Survive or Die? A Decade of Tough Competition for Italian Firms

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Abstract

Firms' survival is a crucial element to assess a country's competitiveness. This paper analyzes business demography of Italian affiliates, using an original database, obtained by matching and merging over a long period (2000 - 2008) two firm level datasets: ICE-Reprint and AIDA. With data on characteristics and budgets of Italian companies, and exploiting the information on number of employees, sales, and country of destination from the census of foreign affiliates of Italian firms, we simultaneously investigate the effect of size, technology, geographical areas of destination and local networks on firms' survival probability. The analysis covers a decade of important transformation for the global economy as well as for Italian firms and allows us to single out the elements increasing the probability to survive - size, number of affiliates per area e per sector and, low distance from destination markets - with a focus on differences within manufacturing between sectors with different technology level as well as between manufacturing and services.

KEY WORDS: : Business Demography, Survival, Competitiveness, Internationalization
JEL classification: C41, L11, L25, F21

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1 Introduction

A recent and increasing literature has pointed out the importance of firms' survival, as well as turnover, entry of new firms, start up, incubators etc. for growth and competitiveness of a country (see for instance Bartelsman et al., 2003, Bartelsman et al. 2004). A different strand of literature emphasizes that firms involved in international activities through export or FDI are "different" from purely domestic firms in several respect, productivity, wages, skill intensity (see for all Mayer and Ottaviano, 2008). In this paper we draw on these two strands of the literature and assess the relationships among firms' characteristics and their competitiveness by analyzing demographic dynamics and survival of Italian firms' affiliates. More specifically, we show how the probability of survival is related to firms' size, technological level (in line with Agarwal e Audretsch, 2001) but also to firms' presence in foreign markets as foreign direct investors (in line with Bernard et al.).

We rely on an original dataset obtained by matching and merging two firm level datasets: ICE-Reprint and AIDA over a long period (2000 - 2008). With data on characteristics and budgets of Italian companies, and exploiting the information on number of employees, sales, and country of destination from the census of foreign affiliates of Italian firms, we simultaneously investigate the effect of size, technology, geographical areas of destination and local networks on firms' survival probability. The analysis covers a decade of important transformation for the global economy and for Italian firms which had to adapt to a more competitive environment. Against this background we single out the elements increasing the probability to survive. After a brief overview of two strand of the literature (Gibrat's Law and business demography on the one and internationalization on the other hand), we sketch the econometric techniques used and then present the empirical results. We conclude by drawing some policy implications.

2 A Sketch of the Literature

Back in 1931, Robert Gibrat proposed an explanation for skew size distributions in a number of different environments, ranging from biology to astronomy. In particular, describing manufacturing industries, he showed that the firms' size distribution is well approximated by a Log Normal: "the probability of a given proportionate change in size during a specified period is the same for all firms in a given industry - regardless of their size at the beginning of the period" (Mansfield, 1962, p. 1031). This regularity is known as the Law of Proportionate Effect or Gibrat's Law.

Until the 1970s this Law was popular, not only because it was coherent with dynamic patterns of manufacturing firms in different countries but also because of its compatibility with different theoretical models. However, empirical testing soon became controversial, and theoretical models started developing different lines of research (cf. Santarelli et al, 2006), the most promising of which emphasized the existence of a strong relationship between the likelihood of survival and firm size. "Because small firms have a lower likelihood of survival than their larger counterparts, and the likelihood of small firms' survival is directly related to growth, firms' size is found to be negatively related to growth, thereby refuting Gibrat's Law" (Agarwal and Audretsch, 2001, pp 22). Hence, the greater is the "size at entry" in a given industry, the higher the likelihood of survival of new entrants. On average, therefore, smaller firms have a lower probability of survival; however those who survive grow proportionately faster than larger firms (Jovanovic, 1982; Evans, 1987; Hall, 1987, Agarwal and Audretsch, 2001). Furthermore, "entry appears to be relatively easy, but survival is not" (Geroski, 1995), so that turnover can be high, especially in highly competitive markets.

