

Financial Distress and the Role of Management in Micro and Small-sized Firms

Fernando Alexandre & Sara Cruz & Miguel Portela

Universidade do Minho and NIPE

January 7, 2021

Outline

- ▶ Motivation
- ▶ High shares of micro and small-sized firms in the Portuguese economy
- ▶ Managerial human capital
- ▶ Empirical analysis and results
- ▶ Final remarks

Motivation

- ▶ High shares of financially distressed firms (a.k.a., zombies) have contributed to lower productivity growth (e.g., Adalet McGowan et al. ,2017; Gouveia and Osterhold, 2018).

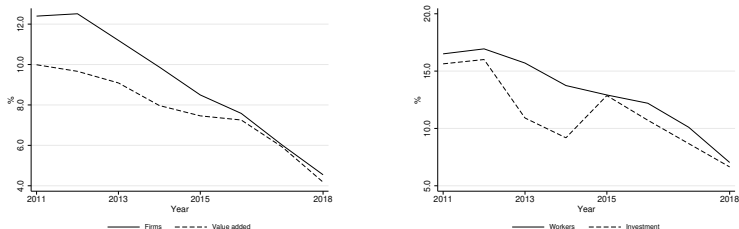


Figure 1: Shares of financially distressed firms

Motivation

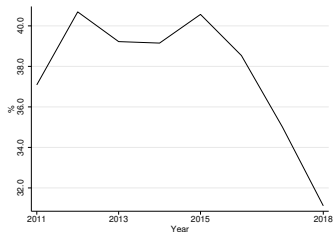


Figure 2: Share of financially distressed firms in total debt

Motivation

A vast literature has identified several determinants of FDF:

- ▶ Banks' evergreen lending to inefficient firms (e.g., Caballero et al. 2008; Acharya et al., 2019).
- ▶ Credit misallocation due to underdeveloped financial markets (e.g., Reis, 2013; Gopinath et al., 2017).
- ▶ Inefficient insolvency regimes (e.g., Andrews et al., 2017).

Motivation

- ▶ This paper contributes to this literature by exploring the role of managerial human capital on firms becoming financially distressed and on their subsequent recovery.
- ▶ The availability of a very rich Linked Employer-Employee Data (LEED) allows us to focus on the managerial characteristics of micro and small-sized firms and on the relationship with its financial condition.

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High shares of micro and small-sized firms in the Portuguese economy

