The Limping Gazelles:

On the Viability of Estonian Fastest Growing Companies under the Economic Crisis

Anna Maria Tsareva & Aaro Hazak
Department of Economics
Tallinn University of Technology
Tallinn, Estonia
e-mail: aaro.hazak@tseba.ttu.ee

Abstract—**We seek to investigate what are the patterns in the performance of the previously fastest growing Estonian companies under the economic crisis. We find that 16% of the firms that figured in the annual top lists of gazelle companies in 2005-2010 have problems with liquidity and 2% have bankrupted by May 2010. During the economic boom, the fastest growing companies were, as expected, primarily from the construction, real estate and trading businesses. However, many of the gazelle companies of the same industries exhibit fragility under the crisis. We find that a considerable share of the success of the Estonian gazelle companies is not sustainable in the longer term.**

Keywords: fastest growing companies, bancruptcy, liquidity, Estonia, economic crisis

I. INTRODUCTION

The so called gazelle tops or lists of fastest growing companies have largely been regarded as walls of fame, praising the businesses where the origins of fast economic growth are believed to be laid. Companies that demonstrated an ability to increase revenues and profits more than 20% a year were not exceptional during the years of fast economic growth, including in Estonia, one of the Central and Eastern European emerging markets.

While a strong real sector serves as an engine of the economy generating employment, growth and innovation, company failures have a considerable adverse impact on both the micro and macro level. Fast increase in revenues and profits may not necessarily represent sustainable growth of a company, as the reasons underlying the revenue and profit increase may be temporary market frictions, demand bubbles and other cyclical effects. In this way, the procyclical fast growth of a company may result in a quick default under economic slowdown when the temporary conditions that enabled the existence of such a company are not present any more. Moreover, the defaulting of such companies may have contagious effects on other companies and stakeholders.

Cyclical macroeconomic changes have been largely addressed by introducing structural control variables in the econometric models that strive to explain company defaults, rather than investigated as a potentially important reason for certain companies having a higher probability of default at certain phases of the economic cycle. The impact of booms and busts on company survival is therefore an area where more research is needed.

We seek to find out what kind of companies have been among the fastest growing ones in Estonia in the years of rapid economic growth, and what has happened to the same companies under the economic crisis. This is the first known study looking into the performance of Estonian gazelle companies under different phases of the economic cycle. Given the limited sample of around 300 Estonian companies and the exploratory nature of the study, we do not develop a sophisticated econometric model in this paper yet but use descriptive statistical analysis instead to pave a road for more detailed future research in this area.

The paper is structured as follows. Section II presents a brief overview of related literature. Section III describes the data and methodology used for the study. Section IV presents the empirical results and Section V concludes.

II. LITERATURE OVERVIEW

As illustrated by the recent economic crisis and as documented in earlier papers (e.g. Das et al., 2007; Lando and Nielsen, 2010), corporate defaults are clustered in time, a phenomenon which is largely attributable to cyclical changes. However, the sensitivities and vulnerabilities of different types of companies to economic cycles have received limited attention and previous studies (e.g. Bhattacharjee et al., 2004 and 2007; Carling et al., 2004, Figlewski et al., 2008; Bottazzi et al. 2009; Männasoo, 2008; Hazak and Männasoo, 2010) have found mixed evidence on the impact of macro variables and cyclical changes on company viability.

Understanding and forecasting corporate failure has been an area of extensive research for nearly half a century. Several thorough reviews of the literature have been written about corporate default prediction and analysis, including Balcaen et al (2004 and 2006), Dimitras et al (1996) and Altman et al (1997). The studies investigating the nature of company failure started with the simple univariate discriminant analysis by Beaver (1967). The subsequent approach of risk index models (e.g. Tamari, 1966 and Moses and Liao, 1987) implements the idea of indexing the individual default-predicting indicators. This approach, however, shares the same weaknesses of univariate analysis by providing largely arbitrary risk-metrics. The next generation of failure prediction techniques – the multivariate

