

Institutional Investors and Corporate Investment

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Table I.a: Descriptive Statistics – Firm Level

This table presents descriptive statistics for the main ownership, stock, and firm characteristics for firms that invest too much and firms that invest too little. Descriptive statistics span over the period 1982-2006. Investment is given by the sum of all outlays on capital expenditure, acquisitions and *R&D* less receipts from the sale of PP&E and investment to maintain assets in place (depreciation and amortization). Investment is normalized by expenditure in property plants and equipment. All variables are from COMPUSTAT. Capital expenditure is item 128. *R&D* expenditure is item 46. Acquisition expenditure is item 129. Cash receipts from sale of PP&E is item 107. Maintenance is construct using reported depreciation and amortization, item 125. Property, plants and equipment is item 8. Adjusted capital investment measures how much a firm invests each year with respect to its average investment in the previous three years. Industry-adjusted Investment (Investment Deviation) is the difference between a firm actual investment and the median investment in its industry in any given year. Firm-specific adjusted investment is measured as the difference between firms' actual investment and its expected level of investment. Long-term Institutional Ownership (LT Investors) is the percentage of the shares held by long-term institutional investors. Short-term Institutional Ownership (ST Investors) is the percentage of the shares held by short-term institutional investors. Long-term Ownership Concentration (Own. Concentration LT) is the Herfindal index of the stake held by the long-term institutional investors in the top 25th percentile in each firm. Short-term Ownership Concentration (Own. Concentration ST) is the Herfindal index of the stake held by the short-term institutional investors in the top 25th percentile in each firm. Market-to-Book is the market value of equity divided by the book value of common equity. Share Turnover is the monthly volume of shares transacted divided by the number of shares outstanding. Past Returns is the stock returns a firm would have made by buying the stock at the end of the year $t-1$ and holding it until the end of the year t . Return Variability is the standard deviation of daily stock returns over the preceding one year. Cash-flows is calculated as earnings before interest depreciation and amortization divided by total assets. Leverage is the book value of debt divided by the book value of total assets. Return on Assets is net income at time t divided by total assets at time $t-1$. All variables are winsorized at the 5th and 95th percentiles. The complete Table is available in the Internet Appendix.

| | Firms that Invest too Much | | | | Firms that Invest too Little | | | | Non-deviation Firms | | | |
|-----------------------------------|----------------------------|--------|--------|--------|------------------------------|--------|--------|--------|---------------------|--------|--------|--------|
| | N | Mean | Median | SD | N | Mean | Median | SD | N | Mean | Median | SD |
| Investment | 8,793 | 0.39 | 0.36 | 0.16 | 14,546 | 0.06 | 0.06 | 0.10 | 16,816 | 0.19 | 0.18 | 0.12 |
| CAPEX | 8,787 | 0.39 | 0.36 | 0.17 | 14,546 | 0.06 | 0.06 | 0.10 | 16,816 | 0.23 | 0.22 | 0.12 |
| Acquisitions | 8,793 | 0.06 | 0.00 | 0.10 | 14,546 | 0.12 | 0.12 | 0.07 | 16,816 | 0.02 | 0.00 | 0.04 |
| R&D | 8,793 | 0.00 | 0.00 | 0.00 | 14,546 | 0.00 | 0.00 | 0.01 | 16,816 | 0.00 | 0.00 | 0.00 |
| Sale of PPE | 8,793 | 0.00 | 0.00 | 0.02 | 14,546 | 0.00 | 0.00 | 0.00 | 16,816 | 0.01 | 0.00 | 0.03 |
| Depreciation & Amortization | 8,793 | 0.05 | 0.04 | 0.03 | 14,546 | 0.01 | 0.00 | 0.05 | 16,816 | 0.05 | 0.05 | 0.04 |
| <i>Investment Deviations</i> | | | | | | | | | | | | |
| Adjusted capital investment | 8,793 | 1.14 | 0.59 | 1.68 | 14,546 | -0.86 | -0.65 | 1.04 | 16,816 | 0.23 | -0.05 | 1.70 |
| Industry-adjusted Investment | 8,793 | 0.18 | 0.15 | 0.15 | 14,546 | -0.13 | -0.12 | 0.10 | 16,816 | -0.002 | -0.01 | 0.12 |
| Firm-specific adjusted investment | 8,793 | 0.18 | 0.15 | 0.14 | 14,546 | -0.12 | -0.10 | 0.11 | 16,816 | 0.003 | 0.01 | 0.11 |
| <i>Ownership Characteristics</i> | | | | | | | | | | | | |
| LT Investors | 8,770 | 30.53% | 26.27% | 22.06% | 14,471 | 23.85% | 18.37% | 19.84% | 16,768 | 29.38% | 25.47% | 21.51% |
| ST Investors | 7,531 | 3.91% | 2.08% | 5.03% | 11,164 | 2.62% | 1.21% | 3.70% | 14,090 | 3.13% | 1.60% | 4.24% |
| Number of Consecutive 13F Filed | 8,793 | 5 | 5 | 2 | 14,546 | 5 | 5 | 2 | 16,816 | 5 | 5 | 2 |
| Number of Institutional Investors | 8,793 | 52 | 30 | 56 | 14,546 | 37 | 15 | 49 | 16,816 | 51 | 27 | 56 |
| Own. Concentration | 8,793 | 0.09 | 0.04 | 0.15 | 14,546 | 0.14 | 0.07 | 0.20 | 16,816 | 0.10 | 0.05 | 0.16 |
| Own. Concentration LT | 8,793 | 0.06 | 0.02 | 0.14 | 14,546 | 0.09 | 0.03 | 0.18 | 16,816 | 0.07 | 0.02 | 0.15 |
| Own. Concentration ST | 8,793 | 0.00 | 0.00 | 0.05 | 14,546 | 0.01 | 0.00 | 0.08 | 16,816 | 0.00 | 0.00 | 0.05 |
| <i>Stock Characteristics</i> | | | | | | | | | | | | |
| Market-to-Book | 8,793 | 2.42 | 1.76 | 2.64 | 14,546 | 1.96 | 1.38 | 2.27 | 16,816 | 2.12 | 1.58 | 2.42 |
| Share Turnover | 8,793 | 0.08% | 0.06% | 0.08% | 14,535 | 0.07% | 0.04% | 0.07% | 16,804 | 0.07% | 0.05% | 0.08% |
| Return Variability | 8,793 | 13.51% | 11.82% | 8.18% | 14,535 | 13.90% | 11.98% | 9.48% | 16,804 | 13.15% | 11.36% | 8.34% |
| Past Returns | 8,793 | 1.85% | 1.69% | 9.55% | 14,535 | 2.22% | 1.86% | 9.23% | 16,804 | 1.88% | 1.58% | 9.40% |
| <i>Firm Characteristics</i> | | | | | | | | | | | | |
| Cash-flows | 8,793 | 0.11 | 0.13 | 0.15 | 14,546 | 0.09 | 0.11 | 0.13 | 16,816 | 0.11 | 0.13 | 0.16 |
| Leverage | 8,793 | 0.22 | 0.20 | 0.18 | 14,546 | 0.26 | 0.25 | 0.17 | 16,816 | 0.24 | 0.22 | 0.18 |
| Total Assets (Million of \$) | 8,792 | 569 | 193 | 1,007 | 14,544 | 493 | 126 | 1,120 | 16,809 | 657 | 203 | 1,268 |
| Return on Assets | 8,769 | 3.38% | 5.54% | 15.75% | 14,534 | 0.00 | 0.02 | 0.13 | 16,778 | 0.02 | 0.05 | 0.15 |