A vast number of recent empirical studies, covering different time periods and countries, finds that size increases the likelihood of survival in the more technological advanced industries, but not in traditional sectors. Most of these studies are consistent with theories of industry evolution (Agarwal and Gort, 1996, Agarwal, 1998, Audretsch, 1995) and with the theory of strategic niches (Caves and Porter, 1977; Porter, 1979). According to the latter, firms remain small because they occupy product niches that are not easily accessible or profitable for their larger counterparts. A different strand of the literature has emphasized firms' heterogeneity and focused on the existence of substantial differences between domestic and internationalized firms. In this paper, in line with Giovannetti et al. (2010), we show that there is a strong heterogeneity also between the internationalized firms, specifically the affiliates of Italian firms. Our purpose is to link the literature on survival with that on internationalization strategies. To the best of our knowledge there are few studies, if any, that look simultaneously at the role of size, technology and localization on firms' survival rates of affiliates.

3 Survival Analysis

To analyze whether the likelihood of survival is invariant to firm size, international involvement and technological intensity we use the Analysis of Duration (Lancaster, 1990) that allows us to estimate the length of the time until failure. The variable of interest in the analysis of survival is the length of time that elapses from the beginning of some events either until "their" end or until the end of the analysis. Observations will typically consist of a cross section of durations $t_1, t_2, .., t_n \epsilon T$, where T is a random variable (discrete or continuous), and for this type of data the analysis of duration allows one to estimate the probability that the event "failure" occurs next period. In this paper the dependent variable is the span of survival and is calculated as the difference between time t and the firm's set up year while the "failure" event includes winding-up, failure or end of activity (Agarwal and Audretsch, 2001). The process observed may have started at different points in time and, because its length is not constant over time, the random variable T is unavoidably censored. Let T be a random variable with a cumulative probability

$$F(t) = \int_0^t f(s)ds = Pr(T \geq t) \tag{1}$$

where f(t) is the continuous probability distribution. We are interested in the probability that the period is of length at least t, which is given by the survival function

$$S(t) = 1 - F(t) \tag{2}$$

and the probability that the phenomenon will end the next short interval of time, Δ , is

$$l(t, \Delta) = Pr(t \leq T \leq t + \Delta | T \geq t). \tag{3}$$

The Hazard Rate, i.e. the rate at which spells are completed after duration t, given that they last at least until t, is:

$$\lambda(t) = \frac{f(t)}{S(t)} \tag{4}$$

To measure the effect of different regressors (in our case entry size and technological level) on the survival probability of the phenomenon, we estimate the parameter λ using Maximum Likelihood by the Cox Proportional Hazard Regressions. The hazard function $h_i(t)$ of a firm i is expressed as:

$$h_i(t) = h_0(t) exp(x_i \beta) \tag{5}$$

$h_0(t)$being an arbitrary and unspecified baseline hazard function representing the probability of failure conditional on the fact that the firm has survived until time t, x_i is a vector of measured explanatory variables for the $i-th$ firm and β is the vector of unknown parameters to be estimated. Negative coefficients or risk ratios less than one imply that the hazard rate decreases and the corresponding probability of survival increases. Life-table analysis, estimating the survival rate at time s, where s is defined as the fraction of the total number of firms that survived at least t years, can also be used to show firms survival and failure rates. Life tables give the number of firms that die conditional on their age, i.e. they represent the probability of failure given that the firm has survived t years. To check for significance of differences between groups, tests of homogeneity are usually run (in the following we use the nonparametric Log-Rank, Wilcoxon, Tarone-West and Peto-Peto-Prentice tests). At each failure time t, the test statistics is obtained as a weighted standardized sum of the difference between the observed and expected number of exit in each of the k-groups. The null hypothesis is no difference between the survival functions of the k-groups. The weights functions used determine the test statistics (see Klein and Moeschenberger, 2003).

