THE SEARCH FOR HYPERCOMPETITION: EVIDENCE FROM A NORDIC MARKET STUDY

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Abstract

Some scholars argue that markets has become hypercompetitive over the years, decreasing the sustainable competitive advantages in a wide range of sectors and regions. The notion of hypercompetition, a state of competition in which firms are unable to build sustainable competitive advantages due to a high rate of change in the competitive environment, has gained in popularity in recent years, not least in the aftermath of the financial crisis. Is the world truly becoming hypercompetitive across industries and countries? The evidence is limited and ambiguous (McNamara, Vaaler, & Devers, 2003; Thomas & D’Aveni, 2009; Vaaler & McNamara, 2010).

Hypercompetition would increase instability and force firms to adapt to the new environment. Some firms may fail to do so. This would then have an impact on the industry dynamism and munificence (Dess & Beard, 1984; McNamara et al., 2003), as some industries may experience a larger increase in the performance volatility compared to others that may retain their traditional stability (Thomas & D’Aveni, 2009).

In this paper, the aim is to explore the claim of increasing hypercompetition and attempt to build empirical support for the argument that business performance has become less stable. Replicating and extending on the seminal study by McNamara et al. (2003), we use an autoregressive model to measure the durability of abnormal profitability over time, cox proportional hazard model to measure the rate of business mortality, and a fixed effects approach to measure the level of dynamism and munificence for a longer period of time than has previously been attempted. Rather than replicate the study for the same US sample (McNamara et al., 2003), we examine the context of Denmark, a small but similarly highly developed European economy. To find data to test our hypotheses, we compile a total of 4,477 observations of 266 Danish firms across 7 SIC-divisions publicly traded in the period 1980-2017.

Similar to McNamara et al. (2003) and Vaaler et al. (2010), we find no support for the notion of a pervasive change in competition. Changes in competition are cyclical around recessions or due to substantial progress in export, rather than indicating a general hypercompetition. We can conclude that the notion of hypercompetition may be useful for some regions or industries, but not as a universal label for the state of competition.

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ABSTRACT

Some scholars and practitioners argue that markets have become hypercompetitive over the years, decreasing the opportunities for sustainable competitive advantage in a wide range of sectors and regions. We test this hypothesis for a panel of 266 Danish firms from seven industries over the period 1980-2017. We find no support for the argument that the market across industries has become more hypercompetitive over time. Specifically, we find no decrease in the durability of abnormal business returns, a decrease in the survival rates, increased dynamism only in the 1980s, but no decrease in the levels of munificence. Our results lead us to caution against the use of hypercompetition as a universal label for the state of contemporary competition.

KEYWORDS

Keywords: hypercompetition, survival, dynamism, munificence, sustainable competitive advantage, resource-based view, competitive dynamics.
INTRODUCTION

Over the last two decades, an increasing number of management scholars and practitioners have argued that there has been a fundamental shift in the competitive environment across regions and sectors, towards what D’Aveni (1994) calls ‘hypercompetition’. This denotes a change in the nature of competition caused by a combination of globalization, demographical shifts, financial instability, new technological developments, and digitalization (D’Aveni & Dagnino, 2010; Harvey & Griffith, 2007; Hermelo & Vassolo, 2010; Ilinitch, D’Aveni, & Lewin, 1996; Longin, 2016; Thomas & D’Aveni, 2009). It is argued that these changes in the competitive environment began in the 1970s, worked through the 1980s, and completely changed the nature of competition by the 1990s, making competition more dynamic, more hostile, and more uncertain (D’Aveni, 1994; Nault & Vandenbosch, 1996; Thomas, 1996; Thomas & D’Aveni, 2009). The notion of hypercompetition thus suggests a state of competition in which firms are unable to build sustainable competitive advantages due to a high rate of change in the competitive environment, thus posing as a potential challenge to strategy making.

Labeling industry environments as hypercompetitive remains popular, not least in the aftermath of the financial crisis. For example, Roberts & Grover (2012, p. 579) write that, “in today's hypercompetitive environment, firms that are agile tend to be more successful”. They go on to empirically link such agility to firm performance. As for Hoisl, Gruber, and Conti (2017), they examine the effects of an R&D team's composition on its performance outcomes in hypercompetition, based on data from Formula 1 teams. Common to these types of studies is that they label the environment as hypercompetitive, but never actually verify this label empirically.
They also fail to verify the argument of increasing hypercompetitivity through time. In fact, the little empirical evidence for hypercompetitivity is both limited and ambiguous (Castrogiovanni, 2002; McNamara, Vaaler, & Devers, 2003; Thomas & D’Aveni, 2009; Vaaler & McNamara, 2010). Some studies indicate positive evidence of hypercompetition (e.g. Barry, Kemerer, & Slaughter, 2006; Farjoun & Levin, 2011; Lee, Venkatraman, Tanriverdi, & Iyer, 2010; Thomas & D’Aveni, 2009). Others disagree (e.g. McNamara et al., 2003; Vaaler & McNamara, 2010).

The key problem in this debate is methodological. Different studies have used very different techniques and samples to measure very different variables that may or may not be indicative of a changed nature of competition. Some have focused on measures of company performance, such as return on assets (ROA), and the degree of volatility in these (e.g. McNamara et al., 2003; Thomas & D’Aveni, 2009). Others have examined volatility in individual firm resources (Barry et al., 2006), or firm mortality (firm exit) data (McNamara et al., 2003). The lack of methodological consistency makes it difficult to find agreement on the existence or non-existence of hypercompetition, and indicates a need for some degree of replication of method, on new samples and time periods.

In this paper, we report the results of a study testing hypotheses related to hypercompetition on Danish publicly listed firms for a longer period than has previously been attempted in the search for evidence of hypercompetition, covering both the period before and after the financial crisis. We find little evidence for increasing levels of hypercompetition, adding to the body of evidence that the idea of a generalized movement towards more uncertainty is wrong. We conclude by echoing McKinley’s (2011) caution that simplifying labels such as hypercompetition, may be used by both scholars and management practitioners in a way
that leads them to believe in the objective reality of the construction. Using this label may in fact simplify and misrepresent a more complex reality.

**THE SEARCH FOR HYPERCOMPETITION**

Scholars applying the hypercompetition construct appear to treat this as both a new (objective) competitive reality and a theoretical construct (D’Aveni, 1994; Hanssen-Bauer & Snow, 1996). Hypercompetition is a perspective on competition that goes in contrasts to the traditional resource-based view and industrial organization approach within strategy. The construct is credited to D’Aveni (1994), who argues that industries have “changed from slow moving stable oligopolies to environments characterized by intense and rapid competitive moves, in which competitors strike quickly with unexpected unconventional means of competing” (D’Aveni, 1997, p. 183). He furthermore suggests that in hypercompetition, “the frequency, boldness, and aggressiveness of dynamic movement by the players accelerates to create a condition of constant disequilibrium and change. Market stability is threatened by short product life cycles, short product design cycles, new technologies, frequent entry by unexpected outsiders, repositioning by incumbents, and radical redefinitions of market boundaries as diverse industries merge. In other words, environments escalate toward higher and higher levels of uncertainty, dynamism, heterogenity of the players, and hostility” (D’Aveni, 1995, p. 46).

