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AIDAF - EY Chair in Family Business  
Strategy in memory of Alberto Falck



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# The impact of the equity and financial structure on the performance of companies

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- I. **The impact of the equity and financial structure on the growth and profitability of family businesses**
- II. **The impact of the equity and financial structure on the target companies acquired by a private equity fund**
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# The impact of the equity and financial structure on the growth and profitability of family businesses



In Italy, the control of companies **with a turnover of more than 20 million euros** is thus distributed

OWNERSHIP STRUCTURE	Small *		Medium-large **		Total	
	N	%	N	%	N	%
<b>Family owned</b>	<b>6.721</b>	<b>69,1%</b>	<b>5.086</b>	<b>61,6%</b>	<b>11.807</b>	<b>65,6%</b>
<b>Branches of Foreign Companies</b>	1.402	14,4%	1.809	21,9%	3.211	<b>17,8%</b>
<b>Cooperatives and Consortia</b>	549	5,6%	402	4,9%	951	5,3%
<b>Coalitions</b>	563	5,8%	305	3,7%	868	4,8%
<b>State / local authorities</b>	264	2,7%	335	4,1%	599	<b>3,3%</b>
<b>Controlled by Private Equity (P.E.)</b>	167	1,7%	237	2,9%	404	<b>2,4%</b>
<b>Controlled by Banks / Insurance</b>	41	0,4%	69	0,8%	110	<b>0,6%</b>
<b>Controlled by Foundations</b>	13	0,1%	6	0,1%	19	<b>0,1%</b>
<b>Public companies</b>	7	0,1%	6	0,1%	13	<b>0,1%</b>
<i>Total</i>	<b>9.727</b>	<b>100,0%</b>	<b>8.255</b>	<b>100,0%</b>	<b>17.982</b>	<b>100,0%</b>

(\*) Small: companies with turnover between 20 and 50 million euros at the end of 2018 (source: Aida).

(\*\*) Medium-large: companies with turnover exceeding 50 million euros at the end of 2018 (source: Aida).

The equity and financial structure of companies has long been one of the central issues in the debate on the entrepreneurial backbone of our country and beyond



What factors determine the choice of funding sources?  
What are the consequences of the equity and financial structure on the growth and profitability of companies?

Journal of Financial Economics  
Volume 5, Issue 2, November 1977, Pages 147-175

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## Determinants of corporate borrowing ☆

The American Economic Review

VOLUME XLVIII      JUNE 1958      NUMBER THREE

THE COST OF CAPITAL, CORPORATION FINANCE  
AND THE THEORY OF INVESTMENT

By FRANCO MODIGLIANI AND MERTON H. MILLER\*

## **Corporate Financing and Investment Decisions When Firms Have Information That Investors Do Not Have**

**Stewart C. Myers & Nicholas S. Majluf**

Agency Costs of Free Cash Flow, Corporate Finance, and Takeovers

Author(s): Michael C. Jensen

Source: *The American Economic Review*, May, 1986, Vol. 76, No. 2, Papers and Proceedings of the Ninety-Eighth Annual Meeting of the American Economic Association (May, 1986), pp. 323-329

Starting from the work of Modigliani and Miller (1958), in the eighties various theories have been proposed on the issue of sources of corporate financing:

- **tradeoff theory** (Myers 1984): using debt over equity improves net profitability, but increases the risk of default. It is necessary to identify an optimal level
- **pecking order theory** (Myers e Majluf 1984): investments should be financed using first internal resources of the company, then debt and finally new equity capital
- **agency theory** (Jensen 1986): cash flow for debt service solves problems of «empire building» or «overinvestment» through which managers of large companies can extract private benefits
- **debt overhang theory** (Myers, 1977): high levels of debt can discourage future investment because the value created by new investments will primarily benefit existing creditors rather than new shareholders. Therefore, the incentives of shareholders to pursue new projects will decrease and the company will suffer from poor investment capacity.