4 The Data

We match and merge two different datasets (AIDA and ICE-Reprint) for the period 2000-2008. AIDA provides standard data on budgets of Italian companies, while the ICE-Reprint database is the census of foreign affiliates of Italian firms and provides information on number of employees, sales and sectors (for both investors and affiliates), as well as country of destination and "affiliates' birth year" (for details, see Mariotti and Mutinelli, 2005). Hence, our consolidated dataset provides information on firms' processes of internationalization, economic performance, innovative capacity and growth for 9552 investors and 32467 affiliates for the period 2000-2008. While in previous work (Giovannetti et al. 2010a, 2010b, 2011) we have used merge data, we have now constructed a long panel that allows us to "follow" the investors[1].

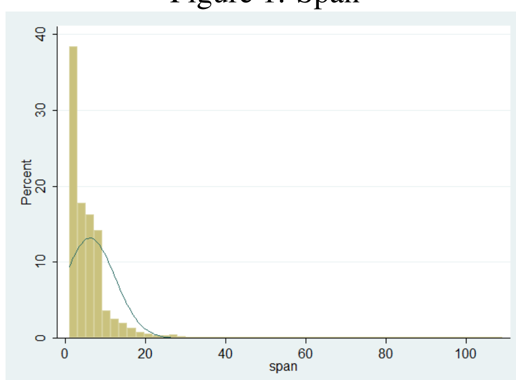
The independent variable (span of survival of Affiliates) is calculated as:

$$S_t = A_t - A_0 + 1 \tag{6}$$

[1]The complex merging procedure and cleaning of the database can be discussed with the authors.

where A_t is the year corresponding to the balance sheet at year t and A_0 is the affiliates' birth year. S_t represents the "failure" variable on which the exit probability is worked out, it is a censored variable because the exit from the market can happen during or before 2008 due to winding-up, failure or end of activity. Hence, we can avoid biased estimates by distinguishing firms that failed during 2008 from those still alive in 2008 that are no longer included in the dataset as a result of falling outside the sample frame. Fig. 1 shows the span of the Italian affiliates: on average they survive roughly 6 years (in line with Italian firms, see Giovannetti et al. 2011) in international markets.

Figure 1: Span



The explanatory variables are impact of affiliate's size, distance of country of destination from Italy, number of affiliates per investor per area, number of affiliates per sector per investor and, a dummy variable that is one when the investor and the affiliate operate in the same sector.

Size is generated from affiliate's total sales. Because of the high skewness of the Italian firms' distribution, we use 4 equally represented classes. By following the procedure introduced by Geweke, Marshall and Zarkin (1986) to avoid inconsistency problems in the axioms at the basis of the discrete Markov Chains theory (Fractile Markov Chains), we define a number of classes n such that the proportion of the population (asset size of the firms) in each class j, for each t, is constant and equal to n-1 instead of using the common procedure of considering equally sized classes. This allows us to avoid classifying most firms as "small" and have a more realistic representation of our sample. As for distance, we consider three main areas for Italian investors: EU countries (with represent on average), OECD countries and Rest of the Word. Finally, the dummy variable "same tech" allows to account for the fact that firms have different technology and R&D intensities. More precisely, we group manufacturing firms into four gropus: high, medium-high, medium-low and low technology, according to OECD (2009), we did not split services and agriculture firms, which are respectively in group five and six. The dummy is one if the affiliates and the investor are in the same group and zero otherwise.

Table 1 summarizes standard statistics of our variables.

Table 1: Summary statistics

Variable	**Mean**	**Std. Dev.**	**Min.**	**Max.**	**N**
Affiliate's size	1.676	0.9	1	4	141179
N. Affiliates per area	12.01	27.85	1	282	163893
N. of affiliates per sector per investor	23.729	58.996	1	558	124241
Manufacture	0.647	0.478	0	1	159443
Same tech	0.549	0.498	0	1	163893