discriminant analysis approach – made a breakthrough with the famous Altman (1968) Z-score model. Although discriminant analysis has remained one of the most widely-used risk analysis tools, probability models, such as the logit and probit models (e.g. Ohlson (1980), Zmijewski (1984), and Becchetti and Sierra (2002), among many others) have overtaken this position due to the higher reliability of results. Although popular among researchers, the disadvantages of the logit and probit models include a strong sensitivity to multicollinearity, outlying observations and missing values in the data. The use of decision trees and neural networks represent non-parametric, artificial intelligence approaches in corporate failure research. Examples of studies based on these methods include Frydman et al. (1985), Coats and Fant (1991) and Back et al. (1996). The main drawback of these approaches is that they identify no measurable links between the causes (variables) and the result (default). Survival analysis applied, for example, by Luoma and Laitinen (1991), Männasoo (2008) and Hazak and Männasoo (2010), is a multi-period modelling technique, the aim of which is to determine a company's hazard rate; that is, the probability of default conditional on survival up to the time under observation. Unlike the static probability models, the survival models are dynamic since they account for the survival time of the company, treating the variables of the same company in different periods as interdependent.

Company growth rates have, however, received limited attention as potential determinants of failure, especially in the context of cyclical macroeconomic changes. We focus on the viability issues of the top companies in terms of growth in the Estonian context to shed some light on this area. The economic environment of Estonia is a specific one, as the unique corporate tax system in this country might have its effects on company survival, as noted by Hazak (2009).

III. DATA AND METHODOLOGY

We use data from the annual Gazelle Top 50 lists of fastest growing companies in Estonia, compiled by the local business daily "Äripäev". Our sample covers all the companies in these top lists in the six years from 2005 to 2010. Our sample includes total 287 companies, while some of the companies have appeared in the Gazelle Top 50 in several years. We have gathered data on the industry, location, age and ownership structure of the companies in the sample in order to study the background of the gazelles.

The Gazelle Top 50 is compiled based on the financial results of all Estonian companies within three years prior to the year for which latest annual reports are available. For example, the 2010 top, published in January 2010, is based on the financial results of the years 2006 to 2008. Each year (*n*) the top list is published, each company is assigned a rank (*r*), which is the total of the company's rank in the revenue growth (r_R) ranking list and its rank in net profit growth (r_P) ranking list of all Estonian companies. The growth rate in revenues is calculated based on the change in the company's revenues in the latest year for which annual reports are available (i.e. *n*-2) compared to a two years older period (i.e. *n*-4). The growth rate in net profit is calculated in a similar

way. Calculation of the ranking of a company in the Gazelle Top can thus be expressed as follows:

$$r_n = r_{R_n} \left\{ r_{R_n} : r_{R_n} = fn\left(\frac{R_{n-2}}{R_{n-4}}\right)\right\} + r_{P_n}\left\{r_{P_n} : r_{P_n} = fn\left(\frac{P_{n-2}}{P_{n-4}}\right)\right\} (1)$$

We use the existence of overdue tax liabilities and interest penalties of more than 10,000 Estonian kroons (i.e. 639 EUR) as at 1 May 2010 as a proxy for measuring liquidity problems. Companies tend to avoid late payment of taxes in consideration of the related fines and penalties. The existence of overdue tax liabilities and interest penalties may therefore be considered a clear indication of liquidity problems in a company. Furthermore, from the practical point of view, information on overdue tax liabilities is publicly available from a reliable source (Krediidinfo, an Estonian credit information agency of the worldwide Experian group), as opposed to information on other overdue liabilities that may not be publicly disclosed in respect of all companies.

We have also used data from the Estonian Commercial Registry as at 1 May 2010 on the bankruptcies and liquidations of the companies included in our sample. Both bankruptcy and liquidation are clear indicators of non-sustainability.

As regards the methodology, we use descriptive statistics to identify what kind of companies have been among the fastest growing ones in Estonia before the crisis and what are the patterns in their performance during the crisis. We seek to find out the industry, age and ownership characteristics of the companies, which have exhibited liquidity problems or become bankrupt.

