0.3**D**ln**(*k*). Independent variables are labor or equal-weighted continued dominance indexes, measuring the proportion of top ten firms in 1996 that were top ten firms in 1975, and continued importance indexes, measuring the proportion of top ten 1975 firms that 'survive' in 1996. Continued importance 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. Only coefficient estimates on corporate stability (b_1) are shown. 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.**

		D**ln**(*y*)		D*TFP*		D**ln**(*k*)			D**ln**(*y*)		D*TFP*		D**ln**(*k*)	
Lis	**Continued dominance**	**Coeff.**	**p-value**	**Coeff.**	**p-value**	**Coeff.**	**p-value**	**Continued importance**	**Coeff.**	**p-value**	**Coeff.**	**p-value**	**Coeff.**	**p-value**
I	Φ_{L75}	**-0.300**	**(.08)**	**-0.188**	**(.08)**	-0.372	(.22)	Ω_{L75}^{GDP}	**-0.297**	**(.07)**	**-0.190**	**(.06)**	-0.358	(.22)
	Φ_{E}	-0.135	(.63)	-.0594	(.74)	-0.253	(.61)	Ω_{E}^{GDP}	-0.256	(.30)	-0.195	(.20)	-0.203	(.64)
II	Φ_{L75}	**-0.378**	**(.03)**	**-0.220**	**(.05)**	**-0.525**	**(.09)**	Ω_{L75}^{GDP}	**-0.382**	**(.02)**	**-0.229**	**(.03)**	**-0.509**	**(.10)**
	Φ_{E}	-.0570	(.86)	.0163	(.93)	-0.244	(.66)	Ω_{E}^{GDP}	-0.300	(.31)	-0.209	(.26)	-0.302	(.56)
III	Φ_{L75}	**-0.384**	**(.02)**	**-0.217**	**(.04)**	**-0.557**	**(.06)**	Ω_{L75}^{GDP}	**-0.350**	**(.02)**	**-0.205**	**(.03)**	**-0.483**	**(.08)**
	Φ_{E}	-0.292	(.30)	-0.148	(.41)	-0.478	(.34)	Ω_{E}^{GDP}	**-0.393**	**(.07)**	**-0.243**	**(.08)**	-0.501	(.20)
IV	Φ_{L75}	-.0356	(.88)	-.0228	(.88)	-.0427	(.92)	Ω_{L75}^{GDP}	-.0563	(.81)	-.0215	(.88)	-0.116	(.77)
	Φ_{E}	-0.147	(.64)	-.0822	(.68)	-0.217	(.70)	Ω_{E}^{GDP}	-0.210	(.47)	-0.139	(.45)	-0.234	(.65)
V	Φ_{L75}	.0327	(.86)	.0565	(.63)	-.0795	(.81)	Ω_{L75}^{GDP}	-.0773	(.68)	-.0150	(.90)	-0.208	(.53)
	Φ_{E}	-.0342	(.89)	.0139	(.93)	-0.160	(.71)	Ω_{E}^{GDP}	-0.219	(.34)	-0.108	(.46)	-0.369	(.36)

Sample includes 22 low-income countries: 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. Numbers in parentheses are probability levels for rejecting the null hypothesis of zero coefficients.

Table 5: OLS Regressions Explaining Stability

Panel A: Summary of OLS Regression Coefficients on Political Economy Variables.