5 The Results

5.1 Whole sample

Table 2 summarizes the main results (we report hazard ratios). We run models for the whole sample (regression 1) and, separately, for manufacturing (regression 3) and services (regression 4), to account for the possible differences in the survival probability of Italian affiliates. We then run a model for the sub-group of affiliates that work in a sector with a similar technological level of their investor (regression 2). In line with the existing literature (Mayer and Ottaviano, 2008; Giovannetti et al., 2010), the larger the size of affiliates (investors) the higher the survival probability. A higher geographical distance between affiliates and their investor, on the other hand, makes it more difficult for them to compete in international markets. This result is in line with the gravity models of international trade and investment which highlight the cost and difficulties of managing very distant affiliates. Also, distance seems to be more relevant in manufacturing than in services sectors. Indeed services are less likely to need a face to face relationship (Baldwin, 2006) and can also be off-shored by broad-band. The weak and positive effect of an higher number of affiliates per area and per sector (per investors) suggests a network effect[2], although very small in magnitude. It is worth noting that the level of technology affects the affiliates likelihood of survival through two opposite ways: in line with the literature the affiliates technological intensity increases the probability of exit, while the investors' technology level reduces it. This confirms the fact that a technologically advanced investor enhances the competitiveness of affiliates in foreign markets. Concerning regression (2), it is worth noting that results still hold but for the distance proxy, which turns to be not significant. This may indicate that sharing the same level of technology is more relevant than geographical distance between investors and their affiliates. Regarding regressions (3) and (4), it is particularly interesting to notice that while a larger size of both affiliates and investors reduces the likelihood to exit, the magnitude is different between sectors: the size of affiliates (investors) has a larger (smaller) effect in manufactures than in services.

5.2 Investor's Size

As investor's size grows, the affiliates' size effect on the affiliates survival increases, confirming that size is the most relevant variable affecting firms' survival. Affiliates' and investor's technology levels have two opposite effects on likelihood of survival. This is more evident when focusing on the two extreme investor's size classes (smallest vs. biggest investors). For the subgroup of affiliates whose investor is small (sales less than 13.85 mln euro), the affiliates' technology level increases the risk of exit by 5.2%, on average, and the investor's technology level reduces the risk by 1.2%. As can be seen in Table 3, the effect is similar also in case where investors are large: the affiliates' technology level increases the risk by 5.6%, on average, and the investor's technology level reduces the risk by 4.6%. This is coherent with results obtained in our general model where an investor on the technological frontier protects (technologically) its affiliates and stimulates their competitiveness on the markets through technology spill-overs. This result does not seem to hold for medium-sized investors (Size==2 and Size==3), whose probability of survival is however negatively affected by geographical proxy.

[2]We run some regressions, available on request, with non linear effects number of affiliates per area and per sector; the numerical values and significance of all coefficients of our model are unchanged. The hazard ratios of the two squared terms are significant but they seem to suggest a neutral effect on the probability of exit (they are not significantly different from one).

Table 2: Results: Whole Sample

	(1)	(2)	(3)	(4)
VARIABLES	All Sample	Same Tech	Manufacture	Service
Size Affiliates	0.862***	0.830***	0.840***	0.918***
	(0.008)	(0.010)	(0.009)	(0.013)
Faraway	1.047***	1.008	1.061***	1.029**
	(0.008)	(0.011)	(0.011)	(0.012)
Num of Aff. per area	1.001*	1.001***	1.003***	0.999*
	(0.000)	(0.000)	(0.001)	(0.000)
Num of Aff. per sector per investors	1.001***	1.002***	1.000	1.002***
	(0.000)	(0.000)	(0.000)	(0.000)
Tech Affiliates	1.034***		1.019***	1.084***
	(0.005)		(0.006)	(0.014)
Tech Investors	0.981***		0.983**	
	(0.004)		(0.008)	
Size Investors	0.890***	0.901***	0.902***	0.875***
	(0.005)	(0.008)	(0.008)	(0.008)
Observations	104,013	54,602	66,402	37,546

Hazard ratio, Robust se in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 3: Results For Investor' Size