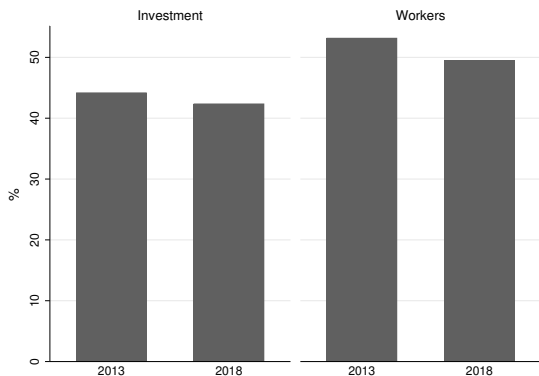


Figure 3: Share Micro & Small/Economy

High shares of micro and small-sized firms in the Portuguese economy

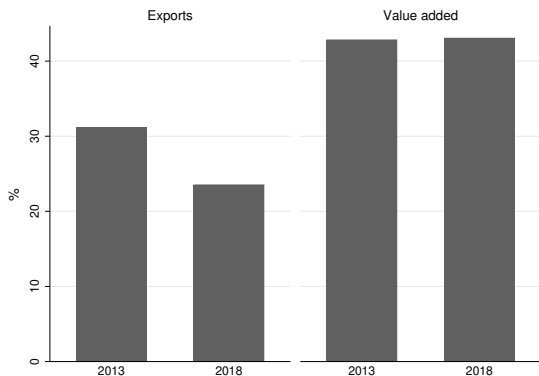


Figure 4: Share Micro & Small/Economy

High shares of micro and small-sized firms in the Portuguese economy

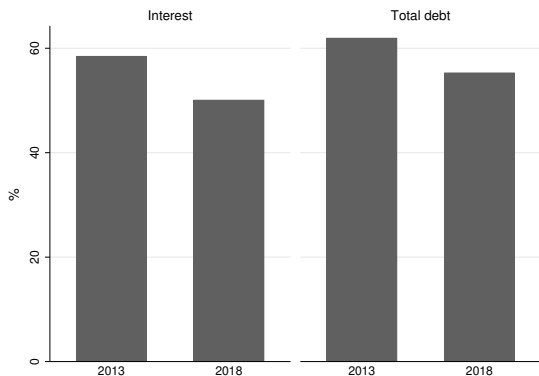


Figure 5: Share Micro & Small/Economy

High shares of micro and small-sized firms in the Portuguese economy

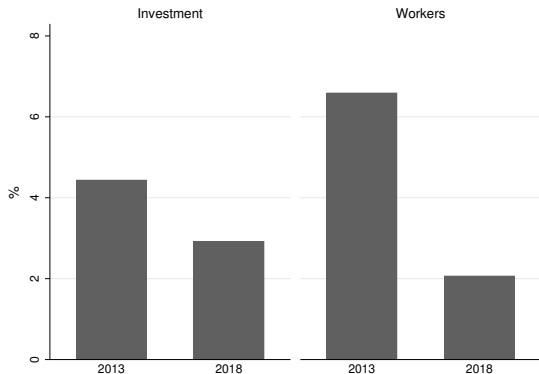


Figure 6: Share FDI/Economy

High shares of micro and small-sized firms in the Portuguese economy

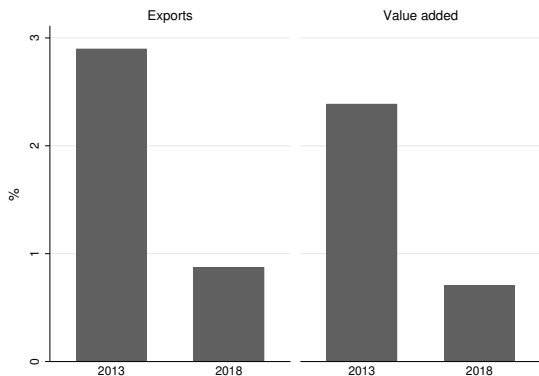


Figure 7: Share FDI/Economy

High shares of micro and small-sized firms in the Portuguese economy

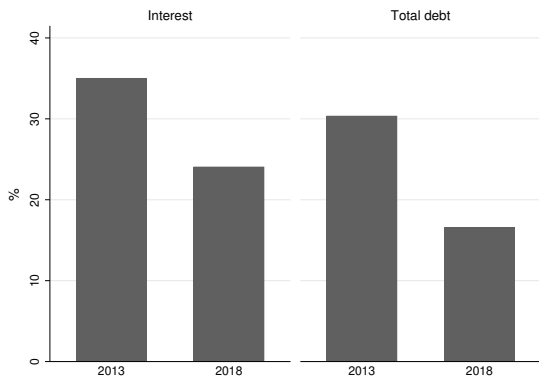


Figure 8: Share FDF/Economy

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Managerial human capital

Most studies on the impact of management on firms' performance have been based on case studies and surveys, and focus on medium and large-sized firms.

- ▶ LEED allows us to investigate the role of management teams' on micro and small-sized firms' financial condition:
 - ▶ Personnel Records database (*Quadros de Pessoal* - QP, INE) has a detailed track of each employee/manager, including information on gender, age, tenure, education level and its corresponding firm
 - ▶ Balance Integrated Business Accounts System (SCIE, INE), which includes all reported information on firms' balance sheet and their financial statement.

Managerial human capital

- ▶ The variable *Manager* has been constructed by selecting all top managers, namely CEOs and executive directors, plus all firms' highest-level department directors, according to QP dataset classification.
- ▶ Using the CPP2010 classification of occupations, we consider as members of the management team: Managing Directors and Chief Executives (112); Administrative and Commercial Managers (12); Production and Specialized Services Managers (13); and Hospitality, Retail and Other Services Managers (14).

Managerial human capital

Management is crucial for firms' financial and operational performance (several papers by Bloom, Van Reenen and co-authors)

- ▶ There is evidence of a positive relationship between education and the quality of management practices.
- ▶ The role of education is even more important for micro and small-sized firms, where in most cases ownership and management coincide and firms have scarce resources to hire new members to the management teams.
- ▶ Expertise and knowledge spillovers from managers' mobility (e.g., Mion and Opromolla, 2014; Sazedj et al., 2018).
- ▶ Experience in the area of finance affects firms' financial policies (e.g., Custódio and Metzger, 2014).