Regressions are of the form: stability index = b_0 + b_1*political economy variables + b_2*ln(*y*) + b_3*ln(*h*) + b_4*ln(*k*) + e. Dependent variables are labor or equal-weighted continued dominance indexes, measuring the proportion of top ten firms in 1996 that were top ten firms in 1975, and continued importance indexes, measuring the proportion of top ten 1975 firms that 'survive' in 1996. 'Importance' is defined either as growth faster than total GDP growth. Political economy variables include government size (total final government consumption over GDP in 1975), income inequality (1975 GINI coefficient), a zero-one indicator for a Common Law legal system, and red tape delays (days needed to obtain legal status as a new business in 1999. Control variables are the logs of 1975 *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. Only coefficient estimates on economy characteristics (b_1) are shown. 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	Continued dominance	Government size		Income Inequality		Common Law Origin		Red tape delays		Continued importance	Government size		Income Inequality		Common Law Origin		Red tape delays	
		Coef.	p-val.	Coef.	p-val.	Coef.	p-val.	Coef.	p-val.		Coef.	p-val.	Coef.	p-val.	Coef.	p-val.	Coef.	p-val.
I	Φ_{L75}	-.0017	(.77)	-.0012	(.77)	**-.112**	**(.07)**	**.0792**	**(.04)**	Ω_{L75}^{GDP}	-.0017	(.77)	-.0014	(.75)	**-.109**	**(.09)**	**.0802**	**(.05)**
	Φ_{E}	.0010	(.82)	-.0034	(.30)	-.0560	(.26)	.0498	(.13)	Ω_{E}^{GDP}	.0012	(.80)	-.0024	(.48)	-.0522	(.32)	.0514	(.14)
II	Φ_{L75}	-.0027	(.62)	.0005	(.90)	**-.140**	**(.02)**	**.0806**	**(.03)**	Ω_{L75}^{GDP}	-.0031	(.58)	.00045	(.91)	**-.131**	**(.03)**	**.0751**	**(.05)**
	Φ_{E}	.0001	(.98)	-.0044	(.15)	-.0663	(.15)	**.0555**	**(.07)**	Ω_{E}^{GDP}	-.0025	(.57)	-.0023	(.46)	-.0673	(.16)	.0414	(.19)
III	Φ_{L75}	-.0015	(.79)	.0018	(.66)	**-.134**	**(.03)**	**.0880**	**(.02)**	Ω_{L75}^{GDP}	-.0033	(.56)	.0021	(.60)	**-.112**	**(.07)**	**.0752**	**(.05)**
	Φ_{E}	.0016	(.72)	-.0030	(.34)	-.0563	(.24)	**.0618**	**(.05)**	Ω_{E}^{GDP}	-.0029	(.51)	.00003	(.99)	-.0407	(.41)	.0378	(.24)
IV	Φ_{L75}	**.0123**	**(.05)**	**-.0084**	**(.07)**	.0227	(.76)	-.0190	(.70)	Ω_{L75}^{GDP}	**.0118**	**(.06)**	-.0071	(.12)	.0259	(.72)	-.0182	(.70)
	Φ_{E}	.0033	(.48)	-.0038	(.27)	.0100	(.85)	-.0177	(.61)	Ω_{E}^{GDP}	.0018	(.71)	-.0030	(.39)	.0229	(.67)	-.0231	(.51)
V	Φ_{L75}	**0.013**	**(.07)**	-.0071	(.17)	.0270	(.74)	-.0081	(.88)	Ω_{L75}^{GDP}	**.0113**	**(.09)**	-.0059	(.23)	.0276	(.71)	-.0057	(.91)
	Φ_{E}	.0037	(.48)	-.0038	(.32)	.0031	(.96)	.0010	(.98)	Ω_{E}^{GDP}	.0010	(.84)	-.0025	(.49)	.0123	(.83)	-.0002	(.99)

Samples are as listed in Table 1 less Taiwan for government size, and those in Table 1 less Bolivia, Sri Lanka, and Uruguay for red tape delays and costs. Numbers in parentheses are probability levels for rejecting the null hypothesis of zero coefficients.

Table 5 (continued)

Panel B: Summary of OLS Regression Coefficients on Financial System Variables.