VARIABLES	(1) Size_inv==1	(2) Size_inv==2	(3) Size_inv==3	(4) Size_inv==4
Size Affiliate	0.888***	0.855***	0.850***	0.847***
	(0.016)	(0.015)	(0.015)	(0.015)
Faraway	1.009	1.077***	1.052***	1.018
	(0.015)	(0.016)	(0.017)	(0.019)
Num of Aff. per area	0.995***	1.000	1.000	1.000
	(0.001)	(0.002)	(0.001)	(0.000)
Num of Aff. per sector per inv	1.007***	1.007***	1.002***	1.000
	(0.001)	(0.001)	(0.000)	(0.000)
Tech Affiliates	1.058***	0.995	1.004	1.064***
	(0.010)	(0.009)	(0.011)	(0.013)
Tech Investors	0.986*	1.009	0.950***	0.964***
	(0.008)	(0.009)	(0.009)	(0.011)
Observations	25,970	26,825	25,684	25,534

Hazard ratio, Robust se in parentheses

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 4: Sub-Sample Tech - Investors

VARIABLES	(1) low tech	(2) medium-low tech	(3) medium-high tech	(4) high tech
Size Affiliates	0.844***	0.860***	0.839***	0.760***
	(0.017)	(0.017)	(0.018)	(0.023)
Faraway	1.076***	1.010	1.078***	1.059**
	(0.022)	(0.020)	(0.018)	(0.029)
Num of Aff. per area	1.005**	1.003***	0.997**	1.014***
	(0.002)	(0.001)	(0.001)	(0.002)
Num of Aff. per sector per inv	0.996***	1.000	1.006***	1.000
	(0.001)	(0.000)	(0.001)	(0.002)
Tech Affiliates	1.051***	0.972***	1.010	0.914**
	(0.009)	(0.011)	(0.017)	(0.033)
Size Investors	0.959***	0.890***	0.868***	0.854***
	(0.015)	(0.015)	(0.014)	(0.022)
Observations	18,543	17,416	21,419	9,024

Hazard ratio, Robust se in parentheses
*** p<0.01, ** p<0.05, * p<0.1

5.3 Level of Technology

Technology matters both from the investors' and affiliates' point of view.

Table 4 reports results for investor's technological level. Size reduces the risk of exit from the market and this effect is largest for the high tech. Being large with an investor which is technologically advanced is a strong competitive advantage for foreign affiliates. On the contrary, the affiliates' technological level could be a source of risk if the investor has a low technological intensity. When the investor's and affiliates' technology levels are similar and high, the risk of exit is reduced by 9%. As expected the larger the distance the larger the risk of exit. The effects of the network proxies (number of affiliates per area and per sector) are significant but negligible on the hazard function.

Table 5 shows the results on affiliates' technological level subgroups. Affiliates' size effect is large and highly significant, especially for high tech affiliates (it reduces the risk by 34%). In line with this, the size of investors is insignificant for low tech affiliates, but it becomes more and more relevant at higher technolog-

Table 5: Sub-Sample Tech - Affiliates

VARIABLES	(1) low tech	(2) medium-low tech	(3) medium-high tech	(4) high tech
Size Affiliates	0.756***	0.772***	0.799***	0.638***
	(0.020)	(0.022)	(0.024)	(0.031)
Faraway	1.020	0.912***	1.117***	
	(0.031)	(0.031)	(0.034)	
Num per Aff. per area	0.990***	1.001	1.009***	1.002
	(0.002)	(0.001)	(0.002)	(0.002)
Num per Aff. per sector per inv	0.994***	1.003***	0.983***	
	(0.001)	(0.001)	(0.003)	
Tech Investors	0.988	0.982	1.032	0.995
	(0.018)	(0.030)	(0.032)	(0.055)
Size Investors	1.008	0.870***	0.881***	0.884***
	(0.025)	(0.024)	(0.022)	(0.034)
Observations	8,683	6,790	6,786	2,838

Hazard ratio, Robust se in parentheses
*** p<0.01, ** p<0.05, * p<0.1

ical levels. Distance is not significant for very low-tech affiliates and significant with a positive effect for medium-low while it increases the risk for medium-high tech. Finally, it is interesting to note that the network proxy (number of affiliates per sector) is strong and significant in the medium-high and high tech affiliates sub-sample, reducing the risk of exit by 2% and increasing it by 3%, respectively, suggesting a sort of diversification effect.