Managerial human capital

This paper considers three dimensions of management teams' human capital

1. Managers' formal education:
 - ▶ Average years of schooling
 - ▶ The inclusion in the management team of at least one manager with a college degree
 - ▶ The share of the management team with a college degree.
2. Managers' tenure
3. Functional experience formerly acquired in other firms:
 - ▶ years of experience in other firms
 - ▶ previous experience in the area of finance
 - ▶ previous experience in international firms
 - ▶ previous experience in exporting firms.

Managerial human capital

Table 1: Summary statistics (2011 and 2018)

	Panel A: non-FDF							
	Micro		Small		Medium		Large	
	2011	2018	2011	2018	2011	2018	2011	2018
EducManager (years)	9.5	10.0	10.6	11.2	12.5	13.1	14.1	14.5
CollegeManager (%)	22.7	25.5	41.2	47.3	75.7	82	93.8	96.3
ShareCollegeManager (%)	19.5	22.2	28.8	34	49.5	55.9	67.9	73.3
TenureManager (years)	14.7	19.9	15.3	19.6	14.7	17.7	13.3	16.5
ExpManager (years)	0.1	0.2	0.3	0.8	0.8	2.2	1.7	4.6
FinExpManager (years)	0.1	0.1	0.2	0.5	0.6	1.5	1.3	3.4
IntExpManager (years)	0.003	0.1	0.03	0.1	0.2	0.6	0.7	2.3
ExportExpManager (years)	0.01	0.03	0.1	0.3	0.2	0.9	0.6	1.9
	Panel B: FDF							
EducManager (years)	9.3	10.1	11.2	12.3	13.2	14.1	13.8	14.7
CollegeManager (%)	20.1	26.2	50.7	60.3	85.1	90.7	93.1	100
ShareCollegeManager (%)	16.2	22.6	35.4	44.4	56.9	64.3	61.7	74.9
TenureManager (years)	15.5	20.4	15.1	17.7	14.3	14.6	13.3	16.3
ExpManager (years)	0.1	0.3	0.5	1.4	1.3	4	2.1	5.3
FinExpManager (years)	0.1	0.2	0.4	1.0	1.0	2.5	1.5	3.8
IntExpManager (years)	0.01	0.03	0.1	0.3	0.2	1.5	0.7	2.0
ExportExpManager (years)	0.01	0.05	0.1	0.3	0.4	1.0	0.5	1.7

Source: own computations using data from SCIE and QP. We report variables' averages.

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Empirical analysis and results

We use a panel data conditional logit estimator which accounts for firms' unobserved heterogeneity to test the following hypotheses:

- ▶ Does management teams' human capital reduce the probability of financial distress, namely of micro and small-sized firms?
- ▶ For firms in a state of financial distress, does management teams' human capital increase the odds of recovery, namely of micro and small-sized firms?
- ▶ Does the impact of management teams' characteristics on the financial condition of firms vary across firm size?

Empirical analysis and results

Probability of FDF

Table 2: Estimation results by firm size on Probability of FDF (2011 – 2018)

	Micro	Small	Medium	Large
Panel A				
EducManager	-0.120*** (0.015)	-0.115*** (0.021)	-0.099* (0.056)	-0.095 (0.144)
TenureManager	-0.122*** (0.005)	-0.046*** (0.007)	-0.045*** (0.014)	-0.046 (0.038)
Panel B				
CollegeManager	-0.004*** (0.001)	0.002 (0.001)	0.002 (0.003)	0.012 (0.009)
TenureManager	-0.120*** (0.005)	-0.036*** (0.007)	-0.033** (0.013)	-0.049 (0.039)
Panel C				
ShareCollegeManager	-0.009*** (0.001)	-0.006*** (0.002)	-0.003 (0.004)	-0.001 (0.009)
TenureManager	-0.121*** (0.005)	-0.042*** (0.007)	-0.039*** (0.014)	-0.045 (0.038)

Empirical analysis

Probability of FDF

Table 3: Estimation results by firm size on the probability of FDF (2011 – 2018)