IV. EMPIRICAL FINDINGS

Approximately 98% of the companies included in the Gazelle Top 50 list appear to be small size companies with less than 50 employees. Considering this as well as the fact that there are approximately 80 thousand companies in Estonia, the role of gazelle companies in the total economic output of Estonia does not appear to be significant. However, as the gazelle type of companies represent outliers from "regular" ones, they still warrant a closer look.

Interestingly, Estonian gazelles are not new companies, while the average age of a company included in the Gazelle Top is 8.0 years. The fact that fast growth has been achieved only after several years of operation may refer to credit constraints, lack of human and physical resources and other activity level limitations in the start-up phase that hinder fast growth.

Surprisingly, 85% of the companies in our sample are owned directly by private persons. This may refer to the close involvement of owners in their business management, decreasing agency conflicts and enabling quick reactions to changes and opportunities emerging from daily business. 15% of the gazelle companies in our sample belong to other companies (which does not exclude, however, that the parent company is just a holding company directly owned by a

private person). Approximately a half of the sample companies have one owner (further decreasing any agency issues) while the rest are owned by two or more shareholders.

Fig. 1 illustrates the industry composition of the fastest growing Estonian companies. Average 25% of the companies in the sample come from the construction industry and 23% are active in the trading business.
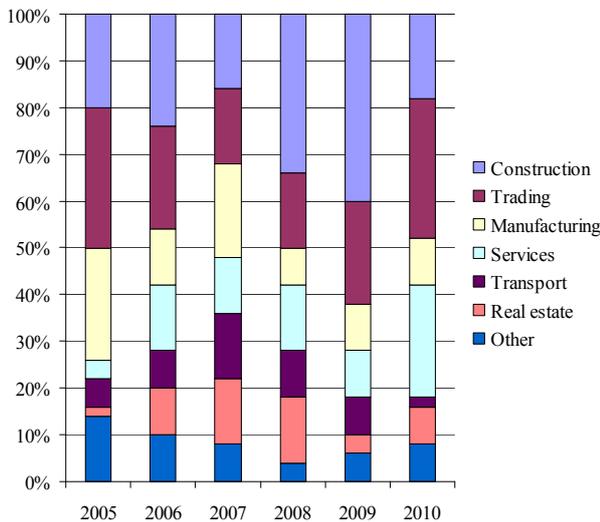

Figure 1.   Fastest Growing Companies by Industries.

The share of construction companies in the top list of fastest growing companies has strongly followed the economic cycle, as illustrated by the real GDP growth trends on Fig. 2. As the Gazelle Top lists reflect the financial results of a company with a one year lag time (as explained in the Data and Methodology section), it can be clearly seen that construction and real estate companies have had an increasing share among the fastest growing companies during the years of fast economic growth. The picture is not so clear in respect of other industries represented in our sample, perhaps due to a less cycle driven nature of the businesses. The start of the economic slowdown in 2008 (evidenced in the 2009 and 2010 top lists) has lead to significant changes in the industry composition of the Gazelle Top 50.
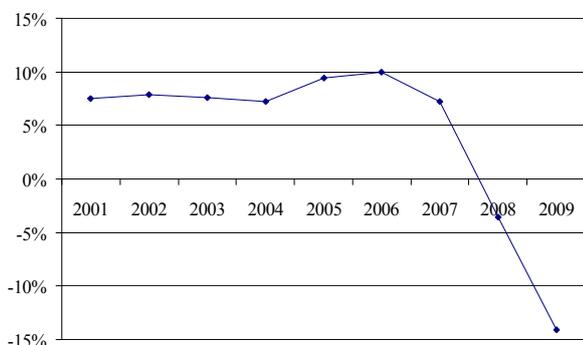

Figure 2.   Real GDP growth in Estonia (Source: Bank of Estonia).

It appears that 6 companies or out of the sample total of 287 had gone bankrupt and 10 had been liquidated by May 2010. The 2.1% bankruptcy rate of the fastest growing companies in our sample is much higher than the overall average 2009 bankruptcy rate of Estonian companies of 0.75% (Source: Krediidiinfo, http://www. krediidiinfo.ee). Fast growth appears to be related to significant bankruptcy risks. Moreover, exceptional growth under overall economic boom appears to be followed by relatively high bankruptcy rates of the previously fast growing companies under economic slowdown.

