



# **The predictability of financial, accounting-based, and industrial factors on the success of newly incorporated Spanish firms**

Ramon Saladrigues

Yehui Tong

Faculty of Law, Economics and Tourism, University of Lleida

Department of Business Administration and Economic Management of Natural Resources



## Introduction (the core of entrepreneurship)

- The core of entrepreneurship is to explore and explain the issue of new venture success and failure (Amason et al. 2006).
- 20 to 40 percent of entrants suffer failure in the first two years; and the survival rate is between 40 and 50 percent after seven years in 10 OECD (The Organisation for Economic Co-operation and Development) countries; Bartelsman et al. (2005).
- The purpose of this paper is to explore the predictability of financial, accounting-based, and industrial factors (as well as corporate venturing) on survival-based success in manufacturing and distributive industries — section C and G of NACE Rev. 2 (from Eurostat of European Commission, 2008).



## Literature review

Liability of newness & liability of smallness (Mellahi and Wilkinson, 2004)

- Liability of newness (Stinchcombe, 1965): young firms often lack of resources, experience, and social capital.
- Liability of smallness (Aldrich and Auster, 1986): small firms face problems of raising capital, highly skilled workers, and administrative costs.

Passive learning & active learning (Lotti and Santarelli, 2004).

- Passive learning (Jovanovic, 1982): every firm believes in itself, because a single firm does not know its true cost before operating; the efficiency of a firm would be learned after its operation; efficient firms outperform inefficient ones in survival and growth.
- Active learning (Ericson and Pakes, 1995): in order to maximize the expected value, firms make decisions with knowing the characteristics of themselves and competitors and the future distribution of industry structure.

Resource-based view & industrial organization (Kraaijenbrink et al., 2010):

- Resource-based view focuses on the internal sources of a firm's sustained competitive advantage (for example, valuable, rare, inimitable, and non-substitutable resources and capabilities).
- Industrial organization view explains the impacts of outside industry structure on firm performance by structure–conduct–performance paradigm.



## Data

- Spanish firms incorporated in 2008 and 2009 in manufacturing and distributive sectors are selected from SABI database (Iberian Balance sheet Analysis System) developed by INFORMA D&B and Bureau Van Dijk.
- Number of firms from manufacturing sector: 4382  
(2327 from the 2008 cohort; 2055 from the 2009 cohort)
- Number of firms from distributive sector: 12865  
(6683 from the 2008 cohort; 6182 from the 2009 cohort)
- For each cohort the firms are tracked for five years after the incorporation year.
- In order to enlarge the size of sample, the firms incorporated in 2008 and 2009 are put together, which means that incorporation year does not work as a variable in analysis.

# Dependent variables & accounting-based independent variables

Dependent variable	Definition
Survival-based success or failure	Whether or not showing the failure event: two consecutive years without reporting operating revenues (Fotopoulos and Louri, 2000).
Accounting-based factors	Measures of independent variables in regression ( <a href="#">with dichotomous variables and some mathematical variations for avoiding collinearity problem</a> )
Firm size	<a href="#">Natural logarithm of one plus total assets</a> : $\text{Ln} (1 + \text{total assets in thousands of Euros})$
Market share	Firm's operating revenues/The total amount of operating revenues in the industry where that firm is

## Financial & financing independent variables

Financial & financing factors	Measures in regression
Profitability	<b>Dichotomous variable</b> , whether showing positive economic profitability Economic profitability: Profits before tax/Total assets
Solvency (or leverage)	<b>Reciprocal of indebtedness</b> : $1/\text{indebtedness}$ Indebtedness: $(\text{Total shareholders funds and liabilities} - \text{Shareholders equity})/\text{Total shareholders funds and liabilities}$
Liquidity	<b>Reciprocal of general liquidity</b> : $1/\text{general liquidity}$ General liquidity: $\text{Current assets}/\text{Current liabilities}$
Efficiency	Asset rotation: $\text{Sales}/\text{Total assets}$
Bank credit	<b>Dichotomous variable</b> , whether showing positive bank loans in firm's balance sheet (liabilities)
Trade credit	$\text{Accounts receivable}/\text{Total assets}$ & $\text{Accounts payable}/\text{Total liabilities}$