Hypercompetitive behavior is the process “of continuously generating new competitive advantages and destroying, obsoleting, or neutralizing the opponent’s competitive advantage,
thereby creating disequilibrium, destroying perfect competition, and disrupting the status quo of the marketplace” (D’Aveni, 1994, p. 218).

The construct of hypercompetition can be seen as an extension of the ideas contained in the discussion of hypervelocity (Eisenhardt & Bourgeois, 1988), and more generally environmental uncertainty (Huff, Miliken, Hodgkinson, Galavan, & Sund, 2016). In a hypercompetitive environment firm performance trends will be inherently more difficult to sustain (McNamara et al., 2003; Thomas & D’Aveni, 2009; Vaaler & McNamara, 2010), due to escalating and shifting patterns in business rivalry, shorter product life cycles, and quicker pace of innovation. In addition, hypercompetition decreases the possibility for firms to build sustainable competitive advantages, questioning if not the validity, then at least the usefulness of the resource-based view of strategy. Hypercompetition is said to be a dynamic application of the resource-based view, but involving “the rapid depreciation of strategic assets” (Thomas, 1996, p. 226). In other words, to be successful in a hypercompetitive environment, firms must continuously learn and apply their knowledge to the changing environment.

Implications for strategy research

In strategy content research, the question that often arises is how to gain and sustain superior firm-level competitive advantage over others (Foss & Knudsen, 2003; Saadatmand, Dabab, & Weber, 2018; Selsky, Goes, & Baburoglu, 2007). Theoretical perspectives on performance and competitive advantages predate the strategic management literature. The traditional industrial organization (IO) view, identifies different types of
competitive environments ranging from monopoly to perfect competition (Saadatmand et al., 2018). This traditional view provides insights to firm performance and how firms gain competitive advantage through positioning in the industry structure, and creating strategies appropriate to this structure (Hanssen-Bauer & Snow, 1996; Saadatmand et al., 2018; Selsky et al., 2007). An extension is the well-known five forces framework (Porter, 1991, 1996). The framework emphasizes the relationship between industry structure and performance that could promote competition, where the equilibrium depends on what one rival believes the other rivals will do in a particular situation (Porter, 1991). Some scholars criticize this framework for being static in its nature and not taking into account the dynamics of the competitive environment over time (Selsky et al., 2007). Even though scholars argue that hypercompetition has widely supplanted the traditional type of competition (D’Aveni & Dagnino, 2010; Polowcxy, 2012; Thomas & D’Aveni, 2009), others seem to equate hypercompetition with what neoclassical economists would call perfect competition (Hanssen-Bauer & Snow, 1996), indicating that hypercompetition simply leads more markets towards perfect competition. Regardless, there has been a proliferation in the number of theoretical concepts addressing the more dynamic aspects of competition, and this has opened up for discussions on strategy making that may or may not be contradicting to the IO view on competition (Foss & Knudsen, 2003; Saadatmand et al., 2018; Selsky et al., 2007).

Another broad theory being questioned in the literature on hypercompetition is the resource-based view (RBV), the perhaps most dominant contemporary approach to analyzing sustainable competitive advantages (D’Aveni, Dagnino, & Smith, 2010; Selsky et al., 2007). Using economic reasoning, Wernerfelt (1984) developed a theory from an inter-firm perspective,
to understand why some firms earn supernormal profits in comparison to others (Hunt, 1995; Lockett, O’Shea, & Wright, 2008; Saadatmand et al., 2018). Barney (1991) defined value, rareness, inimitability and non-substitutability of resources to be conditions for building a sustainable competitive advantage. Hypercompetition would make value less sustainable, and accelerate efforts at imitation and substitution by competitors. In Peteraf’s (1993) conceptualization of competitive advantage, hypercompetition would eliminate limits to competition, again reducing the ability to sustain any competitive advantages over time. Hypercompetition implies that resting on yesterday’s achievements, performance, and knowledge of competitors, could result in a failure tomorrow (D’Aveni et al., 2010; Saadatmand et al., 2018). Not surprisingly, Thomas (1996) finds that the notions of the resource-based view and the industrial organization (IO) approach to strategy may be obsolete in a hypercompetitive environment.

**Detecting hypercompetition**

Although scholars employing the hypercompetition construct typically argue that there has been a fundamental shift in the nature of competition, meaning that sustainable competitive advantages has become increasingly rare, not everyone agrees (McNamara et al., 2003; Porter, 1996; Vaaler & McNamara, 2010). The existing research on hypercompetition offers quite different approaches to the field and analysis (D’Aveni, 1994; Longin, 2016; McNamara et al., 2003). The majority of the studies are limited to the United States (McNamara et al., 2003; Thomas, 1996; Thomas & D’Aveni, 2009; Vaaler & McNamara, 2010). Thomas (1996) conducted the first large-scale empirical investigation of hypercompetition, looking for
evidence at the industry level for manufacturing industries from 1958 to 1991. He examined proxies for such variables as demand elasticity, dynamism of demand, and barriers to market entry, and concluded that many of these show changes over time that would be compatible with a hypothesis of increasing hypercompetition. In a more recent analysis, Thomas and D’Aveni (2009) find evidence of a change in the nature of competition in the U.S. manufacturing industry from the 1950 to 2002, by analyzing the volatility in firm performance.

In contrast, McNamara et al. (2003) find little evidence of hypercompetition in the study of business unit ROA, mortality rates, and industry-level dynamism and munificence, concluding that “we find little support for the argument that markets have become more hypercompetitive” (McNamara et al., 2003). Makadok (1998) in a study on money-market funds in the US, similarly, reports no evidence that could support hypercompetition, concluding that “it may be that the phenomenon of ‘hyper-competition’ is largely psychological or perceptual in nature” (Makadok, 1998). Many scholars cite technology-related industries as the context in which hypercompetition is most pronounced (D’Aveni, 1994; Kim & Kogut, 1996; Lee et al., 2010; Vaaler & McNamara, 2010; Wiggins & Ruefli, 2005). However, a study by Vaaler and McNamara (2010) indicated no long-term decrease in the performance durability among firms from the high-technology industry. They also argued that the indication of dynamic competition that Thomas (1996) found were only temporary, and that perhaps, Thomas ended his study a bit too soon.

A key issue with the search for hypercompetition is the lack of consistency. There is not a clear definition of how we can measure hypercompetition, and until now studies have
used different techniques and samples to measure very different variables that may or may not indicate a change in competition (Wiggins & Ruefli, 2005). With this in mind we here report the empirical results of a study inspired by the analysis of McNamara et al (2003).