Table I.b: Descriptive Statistics - Institutional Investors Level

This table describes all institutional investors' main portfolios features and the main characteristics of the shares they own over the period 1983-2006. Variables definitions are found in the Appendix. All variables are winsorized at the 5th and 95th percentiles.

| | N | Mean | SD | P05 | Median | P95 |
|--|--------|--------|--------|--------|--------|--------|
| <i><u>Portfolio Characteristics</u></i> | | | | | | |
| Portfolio Size (Million of \$) | 32,700 | 613 | 2,180 | 6.413 | 112 | 2,420 |
| Percentage Ownership | 32,700 | 0.42% | 0.40% | 0.03% | 0.29% | 1.23% |
| Stock Importance | 32,695 | 25.48% | 19.29% | 3.79% | 21.12% | 61.82% |
| Number of Stocks | 32,700 | 147 | 360 | 4 | 43 | 616 |
| <i><u>Stock Characteristics</u></i> | | | | | | |
| Market-to-Book | 31,914 | 2.84 | 1.25 | 1.39 | 2.67 | 4.89 |
| <i><u>Firm Characteristics</u></i> | | | | | | |
| Investment | 32,210 | 0.23 | 0.08 | 0.12 | 0.21 | 0.37 |
| Percentage of Firms that invest too much | 31,118 | 25.16% | 17.08% | 0.00% | 24.14% | 50.00% |
| Cash-flow | 32,104 | 0.14 | 0.07 | 0.03 | 0.15 | 0.21 |
| Leverage | 32,058 | 0.24 | 0.07 | 0.15 | 0.24 | 0.35 |
| Total Assets (Million of \$) | 32,179 | 2,213 | 1,589 | 492 | 1,896 | 4,860 |
| Return on Assets | 32,163 | 4.79% | 7.10% | -6.87% | 6.02% | 12.38% |