The companies in our sample that have gone bankrupt come from different industries and locations and have different ownership structures and age. It is therefore difficult to bring out any specific bankruptcy risk drivers of the companies in the sample based on our introductory study.

As a next step, we look into liquidity problems of the fastest growing Estonian companies. We find that 46 companies or 16% of our sample had evident problems with liquidity by May 2010, having overdue tax liabilities. The overall average percentage of companies with overdue tax liabilities out of all the Estonian companies was 20% in the end of June 2010 (Source: Krediidiinfo, http://www. krediidiinfo.ee). This means that the liquidity position of the previously fastest growing companies is only slightly better than the overall average of Estonian companies.

Industry composition of the sample companies with overdue tax liabilities, grouped by the year in which the company appeared in the Gazelle Top 50 is illustrated in Table 1.

TABLE I.   ANNUAL SPLIT OF GAZELLE COMPANIES WITH OVERDUE TAX LIABILITIES BY INDUSTRIES

Industry	2005	2006	2007	2008	2009	2010	Avg
Construction	14%	13%	14%	25%	33%	67%	24%
Trading	57%	38%	29%	17%	11%	N/A	26%
Manufacturing	N/A	N/A	14%	8%	11%	N/A	7%
Services	14%	13%	14%	17%	11%	N/A	13%
Transport	N/A	N/A	N/A	N/A	11%	N/A	2%
Real estate	N/A	13%	29%	25%	11%	N/A	15%
Agriculture	14%	25%	N/A	N/A	N/A	N/A	7%
IT	N/A	N/A	N/A	8%	N/A	N/A	2%
Forestry	N/A	N/A	N/A	N/A	N/A	33%	2%
Fishing	N/A	N/A	N/A	N/A	11%	N/A	2%

The picture appears to be quite similar to the overall industry composition of the sample (Fig. 1). Still, we can see that a relatively high portion of the companies in the trading business, which were among the fastest growing ones in 2005 and 2006, have liquidity problems in May 2010. At the same time, relatively few of the construction companies, which were included in the 2005 and 2006 Gazelle Top 50 list, have liquidity problems in May 2010. It is difficult to attach any economic significance to these findings, while these might be explained by the relatively small number of annual observations of companies with liquidity problems.

V. CONCLUSIONS

98% of the companies included in the Estonian 2005-2010 Gazelle Top 50 lists of fastest growing companies appear to be small size firms with less than 50 employees. Although the role of gazelle companies in the total economic output of Estonia is not significant, they still warrant a closer look due to their outlying financial performance.

Interestingly, Estonian gazelles are not recently established companies, but rather old ones with average age of 8 years. The fact that fast growth has been achieved only after several years of operation may refer to credit constraints, lack of human and physical resources and other activity level limitations in the start-up phase.

We find that 85% of the Estonian gazelle companies are owned directly by private persons. This may refer to the close involvement of owners in the management of their business, thus decreasing agency conflicts and enabling quick reactions to changes and opportunities emerging from daily business.

It appears that average 25% of the companies in the Estonian Gazelle Top 50 come from the construction industry and 23% are active in the trading business. Construction and real estate companies have had an increasing share among the fastest growing companies during the years of fast economic growth. The picture is, however, not so clear in respect of other industries represented in our sample, perhaps due to a less cycle driven nature of these businesses.

We find the 2.1% bankruptcy rate of the fastest growing Estonian companies in our sample to be much higher than the overall average 2009 bankruptcy rate of Estonian companies of 0.75%. Exceptional growth under overall economic boom appears to be followed by relatively high bankruptcy rates of the previously fast growing companies under economic slowdown.

It appears that 16% of the previously fast growing companies in our sample had evident problems with liquidity by May 2010, having overdue tax liabilities. The overall liquidity position of the previously fastest growing companies is only slightly better than the overall average of Estonian companies (20%).

It can be concluded that a considerable share of the success of the Estonian gazelle companies does not appear to be sustainable in the longer term.

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