**Hypothesis development**

If the competitive environment has changed substantially and moved towards hypercompetition, we would assume that the need for strategic decision making increases, as the instability in business performance patterns increases, forcing some firms to adapt to the new competitive environment (Ilinitch et al., 1996). Some firms may fail to do so. This would then have an impact on the task environment of the organization such as dynamism (stability-instability, turbulence) and munificence (capacity) (Dess & Beard, 1984; McNamara et al., 2003; Vaaler & McNamara, 2010). While firms are willing to make internal changes to adapt to the increasing dynamic market, these firms will still in a hypercompetitive environment be likely to have a higher variance in their performance (both positive and negative) compared to the firms in a more stable environment. We therefore propose that increasing hypercompetition would decrease the stability of markets and business performance over time.

The first hypothesis we aim to test is linked to the durability of abnormal business performance, where abnormal returns are the “difference between actual return and the competitive return” (Jacobsen, 1988, p. 416). Sustaining a competitive advantage a firm must undertake strategies that not only generate an abnormal level of return, but also ensure the
persistence of this performance (Jacobsen, 1988). In previous research, scholars have demonstrated how abnormal returns tend to regress to the mean over time, as a consequence of competitive pressures (Jacobsen, 1988; Mueller, 1986). Under hypercompetition, shorter product life cycle, lower barriers to entry, and aggressive competitors would lead to a more intense competitive pressure (D’Aveni, 1994), which would increase the rate of decay of abnormal business performance returns.

*Hypothesis 1: The durability of abnormal business returns has decreased.*

With the second hypothesis, we link the proposition of increasing hypercompetition to a decrease in the survival rate of firms. We assume that competitive pressures are likely to have an impact on the industry density and survival of firms (D’Aveni et al., 2010; McNamara et al., 2003; Vaaler & McNamara, 2010). The pressure from the market such as lower barriers to entry, competitive aggressiveness (Andrevski & Ferrier, 2016), and a rapidly changing environment, have an impact on the number of firm exits. Some firms will fail to adapt to their current environment, or see the value in their resources drop, and consequently they will likely exit an industry.

*Hypothesis 2: The rate of firm survival has decreased.*

In the final set of hypotheses, we raise the level of analysis from firm-level to industry-level. Similarly to the first two hypotheses where we expected to see the effects of hypercompetition in the performance, we now expect to see the consequences of the hypercompetitive shift at a broader level. Previous researchers argue that organizational task environments can be measured from many perspectives by examining the industry dimensions
such as dynamism and munificence (Dess & Beard, 1984). We define dynamism as the degree of volatility in an industry, and munificence as the degree of resource abundance, necessary to support firm growth (Castrogiovanni, 2002; Dess & Beard, 1984). We assume that industry dynamism will increase if hypercompetition increases.

_Hypothesis 3: Industry dynamism (lower barriers to entry) has increased._

In making the link between hypercompetition and the second industry dimension, munificence, we assume that industry munificence will decrease if hypercompetition increases. In other words, there will be less resource slack at industry level. We argue that the overall capacity to support firm growth in an industry will decrease due to the structural changes, such as lower barriers to entry and short product life cycle (D’Aveni et al., 2010; Dess & Beard, 1984; McNamara et al., 2003; Vaaler & McNamara, 2010).

_Hypothesis 4: Industry munificence has decreased._

**METHODOLOGY**

**Data collection and sampling**

We collated 5,574 annual observations of financial data of Danish publicly listed firms from 1980 to 2017 from the Thomson Reuters Eikon database. We use ROA to proxy for firm performance. Similarly to D’Aveni (2009), ROA is measured as the sum of net income plus interest expense divided by the average of last year’s and current year’s total assets. We further collected data on total revenues and total assets for every firm. While the former variable
represents gross sales and other operating revenues minus discounts, the latter represents the sum of total current assets, total investments, net loans, investments, and other assets.

To measure industry density, we use the annual number of firms in each SIC industry division. Unfortunately, Reuters does not divide Danish firms into SIC codes. Consequently, we used SIC divisions to categorize the different Danish firms according to the standards used by Reuters for the American stock market. These include: “Mining”, “Construction”, “Manufacturing”, “Transportation, Communication, Electric, Gas & Sanitary Services”, “Retail Trade”, “Finance, Insurance & Real Estate” and “Services”.

We follow McGahan and Porter's (1997) suggestion, and exclude firms with a market value of less than 70 million Danish kroner (approximately $10 million, in real values of 2017) and with less than 6 years of data on ROA. We measure market value as the stock price multiplied by the number of issued shares. Once screened on these criteria, our base sample comprised 4,477 observations of 266 Danish firms across 7 SIC-divisions publicly traded in the period 1980 to 2017. On average, we have approximately 120 annual business observations in each of the 38 years covered.

In order to account for general economic environment we collected data on the total Danish real GDP and calculated its yearly variation leading to a series of GDP growth rates. We proxy yearly inflation with the variation of the Danish CPI index.
**Autoregressive analysis**

To formally test hypothesis 1, we build an autoregressive model to measure business performance over the last 38 years, to investigate the durability of abnormal profitability over time (Jacobsen, 1988; Mueller, 1986). Specifically, we analyze Return on Asset (ROA<sub>t</sub>) and its decay over time. Since in this analysis we had to construct the series for the lag of ROA over time, it was mandatory to exclude all first data points on our original ROA series. Our final sample comprises 4,198 observations of 266 firms from 1981 to 2017. We regress ROA on its lag ROA<sub>t-1</sub>, and on different control variables: a year counter to capture any time trend, GDP growth, and inflation in order to control for macroeconomic conditions that may affect the degree to which abnormal returns will appear (Huhtala, 2014; Westergård-Nielsen & Neamtu, 2012). Thus, our base model can be written as:

\[
ROA_{t, t} = \beta_0 + \beta_1 ROA_{t, t-1} + \beta_2 YEAR_t + \beta_3 GDP_t + \beta_4 INF_t, \tag{1}
\]

where ROA is the yearly return on assets, YEAR is the respective year counter that ranges from 2 (in 1981) to 38 (in 2017), GDP is the real GDP growth rate and INF is the annual inflation rate. We expect \(\beta_1\) to fall between 0 and 1.00, where a value near 1.00 would indicate little if any decay in ROA in the current period. A value over 1 for this parameter would indicate an explosive time series, what would go against economic reasoning.

With the objective to study whether the rate of decay on the prior performance exhibits any linear time trends over the study period, we include an interaction term between ROA and the time counter YEAR. We would expect the coefficient associated with this interaction term to be significant and negative, indicating an increase in the rate of decay in
abnormal business returns between 1980 and 2017 and consequently providing evidence in favor of a change in the competitive environment towards hypercompetition.

\[
ROA_{i,t} = \beta_0 + \beta_1 ROA_{i,t-1} + \beta_2 YEAR_t + \beta_3 GDP_t + \beta_4 INF_t + \beta_5 (ROA_{i,t-1} \times YEAR_t),
\]

(2)

In order to investigate whether the pattern of competition is different across industries, we repeat the exercise of Equation 1 and 2 including industry dummy variables according to SIC codes \((SIC_i)\).