Other firm-specific & industrial independent variables

Factors	Independent variables	Measures in regression
Other firm-specific factor	Corporate venturing	Dichotomous variable, whether the number of companies in corporate group is more than zero.
Industrial factors (in two-digit code, NACE Rev. 2)	Entry rate	The number of incorporated firms within a year in a selected industry/The number of the firms reporting total assets in that industry in the same year
	Concentration rate	The total amount of operating revenues of the top 10 percent firms in a selected industry in a year/The total amount of operating revenues in that industry in the same year (López-García and Puente, 2006)
	Industry growth rate	(Operating revenues in a selected industry in a year — the operating revenues in that industry one year before)/ The operating revenues in that industry one year before

Logistic regressions to identify the predictability of factors at age 1, age 2, and age 3 in different classifications

		C1	C12-345	C123-45
Regressions with the data of age 1	Firms failing after age 1	Failure group	Failure group	Failure group
	Firms failing after age 2	Success group		
	Firms failing after age 3		Success group	
	Firms being successful after age 3			Success group
		C2	C23-45	
Regressions with the data of age 2	Firms failing after age 2	Failure group	Failure group	
	Firms failing after age 3	Success group		
	Firms being successful after age 3		Success group	
		C3		
Regressions with the data of age 3	Firms failing after age 3	Failure group		
	Firms being successful after age 3	Success group		

Regression results (B=coefficient; Sig.=statistical significance; Yes=being significant at 95% confidence level)

	Manufacturing sector											
	C1 (predicted 60.7 %)		C12-345 (58.7%)		C123-45 (57.4%)		C2 (61.2 %)		C23-45 (60.1%)		C3 (62.6%)	
	B	Sig.	B	Sig.	B	Sig.	B	Sig.	B	Sig.	B	Sig.
Ln Total assets	0,158	Yes	0,144	Yes	0,130	Yes	0,141	Yes	0,131	Yes	0,172	Yes
Firm´s market share												
Profitability	0,653	Yes	0,545	Yes	0,504	Yes	0,730	Yes	0,627	Yes	0,947	Yes
Reciprocal of indebtedness							-0,008	Yes	-0,007	Yes		
Bank loans												
Accounts receivables to total assets												
Accounts payable to total liabilities												
Reciprocal of general liquidity	-0,060	Yes					-0,055	Yes	-0,031	Yes		
Asset rotation											-0,022	Yes
Corporate venturing			0,176	Yes	0,168	Yes	0,146	Yes	0,152	Yes		
Entry rate												
Concentration												
Industry growth	-0,686	Yes	-0,645	Yes	-0,675	Yes	-1,377	Yes			1,774	Yes

Regression results (B=coefficient; Sig.=statistical significance; Yes=being significant at 95% confidence level)

	Distributive sector											
	C1 (predicted 60.5%)		C12-345 (59.9%)		C123-45 (60.2%)		C2 (63.3%)		C23-45 (63.1%)		C3 (65.0%)	
	B	Sig.	B	Sig.	B	Sig.	B	Sig.	B	Sig.	B	Sig.
Ln Total assets	0,238	Yes	0,208	Yes	0,215	Yes	0,213	Yes	0,219	Yes	0,261	Yes
Firm´s market share												
Profitability	0,642	Yes	0,622	Yes	0,606	Yes	0,849	Yes	0,853	Yes	1,088	Yes
Reciprocal of indebtedness											-0,002	Yes
Bank loans							0,073	Yes				
Accounts receivables to total assets	-0,385	Yes							-0,166	Yes		
Accounts payable to total liabilities					0,101	Yes						
Reciprocal of general liquidity	-0,013	Yes	-0,016	Yes	-0,014	Yes	-0,025	Yes	-0,010	Yes	-0,007	Yes
Asset rotation												
Corporate venturing	0,107	Yes	0,204	Yes	0,268	Yes	0,214	Yes	0,268	Yes	0,198	Yes
Entry rate	-12,245	Yes	-11,429	Yes	-11,845	Yes	-28,265	Yes			-13,563	Yes
Concentration			1,939	Yes	1,751	Yes	5,087	Yes			2,775	Yes
Industry growth			-0,499	Yes	-0,729	Yes	4,194	Yes				