Table II.a: Firms' Investment and Institutional Investors Holdings

This table presents first differences OLS regressions with robust standard errors. In the first four columns of the table, the over-investment dummy is equal to one if a firm invests too much and zero if it invests too little. In columns from (5) to (8), the over-investment dummy is equal to one if a firm invest too much and zero if the firm is classified as non-deviation firm. A firm invests too much if: (1) it invests more than its average investment in the previous 3 years (Titman et al. (2004)), and (2) it invests too much with respect to its industry peers (Harvey et al. (2004)), and (3) it invests too much given its growth opportunities, cash-flows, leverage, firm and industry time-invariant characteristics, and trend in investment (Richardson (2006)). Otherwise the firm invests too little. A firm is defined as a non-deviation firm when it cannot be clearly classified neither as a firm that invests too much nor as a firm that invests too little. Investment measures the change in the firm's investment and Investment Deviation is the change in the firm's industry-adjusted investment, both variables are calculated between time ($t-1$) and time (t). The following control variables are included in the analysis: Market-to-Book, Cash-flows, Leverage, Size (the natural log of Total Assets), ROA, Share Turnover, Past Returns, S&P 500 Dummy and the Entrenchment Index. S&P500 is a dummy variable taking the value of 1 if the firm in a given year is included in the S&P500 index and zero otherwise. The Entrenchment Index measures how entrenched a manager is (Bebchuk et al. (2009)). Its value ranges from zero to six, with six indicating the highest managerial entrenchment. Data has been obtained from the Lucian Bebchuk's website: <http://www.law.harvard.edu/faculty/bebchuk/data.shtml>. If the entrenchment index is missing in year (t), but available for year ($t-1$), we assume that in year (t) the entrenchment index is the same than in year ($t-1$). For robustness checks we also use the GIM (Gompers et al. (2003)) index as a measure of corporate governance and results are qualitatively unchanged. The data is obtained from Andrew Metrick's website: <http://faculty.som.yale.edu/andrewmetrick/data.html>. The ownership variables and control variables are measured as the change between time ($t-2$) and time ($t-1$). Change in Past Returns and change in Share Turnover are measured between time ($t-1$) and time (t). The complete Table is available in the Internet Appendix. Errors are clustered at the firm level when the dependent variable is investment and at the industry level when the dependent variable is Investment Deviation. In robustness tests, errors are also bootstrapped. All variables are winsorized at the 5th and 95th percentiles. All regressions include the constant term, but the coefficient is not reported. Standard errors are White-corrected for heteroskedasticity. P-values are in parentheses. * indicates significance at 1% (***), 5% (**), 10% (*).

| | Firms that Invest too Much vs Firms that Invest too Little | | | | Firms that Invest too Much vs Non-deviation Firms | | | | Firms that Invest too Much vs Firms that Invest too Little & Non-deviation Firms | | | |
|--------------------------------|--|--------------------------|--------------------------|--------------------------|---|--------------------------|--------------------------|--------------------------|---|--------------------------|--------------------------|--------------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
| | Investment | | Investment Deviation | | Investment | | Investment Deviation | | Investment | | Investment Deviation | |
| Over-investment | 0.176*** (0.000) | 0.176*** (0.000) | 0.165*** (0.000) | 0.165*** (0.000) | 0.123*** (0.000) | 0.122*** (0.000) | 0.114*** (0.000) | 0.114*** (0.000) | 0.143*** (0.000) | 0.143*** (0.000) | 0.133*** (0.000) | 0.133*** (0.000) |
| LT Investors* Over-investment | - 0.083*** (0.003) | - 0.083*** (0.008) | -0.073* (0.058) | -0.072* (0.065) | -0.062** (0.019) | -0.061** (0.026) | -0.061* (0.059) | -0.061* (0.080) | - 0.079*** (0.002) | - 0.078*** (0.008) | -0.075** (0.027) | -0.074** (0.028) |
| LT Investors | 0.038* (0.078) | 0.038** (0.044) | 0.023 (0.323) | 0.023 (0.301) | 0.016 (0.369) | 0.015 (0.411) | 0.010 (0.537) | 0.010 (0.579) | 0.029** (0.038) | 0.029** (0.011) | 0.019 (0.263) | 0.018 (0.268) |
| ST Investors * Over-investment | -0.114 (0.175) | -0.111 (0.184) | -0.066 (0.383) | -0.063 (0.470) | -0.028 (0.766) | -0.030 (0.694) | 0.013 (0.876) | 0.011 (0.929) | -0.057 (0.465) | -0.058 (0.366) | -0.014 (0.863) | -0.014 (0.861) |
| ST Investors | 0.110* (0.089) | 0.105 (0.124) | 0.073 (0.124) | 0.068 (0.182) | 0.041 (0.452) | 0.040 (0.470) | 0.002 (0.970) | 0.003 (0.968) | 0.046 (0.310) | 0.044 (0.296) | 0.009 (0.856) | 0.008 (0.877) |
| Own. Concentration LT | -0.116 (0.220) | -0.115 (0.242) | -0.169** (0.041) | -0.169** (0.029) | 0.013 (0.859) | 0.013 (0.818) | -0.047 (0.546) | -0.045 (0.485) | -0.059 (0.387) | -0.058 (0.384) | -0.109* (0.055) | -0.108* (0.055) |
| Own. Concentration ST | 0.031 (0.933) | 0.030 (0.936) | 0.113 (0.320) | 0.112 (0.637) | 0.252 (0.726) | 0.303 (0.595) | 0.172 (0.848) | 0.209 (0.804) | 0.032 (0.868) | 0.033 (0.827) | 0.112 (0.267) | 0.113 (0.258) |
| Market-to-Book | 0.003 (0.243) | 0.003 (0.156) | -0.002* (0.070) | -0.003* (0.064) | 0.004*** (0.006) | 0.004** (0.012) | -0.000 (0.781) | -0.000 (0.815) | 0.005*** (0.000) | 0.005*** (0.001) | 0.000 (0.773) | 0.000 (0.794) |
| Cash-flows | 0.154*** (0.000) | 0.150*** (0.000) | 0.074 (0.127) | 0.071 (0.112) | 0.147*** (0.000) | 0.145*** (0.000) | 0.099*** (0.000) | 0.098*** (0.003) | 0.176*** (0.000) | 0.173*** (0.000) | 0.123*** (0.001) | 0.121*** (0.002) |
| Leverage | - 0.216*** (0.000) | - 0.217*** (0.000) | - 0.172*** (0.000) | - 0.174*** (0.000) | - 0.222*** (0.000) | - 0.224*** (0.000) | - 0.183*** (0.000) | - 0.184*** (0.000) | - 0.259*** (0.000) | - 0.260*** (0.000) | - 0.210*** (0.000) | - 0.211*** (0.000) |
| Size | - 0.129*** (0.000) | - 0.129*** (0.000) | - 0.130*** (0.000) | - 0.130*** (0.000) | - 0.121*** (0.000) | - 0.121*** (0.000) | - 0.119*** (0.000) | - 0.119*** (0.000) | - 0.118*** (0.000) | - 0.118*** (0.000) | - 0.114*** (0.000) | - 0.114*** (0.000) |
| ROA | 0.057** (0.026) | 0.057*** (0.009) | 0.023 (0.476) | 0.023 (0.493) | 0.103*** (0.000) | 0.103*** (0.000) | 0.050*** (0.004) | 0.050*** (0.005) | 0.082*** (0.000) | 0.081*** (0.000) | 0.040** (0.049) | 0.040* (0.051) |