Regressions are of the form: stability = b_0 + b_1*political economy variables + b_2*ln(*y*) + b_3*ln(*h*) + b_4*ln(*k*) + e. Dependent variables are labor or equal-weighted continued dominance indexes, measuring the proportion of top ten firms in 1996 that were top ten firms in 1975, and continued importance indexes, measuring the proportion of top ten 1975 firms that 'survive' in 1996. 'Importance' is defined either as growth faster than total GDP growth. Financial development variables include banking system (financial credit to private sector over GDP in 1975), stock market (total market capitalization over GDP in 1978), creditor rights, and shareholder rights. Control variables are the logs of 1975 *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. Only coefficient estimates on economy characteristics (b_1) are shown. 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	Continued dominance	Banking system size		Stock market size		Creditor rights		Shareholder rights		Continued importance	Banking system size		Stock market size		Creditor rights		Shareholder rights	
		Coef.	p-val.	Coef.	p-val.	Coef.	p-val.	Coef.	p-val.		Coef.	p-val.	Coef.	p-val.	Coef.	p-val.	Coef.	p-val.
I	Φ_{L75}	.00171	(.23)	-.0348	(.68)	-.00570	(.81)	**-.0571**	**(.01)**	Ω_{L75}^{GDP}	.00181	(.22)	-.0338	(.70)	-.00417	(.86)	**-.0593**	**(.01)**
	Φ_{E}	**.00183**	**(.07)**	-.0331	(.62)	-.00777	(.69)	-.0227	(.21)	Ω_{E}^{GDP}	**.00224**	**(.04)**	-.0172	(.81)	-.00675	(.74)	**-.0337**	**(.07)**
II	Φ_{L75}	.00127	(.35)	-.0461	(.57)	-.0144	(.52)	**-.0547**	**(.01)**	Ω_{L75}^{GDP}	.00126	(.37)	-.0467	(.57)	-.0141	(.54)	**-.0557**	**(.01)**
	Φ_{E}	**.00229**	**(.01)**	-.0277	(.66)	-.00572	(.75)	-.0137	(.42)	Ω_{E}^{GDP}	**.00235**	**(.01)**	-.0173	(.79)	-.00940	(.62)	-.0224	(.20)
III	Φ_{L75}	.00132	(.36)	-.0336	(.67)	-.0139	(.55)	**-.0569**	**(.01)**	Ω_{L75}^{GDP}	.000993	(.48)	-.0381	(.65)	-.0119	(.60)	**-.0564**	**(.01)**
	Φ_{E}	**.00270**	**(.00)**	-.00908	(.88)	-.00403	(.83)	-.0171	(.33)	Ω_{E}^{GDP}	**.00216**	**(.04)**	-.00279	(.97)	-.00807	(.68)	-.0202	(.26)
IV	Φ_{L75}	.00242	(.14)	-.0324	(.74)	.0311	(.27)	-.0209	(.43)	Ω_{L75}^{GDP}	.00215	(.18)	-.0332	(.73)	.0272	(.32)	-.0184	(.48)
	Φ_{E}	**.00241**	**(.03)**	.00798	(.91)	.0105	(.62)	-.000978	(.96)	Ω_{E}^{GDP}	**.00228**	**(.05)**	.0103	(.89)	.00792	(.71)	-.00100	(.96)
V	Φ_{L75}	.00229	(.21)	-.0887	(.41)	.0154	(.62)	-.0189	(.52)	Ω_{L75}^{GDP}	.00141	(.41)	-.110	(.28)	.0142	(.63)	-.0237	(.38)
	Φ_{E}	**.00229**	**(.07)**	-.0401	(.61)	.00234	(.92)	-.0102	(.63)	Ω_{E}^{GDP}	.00143	(.25)	-.0592	(.44)	-.0000109	(.99)	-.0145	(.48)

Samples are as listed in Table 1 less Germany, Hong Kong, Korea, and Taiwan for banking system size, those in Table 1 less Ireland and New Zealand for stock market size, those in Table 1 less Bolivia, Chile, and Venezuela for creditor rights, and those in Table 1 less Bolivia, Chile for shareholder rights. Numbers in parentheses are probability levels for rejecting the null hypothesis of zero coefficients.

Table 6 (Continued)
Panel C: Summary of OLS Regression Coefficients on Openness.

Regressions are of the form: stability index = b_0 + b_1*political economy variables + b_2*ln(*y*) + b_3*ln(*h*) + b_4*ln(*k*) + e. Dependent variables are labor or equal-weighted continued dominance indexes, measuring the proportion of top ten firms in 1996 that were top ten firms in 1975, and continued importance indexes, measuring the proportion of top ten 1975 firms that 'survive' in 1996. 'Importance' is defined as growth at least as fast as total GDP growth. Openness variables include foreign direct investment (FDI inflows as a fraction of GDP in 1975) and trade openness (imports plus exports as fraction of GDP in 1975). Control variables are the logs of 1975 *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. Only coefficient estimates on economy characteristics (b_1) are shown. 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.