## Conclusion for firm-specific factors

	Explanation & support from past literature
Strongly positive: firm size	Inherent size disadvantage theory (Audretsch, 1991; Audretsch and Mahmood, 1995): small size means cost disadvantage and exposure to risk impacting much on new business survival.
Strongly positive: profitability	The impacts of profits and losses separately on entry and exit (Ilmakunnas and Topi, 1999)
Strongly positive: corporate venturing	The usefulness of obtaining experience from the established parent companies (as expected by Audretsch and Mahmood, 1995)
Strongly positive in distributive sector: general liquidity	The importance of liquidity: advancing the capacity to deal with changes of competitive markets and meeting short-term commitment (Serrasqueiro and Nunes, 2008)
Weakly positive: indebtedness	Close to past empirical findings (for example, of Nunes and Serrasqueiro, 2012), though theoretically hard to expect the universality in the theory of debt-equity choice (Myers, 2001)
Weakly positive in distributive sector: bank debt & trade credit	Bank credit and trade credit are the two major sources of debt-financing for start-ups (Huyghebaert et al., 2007).
Weakly negative: asset rotation	The impact of asset rotation is questioned due to its low frequency of statistical significance; past research (for example, Charitou et al., 2004) also challenges its significance.
No significance: market share	The gross market share of entrants usually is not as high as the rate of new firm formation (Audretsch et al., 1999).



## Conclusion for industrial factors

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### Explanation & support from past literature

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Strongly negative in distributive sector: industry entry rate	High entry rate signifies more intensity of competition, leading to new firm failure (Fritsch et al., 2006).
Strongly positive in distributive sector: industry concentration	The positive effect of concentration is different to many empirical studies; however, it can also be explained: that entrants could not threaten the existing firms immediately due to smallness (Baldwin and Rafiquzzaman, 1995) and that the time for a new firm to be competitive with incumbents should be five to ten years (Cincera and Galgau, 2005)
Being dichotomous, industry growth is mostly negative at early ages but positive later.	Similar results can be found in past research; for example, the negative effect of industry growth is kept till age 8 (Audretsch et al., 2000). So the statement of Audretsch et al. (2000) that uncertainty is entwined with industry's high growth can help to explain the negative effect.

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## General conclusion & contribution

### General conclusion:

- Differences in predictability are observed between manufacturing and distributive sectors; it is obvious in distributive sector (rather than manufacturing sector) that liquidity, bank credit, trade credit, and concentration are positively related to success while entry rate is negatively related to success.
- In spite of that, some factors still show strong predictability in both two sectors. Firm size and profitability are the strongest positive factors, which are followed by corporate venturing and the growth of industrial operating revenues with positive and generally negative relationships to success separately.
- Besides, for some factors and variables frequently showing statistical significance (firm size, corporate venturing; profitability, entry rate, concentration, and the growth rate of industrial operating revenues), their impacts in the same age tend to be relatively stable.

### Contribution:

- This paper enriches the empirical study of new firm success in Spain in depression and stagnant environment (because the observed years here are from 2009 to 2014);
- In addition, the findings also contribute to the specific prediction study of manufacturing and distributive sectors.