| | | | | | | | | | | | | |
|-------------------------------|---------|---------|---------|---------|---------|----------|---------|---------|---------|----------|---------|---------|
| Share Turnover | | -0.021* | | -0.018 | | -0.025** | | -0.020* | | -0.022** | | -0.016 |
| | | (0.079) | | (0.202) | | (0.041) | | (0.064) | | (0.011) | | (0.127) |
| Past Returns | | 5.865* | | 4.261 | | 3.911* | | -0.146 | | 5.921*** | | 2.387 |
| | | (0.057) | | (0.185) | | (0.080) | | (0.945) | | (0.006) | | (0.152) |
| S&P 500 | -0.003 | -0.003 | -0.006* | -0.006 | -0.003 | -0.003 | -0.003 | -0.003 | 0.003* | 0.003* | 0.002 | 0.002 |
| | (0.338) | (0.462) | (0.086) | (0.151) | (0.301) | (0.291) | (0.402) | (0.316) | (0.092) | (0.087) | (0.260) | (0.252) |
| Entrenchment Index | 0.002 | 0.002 | 0.000 | 0.000 | 0.001 | 0.001 | -0.000 | -0.000 | 0.001* | 0.001** | 0.000 | 0.000 |
| | (0.124) | (0.128) | (0.638) | (0.625) | (0.416) | (0.302) | (0.804) | (0.819) | (0.071) | (0.043) | (0.642) | (0.633) |
| Cluster at the Firm Level | YES | YES | NO | NO | YES | YES | NO | NO | YES | YES | NO | NO |
| Cluster at the Industry Level | NO | NO | YES | YES | NO | NO | YES | YES | YES | YES | YES | YES |
| Observations | 5,804 | 5,803 | 5,804 | 5,803 | 7,510 | 7,510 | 7,510 | 7,510 | 10,764 | 10,763 | 10,764 | 10,763 |
| R-squared | 0.430 | 0.431 | 0.361 | 0.362 | 0.302 | 0.303 | 0.238 | 0.238 | 0.325 | 0.326 | 0.257 | 0.257 |

Table III.a:

Firms' Investment and Institutional Investors Holdings – Finer definition of Firms that Invest too Much

This table presents first differences OLS regressions with robust standard errors. In the first two columns of the table, the over-investment dummy is equal to one if a firm invests too much and zero if it invests too little. Columns from (4) to (6) show results for the entire sample. In this latter case the over-investment dummy is equal to one if a firm invests too much and zero if the firm invests too little or it is classified as non-deviation firm. A firm invests too much if: (1) it invests more than its average investment in the previous 3 years (Titman et al. (2004)), and (2) it invests too much with respect to its industry peers (Harvey et al. (2004)), and (3) it invests too much given its growth opportunities, cash-flows, leverage, firm and industry time-invariant characteristics, and trend in investment (Richardson (2006)) and (4) has lower investment opportunities and higher levels of cash-flow than its industry peers. Otherwise the firm is classified as a firm that invests too little. A firm is defined as a non-deviation firm when it cannot be clearly classified neither as a firm that invests too much nor as a firm that invests too little. The dependent variables are as follows: Investment measures the change in the firm's investment and Investment Deviation is the change in the firm's industry-adjusted investment, both variables are calculated between time ($t-1$) and time (t). The following control variables are included in the analysis: Market-to-Book, Cash-flows, Leverage, Size, ROA, Share Turnover, Past Returns, S&P 500 Dummy and the Entrenchment Index. The ownership variables and control variables are measured as the change between time ($t-2$) and time ($t-1$). Change in Past Returns and change in Share Turnover are measured between time ($t-1$) and time (t). Variables definitions are found in the Appendix. Errors are clustered at the firm level when the dependent variable is investment and at the industry level when the dependent variable is Investment Deviation. Errors are also bootstrapped. All variables are winsorized at the 5th and 95th percentiles. All regressions include the constant term, but the coefficient is not reported. Standard errors are White-corrected for heteroskedasticity. P-values are in parentheses. * indicates significance at 1% (***), 5% (**), 10% (*).