The research aims to verify whether and to what extent a **greater use of debt capital** compared to equity can to some extent **limit investment projects**, coming to constitute a brake for the development of Italian companies

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- Revenue growth
- Growth in fixed assets
- Growth in net assets
- ROA
- EBITDA margin
- EBITDA growth



All Italian companies with turnover > 20 mln €

- Regression on a panel dataset of about 17,000 companies in the period 2006-2018
- Two financial structure metrics: NFP / EQUITY and NFP / EBITDA

Family businesses owned by private equity funds

- Regression on a dataset panel of 379 target companies involved in a deal in the period 2007-2018
- Fixed effects regression model with Difference in Difference (DiD\*) methodology

\* DiD: Econometric analysis technique that calculates the effect of a treatment (i.e., an explanatory variable or an independent variable) on a result (i.e., a response variable or a dependent variable)

To investigate the relationship between the level of indebtedness of all Italian companies with turnover higher than 20 mln Euros and the company performance, two models were adopted, with two different objectives:

- 1) Test the relationship between a company's debt level and the performance (in terms of growth and profitability) of subsequent years;
- 2) Test the effect of a greater / lower use of financial leverage in companies with a low starting level of debt.

There is a negative relationship between the starting level of debt of a company (measured as NFP / EBITDA) and the performance in the following 5 years.

An increase of 1 unit in the NFP / EBITDA ratio reduces the annual average of the following 5 years of these performance indicators by the following percentages:

Dependent variable (average 2014-2018)	Annual revenue growth rate	ROA	Annual growth rate of Fixed assets	EBITDA margin	Annual growth rate Of EBITDA	Annual growth rate of Net Assets
NFP / EBITDA 2014 *	-1,5%	-6,0%	-1,7%	-9,5%	-2,6%	-1,9%
P value **	***	***	***	***	*	***

\* NFP: Debt to banks + Payables to other financials - Cash and cash equivalents (Source: Aida). Companies with negative EBITDA were excluded.

\*\* The values indicate high significance (\*\*\*) if the p value is <.01, medium significance (\*\*) if the p value is <.05, moderate significance (\*) if the p value is <.1).

A regression analysis was performed with the OLS model and the following control variables: i) age of the company; 2) company size; 3) profitability (ROA). Dummy variables have also been added to control by year, sector (considering the first 2 digits of the Ateco 2007 code) and region.

There is a negative relationship between the starting level of debt of a company (measured as NFP / EQUITY) and the performance in the following 5 years.

An increase of 1 unit in the NFP / EQUITY ratio reduces the annual average of the following 5 years of these performance indicators by the following percentages:

Dependent variable (average 2014-2018)	Annual revenue growth rate	ROA	Annual growth rate of Fixed assets	EBITDA margin	Annual growth rate Of EBITDA	Annual growth rate of Net Assets
NFP / EQUITY 2014 *	-3,6%	-10,4%	-3,6%	-9,1%	-2,5%	-3,7%
P value **	***	***	***	***	***	***

\* NFP: Debt to banks + Payables to other financials - Cash and cash equivalents (Source: Aida). Companies with negative EBITDA were excluded.

\*\* The values indicate high significance (\*\*\*) if the p value is <.01, medium significance (\*\*) if the p value is <.05, moderate significance (\*) if the p value is <.1).

A regression analysis was performed with the OLS model and the following control variables: i) age of the company; 2) company size; 3) profitability (ROA). Dummy variables have also been added to control by year, sector (considering the first 2 digits of the Ateco 2007 code) and region.

The same analyses were replicated using different time horizons:

- I. the 2010-2018 period: measuring the initial debt level in 2010, and calculating the averages of performance indicators in the 2010-2018 period;
- II. the 2006-2018 period: measuring the initial debt level in 2006, and calculating the averages of performance indicators in the 2006-2018 period.

Even over a different time horizon, the results confirm that **companies with a higher debt rate have lower levels of growth and profitability** in subsequent years than companies with lower debt.

The results are confirmed through two further analyses:

1. comparing companies with a starting level of debt above and below the median \*
2. comparing companies with a high (values included in the first quartile) and low (values included in the fourth quartile) starting level of debt \*\*

Companies with a higher level of debt (with values above the median and in the last quartile of the NFP / EBITDA and NFP / EQUITY indicators) are those that show a stronger negative correlation with the performance measures of the following 5 years.

