

Table S1. Variable definitions

Code	Definition
Investment	Numerical variable calculated by the sum of investment in innovation in capital goods and other intangible assets minus cash from sales of similar elements, multiplied by 100 and scaled by the total assets
Optimal_Investment	Dummy variable that takes the value 1 if the firm is in the two middle quartiles of the ranking of the residuals of a firm-specific deviation from optimal investment, calculated by estimating an industry-year model of investments as a function of growth opportunities (as measured by the percentage change in sales from year t-1 to year t).
Overinvestment	Dummy variable that takes the value 1 if the firm is in the top quartile of the ranking of the residuals of a firm-specific deviation from optimal investment, calculated by estimating an industry-year model of investments as a function of growth opportunities (as measured by the percentage change in sales from year t-1 to year t).
Underinvestment	Dummy variable that takes the value 1 if the firm is in the bottom quartile of the ranking of the residuals of a firm-specific deviation from optimal investment, calculated by estimating an industry-year model of investments as a function of growth opportunities (as measured by the percentage change in sales from year t-1 to year t).

Code	Expected Sign Inve / Op_Inve	Definition
Leverage	-/+	Numerical variable measured by the ratio total liabilities to total assets
Debt_Maturity	-/+	Numerical variable calculated by the ratio current to total liabilities
CommonStock	+/-	Numerical variable measured as the logarithm of common stock
Self-financing	+/-	Numerical variable calculated by the accumulated retained earnings
Liquidity_Problem	-/+	Dummy variable that takes the value 1 if the company has liquidity problems, 0 otherwise. It is determined by the negative difference between the working capital (current assets minus current liabilities) and the need for funds of operations or NOF (Stocks + Receivables + Treasury Operating – Spontaneous Liabilities).
Size	+	Numerical variable measured by the logarithm of total assets
ROA	+	Numerical variable measured by the ratio return on assets
Growth_Opportunities	+	Numerical variable determined as the year-on-year variation in sales over the period
Age	+	Numerical variable measured by the logarithm of the age of the company
Cash	+/-	Numerical variable measured by the standard deviation of the cash flows from t-2 to t
Loss	-	Dummy variable that takes the value 1 if the ordinary result before extraordinary income and expenses is negative and 0 otherwise
Inventory	-	Numerical variable measured by the duration of the operating cycle
Crisis	-	Dummy variable that takes the value 1 if the year corresponds with the period 2008–2012 and 0 otherwise
Subsector		Categorical variable that identifies the four activities of agri-food industry
Year		Categorical variable that identifies the years of the sample (2008–2017)