| | Firms that Invest too Much vs Firms that Invest too Little | | | Firms that ly Over-invest vs Firms that Invest too Little & Non-deviation Firms | | |
|--------------------------------|--|----------------------|-------------------------|--|----------------------|-------------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| | Investment | | Investment Deviation | Investment | | Investment Deviation |
| Over-investment | 0.129*** (0.000) | 0.129*** (0.000) | 0.120*** (0.000) | 0.125*** (0.000) | 0.125*** (0.000) | 0.116*** (0.000) |
| LT Investors* Over-investment | -0.134*** (0.003) | -0.131*** (0.002) | -0.128** (0.018) | -0.093** (0.019) | -0.091** (0.022) | -0.092* (0.058) |
| LT Investors | 0.062** (0.033) | 0.060** (0.041) | 0.048* (0.086) | 0.035** (0.039) | 0.034** (0.045) | 0.025 (0.193) |
| ST Investors * Over-investment | -0.052 (0.595) | -0.038 (0.709) | -0.061 (0.596) | -0.011 (0.908) | -0.006 (0.956) | -0.009 (0.933) |
| ST Investors | 0.045 (0.509) | 0.035 (0.605) | 0.038 (0.540) | 0.031 (0.535) | 0.027 (0.594) | 0.006 (0.898) |
| Own. Concentration LT | -0.191* (0.051) | -0.189* (0.053) | -0.240** (0.015) | -0.084 (0.203) | -0.083 (0.204) | -0.133* (0.054) |
| Own. Concentration ST | 0.188* (0.075) | 0.183* (0.082) | 0.263** (0.017) | 0.085 (0.319) | 0.085 (0.311) | 0.162 (0.106) |
| Market-to-Book | 0.006*** (0.008) | 0.006** (0.014) | 0.001 (0.634) | 0.006*** (0.000) | 0.006*** (0.000) | 0.001 (0.222) |
| Cash-flows | 0.227*** (0.000) | 0.219*** (0.000) | 0.142*** (0.002) | 0.205*** (0.000) | 0.200*** (0.000) | 0.150*** (0.000) |
| Leverage | -0.297*** (0.000) | -0.298*** (0.000) | -0.248*** (0.000) | -0.290*** (0.000) | -0.292*** (0.000) | -0.240*** (0.000) |
| Size | -0.067*** (0.000) | -0.067*** (0.000) | -0.072*** (0.000) | -0.095*** (0.000) | -0.095*** (0.000) | -0.093*** (0.000) |
| ROA | 0.082*** (0.006) | 0.081*** (0.004) | 0.046 (0.139) | 0.096*** (0.000) | 0.095*** (0.000) | 0.054*** (0.005) |
| Share Turnover | | 13.286*** (0.000) | | | 9.079*** (0.000) | |
| Past Returns | | -0.028* (0.066) | | | -0.023** (0.010) | |
| S&P 500 | -0.002 (0.541) | -0.002 (0.498) | -0.005 (0.165) | 0.003 (0.105) | 0.003 (0.101) | 0.002 (0.355) |
| Entrenchment Index | 0.000 (0.899) | 0.000 (0.880) | -0.001 (0.465) | 0.001 (0.475) | 0.001 (0.461) | -0.000 (0.756) |
| Cluster at the Firm Level | YES | YES | NO | YES | YES | NO |
| Cluster at the Industry Level | YES | YES | YES | YES | YES | YES |
| Observations | 5,801 | 5,800 | 5,801 | 10,760 | 10,759 | 10,760 |
| R-squared | 0.234 | 0.238 | 0.186 | 0.221 | 0.223 | 0.166 |

Table IV.a: Firms' Investment and Investors' Holdings Size

This table presents first difference OLS regressions with robust standard errors. In the first two columns of the table, the over-investment dummy is equal to one if a firm invests too much and zero if it invests too little. The last two columns show results for the entire sample. In this latter case the over-investment dummy is equal to one if a firm invests too much and zero if the firm invests too little or it is classified as non-deviation firm. A firm invests too much if: (1) it invests more than its average investment in the previous 3 years (Titman et al. (2004)), and (2) it invests too much with respect to its industry peers (Harvey et al. (2004)), and (3) it invests too much given its growth opportunities, cash-flows, leverage, firm and industry time-invariant characteristics, and trend in investment (Richardson (2006)). Otherwise the firm invests too little. A firm is defined as a non-deviation firm when it cannot be clearly classified neither as a firm that invests too much nor as a firm that invests too little. The dependent variables are as follows: Investment measures the change in the firm's investment and Investment Deviation is the change in the firm's industry-adjusted investment, both variables are calculated between time ($t-1$) and time (t). The following control variables are included in the analysis: Market-to-Book, Cash-flows, Leverage, Size, ROA, Share Turnover, Past Returns, S&P 500 Dummy and the Entrenchment Index. The ownership variables and control variables are measured as the change between time ($t-2$) and time ($t-1$). Change in Past Returns and change in Share Turnover are measured between time ($t-1$) and time (t). Variables definitions are found in the Appendix. Errors are clustered at the firm level when the dependent variable is investment and at the industry level when the dependent variable is Investment Deviation. Errors are also bootstrapped. All variables are winsorized at the 5th and 95th percentiles. All regressions include the constant term, but the coefficient is not reported. Standard errors are White-corrected for heteroskedasticity. P-values are in parentheses. * indicates significance at 1% (***), 5% (**), 10% (*).