\* The median of the NFP / EBITDA ratio in 2014 was 1.24 (the average was 2.53). Excluding companies with negative NFP, the median is 3.5 (and the average is 7.0). The median of the NFP / EQUITY ratio in 2014 was 0.33 (the average was 0.91). Excluding companies with negative NFP, the median is equal to 1 (and the average is equal to 4.62).

\*\* The values of the first and fourth quartiles of the NFP / EBITDA ratio in 2014 are respectively -0.33 and 4.56. Excluding companies with negative NFP, the values are respectively 1.48 and 6.63. The values of the first and fourth quartiles of the NFP / EQUITY ratio in 2014 were respectively 0 and 1.40. Excluding companies with negative NFP, the values are respectively 0.42 and 2.22.

In companies with a low starting level of debt (below the median), **an increase in the level of debt has a negative impact on company performance.**

An increase of 1 unit in the NFP / EBITDA ratio reduces the annual average of the following 5 years of these performance indicators by the following percentages:

Dependent variable (average 2014-2018)	Annual revenue growth rate	ROA	Annual growth rate of Fixed assets	EBITDA margin	Annual growth rate Of EBITDA
Growth rate of the NFP / EBITDA ratio*	-2,5%	-1,9%	-3,1%	-0,3%	-0,2%
P value **	***	***	**	***	***

\* NFP: Debt to banks + Payables to other financials - Cash and cash equivalents (Source: Aida). Companies with negative EBITDA were excluded.

\*\* The values indicate high significance (\*\*\*) if the p value is <.01, medium significance (\*\*) if the p value is <.05, moderate significance (\*) if the p value is <.1).

A regression analysis was performed with fixed effects for the company and the following control variables: i) age of the company; 2) company size; 3) profitability (ROA). Year dummies have also been added.

In the second analysis model:

- only companies with a starting level of debt (in 2014) below the median were considered;
- a panel analysis was carried out with firm fixed effects and standard errors clustered per company. This model makes it possible to estimate the changes that have occurred over time within the same company, net of external effects (eg: sector, geographical location, etc.).

The result is also confirmed using:

- a different time frame: 2010-2018 and 2006-2018;
- a different indicator of the level of indebtedness: the NFP / EQUITY ratio
- a different regression model: cross-sectional (with variables calculated using the average of the period considered)



It is possible to say that an increase in the level of debt is associated with lower performance in subsequent years, even for companies with a low starting level of debt.

Further analysis on companies with a higher starting debt level (above the median) also indicates that an increase in debt is associated with a more pronounced negative effect on performance.

It is therefore possible to conclude that **the higher the starting level of indebtedness, the higher negative impact on growth and profitability indicators due to the increase in the level of indebtedness**

# The impact of the equity and financial structure on the target companies acquired by a private equity fund



**Time horizon:** all deals that took place in the 2007-2018 period, with analyses starting from the 3 pre-deal years (eg: 2004-2005-2006 for deals that took place in 2007).