	Micro	Small	Medium	Large
Panel A				
EducManager	-0.057*** (0.014)	-0.077*** (0.021)	-0.005 (0.052)	-0.065 (0.144)
ExpManager	-0.063** (0.027)	-0.039 (0.024)	-0.119*** (0.028)	-0.051 (0.047)
Panel B				
EducManager	-0.058*** (0.014)	-0.079*** (0.021)	-0.008 (0.052)	-0.076 (0.142)
FinExpManager	-0.070* (0.041)	-0.012 (0.030)	-0.092** (0.037)	-0.079 (0.057)
Panel C				
EducManager	-0.059*** (0.014)	-0.076*** (0.021)	-0.026 (0.051)	-0.076 (0.143)
IntExpManager	-0.464** (0.212)	-0.201*** (0.072)	-0.017 (0.049)	-0.112 (0.073)
Panel D				
EducManager	-0.058*** (0.014)	-0.079*** (0.021)	-0.020 (0.051)	-0.078 (0.142)
ExportExpManager	-0.276** (0.116)	-0.064 (0.053)	-0.059 (0.050)	-0.102 (0.074)

Empirical analysis

Probability of Recovery

Table 4: Estimation results by Firms' Size on Probability of Recovery (2011 – 2017)

	Micro	Small	Medium	Large
Panel A				
EducManager	0.618*** (0.033)	0.459*** (0.041)	0.470*** (0.096)	0.289 (0.208)
TenureManager	0.549*** (0.012)	0.202*** (0.014)	0.124*** (0.023)	0.148* (0.082)
Panel B				
CollegeManager	0.022*** (0.002)	0.005** (0.002)	0.002 (0.005)	0.000 (0.011)
TenureManager	0.525*** (0.012)	0.154*** (0.013)	0.072*** (0.020)	0.143* (0.079)
Panel C				
ShareCollegeManager	0.062*** (0.004)	0.029*** (0.003)	0.020*** (0.006)	0.015 (0.015)
TenureManager	0.542*** (0.012)	0.183*** (0.013)	0.098*** (0.021)	0.132* (0.080)

Empirical analysis

Probability of Recovery

Table 5: Estimation results by Firms' Size on Probability of Recovery (2011 – 2017)

	Micro	Small	Medium	Large
Panel A				
EducManager	0.195*** (0.022)	0.230*** (0.034)	0.177** (0.084)	0.484** (0.231)
ExpManager	0.270*** (0.053)	0.235*** (0.045)	0.263*** (0.047)	0.739*** (0.195)
Panel B				
EducManager	0.198*** (0.022)	0.229*** (0.034)	0.181** (0.082)	0.556** (0.223)
FinExpManager	0.293*** (0.072)	0.209*** (0.053)	0.168*** (0.056)	0.786*** (0.196)
Panel C				
EducManager	0.200*** (0.022)	0.234*** (0.034)	0.211*** (0.081)	0.332 (0.213)
IntExpManager	0.758** (0.345)	0.487*** (0.137)	0.138* (0.078)	0.179 (0.171)
Panel D				
EducManager	0.197*** (0.022)	0.229*** (0.034)	0.201** (0.081)	0.342 (0.216)
ExportExpManager	1.281*** (0.497)	0.398*** (0.122)	0.169** (0.073)	0.544** (0.273)

Final remarks

- ▶ In this paper, we contribute to the literature on the determinants of financially distressed firms.
- ▶ The availability of linked employer-employee databases that include the population of Portuguese firms, allows our analysis to be focused on the managerial characteristics of micro and small-sized firms.
- ▶ Management teams' formal education reduces the probability of firms becoming financially distressed and increase the odds of their subsequent recovery.

Final remarks

- ▶ The relevance of management teams' human capital depends on firms' size and the type of education.
- ▶ Management teams' formal education has a stronger impact in reducing the probability of micro and small-sized firms becoming financially distressed and in increasing the chances of their subsequent recovery.
- ▶ Functional experience previously acquired in other firms, namely in foreign-owned companies, exporting firms and in the area of finance, may reduce the probability of micro firms becoming financially distressed.

Final remarks

- ▶ Our results suggest that policies that induce an improvement in the managerial human capital of micro and small-sized firms may contribute to a better financial condition, reducing the likelihood of firms entering a state of financial distress.
- ▶ More educated management teams may contribute to enhance the resilience of the economy against shocks, such as the pandemic COVID-19.