| | Firms that Invest too Much vs Firms that Invest too Little | | | | Firms that Invest too Much vs Firms that Invest too Little & Non-deviation Firms | | | |
|--------------------------------|--|----------------------|---|----------------------|---|----------------------|---|----------------------|
| | Stake Above Median | | Stake Above 95 th Percentile | | Stake Above Median | | Stake Above 95 th Percentile | |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Over-investment | 0.176*** (0.000) | 0.175*** (0.000) | 0.176*** (0.000) | 0.176*** (0.000) | 0.143*** (0.000) | 0.143*** (0.000) | 0.144*** (0.000) | 0.143*** (0.000) |
| LT Investors* Over-investment | -0.115*** (0.004) | -0.114*** (0.008) | -0.302*** (0.010) | -0.304*** (0.003) | -0.116*** (0.010) | -0.116** (0.011) | -0.340*** (0.000) | -0.341*** (0.000) |
| LT Investors | 0.079*** (0.001) | 0.076** (0.012) | 0.209*** (0.008) | 0.207*** (0.002) | 0.071*** (0.000) | 0.068*** (0.000) | 0.208*** (0.000) | 0.204*** (0.000) |
| ST Investors * Over-investment | -0.222 (0.118) | -0.214 (0.102) | -0.380 (0.129) | -0.368 (0.131) | -0.156 (0.154) | -0.152 (0.168) | -0.259 (0.226) | -0.252 (0.246) |
| ST Investors | 0.123 (0.117) | 0.120 (0.159) | 0.135 (0.333) | 0.128 (0.443) | 0.054 (0.243) | 0.052 (0.258) | 0.014 (0.903) | 0.010 (0.929) |
| Own. Concentration LT | -0.111 (0.168) | -0.113 (0.146) | -0.140 (0.164) | -0.142* (0.088) | -0.046 (0.379) | -0.046 (0.377) | -0.083 (0.128) | -0.081 (0.131) |
| Own. Concentration ST | 0.034 (0.878) | 0.034 (0.937) | 0.062 (0.848) | 0.061 (0.858) | 0.028 (0.719) | 0.028 (0.707) | 0.062 (0.414) | 0.062 (0.405) |
| Market-to-Book | 0.003 (0.146) | 0.003 (0.211) | 0.003 (0.184) | 0.003 (0.193) | 0.005*** (0.000) | 0.005*** (0.000) | 0.005*** (0.000) | 0.005*** (0.000) |
| Cash-flows | 0.152*** (0.000) | 0.148*** (0.000) | 0.153*** (0.001) | 0.148*** (0.000) | 0.172*** (0.000) | 0.169*** (0.000) | 0.172*** (0.000) | 0.168*** (0.000) |
| Leverage | -0.215*** (0.000) | -0.216*** (0.000) | -0.214*** (0.000) | -0.215*** (0.000) | -0.257*** (0.000) | -0.259*** (0.000) | -0.257*** (0.000) | -0.258*** (0.000) |
| Size | -0.129*** (0.000) | -0.128*** (0.000) | -0.129*** (0.000) | -0.129*** (0.000) | -0.119*** (0.000) | -0.119*** (0.000) | -0.120*** (0.000) | -0.120*** (0.000) |
| ROA | 0.056** (0.012) | 0.056*** (0.003) | 0.057** (0.031) | 0.057** (0.038) | 0.081*** (0.000) | 0.080*** (0.000) | 0.081*** (0.000) | 0.081*** (0.000) |
| Share Turnover | | 5.936** (0.016) | | 6.143** (0.011) | | 5.574** (0.022) | | 5.636** (0.022) |
| Return Variability | | -0.030 (0.151) | | -0.030 (0.163) | | -0.004 (0.719) | | -0.004 (0.727) |
| Past Returns | | -0.019* (0.087) | | -0.020* (0.064) | | -0.021** (0.015) | | -0.021** (0.014) |
| S&P 500 | -0.003 (0.257) | -0.003 (0.376) | -0.003 (0.392) | -0.003 (0.341) | 0.004* (0.070) | 0.004* (0.066) | 0.003* (0.087) | 0.003* (0.082) |
| Entrenchment Index | 0.002* (0.091) | 0.002** (0.030) | 0.002** (0.018) | 0.002* (0.061) | 0.001* (0.082) | 0.001* (0.081) | 0.001* (0.080) | 0.001* (0.080) |
| Cluster at the Firm Level | YES | YES | NO | YES | YES | YES | NO | YES |
| Cluster at the Industry Level | NO | NO | YES | NO | YES | YES | YES | NO |
| Observations | 5,820 | 5,819 | 5,820 | 5,819 | 10,806 | 10,805 | 10,806 | 10,805 |
| R-squared | 0.430 | 0.432 | 0.430 | 0.431 | 0.326 | 0.327 | 0.325 | 0.327 |

Table V.a: Over-investment, Under-investment and Firm's Importance in Investors' Portfolios

This table presents first difference OLS regressions with robust errors. A firm overinvests if: (1) it invests more than its average investment in the previous 3 years (Titman et al. (2004)), and (2) it invests too much with respect to its industry peers (Harvey et al. (2004), and (3) it invests too much given its growth opportunities, financing constraints, firm and industry time-invariant characteristics, and trend in investment (Richardson (2006)). Otherwise the firm under-invests. A firm is ambiguous when it cannot be clearly classified as a firm that over-invests or under-invests. The dependent variables are as follow: Investment measures the change in investment, IndDev is the change in industry-adjusted investment, and AbnInv measures the change in the firm's investment deviation from its expected investment. Changes in the dependent variable are measured between time (t-1) and time (t). The ownership variables and control variables are measured as the change between time (t-2) and time (t-1). Change in Past Returns and change in Share Turnover are measured between time (t-1) and time (t). Variables definitions are found in Appendix A. Variables are winsorized at the 5% level. All regressions include the constant term, but the coefficient is not reported. P-values are in parentheses. * indicates significance at 1% (***), 5% (**), 10% (*).