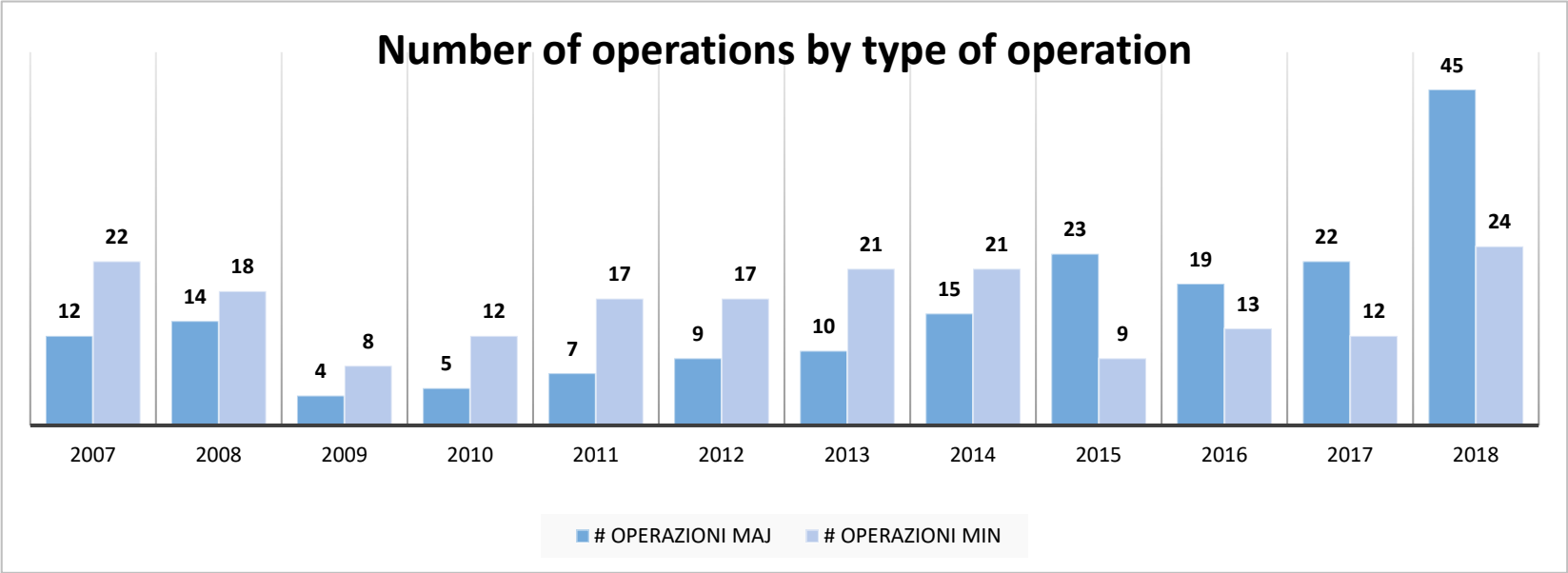
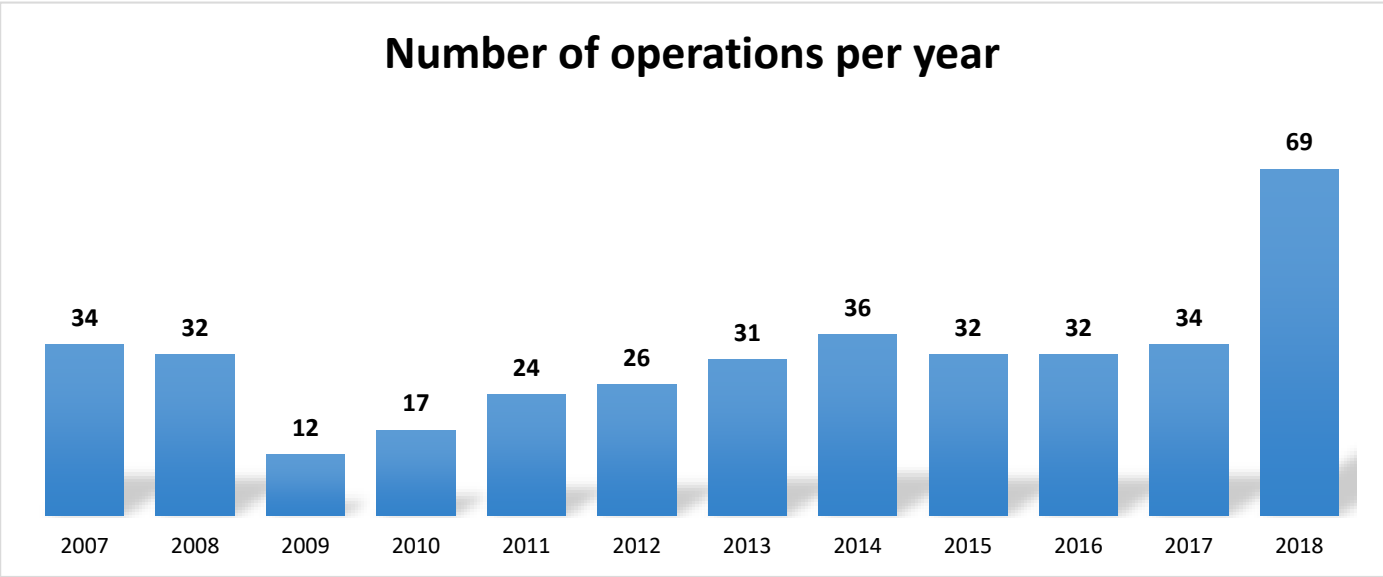
**Target companies:** family-owned companies with a turnover of more than 20 million euros.