		Foreign Direct Investment		Trade Openness			Foreign Direct Investment		Trade Openness	
List	Continued dominance	Coef.	p-value	Coef.	p-value	Continued importance	Coef.	p-value	Coef.	p-value
I	Φ_{L75}	-.00685	(.81)	.0000517	(.94)	Ω_{L75}^{GDP}	-.00762	(.80)	.0000513	(.94)
	Φ_{E}	-.0235	(.23)	-.000527	(.28)	Ω_{E}^{GDP}	-.0162	(.44)	-.000390	(.45)
II	Φ_{L75}	-.00333	(.90)	-.0000763	(.90)	Ω_{L75}^{GDP}	-.00552	(.84)	-.000131	(.83)
	Φ_{E}	-.0241	(.18)	-.000486	(.29)	Ω_{E}^{GDP}	-.0152	(.43)	-.000490	(.30)
III	Φ_{L75}	-.000320	(.99)	.0000307	(.96)	Ω_{L75}^{GDP}	-.000575	(.98)	-.0000882	(.89)
	Φ_{E}	-.0143	(.46)	-.000270	(.57)	Ω_{E}^{GDP}	-.00224	(.91)	-.000393	(.42)
IV	Φ_{L75}	**-.0560**	**(.07)**	-.000371	(.61)	Ω_{L75}^{GDP}	**-.0533**	**(.07)**	-.000430	(.54)
	Φ_{E}	-.0186	(.35)	-.000476	(.37)	Ω_{E}^{GDP}	-.0209	(.31)	-.000554	(.30)
V	Φ_{L75}	**-.0839**	**(.02)**	-.000971	(.22)	Ω_{L75}^{GDP}	**-.0763**	**(.02)**	-.00107	(.15)
	Φ_{E}	**-.0460**	**(.05)**	-.000882	(.12)	Ω_{E}^{GDP}	**-.0429**	**(.05)**	**-.00101**	**(.06)**

Samples are as listed in Table 1 less Germany, Greece, Hong Kong, Japan, Korea, Switzerland and Taiwan for foreign direct investment, and those in Table 1 less Taiwan for trade openness. Numbers in parentheses are probability levels for rejecting the null hypothesis of zero coefficients.

Table 7: Two Stage Least Squares Regressions

First stage regressions are of the form: stability index = b ?z where z is a vector of predetermined institutional variables: government size, an indicator variable for a Common Law legal origin, banking system size, stock market size, foreign direct investment, trade openness, and an intercept. For detailed definitions, see table 6. First stage explanatory variable coefficients with p-levels below 15% are set to zero in a stepwise procedure. Missing data for first stage independent variables are filled with cross sectional averages. Second stage regressions are of the form: growth measure = b_0 + b_1*predicted continued importance or stability index (from first stage) + b_2*ln(*y*) + b_3*ln(*h*) + b_4*ln(*k*) + e. Growth measures are 1990 to 2000 *per capita* GDP growth, Dln**(*y*), total factor productivity growth, D*TFP*, and per capita capital accumulation, D**ln**(*k*), as defined in Table 4. 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. Only coefficient estimates on corporate stability (b_1) are shown. 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.**