**Hazard rate model**

To formally test hypothesis 2, we use a proportional hazard rate model. By doing so, we will investigate whether there is a relationship between survival and time, as well as explain the likelihood that a firm \(i\) will exit an industry from one year to the other. In order to deal with firm exit (business mortality), we construct a dummy variable that assumes the value of 1 when a firm \(i\) does not report ROA in the following years. Thus, we observe firm exit on a discrete time scale from year to year. In line with McNamara et al. (2003), we decided to exclude all observations related to the final year 2017, since we are not able to determine whether the firm has survived in 2018.

For this model, we use the Kaplan-Meier survival probability that defines our dependent variable. This is given by the following equation:

\[
Survival \ Prob_t = \frac{n_t - Dead_t}{n_t},
\]

(3)
where \( n_t \) is the number of firms collected in our sample in year \( t \) and \( \text{Dead}_t \) is the number of firms that exit the sample in the following year. In simple words, equation 3 measures the probability that a firm \( i \) will survive beyond any given time in the range of 1980 to 2016. Factors other than hypercompetition could have an effect on firm survival. For example, our sample period includes the global financial crisis that could potentially have an impact on business mortality (Abildgren & Thomsen, 2011; Bertola et al., 2012; Nationalbank, 2018; Westergård-Nielsen & Neamtu, 2012). In order to account for this type of macroeconomic effects on firm survival, we follow McNamara et al. (2003) and Hannan and Freeman (1988) and control for economic growth (\( \text{GDP}_t \)). Moreover, we control for industry density (\( \text{DENSITY}_t \)). This variable counts the number of firms in our sample every year. Lastly, we again follow the aforementioned authors and include the quadratic transformation of density (\( \text{DENSITY}_t^2 \)), which allows us to account for eventual nonlinear effects of density in survival. In order to account for any trend in competition over time we include a year counter. Thus, we check for any possible trend on competition over time using the following equation:

\[
\text{Survival rate}_t = \beta_0 + \beta_1 \text{GDP}_t + \beta_2 \text{Density}_t + \beta_3 \text{Density}_t^2 + \beta_4 \text{Year}_t, \quad (4)
\]

To support our hypotheses, we predict that the coefficient for the year counter (\( \text{YEAR}_t \)) will be negative and significant, indicating a decrease in the business survival along the years of our sample. Thus, we assume that increasing hypercompetition is linked to an increase in the number of firm exits, and therefore, with decreasing firm survival. Finally, in order to check for any specific trend of survival in each specific industry, we divide our sample into the 7 different SIC codes. Then, we re-estimate equation 4 for each individual industry.
Industry dynamism and munificence analyses

In order to test our hypothesis 3 and 4, we follow McNamara et al. (2003) and make an analysis of industry dynamism and munificence in Denmark using the different SIC codes. In order to calculate industry munificence and dynamism we also follow Dess & Beard (1984) and Vaaler & McNamara (2010) and divide our sample into 8 time subsamples of 5 years each. As a preliminary step, we examine whether variables that are usually used to proxy munificence are associated to a time trend\(^1\). Thus, we run the following regressions 5 and 6:

\[
Rev_{it}^{ks} = \beta_{0,Rev}^{ks} + \beta_{1,Rev}^{ks} Year_t, \tag{5}
\]

\[
TOA_{it}^{ks} = \beta_{0,TOA}^{ks} + \beta_{1,TOA}^{ks} Year_t, \tag{6}
\]

where \(i\) represents each firm in a specific SIC level \(k\), \(t\) represents each of the 5 years in each of the 8 subsamples \(s\), \(REV\) is revenues and \(TOA\) is total assets.

We divide the regression coefficients by the mean value for each of the dependent variables to construct a composite measure of the level of industry munificence in each of the sampled industries \(k\).

\[
Mun\_Index_t^{ks} = \frac{\sum_{i=1}^{n_k,t} Rev_{it}^{ks}}{n_{kt}} + \frac{\sum_{i=1}^{n_k,t} TOA_{it}^{ks}}{n_{kt}} \tag{7}
\]

\(^1\) Note that it is also standard in the literature to use capital expenditure as another determinant of munificence. However, since there were excessive numbers of missing values in our sample for capital expenditure, we decided to exclude this variable from our study.
where \( n \) is the total number of firms in the particular industry \( k \) in year \( t \). This will provide us with an indication of the degree of either growth or decline in munificence in one particular division in Denmark over the period 1980-2016.

In order to calculate dynamism, we divided the standard error of each of the prior regressions by the mean of each dependent variable (revenues and total assets) in each of the 5 years periods. The average of the two resulting numbers in each of the panel periods are used as the level of dynamism of a particular industry \( k \) in year \( t \).

\[
Dyn_{\text{Index}}_{t}^{k,s} = \frac{\sigma_{\text{res.Rev}}^{k,s} + \sigma_{\text{res.TOA}}^{k,s}}{\frac{\sum_{i=1}^{n_{k,t}} \text{Rev}_{i,t}}{n_{k,t}} + \frac{\sum_{i=1}^{n_{k,t}} \text{TOA}_{i,t}}{n_{k,t}}} \times \frac{2}{n_{k,t}},
\]

(8)

where \( \sigma_{\text{res.Rev}}^{k,s} \) and \( \sigma_{\text{res.TOA}}^{k,s} \) are the standard errors of each regression on revenues and total assets respectively for each sub-period \( s \) and industry \( k \).

We regress the estimated munificence and dynamism composites on industry dummies in order to search for industry-specific differences in our dependent variables. Moreover, we control for the different time sub-periods by using time dummies\(^2\).

In order to support hypothesis 3 of increasing dynamism across time, we need to observe the coefficients of our time dummies to be negative and significant, with the lowest estimate in the earliest sub-period (1980-1984). This would indicate a positive trend in the level of dynamism over the study period. An analogous reasoning is valid for the analysis of

\(^2\) We exclude the dummy for the final time period (2014-2020) and treat it is as our base.
hypothesis 4 with respect to munificence. Here, coefficients related to time dummies are expected to be positive and significant, with a decreasing value in time. This would indicate a negative trend in the level of munificence over the period. In order to avoid small sample bias, we decided to exclude five year panels with less than two observations in each year of the SIC divisions. This results in a total sample of 4,463 observations. On average this results in 638 observations per SIC division. As a last step, we plot the dynamism and munificence coefficients from Table 5 and the significance level in Figure 2. In order to check for the presence of hypercompetition in specific industries along time, we regress for every industry the composite measures of dynamism and munificence against year and check the sign and significance of the estimated slopes.