**Data source:** Zephyr and Merger Market for the starting extraction, Private Equity Monitor (PEM) reports and print sources for checks and refinements.

**Number of deals:** 379 private equity deals involving 328 companies (including «add-on» transactions), including both majority (185) and minority (194) deals

**Variables:** The main financial variables (source Aida):

- I. Main indicators of INCOME STATEMENT
- II. Main indicators of BALANCE SHEET
- III. Main financial ratios



The positive effect on the growth rate of fixed assets related to the entry of a private equity fund is reduced by 12% following an increase in the NFP / EBITDA ratio of 1 point (and by 26% following the increase of 1 point of the NFP / EQUITY ratio).

- «0» in the 3 pre-deal years
- «1» during the years of the holding period

**Moderation analysis that allows to estimate the effect of the financial structure attributable to the change of ownership in the target company**

Dependent variable: Growth in total fixed assets T+1	(1)	(2)
Dummy PE	0.952*** (0.2302)	0.9572*** (0.2344)
NFP / EQUITY *	0.0302 (0.0885)	
NFP / EBITDA **		0.0837 (0.0509)
<b>Dummy PE * NFP / EQUITY</b>	<b>-0.2640** (0.1371)</b>	
<b>Dummy PE * NFP / EBITDA</b>		<b>-0.1196*** (0.0520)</b>
Year dummies	Y	Y
S.D. clustered per enterprise	Y	Y
Observations	1,896	1,915
R-squared	0.2184	0.2172

•NFP: Debt to banks + Payables to other financials - Cash and cash equivalents (Source: Aida). Companies with negative EQUITY were excluded from the calculation of the NFP / EQUITY ratio and with negative EBITDA from the calculation of the NFP / EBITDA ratio.

•The values indicate high significance (\*\*\*) if the p value is <.01, medium significance (\*\*) if the p value is <.05, moderate significance (\*) if the p value is <.1).

The results emerging from the regression model show that:

- the entry of a private equity fund has a positive impact on the growth rate of fixed assets;
- as the level of debt of the target company increases, the positive impact of private equity funds on the growth of fixed assets is reduced.

It is possible to say that **the lower the initial debt level of the target company, the higher the impact on the growth** of a company's fixed assets due to private equity funds.

This effect is more pronounced in majority deals.

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# Conclusions and managerial implications



The results of this study indicate that, regardless of size or sector, an increase in the level of indebtedness leads to lower performance in terms of:

## Size growth

- Sales revenues
- Total net assets
- Total assets

## Profitability

- ROA
- EBITDA margin
- EBITDA growth

The higher the starting level of debt, the stronger this effect



The results emerging from this study are consistent with other empirical evidence that analyzed the impact of the equity and financial structure on corporate performance:

- **Lang et al. (1996):** negative association between debt and growth measures (Capex or growth in the number of employees);
- **Cai and Zhang (2011):** the level of debt is negatively associated with the company's stock market value;
- **Giroud and Mueller (2016):** high levels of pre-crisis debt induced less capacity for growth (in terms of number of employees) during the crisis period from 2007 to 2009
- **Popov et al. (2018):** confirms the existence of the negative association between debt and investment - although the relationship tends to decrease for companies with high growth potential rates;
- **Kalemli-Ozcan et al. (2020):** negative effect of debt on investments immediately after the Covid-19 crisis



For companies: developing an «equity culture» to win the challenge of dimensional growth

- An equity culture is linked to choices of opening up capital, choices of dividend payout as well as choices of governance and management
- Companies with a more solid financial structure are those able to achieve higher profitable growth in the medium to long term

For private equity funds: make choices of financial structure more oriented to the use of risk capital in the target companies

- Private equity funds have a fundamental role in supporting the growth process of Italian companies
- The drive for growth is amplified when the entry of a private equity fund takes place by providing risk capital and minimizing the use of financial leverage
- It is reasonable to believe that in the coming years - due to the outbreak of the COVID-19 pandemic - private equity funds will increasingly play a complementary role to the traditional banking channel.