6 Conclusions

To survive in an increasingly competitive environment requires a mix of internationalization strategies. In this paper, with the help of an original database, we discuss variables increasing the probability of affiliates' survival. Larger affiliates of large investors resist better to tougher competition. Networks of affiliates in the same area and/or sector also decrease the risk of exiting markets. As expected, faraway countries are more difficult markets to keep. These results are compatible with different theoretical models and help shaping competitiveness policies.

7 Appendix: The Database

The database is constructed starting from AIDA and ICE-Reprint for the period 2000-2008. AIDA provides standard data on budgets of Italian companies, while the ICE-Reprint database is the census of foreign affiliates of Italian firms and provides information on number of employees, sales and sectors (for both investors and affiliates), as well as country of destination and "affiliates' birth year". The ICE-Reprint database is an annual survey, in which investors are identified with fiscal code and other relevant identification variables (name, address, sector at 2-digit level, etc.). The information is derived mainly from newspapers, webpages, firms' communication to Chambers of Commerce or Consob (if they are quoted in Milan Stock Exchange). This means that often data are not comparable year by year, there are missing values as well as changes in the nature of firms or their location or the governance. With complex and detailed screening of the data we corrected mistakes and imprecision, dropping the firms for which we were not confident when there are contrasting information and trying to make the relevant variables more homogeneous. The cleaning of the data also required to double check the fiscal code or VAT code of each individual investor.

References

[1] Agarwal R. (1997), "Survival of Firms over the Product Life Cycle", Southern Economic Journal, 3, pp.571-584

[2] Agarwal R. (1998), "Evolutionary Trends of Industry Variables", International Journal of Industrial Organization, 16, pp. 511-526

[3] Agarwal R, Gort M. (1996), "The Evolution of Markets and Entry, Exit and Survival of Firms", Review of Economics and Statistics, 78, pp.489-498

[4] Agarwal R., Audretsch D. B. (2001), "Does entry size matter? The impact of the life cycle and technology on firm survival", The Journal of Industrial Economics, 1, pp. 21-43

[5] Audretsch D.B. (1991),"New Firm Survival and the Technological Regime", Review of Economics and Statistics, 73, pp.441-450

[6] Audretsch D.B. (1995), Innovation and Industry Evolution, Cambridge, MIT Press

[7] Bartelsman E., Scarpetta S., Schivardi F. (2003),"Comparative Analysis of Firm Demographics and Survival: Micro-Level Evidence for the OECD Countries", OECD Economics Department Working Papers, No. 348, OECD

[8] Bartelsman E., Haltiwanger J., Scarpetta S. (2004), "Microeconomic Evidence of Creative Destruction in Industrial and Developing countries", Tinbergen Institute Discussion Papers, TI 2004-114/3

[9] Bernard A. B., Bradford J., Redding S. J., Schott P. K. , (2007). "Firms in International Trade" Journal of Economic Perspectives, American Economic Association, vol. 21(3), pages 105-130, Summer.

[10] Caves R., Porter M.E. (1977), "From Entry Barriers to Mobility Barriers", Quarterly Journal of Economics, 91, pp.241-261

[11] Caves R. E. (1998), Industrial Organization and New Findings on the Turnover and Mobility of Firms, Journal of Economic Literature, Vol. 36, No. 4, pp. 1947-1982

[12] Clerides, S., Lach,S, Tybout, J. (1998), Is learning by exporting important? Micro-dynamic evidence from Columbia, Mexico and Morocco, Quarterly Journal of Economics, Vol. 113, pp.903-948

[13] Dunne T., Roberts, M.J., Samuelson L. (1988), "Patterns of Firm Entry and Exit in the U.S. Manufacturing Industries", Rand Journal of Economics, 19, pp.495-515