## References

- Aldrich, H.E., & Auster, E.R. (1986). Even dwarfs started small: Liabilities of age and size and their strategic implications. *Research in Organizational Behavior: An Annual Series of Analytical Essays and Critical Reviews*, 8, 165-198.
- Amason, A.C., Shrader, R.C., & Tompson, G.H. (2006). Newness and novelty: Relating top management team composition to new venture performance. *Journal of Business Venturing*, 21(1), 125-148.
- Audretsch, D.B. (1991). New-firm survival and the technological regime. *The Review of Economics and Statistics*, 73(3), 441-450.
- Audretsch, D.B., & Mahmood, T. (1995). New firm survival: New results using a hazard function. *The Review of Economics and Statistics*, 77(1), 97-103.
- Audretsch, D.B., Santarelli, E. & Vivarelli, M. (1999). Start-up size and industrial dynamics: Some evidence from Italian manufacturing. *International Journal of Industrial Organization*, 17(7), 965-983.
- Audretsch, D.B., Houweling, P., & Thurik, A.R. (2000). Firm survival in the Netherlands. *Review of Industrial Organization*, 16(1), 1-11.
- Baldwin, J.R., & Rafiquzzaman, M. (1995). Selection versus evolutionary adaptation: Learning and postentry performance. *International Journal of Industrial Organization*, 13(4), 501-522.
- Bartelsman, E., Scarpetta, S. & Schivardi, F. (2005). Comparative analysis of firm demographics and survival: Evidence from micro-level sources in OECD countries. *Industrial and Corporate Change*, 14(3), 365-391.
- Charitou, A., Neophytou, E., & Charalambous, C. (2004). Predicting corporate failure: Empirical evidence for the UK. *European Accounting Review*, 13(3), 465-497.
- Cincera, M., & Galgau, O. (2005). Impact of market entry and exit on EU productivity and growth performance. No. 222, *European Economy - Economic Papers 2008 - 2015* from Directorate General Economic and Financial Affairs (DGECFIN), European Commission. [http://ec.europa.eu/economy\\_finance/publications/pages/publication712\\_en.pdf](http://ec.europa.eu/economy_finance/publications/pages/publication712_en.pdf)
- Ericson, R., & Pakes, A. (1995). Markov-perfect industry dynamics: A framework for empirical work. *The Review of Economic Studies*, 62(1), 53-82.
- Eurostat (European Commission), (2008). NACE Rev. 2 — Statistical classification of economic activities in the European Community. Luxembourg: office for official publications of the European Communities. <http://ec.europa.eu/eurostat/documents/3859598/5902521/KS-RA-07-015-EN.PDF>



## References

- Fotopoulos, G., & Louri, H. (2000). Determinants of hazard confronting new entry: Does financial structure matter? *Review of Industrial Organization*, 17(3), 285-300.
- Fritsch, M., Brixey, U., & Falck, O. (2006). The effect of industry, region, and time on new business survival – a multi-dimensional analysis. *Review of Industrial Organization*, 28(3), 285-306.
- Huyghebaert, N., Van de Gucht, L., & Van Hulle, C. (2007). The choice between bank debt and trade credit in business start-ups. *Small Business Economics*, 29(4), 435-452.
- Ilmakunnas, P., & Topi, J. (1999). Microeconomic and macroeconomic influences on entry and exit of firms. *Review of Industrial Organization*, 15(3), 283-301.
- Jovanovic, B. (1982). Selection and the evolution of industry. *Econometrica*, 50(3), 649-670.
- Kraaijenbrink, J., Spender, J.-C., & Groen, A.J. (2010). The resource-based view: A review and assessment of its critiques. *Journal of Management*, 36(1), 349-372.
- López-García, P., & Puente, S. (2006). *Business demography in Spain: Determinants of firm survival*. Banco de España Research Paper No. WP-0608.  
<http://www.bde.es/f/webbde/SES/Secciones/Publicaciones/PublicacionesSeriadas/DocumentosTrabajo/06/Fic/dt0608e.pdf>
- Lotti, F., & Santarelli, E. (2004). Industry dynamics and the distribution of firm sizes: A nonparametric approach. *Southern Economic Journal*, 70(3), 443-466.
- Mellahi, K., & Wilkinson, A. 2004. Organizational failure: A critique of recent research and a proposed integrative framework. *International Journal of Management Reviews*, 5-6(1), 21-41.
- Myers, S.C. (2001). Capital structure. *The Journal of Economic Perspectives*, 15(2), 81-102.
- Nunes, P.M., & Serrasqueiro, Z. (2012). Are young SMEs' survival determinants different? Empirical evidence using panel data. *Applied Economics Letters*, 19(9), 849-855.
- Serrasqueiro, Z.S., & Nunes, P.M. (2008). Performance and size: Empirical evidence from Portuguese SMEs. *Small Business Economics*, 31(2), 195-217.
- Stinchcombe, A.L. (1965). Social structure and organizations. In *Handbook of Organizations*, Edited by March, J.G., Rand McNally, Chicago, IL, 142-193.