Panel A. Full Sample

List	Predicted Continued dominance	D**ln**(*y*) Coef.	D**ln**(*y*) p-val.	D*TFP* Coef.	D*TFP* p-val.	D**ln**(*k*) Coef.	D**ln**(*k*) p-val.	Predicted Continued importance	D**ln**(*y*) Coef.	D**ln**(*y*) p-val.	D*TFP* Coef.	D*TFP* p-val.	D**ln**(*k*) Coef.	D**ln**(*k*) p-val.
I	Φ_{L75}	**-0.401**	**(.09)**	**-0.297**	**(.08)**	-0.345	(.32)	Ω_{L75}^{GDP}	**-0.423**	**(.08)**	**-0.333**	**(.06)**	-0.299	(.41)
	Φ_{E}	-0.498	(.19)	-0.382	(.16)	-0.385	(.49)	Ω_{E}^{GDP}	-0.446	(.19)	-0.343	(.16)	-0.341	(.49)
II	Φ_{L75}	**-0.348**	**(.10)**	**-0.255**	**(.09)**	-0.308	(.32)	Ω_{L75}^{GDP}	**-0.382**	**(.09)**	**-0.297**	**(.07)**	-0.282	(.39)
	Φ_{E}	-0.344	(.28)	-0.251	(.27)	-0.311	(.50)	Ω_{E}^{GDP}	-0.502	(.13)	**-0.420**	**(.08)**	-0.274	(.58)
III	Φ_{L75}	**-0.349**	**(.10)**	**-0.257**	**(.09)**	-0.310	(.32)	Ω_{L75}^{GDP}	**-0.425**	**(.09)**	**-0.332**	**(.06)**	-0.310	(.40)
	Φ_{E}	-0.449	(.16)	-0.352	(.13)	-0.325	(.49)	Ω_{E}^{GDP}	-0.529	(.13)	**-0.443**	**(.08)**	-0.288	(.58)
IV	Φ_{L75}	-0.258	(.20)	-0.156	(.28)	-0.338	(.25)	Ω_{L75}^{GDP}	-0.260	(.21)	-0.157	(.30)	-0.344	(.26)
	Φ_{E}	-0.541	(.21)	-0.409	(.19)	-0.438	(.49)	Ω_{E}^{GDP}	-0.524	(.23)	-0.394	(.21)	-0.435	(.50)
V	Φ_{L75}	-0.164	(.37)	-0.0718	(.58)	-0.306	(.24)	Ω_{L75}^{GDP}	-0.177	(.37)	-0.0773	(.59)	-0.333	(.25)
	Φ_{E}	**-0.613**	**(.07)**	**-0.416**	**(.09)**	-0.657	(.19)	Ω_{E}^{GDP}	**-0.684**	**(.07)**	**-0.457**	**(.10)**	-0.757	(.18)

Sample is the 44 countries listed in Table 1. Numbers in parentheses are probability levels for rejecting the null hypothesis of zero coefficients.

Panel B. High Income Countries

List	Predicted Continued dominance	Dln(y) Coef.	Dln(y) p-val.	D*TFP* Coef.	D*TFP* p-val.	Dln(k) Coef.	Dln(k) p-val.	Predicted Continued importance	Dln(y) Coef.	Dln(y) p-val.	D*TFP* Coef.	D*TFP* p-val.	Dln(k) Coef.	Dln(k) p-val.
I	Φ_{L75}	**-0.442**	**(.10)**	-0.263	(.27)	**-0.596**	**(.02)**	Ω_{L75}^{GDP}	**-0.428**	**(.10)**	-0.255	(.27)	**-0.577**	**(.02)**
	Φ_{E}	-0.368	(.24)	-0.251	(.36)	-0.388	(.23)	Ω_{E}^{GDP}	-0.341	(.24)	-0.231	(.36)	-0.367	(.22)
II	Φ_{L75}	**-0.412**	**(.10)**	-0.245	(.27)	**-0.556**	**(.02)**	Ω_{L75}^{GDP}	**-0.422**	**(.10)**	-0.251	(.27)	**-0.569**	**(.02)**
	Φ_{E}	**-0.449**	**(.10)**	-0.223	(.36)	**-0.752**	**(.00)**	Ω_{E}^{GDP}	-0.458	(.11)	-0.226	(.37)	**-0.773**	**(.00)**
III	Φ_{L75}	**-0.380**	**(.10)**	-0.226	(.27)	**-0.512**	**(.02)**	Ω_{L75}^{GDP}	**-0.430**	**(.10)**	-0.256	(.27)	**-0.581**	**(.02)**
	Φ_{E}	-0.495	(.11)	-0.370	(.17)	-0.416	(.19)	Ω_{E}^{GDP}	-0.375	(.23)	-0.238	(.39)	-0.457	(.15)
IV	Φ_{L75}	**-0.595**	**(.04)**	**-0.424**	**(.09)**	**-0.571**	**(.05)**	Ω_{L75}^{GDP}	**-0.596**	**(.04)**	**-0.424**	**(.09)**	**-0.572**	**(.05)**
	Φ_{E}	**-0.791**	**(.05)**	-0.495	(.17)	**-0.988**	**(.01)**	Ω_{E}^{GDP}	**-0.719**	**(.05)**	-0.450	(.17)	**-0.898**	**(.01)**
V	Φ_{L75}	**-0.517**	**(.04)**	**-0.368**	**(.09)**	**-0.496**	**(.05)**	Ω_{L75}^{GDP}	**-0.403**	**(.06)**	-0.286	(.13)	**-0.390**	**(.08)**
	Φ_{E}	**-0.714**	**(.05)**	-0.446	(.17)	**-0.892**	**(.01)**	Ω_{E}^{GDP}	**-0.634**	**(.05)**	-0.397	(.17)	**-0.792**	**(.01)**