Table 6: Summary statistics by firm size (2011 – 2018)

	Micro		Small		Medium		Large		Aggregate	
	2011	2018	2011	2018	2011	2018	2011	2018	2011	2018
	Sample									
Firms	30,969	18,477	10,718	7,611	2,253	1,793	396	339	44,336	28,220
NWorkers	181,045	111,032	273,768	216,384	274,307	252,787	416,163	430,889	1,145,283	1,011,092
Firms (% total)	69.85	65.47	24.17	26.97	5.08	6.35	.89	1.2		
NWorkers (% total)	15.81	10.98	23.9	21.4	23.95	25	36.34	42.62		
Value-added (% total)	9.71	7.86	21.44	20.58	27.18	28.09	41.67	43.48		
	National SCIE datasets									
Firms	324,336	376,719	31,246	31,876	4,699	4,488	713	684	360,994	413,767
NWorkers	877,013	957,551	667,437	763,734	495,932	564,599	624,719	707,378	2,665,101	2,993,262
Firms (% total)	89.9	91.1	8.7	7.7	1.3	1.1	0.2	0.2		
NWorkers (% total)	32.9	32.0	25.0	25.5	18.6	18.9	23.4	23.6		
Value-added (% total)	24.2	26.7	22.4	23.6	22.2	21.8	31.2	27.9		

Source: own computations using data from SCIE.

Table 7: Summary statistics (2018)

	Mean	Std.dev.	Perc. 1	Median	Perc. 99	Min	Max
FDF	0.04	0.20	0	0	1	0	1
AgeManager	53.11	7.68	35	53	68	20	68
EducManager	10.58	3.98	4	11	17	4	20
CollegeManager	36.05	48.01	0	0	100	0	100
ShareCollegeManager	28.28	40.89	0	0	100	0	100
TenureManager	19.65	8.05	0	20	40	0	59
ExpManager	0.58	1.94	0	0	11	0	13
FinExpManager	0.38	1.45	0	0	8	0	13
IntExpManager	0.11	0.86	0	0	5	0	13
ExportExpManager	0.17	1.05	0	0	6	0	13
LevRatio	0.75	1.22	0	1	8	0	11
Productivity	25.40	22.73	-4	20	134	-25	179
ExportsRatio	5.86	18.49	0	0	95	0	100
TeamManagerSizes	2.11	4.84	1	2	11	1	419
NWorkers	35.83	311.72	2	8	421	2	26,857

Source: own computations using data from SCIE and QP. The number of observations is 28,220. 'Std.dev.' stands for standard deviation; 'Perc.' stands for percentile.

Table 8: Evolution of recovered FDF (2011 – 2017)

	non-Recovered	Recovered	Aggregate	Share recovered (%)
2011	6,457	548	7,005	7.8
2012	6,280	890	7,170	12.4
2013	5,458	1,359	6,817	19.9
2014	4,508	2,013	6,521	30.9
2015	3,452	2,694	6,146	43.8
2016	2,648	3,219	5,867	54.9
2017	1,828	3,568	5,396	66.1
Firms	10,944	4,509	10,946	41.2
Observations	36,963	14,291	51,254	27.9

Source: own computations using data from SCIE and QP

Table 10.a: Summary statistics for non-Recovered and Recovered FDF by firm size (2011 – 2017)

	Panel A: non-Recovered									
	Micro		Small		Medium		Large		Aggregate	
	2011	2017	2011	2017	2011	2017	2011	2017	2011	2017
AgeManager	50.4	54.1	49.3	51.9	47.5	49.2	46.7	49.4	50.0	53.1
EducManager	9.3	9.9	11.2	12.1	13.2	13.8	13.9	14.6	9.9	10.9
CollegeManager	19.8	24.2	50.9	56.8	85.0	87.0	94.3	100	30.4	39.0
ShareCollegeManager	15.9	20.9	35.6	42.1	57	61.3	62.5	74.4	22.6	30.6
TenureManager	15.4	19.9	15.1	18	14.3	14.8	13.3	16.3	15.3	18.9
ExpManager	0.1	0.3	0.5	1.1	1.3	3.3	2.2	4.9	0.3	0.8
FinExpManager	0.1	0.2	0.4	0.8	1.0	2.2	1.5	3.4	0.2	0.6
IntExpManager	0.003	0.01	0.1	0.2	0.2	1.2	0.7	2.4	0.03	0.2
ExportExpManager	0.01	0.02	0.1	0.2	0.4	0.9	0.5	1.5	0.1	0.2
LevRatio	1.3	1.8	0.9	1.0	0.9	0.9	0.9	0.8	1.2	1.5
Productivity	9.0	9.1	17.8	20.4	24.8	28.2	24.7	23.7	11.8	13.7
ExportsRatio	1.9	2.5	6.2	7.5	15.7	17.6	18.5	21.7	3.7	5.4
TeamManagerSize	1.6	1.5	2.4	2.3	5.7	5.1	28	29.7	2.2	2.8
NWorkers	6	5	29.3	26	128.4	126.6	1573.1	2099.7	34.1	81.1
Firms by size	7,966		2,372		503		103		10,944	
Observations by size	26,463		8,024		1,972		504		36,963	
Observations share (%)	71.6		21.7		5.3		1.4			