**RESULTS**

In order to test hypothesis one, we first estimate equations 1 and 2 using a pooling OLS methodology. Afterwards, we redo this exercise including dummies for each industry according to SIC codes. Result for our estimations are provided in Table 1.
Our results are in line with McNamara et al. (2003) and Jacobsen (1988). The coefficient associated to the lag of ROA is significant and positive and below one ranging from 0.5600 to 0.5661 depending on the estimation setting. This indicates that business returns follow an autoregressive process that is not explosive between 1981 and 2017. Moreover, we observe a
significant and negative linear time trend for ROA, with the year counter (YEAR$_t$) coefficient varying between -0.0588 and -0.0611. To sum up, we can observe that business performance is influenced by its past observation and has a tendency to fall over the time period analyzed.

We controlled for macroeconomic conditions in the different estimations. The coefficients associated to the variables inflation rates and economic growth are both significant providing evidence that macroeconomic environment play an important role in the definition of business returns. As expected, the coefficient associated to inflation is negative with a mean between -0.9525 and -0.9671 according to the estimation setting. This indicates that higher inflation tends to be associated with lower ROAs. Analogously, higher economic growth is associated to higher ROAs as the coefficient associated to economic growth is positive and between 0.7358 and 0.7415$^3$.

In order to verify hypercompetition, we need the coefficient associated to the interaction term (ROA$_{i,t-1}$*YEAR$_t$) to be significant and negative. This would indicate to us that the level of business performance is explained by an increase in the decay rate of abnormal returns along the study period which can be possibly linked to stronger competition. By looking at our results in column 2, there is no indication that this coefficient is significant. This indicates no decrease in the durability of abnormal business returns in the study period, and a lack of support for Hypothesis 1. It should be noted that this result is also stable in column 4 when we assess the possibility of industry individual effects in the decay rate of ROA across time. Here we split the sample into different industry SIC codes. Although some industries have an

$^3$For a rich analysis on inflation and economic growth in Denmark and well as the consequences to business returns, see Abildgren & Thomsen (2011) and Jensen & Johannesen (2017).
individual influence on the general levels of ROA, the inclusion of their respective dummies in the model does not change the significance of the interaction term (ROA_{i,t-1}*YEAR_{i}). Thus when we use this model setting none of our prior conclusions change.

**Hazard rate model results**

As a post hoc analysis of the trends in business mortality during the period 1980 to 2016, we plotted the percentage of business mortality from year to year in Figure 1. The plot reveals that business mortality is lowest in the first 10-year period (1980-1989). In this period of time, a maximum of four percent of the firms exit a division. Afterwards, business mortality peaks in 1999 when approximately 14 percent of the firms exit the sample in the following year, most of these from the Finance, Insurance, and Real Estate division. Moreover, mortality peaks again in 2012 and 2013, when approximately 10 percent of the firms exit the market in the following years. Overall, the plot reveals a fluctuating pattern in mortality rates, with suggestion of a positive trend in time.
In order to formally test for the existence of a time trend in the survival of companies when controlling for GDP growth and industry density, we estimate equation 4. Table 2 reports estimation results for the cross industry sample. The coefficient associated to the time variable equals -0.2026 and is significant at the 1% level. This indicates that the risk of a firm exiting the market increases every year by 0.20%. The other variables GDP growth, Density, and the quadratic term on Density does not prove to be significant in our sample, in line with the findings of McNamara et al. (2003). A reason for this lack of significance could be the small sample of 37 years that we use for these more aggregate estimations.

<table>
<thead>
<tr>
<th>Independent variable</th>
<th>Base model</th>
<th>Time model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>97.360***</td>
<td>498.90***</td>
</tr>
<tr>
<td></td>
<td>(3.409)</td>
<td>(125.80)</td>
</tr>
<tr>
<td>GDP growth rate (GDP_G_t)</td>
<td>24.350</td>
<td>0.0575</td>
</tr>
<tr>
<td></td>
<td>(0.2181)</td>
<td>(0.2015)</td>
</tr>
<tr>
<td>Division Density (DENSITY_t)</td>
<td>-0.0025</td>
<td>0.0787</td>
</tr>
<tr>
<td></td>
<td>(0.0658)</td>
<td>(0.0635)</td>
</tr>
</tbody>
</table>
the quadratic trans. of the division density \(DENSITY_t^2\) -0.00008  -0.0004 (0.0003)  (0.0003)
A year counter (\(YEARS_t\)) -0.2026** (0.0635)

<table>
<thead>
<tr>
<th>N</th>
<th>37</th>
<th>37</th>
</tr>
</thead>
<tbody>
<tr>
<td>R-squared</td>
<td>0.2358</td>
<td>0.4204</td>
</tr>
</tbody>
</table>

Significant codes:
*** \(p<0.001\)
** \(p<0.01\)
*Standard error terms appear in parentheses

**Table 2. The overall survival analyses across the 7 SIC divisions**

To account for any possible differences within industries, we re-estimate equation 4 by dividing our sample into the 7 different SIC industries. Tables 3 and 4 (see Appendix 1 and 2) provide the estimation results when each industry is analyzed independently. Again, the explanatory variables GDP growth, density and density squared are not significant in any model setting. Moreover, time is significant with a lower trend in survival in the industries: “Construction”, “Manufacturing”, “Retail Trade”, “Finance, Insurance, and Real Estate”, and “Services”. The survival of industries 5 and 6 (“Retail Trade” and “Finance, Insurance, and Real Estate”) are those with the most significant impact in time, suggesting that these industries experience a higher level of competition compared to their peers.

**Industry dynamism and munificence results**

In order to perform our estimations, we use panel OLS including fixed effects. Results for the dynamism and munificence analysis are reported in Table 5. In a first step, we estimate dynamism and munificence using only division dummy variables (using the division “Services” as base level). We then add the time indicator variables for seven of the 5-year panels (using the final panel as base level).
## Table 5. The Industry Dynamism (Instability) and Munificence Model

<table>
<thead>
<tr>
<th>Independent variable</th>
<th>Dynamism</th>
<th>Munificence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Controls only</td>
<td>Time model</td>
</tr>
<tr>
<td>Constant</td>
<td>2.1458*** (0.2476)</td>
<td>2.4854*** (0.3607)</td>
</tr>
<tr>
<td>Panel 1 (1980-84)</td>
<td>-1.7521*** (0.4093)</td>
<td></td>
</tr>
<tr>
<td>Panel 2 (1985-89)</td>
<td>-1.1986** (0.3879)</td>
<td></td>
</tr>
<tr>
<td>Panel 3 (1990-94)</td>
<td>-0.4253 (0.3879)</td>
<td></td>
</tr>
<tr>
<td>Panel 4 (1995-99)</td>
<td>-0.4978 (0.3879)</td>
<td></td>
</tr>
<tr>
<td>Panel 5 (2000-04)</td>
<td>0.7420• (0.3879)</td>
<td></td>
</tr>
<tr>
<td>Panel 6 (2005-09)</td>
<td>0.2869 (0.3740)</td>
<td></td>
</tr>
<tr>
<td>Panel 7 (2010-14)</td>
<td>0.2641 (0.3719)</td>
<td></td>
</tr>
</tbody>
</table>