[14] Dunne T., Roberts, M.J., Samuelson L. (1989), "The Growth and the Failure of U.S. Manufacturing Plants", Quarterly Journal of Economics, 104, pp.671-698

[15] Evans D. (1987), "The Relationship between Firms Growth, Size and Age: Estimates from 100 Manufacturing Industries", Journal of Industrial Economics, 35, pp.567-581

[16] Geweke, J, Marshall, R.C., Zarkin, G.A. (1986), "Mobility Indices in Continuous Time Markov Chains", Econometrica, 54(6), pp.1407-1423

[17] Geroski P.A. (1995), "What do we know about entry?" International Journal of Industrial Organization, 13, pp. 450-456

[18] Gibrat R. (1931), Les Inégalités Économiques. Applications : Aux Inégalités des Richesses, à la Concentration des Entreprises, Aux Population des Villes, Aux Statistiques des Familles, etc., d'une Loi Nouvelle : La Loi de l'Effet Proportionnel, Paris, Librairie du Recueil Sirey

[19] Giovannnetti G., Ricchiuti G. and Velucchi M. (2010), Size, Innovation and Internationalization: A Survival Analysis of Italian Firms, Applied Economics, forthcoming (DOI: 10.1080/00036840802600566)

[20] Hall B.(1987), "The Relationship Between Firm Size and Firm Growth in the U.S. Manufacturing Sector", Journal of Industrial Economics, 35, pp.583-606

[21] Holmes, P., Hunt, A. and Stone, I. (2008) "An analysis of new firm survival using a hazard function", Applied Economics, 99999:1

[22] Klein J.P. and Moeschberger M.L., (2003), Survival Analysis: Techniques for censored and truncated data, 2nd ed., New York, Springer

[23] Jovanovic, B. (1982), "Selection and the Evolution of Industry", Econometrica, Econometric Society, vol. 50(3), pp. 649-670

[24] Lancaster, T. (1990), The Analysis of Transition Data, New York: Cambridge University Press

[25] Leung, M. K., Rigby, D. and Young, T. (2003) "Entry of foreign banks in the People's Republic of China: a survival analysis"; Applied Economics,35:1,21-31

[26] Mansfield, E. (1962), "Entry, Gibrat's Law, Innovation, and the Growth of Firms", American Economic Review, 52, pp. 1023-1051

[27] Mariotti S., Mutinelli M. (2005), Italia Multinazionale 2004. Le partecipazioni Italiane all'estero e estere in Italia, Soveria Mannelli, Rubbettino Editore.

[28] Mata J., Portugal P. (1994), "Life Duration of New Firms", Journal of Industrial Economics, 27, pp.227-246

[29] Mayer, T., Ottaviano, G.M. (2007), The Happy Few the internationalization of European Firms, Bruegel blueprint series, n. 3

[30] Melitz, M. (2003), "The Impact of Trade on Intra-Industry Reallocations and Aggregate Industry Productivity" Econometrica, Econometric Society, vol. 71(6), pp. 1695-1725

[31] Melitz, M, Ottaviano G. M. (2008), "Market Size, Trade, and Productivity", Review of Economic Studies, Vol. 75, Issue 1, pp. 295 - 316

[32] Porter M.E. (1979), "The structure within industries and companies performance", Review of Economics and Statistics, 61, pp. 214-227

[33] Santarelli, E. (1998), "Start-up size and post-entry performance: the case of tourism services in Italy", Applied Economics, 30:2, 157-163

[34] Santarelli E., Klomp L., Turik R. (2006), "Gibrat Law: an Overview of the Empirical Literature", in Santarelli (eds.), Entrepreneurship, Growth, and Innovation: the Dynamics of Firms and Industries, Springer, New York

[35] Steindl J. (1965), Random Processes and the Growth of the Firms: A Study of the Pareto Law, London: Griffith

[36] Sutton J. (1997), "Gibrat's Legacy", Journal of Economic Literature, 35, pp. 40-59.

[37] Sutton J. (1998), Technology and market structure: Theory and History, Cambridge, Mass, the MIT Press.