| | Over-investment vs Under-investment | | | Over-investment vs Under-investment & Ambiguous | | |
|---|---|-----------------------------|---------------------------|---|-----------------------------|----------------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| | Investment | IndDev | AbnInv | Investment | IndDev | AbnInv |
| Over-investment | 0.190*** (0.000) | 0.163*** (0.000) | 0.165*** (0.000) | 0.155*** (0.000) | 0.132*** (0.000) | 0.136*** (0.000) |
| Importance LT Investors* Over-investment | -0.267** (0.048) | -0.200 (0.166) | -0.319*** (0.010) | -0.312*** (0.005) | -0.297*** (0.007) | -0.366*** (0.001) |
| Importance LT Investors | 0.353*** (0.000) | 0.173* (0.078) | 0.031 (0.666) | 0.318*** (0.000) | 0.217*** (0.002) | 0.082* (0.080) |
| Importance ST Investors * Over-investment | 0.000 (0.999) | -0.012 (0.762) | -0.044 (0.158) | 0.013 (0.669) | 0.019 (0.596) | -0.022 (0.428) |
| Importance ST Investors | 0.011 (0.565) | 0.022 (0.363) | 0.024 (0.198) | -0.003 (0.788) | -0.010 (0.541) | 0.003 (0.780) |
| Own. Concentration LT | -0.142 (0.120) | -0.159** (0.035) | 0.093 (0.247) | -0.033 (0.588) | -0.093* (0.077) | 0.127** (0.029) |
| Own. Concentration ST | -0.243** (0.026) | -0.020 (0.876) | -0.150 (0.190) | -0.258*** (0.003) | -0.051 (0.647) | -0.168** (0.045) |
| Market-to-Book | 0.001 (0.761) | -0.003** (0.048) | | 0.004*** (0.003) | -0.000 (0.786) | |
| Cash flows | 0.204*** (0.000) | 0.072 (0.122) | | 0.183*** (0.000) | 0.119*** (0.002) | |
| Leverage | -0.237*** (0.000) | -0.167*** (0.000) | | -0.269*** (0.000) | -0.205*** (0.000) | |
| Size | -0.144*** (0.000) | -0.131*** (0.000) | | -0.123*** (0.000) | -0.117*** (0.000) | |
| ROA | 0.005 (0.874) | 0.020 (0.544) | | 0.049** (0.023) | 0.037* (0.065) | |
| S&P 500 | -0.011 (0.128) | -0.006* (0.086) | -0.000 (0.994) | -0.003 (0.460) | 0.002 (0.276) | 0.007*** (0.001) |
| Entrenchment Index | 0.001 (0.847) | 0.001 (0.553) | 0.002** (0.038) | -0.001 (0.653) | 0.000 (0.610) | 0.002** (0.011) |
| Cluster at the Firm Level | YES | NO | YES | YES | NO | YES |
| Cluster at the Industry Level | NO | YES | NO | NO | YES | NO |
| Observations | 5,813 | 5,813 | 5,358 | 10,789 | 10,789 | 9,961 |
| R-squared | 0.452 | 0.361 | 0.369 | 0.352 | 0.258 | 0.231 |

Table VI.a: Firms' Investment, Long-term Investors, Quasi-indexers and Transient Investors

This table presents first difference OLS regressions with robust standard errors. In the first two columns of the table, the over-investment dummy is equal to one if a firm invests too much and zero if it invests too little. The last two columns show results for the entire sample. In this latter case the over-investment dummy is equal to one if a firm invests too much and zero if the firm invests too little or it is classified as non-deviation firm. A firm invests too much if: (1) it invests more than its average investment in the previous 3 years (Titman et al. (2004)), and (2) it invests too much with respect to its industry peers (Harvey et al. (2004)), and (3) it invests too much given its growth opportunities, cash-flows, leverage, firm and industry time-invariant characteristics, and trend in investment (Richardson (2006)). Otherwise the firm invests too little. A firm is defined as a non-deviation firm when it cannot be clearly classified neither as a firm that invests too much nor as a firm that invests too little. The dependent variables are as follows: Investment measures the change in the firm's investment and Investment Deviation is the change in the firm's industry-adjusted investment, both variables are calculated between time ($t-1$) and time (t). The following control variables are included in the analysis: Market-to-Book, Cash-flows, Leverage, Size, ROA, Share Turnover, Past Returns, S&P 500 Dummy and the Entrenchment Index. The ownership variables and control variables are measured as the change between time ($t-2$) and time ($t-1$). Change in Past Returns and change in Share Turnover are measured between time ($t-1$) and time (t). Variables definitions are found in the Appendix. Errors are clustered at the firm level when the dependent variable is investment and at the industry level when the dependent variable is Investment Deviation. Errors are also bootstrapped. All variables are winsorized at the 5th and 95th percentiles. All regressions include the constant term, but the coefficient is not reported. Standard errors are White-corrected for heteroskedasticity. P-values are in parentheses. * indicates significance at 1% (***), 5% (**), 10% (*).