Control for variable ($SIC_i$)

<table>
<thead>
<tr>
<th>Industry</th>
<th>Coefficient</th>
<th>Standard Error</th>
<th>t-value</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mining</td>
<td>-0.7025</td>
<td>0.5054</td>
<td>-1.400</td>
<td>0.001</td>
</tr>
<tr>
<td>Construction</td>
<td>-0.9189**</td>
<td>0.3501</td>
<td>-2.640</td>
<td>0.010</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>-0.3133</td>
<td>0.3501</td>
<td>-0.890</td>
<td>0.377</td>
</tr>
<tr>
<td>Transportation and Communication Services</td>
<td>-0.0153</td>
<td>0.3501</td>
<td>-0.044</td>
<td>0.965</td>
</tr>
<tr>
<td>Retail Trade</td>
<td>-0.9961**</td>
<td>0.3631</td>
<td>-2.750</td>
<td>0.006</td>
</tr>
<tr>
<td>Finance, Insurance, and Real Estate</td>
<td>1.9219***</td>
<td>0.3525</td>
<td>5.440</td>
<td>0.000</td>
</tr>
<tr>
<td>R-Squared</td>
<td>0.28408</td>
<td>0.3112</td>
<td>0.900</td>
<td>0.368</td>
</tr>
</tbody>
</table>

Significant codes:
*** p<0.001
** p<0.01
* p<0.05
. p<0.1

*Standard error terms appear in parentheses
According to McNamara et al. (2003), we should expect a decrease in market stability along the study period as a result of increasing hypercompetition. Both our results for dynamism and munificence are similar to those of McNamara et al. (2003). We do not find any clear evidence of an increasing level of dynamism overall (decreasing market stability), as only 3 out of 7 time periods are significant, with little indication of positive time trend. Thus, at best we find a weak support for Hypothesis 3 along the 38 years of our study. More specifically, the coefficients in periods 1 (1980-84) and 2 (1985-89) are negative and significant (p<0.001, p<0.01), and indicate an increase in dynamism (decrease in market stability) compared to the base period (2014-17). This could be due to the sound progress and increasing competition in the Danish export market in the 1980s (Abildgren & Thomsen, 2011). However, this reverses again, as industry dynamism in the 1990s is not significant. In period 5 the coefficient is again significant, but positive (0.7420), indicating a higher increase in market stability compared to the base period. Thus, overall our results indicate that the level of dynamism has increased (market stability decreased) in the 1980s, but this tendency stops and reverts to a decrease in the early 2000s with the market becoming more stable.

Concerning Hypothesis 4, results are similar. We do not find clear evidence of significant decrease in the level of munificence along the study period overall. Although the time indicator coefficients for period 5 (2000-04) is positive and significant (p<0.05), we are unable to find clear evidence of a negative time trend across the 38 years. The largest coefficient is found in period 5 (coef = 0.0692), and not in period 1 (1980-84), as we would need in order to support
Hypothesis 4. Thus, we can conclude that the level of munificence overall across the 38 years fluctuates with no specific time trend.

![Graph of Dynamism and Munificence](image)

*Figure 2: The level of Dynamism and Munificence*

When analyzing dummies for industry-specific effects in columns 2 and 4, our results in both the control model and time indicator model show significant differences between industries. In Table 5, column 2, the Manufacturing division does not show a significant difference in the level of dynamism compared to the services division. This result goes in line with McNamara et al. (2003). However, four out of the seven divisions experience a significant difference in the overall level of dynamism relative to Services. The Mining-, Construction-, and Retail Trade divisions have a significantly lower market stability (p<0.01, p<0.001). This indicates that the level of dynamism in these industries is higher overall, compared to the base group ‘Services’. On the other hand, the Finance, Insurance, and Real Estate divisions have positive and significant coefficients, indicating a lower relative level of dynamism. Four of the six divisions experience a significant difference in munificence. The Mining-, Manufacturing-, Transportation and Communication services-, and Finance, Insurance, and Real Estate divisions
experience a significant and higher level of munificence relatively to the Service division (p<0.05, p<0.001).

We analyze whether a trend exists in the level of dynamism and munificence for each specific industry with the regressions that investigate the existence of a trend in these composites. Table 6 and 7 (See Appendix 3 and 4) provide the results of each of these regressions.

It should be noted that results for the dynamism regression indicate that 6 out of 7 industries experience an increasing level of stability over time, evidence for a negative trend in dynamism. These are: “Construction, Manufacturing”, “Transportation and Communication services”, “Retail Trade”, “Finance, Insurance and Real estate” and “Services”. On the other hand 2 out of 7 industries present a decreasing trend in munificence over time giving support for an increasing level of competition. These are “Retail Trade” and “Services”. Finally, the mining industry also indicates a trend in munificence over time, but with the “wrong sign”, indicating a positive trend in munificence and a less competitive environment.

**DISCUSSION AND CONCLUSION**

The aim of this study was to look for empirical evidence of a change in the competitive environment towards hypercompetition. Our results tell more than one story. On the one hand, our broad sample results tell a story that is inconsistent with the assumptions of a
universal transition toward hypercompetition. There is only very weak evidence of changed performance that can be linked to increasing competition in Denmark across industries. There is no general evidence of a decrease in the durability of abnormal business returns, and no general increase in munificence. However, overall there is a small decrease in the survival rate over time, and a little indication of a positive trend in the level of dynamism in the 1980s. Even though, we in our regression model find evidence of a decrease in the survival rate across industries over the study period, we can see from Figure 1 that the probability of a firm exiting an industry is still fluctuating. Broadly speaking, the competitive dynamics across industries in each of the decades do not appear to be significantly different from each other.

On the other hand, the broad sample results do not take industry differences into account. Consistent with the broad results, did these industry specific results not indicate any explosive returns between 1980-2017. Most of the industries experienced an increase in the business mortality. Some industries did experience a higher mortality rate than others, e.g. in each of the significant years the Finance, Insurance, and Real estate industry had the lowest survival rate, indicating a higher level of competition compared to others. During the period 2007 to 2011 did approximately 23% of the firms exit from this particular industry, which could be due to the financial crisis (Jensen & Johannesen, 2017; Nationalbank, 2018). Not surprisingly did the majority of the industries experience an increase in stability (decreasing dynamism) over time. However, the level of munificence has decreased in both the Retail Trade and Services industry, indicating that the capacity to sustain business growth has become smaller, but increased in the Mining industry. By looking at these industry specific results, we see some significant differences. Within this small sample of firms, there may be value in a more deep
investigation of change in the competitive landscape of specific industries, as some industries may experience a higher competition than others, such as the Retail Trade and Services industry showed a higher mortality and decreasing munificence than others.