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# Appendix



# The first regression model (1/2)

Dependent variable (average 2014-2018)	Annual revenue growth rate	ROA	Annual growth rate of Fixed assets	EBITDA margin	Annual growth rate Of EBITDA	Annual growth rate Of Net Assets
<b>NFP / EBITDA 2014 *</b>	<b>-0.139***</b> (0.001)	<b>-0.329***</b> (0.000)	<b>-0.224***</b> (0.000)	<b>-0.073***</b> (0.000)	<b>-0.258*</b> (0.092)	<b>-0.156***</b> (0.000)
Company age 2014	-0.041*** (0.000)	0.122* (0.051)	-0.046*** (0.000)	-0.017 (0.804)	-0.024*** (0.002)	-0.030*** (0.000)
Company size (Net Assets 2014)	-0.017*** (0.000)	-0.645*** (0.000)	-0.032*** (0.000)	1.910*** (0.000)	-0.030*** (0.000)	-0.024*** (0.000)
ROA 2014	0.001*** (0.005)		0.006*** (0.000)	0.507*** (0.000)	0.003*** (0.002)	0.004*** (0.000)
Costant	0.305*** (0.000)	23.967*** (0.000)	0.959*** (0.005)	-27.342*** (0.000)	0.524*** (0.000)	0.371*** (0.000)
Observations	12,227	12,371	12,229	12,185	12,245	12,235
R-squared	0.102	0.163	0.066	0.431	0.023	0.157
Robust S.E.	Yes	Yes	Yes	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes
Region dummies	Yes	Yes	Yes	Yes	Yes	Yes

\* NFP: Debt to banks + Payables to other financials - Cash and cash equivalents (Source: Aida). Companies with negative EQUITY were excluded.

# The first regression model (2/2)

Dependent variable (average 2014-2018)	Annual revenue growth rate	ROA	Annual growth rate of Fixed assets	EBITDA margin	Annual growth rate Of EBITDA	Annual growth rate Of Net Assets
<b>NFP / EQUITY 2014 *</b>	<b>-0.343***</b> <b>(0.000)</b>	<b>-0.561***</b> <b>(0.000)</b>	<b>-0.477***</b> <b>(0.001)</b>	<b>-0.070***</b> <b>(0.010)</b>	<b>-0.241</b> <b>(0.389)</b>	<b>-0.317***</b> <b>(0.000)</b>
Company age 2014	-0.042*** (0.000)	0.087 (0.189)	-0.045*** (0.000)	-0.048 (0.477)	-0.025*** (0.002)	-0.029*** (0.000)
Company size (Net Assets 2014)	-0.017*** (0.000)	-0.717*** (0.000)	-0.033*** (0.000)	1.741*** (0.000)	-0.029*** (0.000)	-0.024*** (0.000)
ROA 2014	0.001*** (0.002)		0.006*** (0.000)	0.530*** (0.000)	0.010*** (0.000)	0.004*** (0.000)
Costant	0.284*** (0.000)	24.570*** (0.000)	0.981*** (0.004)	-25.230*** (0.000)	0.391*** (0.003)	0.337*** (0.000)
Observations	12,792	12,988	12,799	12,757	12,813	12,804
R-squared	0.088	0.110	0.063	0.435	0.033	0.153
Robust S.E.	Yes	Yes	Yes	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes
Region dummies	Yes	Yes	Yes	Yes	Yes	Yes

\* NFP: Debt to banks + Payables to other financials - Cash and cash equivalents (Source: Aida). Companies with negative EQUITY were excluded.