Table 10.b: Summary statistics for non-Recovered and Recovered FDF by firm size (2011 – 2017)

	Panel B: Recovered									
	Micro		Small		Medium		Large		Aggregate	
	2011	2017	2011	2017	2011	2017	2011	2017	2011	2017
AgeManager	50.2	53.3	50.1	52.1	47.4	49.7	40.1	49.3	50.1	52.8
EducManager	9.1	9.4	10.4	11.5	12.8	13.7	14.8	14.3	9.4	10.1
CollegeManager	16.2	19.6	42.1	50	85.7	87.1	100	96.6	21.7	29.7
ShareCollegeManager	14.3	16.6	31.6	36.7	50.7	61.9	71.4	65.8	17.7	23.3
TenureManager	14.4	19.5	16	18.4	13.7	16.1	8.4	15.7	14.6	19.1
ExpManager	0.1	0.2	0.4	0.9	1.4	2.9	2.0	4.5	0.2	0.5
FinExpManager	0.1	0.1	0.2	0.7	0.7	1.9	4.0	3.4	0.1	0.3
InfExpManager	0.01	0.01	0.06	0.2	0.3	0.6	4.0	1.7	0.03	0.1
ExportExpManager	0.01	0.02	0.1	0.2	0.1	0.9	0.3	1.6	0.03	0.1
LevRatio	2.1	1.5	1.2	0.8	0.8	0.8	0.9	0.7	1.9	1.3
Productivity	12.1	16.4	19.1	24.3	30.0	32.0	35.3	30.7	13.6	18.9
ExportsRatio	2.4	1.8	10.5	7.9	37	20.5	0.1	24.1	4.4	4.2
TeamManagerSize	1.4	1.5	1.7	2.2	7.6	5.5	21.0	15.3	1.7	1.9
NWorkers	4.7	5.3	24.2	25.6	110.6	136.4	777	1773.3	11.5	30.1
Firms by size	3,413		874		192		30		4,509	
Observations by size	10,728		2,813		644		106		14,291	
Observations share (%)	75.1		19.7		4.5		0.7			

Source: own computations using data from SCIE and QP.

Table 11: Variable description and sources

Variable	Description	Source
Financially Distressed Firm (FDF)	FDF = 1 if financially distressed; 0 otherwise. FDF has been defined as having an interest coverage ratio inferior to one over three consecutive years.	SCIE
Recovered Financially Distressed Firm	Recovered=1 if the firm recovered from the financially distressed status; 0 otherwise. Recovered firm is defined as being in a non-FDF state over two consecutive years.	SCIE
Managers' age	AgeManager = managers' average age	QP
Managers' education	EducManager = managers' average years of schooling	QP
Manager with a college degree	CollegeManager = 1 if at least one manager has a college degree; 0 otherwise	QP
Share of managers with a college degree	ShareCollegeManager = share of managers with a college degree (%)	QP
Managers' tenure	TenureManager = managers' average years in the firm	QP
Managers' experience	ExpManager = managers' average years of experience in former firms	QP
Managers' experience in finance	FinExpManager = managers' average years of overall finance experience in former firms	QP
Managers' experience in foreign-owned/ international firms	IntExpManager = managers' average years of experience in former international firms	QP
Managers' experience in exporting firms	ExportExpManager = managers' average years of experience in former exporting firms	QP
Leverage Ratio	LevRatio = Total Liabilities/Total Equity and Liabilities	SCIE
Productivity per worker	Productivity = Gross Value-Added at cost of factors (/ 1000 euros)/Total Workers	SCIE
Exports ratio	ExportsRatio = Total Exports/Total Sales Turnover	SCIE
TeamManagerSize	Number of individuals in the management team	QP
NWorkers	Number of workers by each firm	SCIE

Sources: SCIE and QP