Understanding the two stories provided above relating to the claim of increasing hypercompetition, our results are somewhat in line with other skeptics (Castrogiovanni, 2002; Makadok, 1998; McNamara et al., 2003; Vaaler & McNamara, 2010), who find no evidence of such a fundamental shift in the competitive environment. Similar to McNamara et al. (2003), our models probed for a broad-based evidence of factors implicating business performance, that is linked to the assumption of increasing hypercompetition. These models included both firm and industry levels, trying to find support for a decreasing durability of abnormal returns, decreasing survival rate, increasing market dynamism, and a decreasing level of munificence. Broadly speaking, with these models we find little supporting evidence of stronger competition, and some industry specific differences in the level of munificence and in the likelihood of firms exiting a particular industry. These results goes in line with some researchers (Castrogiovanni, 2002; McNamara et al., 2003; Vaaler & McNamara, 2010), and against the increasing number of researcher and practitioners advocating that “hypercompetition has affected virtually every industry” (Hanssen-Bauer & Snow, 1996, p. 414). So how do we explain the mismatch between the advocates and skepticism?

First, it may be that hypercompetition exhibit cycles of increase and decrease in individual markets (Bogner & Barr, 2000; Gimeno & Woo, 1996; Thomas & D’Aveni, 2009). Hypercompetition could be more industry specific, as we also saw a small indication of in our
industry specific models. As mentioned earlier is technology industries often cited as a hypercompetitive market, but Vaaler and McNamara (2010) still failed to find broad evidence of increasing hypercompetition. We find evidence of the Retail Trade and Services industry having the strongest competition in our sample, however there is limited research on these industries both in and across regions. Due to globalization, it could be that hypercompetition appears in industries across regions, and are not fixed or limited to a specific region. Most research have focused on the US market and the manufacturing industry, however it could be that we find hypercompetition in industries across boarders or in more emerging regions such as China, India or in the semi-conductor industry across regions?

Second, we noted earlier that previous researchers have found different results that may or may not indicate an increasing hypercompetition, linking this to our result it could be due to timing. Looking at Thomas (1996), he found evidence of a hypercompetitive shift in the manufacturing industry during the 1958 to 1991. However, analyzing the same industry and for a longer time period McNamara et al. (2003) found no evidence of such fundamental shift. We agree with previous researchers (Castrogiovanni, 2002; McNamara et al., 2003; Vaaler & McNamara, 2010), that if we had focused on only one specific time period e.g. 1980-89, it would, in the analysis of dynamism, have lead us to a conclusion of increasing hypercompetition. With this in mind, by looking at a smaller timeframe it is perhaps more coincidental that hypercompetition will appear.

Third, the lack of consistency in the findings that may or may not indicate increasing hypercompetition could be due to the methodological inconsistency. To date, only six
scholars have statistically investigated the assumptions of increasing hypercompetition across several years. These studies yield very different results that either is consistent (Thomas, 1996; Thomas & D’Aveni, 2009; Wiggins & Ruefli, 2005) or inconsistent (Castrogiovanni, 2002; McNamara et al., 2003; Vaaler & McNamara, 2010) with the assumptions of hypercompetition. Makadok (1998) was the first to question the methodology in the research field, and that the popular view of hypercompetitive markets rested on descriptive analyses, case studies, and single industry studies (Craig, 1996; D’Aveni, 1994; Nault & Vandenbosch, 1996; Rindova & Kotha, 2001). By relying on a few case studies the result could, similar to timing, skew the result and indicate a hypercompetitive shift. Not saying, that it is not correct for these particular firms, but studies show that managers often make decisions based on behalf of their organization based on subjective perceptions of the reality (Daft & Weick, 1984; Ilinitch et al., 1996; Sund, 2015). In other words, it may be that hypercompetition is more psychological or perceptual in nature, just as Makadok (1998) suggested.

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https://doi.org/10.1002/(SICI)1097-0266(199807)19:7<683::AID-SMJ965>3.0.CO;2-T


https://doi.org/10.1002/smj.295


### Appendix 1: The survival analysis of each of the industries (base model)

<table>
<thead>
<tr>
<th>Independent variable</th>
<th>Mining, SIC1</th>
<th>Construction, SIC2</th>
<th>Manufacturing, SIC3</th>
<th>Transportation and Communication services, SIC4</th>
<th>Retail Trade, SIC5</th>
<th>Finance, Insurance, and Real Estate, SIC6</th>
<th>Services, SIC7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>90.2851***</td>
<td>111.8747***</td>
<td>96.7845**</td>
<td>102.2797***</td>
<td>97.9769***</td>
<td>91.7279***</td>
<td>102.4984***</td>
</tr>
<tr>
<td>GDP growth rate (GDP_G[t])</td>
<td>0.2128</td>
<td>0.1038</td>
<td>0.4375</td>
<td>-0.2491</td>
<td>0.1152</td>
<td>0.604295</td>
<td>-0.1146</td>
</tr>
<tr>
<td></td>
<td>(0.7383)</td>
<td>(0.3616)</td>
<td>(0.3049)</td>
<td>(0.1840)</td>
<td>(0.4469)</td>
<td>(0.4888)</td>
<td>(0.1995)</td>
</tr>
<tr>
<td>Division Density</td>
<td>11.7601</td>
<td>-2.2306</td>
<td>-0.2772</td>
<td>-0.0156</td>
<td>0.7288</td>
<td>0.0912</td>
<td>-0.2677</td>
</tr>
<tr>
<td></td>
<td>(8.9772)</td>
<td>(1.5940)</td>
<td>(0.4192)</td>
<td>(0.3298)</td>
<td>(1.3605)</td>
<td>(0.3549)</td>
<td>(0.2582)</td>
</tr>
<tr>
<td>(DENSITY[t])</td>
<td>-2.8969</td>
<td>0.0648</td>
<td>0.0056</td>
<td>-0.0143</td>
<td>-0.0921</td>
<td>-0.0014</td>
<td>0.0035</td>
</tr>
<tr>
<td></td>
<td>(1.8372)</td>
<td>(0.0508)</td>
<td>(0.0078)</td>
<td>(0.0149)</td>
<td>(0.0915)</td>
<td>(0.0060)</td>
<td>(0.0064)</td>
</tr>
<tr>
<td>(DENSITY[t]^2)</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>N</td>
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<td>37</td>
<td>37</td>
<td>35</td>
<td>36</td>
<td>37</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.288</td>
<td>0.1181</td>
<td>0.1723</td>
<td>0.3525</td>
<td>0.1372</td>
<td>0.0682</td>
<td>0.1901</td>
</tr>
</tbody>
</table>