# The second regression model

Dependent variable (average 2014-2018)	Annual revenue growth rate	ROA	Annual growth rate of Fixed assets	EBITDA margin	Annual growth rate Of EBITDA
<b>Growth rate of the NFP / EBITDA ratio*</b>	<b>-0.24***</b> <b>(0.004)</b>	<b>-0.11***</b> <b>(0.000)</b>	<b>-0.43**</b> <b>(0.025)</b>	<b>-0.03***</b> <b>(0.000)</b>	<b>-0.03***</b> <b>(0.000)</b>
Company age 2014	-0.645*** (0.000)	-0.301 (0.500)	-0.399*** (0.000)	0.155 (0.577)	-0.779*** (0.000)
Company size (Net Assets 2014)	0.164*** (0.000)	-1.625*** (0.000)	0.245*** (0.000)	1.958*** (0.000)	0.309*** (0.000)
ROA	0.009*** (0.000)		-0.003* (0.056)	0.506*** (0.000)	0.066*** (0.000)
Costant	0.304 (0.239)	26.700*** (0.000)	-1.158* (0.059)	-15.565*** (0.000)	-1.172** (0.035)
Observations	24,711	25,034	24,448	24,752	24,871
S.E. clustered per company	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes

\* NFP: Debt to banks + Payables to other financials - Cash and cash equivalents (Source: Aida). Companies with negative EQUITY were excluded.

# The analysis model on private equity deals

**Regression model:** panel analysis with firm fixed effects and standard errors clustered per company. To reduce endogeneity problems, the level of debt at time t was tested on performance at time t + 1.

- «0» in the 3 pre-deal years
- «1» during the years of the holding period

**Moderation analysis that allows to estimate the effect of the financial structure attributable to the change of ownership in the target company**

Dependent variable:	(1)	(2)
Growth in net fixed assets T+1		
Dummy PE	0.952*** (0.2302)	0.9572*** (0.2344)
NFP / EQUITY *	0.0302 (0.0885)	
NFP / EBITDA		0.0837 (0.0509)
<b>Dummy PE * NFP / EQUITY</b>	<b>-0.2640** (0.1371)</b>	
<b>Dummy PE * NFP / EBITDA</b>		<b>-0.1196*** (0.0520)</b>
Ln Company age	0.2278 (0.3535)	0.1279** (0.3593)
Ln Total assets	-1.6914*** (0.2800)	-1.6172*** (0.2820)
Constant	18.5224*** (3.5251)	17.9048*** (3.5244)
Year dummies	Y	Y
S.D. clustered per enterprise	Y	Y
Observations	1,896	1,915
R-squared	0.2184	0.2172

\* NFP: Debt to banks + Payables to other financials - Cash and cash equivalents (Source: Aida). Companies with negative EQUITY were excluded.

Robust standard errors in parentheses

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

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# Methodological note





## Companies considered as family-owned are those:

- controlled with at least 50% (+1) shares by one or two families (if not listed);
- controlled with at least 25% of shares by one or two families (if listed);
- controlled by a legal entity attributable to one of the two situations described above.

## In the case of single business groups:

The parent companies were considered in the following cases:

- I. the parent company is a pure holding company;
- II. there is only one operating subsidiary with revenues exceeding € 20 million);
- III. the consolidation perimeter of the parent company substantially coincides with the size of the main subsidiary.

All subsidiaries, both first level and subsequent levels, were excluded.

## In the case of multi-business groups:

- The parent companies (often financial companies) were excluded.
- Subsidiaries (operating) at the second level of the control chain were included.
- Second level financial companies (sub-holding, identified as such by the ATECO 2007 code) have been included only in the following circumstances:
  - I. the companies controlled by these with more than 50% and with a turnover of more than € 20 million carry out similar activities;
  - II. there is only one subsidiary controlled with a turnover of more than € 20 million.
- The subsidiaries at the third and subsequent levels of the control chain were also excluded since the information is largely contained in the consolidated financial statements of the second-level parent companies, included in the list according to the above criteria.

The collection of data and information on shareholding, governing bodies and business leaders of family firms took place through the coding of what is contained in the official documents of chamber of commerce related to the companies considered (source: Chamber of Commerce, Industry, Agriculture and Crafts of Milan).

For this reason, it was necessary to make some methodological choices:

- the familiarity of all members in the Board of Directors was determined by affinity of surname with that of the owners. The data on familiarity could therefore be slightly underestimated;
- the only exception for not underestimating the data was possible for the spouse of the aforementioned subjects, considered family members in the event that the same residential address was found;
- the same methodological choices were made for other shareholders belonging to the controlling family.