Sample includes 22 high-income countries: 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. Numbers in parentheses are probability levels for rejecting the null hypothesis of zero coefficients.

Panel C. Low Income Countries

List	Predicted Continued dominance	Dln(y) Coef.	Dln(y) p-val.	D*TFP* Coef.	D*TFP* p-val.	Dln(k) Coef.	Dln(k) p-val.	Predicted Continued importance	Dln(y) Coef.	Dln(y) p-val.	D*TFP* Coef.	D*TFP* p-val.	Dln(k) Coef.	Dln(k) p-val.
I	Φ_{L75}	-0.400	(.45)	-0.300	(.37)	-0.333	(.72)	Ω_{L75}^{GDP} a	-0.438	(.45)	-0.329	(.37)	-0.365	(.72)
	Φ_{E} a	-1.15	(.45)	-0.866	(.37)	-0.962	(.72)	Ω_{E}^{GDP} a	-1.09	(.22)	-0.352	(.54)	-2.46	(.11)
II	Φ_{L75}	-0.293	(.45)	-0.220	(.37)	-0.244	(.72)	Ω_{L75}^{GDP}	-0.317	(.45)	-0.238	(.37)	-0.264	(.72)
	Φ_{E} a	-1.43	(.22)	-0.460	(.54)	-3.22	(.11)	Ω_{E}^{GDP}	**-1.19**	**(.00)**	**-0.661**	**(.01)**	**-1.75**	**(.02)**
III	Φ_{L75}	**-0.724**	**(.05)**	-0.374	(.12)	**-1.17**	**(.08)**	Ω_{L75}^{GDP}	-0.602	(.16)	**-0.454**	**(.09)**	-0.492	(.52)
	Φ_{E}	-0.958	(.22)	-0.309	(.54)	-2.16	(.11)	Ω_{E}^{GDP}	**-0.789**	**(.03)**	**-0.406**	**(.08)**	**-1.28**	**(.05)**
IV	Φ_{L75} a	0.0909	(.90)	0.253	(.56)	-0.541	(.66)	Ω_{L75}^{GDP} a	0.105	(.90)	0.292	(.56)	-0.624	(.66)
	Φ_{E} a	-1.52	(.22)	**-1.36**	**(.07)**	-0.545	(.81)	Ω_{E}^{GDP} a	-1.11	(.22)	-0.360	(.54)	-2.51	(.11)
V	Φ_{L75}	0.0483	(.90)	0.134	(.56)	-0.287	(.66)	Ω_{L75}^{GDP}	0.063	(.90)	0.176	(.56)	-0.376	(.66)
	Φ_{E}	0.0767	(.90)	0.213	(.56)	-0.456	(.66)	Ω_{E}^{GDP} a	-1.14	(.22)	**-1.01**	**(.07)**	-0.406	(.81)

a. No first stage variable has a p-level better than 15%, so the instrument with the lowest p-level is used to predict the stability index.

Sample includes 22 low-income countries: 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. Numbers in parentheses are probability levels for rejecting the null hypothesis of zero coefficients.