Significant codes:
*** p<0.001
*Standard error terms appear in parentheses

Table 3. The survival analysis for each of the industries (Base model)
Appendix 2: The survival analysis for each of the industries (Time model)

<table>
<thead>
<tr>
<th>Independent variable</th>
<th>Mining, SIC1</th>
<th>Construction, SIC2</th>
<th>Manufacturing, SIC3</th>
<th>Transportation and Communication services, SIC4</th>
<th>Retail Trade, SIC5</th>
<th>Finance, Insurance, and Real Estate, SIC6</th>
<th>Services, SIC7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>513.8042</td>
<td>588.38460*</td>
<td>540.1374**</td>
<td>274.9995•</td>
<td>676.5455*</td>
<td>684.7415*</td>
<td>493.5182*</td>
</tr>
<tr>
<td>(1274.3708 )</td>
<td>(275.4194)</td>
<td>(196.9929)</td>
<td></td>
<td>(151.2668)</td>
<td>(275.5964)</td>
<td></td>
<td></td>
</tr>
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<td>GDP growth rate (GDP_Gt)</td>
<td>0.1948</td>
<td>-0.45319</td>
<td>0.30144</td>
<td>-0.3066</td>
<td>-0.1111</td>
<td>0.2583</td>
<td>-0.1826</td>
</tr>
<tr>
<td>(0.7754)</td>
<td>(0.4762)</td>
<td>(0.2939)</td>
<td></td>
<td>(0.1900)</td>
<td>(0.4377)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Division Density</td>
<td>13.4367</td>
<td>-2.0603</td>
<td>0.4134</td>
<td>0.1196</td>
<td>2.4032</td>
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<td></td>
</tr>
<tr>
<td>(10.6728)</td>
<td>(1.5509)</td>
<td>(0.5005)</td>
<td></td>
<td>(0.3490)</td>
<td>(1.5177)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>the quadratic trans. of the division density (DENSITYt^2)</td>
<td>-3.1342</td>
<td>0.0558</td>
<td>-0.0065</td>
<td>-0.0161</td>
<td>-0.1956</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(2.0529)</td>
<td>(0.0496)</td>
<td>(0.0091)</td>
<td></td>
<td>(0.0149)</td>
<td>(0.0999)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A year counter (YEARt)</td>
<td>-0.2120</td>
<td>-0.23730•</td>
<td>-0.2255*</td>
<td>-0.0869</td>
<td>-0.2917*</td>
<td>-0.2981•</td>
<td>-0.1975•</td>
</tr>
<tr>
<td>(0.6379)</td>
<td>(0.1371)</td>
<td>(0.1002)</td>
<td></td>
<td>(0.0761)</td>
<td>(0.1389)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>14</td>
<td>37</td>
<td>37</td>
<td>37</td>
<td>35</td>
<td>36</td>
<td>37</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.2966</td>
<td>0.1936</td>
<td>0.2855</td>
<td>0.3778</td>
<td>0.2478</td>
<td>0.1584</td>
<td>0.2751</td>
</tr>
</tbody>
</table>

Significant codes:
** p<0.01
* p<0.05
. p<0.1
*Standard error terms appear in parentheses

Table 4. The survival analysis for each of the industries (Time model)
Appendix 3: The level of munificence of each industry

<table>
<thead>
<tr>
<th>Independent variable</th>
<th>Mining, SIC1</th>
<th>Construction, SIC2</th>
<th>Manufacturing, SIC3</th>
<th>Transportation and Communication services, SIC4</th>
<th>Retail Trade, SIC5</th>
<th>Finance, Insurance, and Real Estate, SIC6</th>
<th>Services, SIC7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>66.2982***</td>
<td>-3.1252</td>
<td>-3.5433</td>
<td>-0.8496</td>
<td>-16.6195***</td>
<td>-2.0786</td>
<td>-8.2429***</td>
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<tr>
<td></td>
<td>(6.2836)</td>
<td>(1.9398)</td>
<td>(2.7217)</td>
<td>(5.3644)</td>
<td>(2.7196)</td>
<td>(7.6080)</td>
<td>(1.6567)</td>
</tr>
<tr>
<td>Year</td>
<td>-0.0349***</td>
<td>0.00158</td>
<td>0.0018</td>
<td>0.0005</td>
<td>0.0083***</td>
<td>0.0011</td>
<td>0.0041***</td>
</tr>
<tr>
<td></td>
<td>(0.0031)</td>
<td>(0.0010)</td>
<td>(0.0014)</td>
<td>(0.0027)</td>
<td>(0.0014)</td>
<td>(0.0038)</td>
<td>(0.0008)</td>
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<tr>
<td>R-squared</td>
<td>0.9173</td>
<td>0.0681</td>
<td>0.0463</td>
<td>0.0008</td>
<td>0.5473</td>
<td>0.0024</td>
<td>0.4065</td>
</tr>
<tr>
<td>N</td>
<td>12</td>
<td>38</td>
<td>38</td>
<td>38</td>
<td>33</td>
<td>37</td>
<td>38</td>
</tr>
</tbody>
</table>

Significant codes:
*** p<0.001
* Standard error terms appear in parentheses

Table 6. The level of munificence in each industry

Appendix 4: The level of dynamism of each industry

<table>
<thead>
<tr>
<th>Independent variable</th>
<th>Mining, SIC1</th>
<th>Construction, SIC2</th>
<th>Manufacturing, SIC3</th>
<th>Transportation and Communication services, SIC4</th>
<th>Retail Trade, SIC5</th>
<th>Finance, Insurance, and Real Estate, SIC6</th>
<th>Services, SIC7</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(65.1585)</td>
<td>(6.6584)</td>
<td>(10.8981)</td>
<td>(36.4241)</td>
<td>(9.3149)</td>
<td>(96.0469)</td>
<td>(23.6950)</td>
</tr>
<tr>
<td>YEAR</td>
<td>0.0497</td>
<td>0.0075*</td>
<td>0.0507***</td>
<td>0.0645**</td>
<td>0.0200***</td>
<td>0.1024*</td>
<td>0.0713***</td>
</tr>
<tr>
<td></td>
<td>(0.0324)</td>
<td>(0.0033)</td>
<td>(0.0054)</td>
<td>(0.01823)</td>
<td>(0.0047)</td>
<td>(0.0481)</td>
<td>(0.0119)</td>
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<tr>
<td>R-squared</td>
<td>0.1903</td>
<td>0.1244</td>
<td>0.7064</td>
<td>0.2585</td>
<td>0.3733</td>
<td>0.1148</td>
<td>0.8015</td>
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<td>38</td>
<td>33</td>
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<td>38</td>
</tr>
</tbody>
</table>
Significant codes:
*** p<0.001
** p<0.01
* p<0.05
*Standard error terms appear in parentheses

Table 7. The level of Dynamism in each Industry