| | Firms that Invest too Much vs Firms that Invest too Little | | Firms that Invest too Much vs Firms that Invest too Little & Non-deviation Firms | |
|--------------------------------------|--|--------------------------------|---|--------------------------------|
| | (1) Investment | (2) Investment Deviation | (3) Investment | (4) Investment Deviation |
| Over-investment | 0.175*** (0.000) | 0.164*** (0.000) | 0.141*** (0.000) | 0.131*** (0.000) |
| LT Investors * Over-investment | -0.126*** (0.001) | -0.100** (0.040) | -0.125*** (0.001) | -0.109** (0.017) |
| LT Investors | 0.067** (0.012) | 0.037 (0.222) | 0.056*** (0.008) | 0.035 (0.166) |
| ST Investors * Over-investment | -0.217 (0.262) | -0.141 (0.510) | -0.073 (0.722) | 0.000 (0.999) |
| ST Investors | 0.119 (0.127) | 0.097 (0.250) | -0.031 (0.680) | -0.053 (0.424) |
| Quasi Indexers * Over-investment | -0.024 (0.568) | -0.038 (0.484) | 0.003 (0.941) | -0.012 (0.812) |
| Quasi Indexers | 0.023 (0.251) | 0.027 (0.308) | -0.006 (0.717) | 0.001 (0.974) |
| Transient Investors* Over-investment | -0.134 (0.198) | -0.089 (0.409) | -0.099 (0.355) | -0.071 (0.503) |
| Transient Investors | 0.143** (0.041) | 0.090 (0.190) | 0.095 (0.119) | 0.056 (0.376) |
| Own. Concentration LT | -0.051 (0.567) | -0.104 (0.251) | -0.025 (0.682) | -0.067 (0.299) |
| Own. Concentration ST | -0.030 (0.780) | 0.050 (0.680) | -0.016 (0.851) | 0.033 (0.748) |
| Market-to-Book | 0.003 (0.189) | -0.002 (0.192) | 0.005*** (0.001) | 0.000 (0.805) |
| Cash-flows | 0.134*** (0.001) | 0.054 (0.216) | 0.173*** (0.000) | 0.118*** (0.002) |
| Leverage | -0.203*** (0.000) | -0.161*** (0.000) | -0.249*** (0.000) | -0.205*** (0.000) |
| Size | -0.131*** (0.000) | -0.130*** (0.000) | -0.117*** (0.000) | -0.113*** (0.000) |
| ROA | 0.072** (0.014) | 0.037 (0.206) | 0.087*** (0.000) | 0.045** (0.017) |
| S&P 500 | -0.001 (0.711) | -0.004 (0.250) | 0.004** (0.044) | 0.003 (0.215) |
| Entrenchment Index | 0.002 (0.170) | 0.001 (0.523) | 0.002** (0.030) | 0.001 (0.382) |
| Cluster at the Firm Level | YES | NO | YES | NO |
| Cluster at the Industry Level | YES | YES | YES | YES |
| Observations | 5,377 | 5,377 | 10,046 | 10,046 |
| R-squared | 0.428 | 0.357 | 0.321 | 0.252 |

Table VII.a: Firms' Investment and Institutional Investors Purchases and Sales

This table presents first differences OLS regressions with robust standard errors. In the first four columns of the table, the over-investment dummy is equal to one if a firm invests too much and zero if it invests too little. In columns from (5) to (8), the over-investment dummy is equal to one if a firm invest too much and zero if the firm is classified as non-deviation firm. The last four columns show results for the entire sample. In this latter case the over-investment dummy is equal to one if a firm invests too much and zero if the firm invests too little or it is classified as non-deviation firm. A firm invests too much if: (1) it invests more than its average investment in the previous 3 years (Titman et al. (2004)), and (2) it invests too much with respect to its industry peers (Harvey et al. (2004)), and (3) it invests too much given its growth opportunities, cash-flows, leverage, firm and industry time-invariant characteristics, and trend in investment (Richardson (2006)). Otherwise the firm invests too little. A firm is defined as a non-deviation firm when it cannot be clearly classified neither as a firm that invests too much nor as a firm that invests too little. The dependent variables are as follows: Investment measures the change in the firm's investment and Investment Deviation is the change in the firm's industry-adjusted investment, both variables are calculated between time ($t-1$) and time (t). For each long-term investor purchases (sales) in firm i is measured as the increase (decrease) in the ownership stake she owned between time ($t-2$) and time ($t-1$). Individual purchases and sales made by long-term investors are then aggregated at the firm level. The following control variables are included in the analysis: Market-to-Book, Cash-flows, Leverage, Size, ROA, Share Turnover, Past Returns, S&P 500 Dummy and the Entrenchment Index. The control variables are measured as the change between time ($t-2$) and time ($t-1$). Change in Past Returns and change in Share Turnover are measured between time ($t-1$) and time (t). Variables definitions are found in the Appendix. Errors are clustered at the firm level when the dependent variable is investment and at the industry level when the dependent variable is Investment Deviation. Errors are also bootstrapped. All variables are winsorized at the 5th and 95th percentiles. All regressions include the constant term, but the coefficient is not reported. Standard errors are White-corrected for heteroskedasticity. P-values are in parentheses. * indicates significance at 1% (***), 5% (**), 10% (*).

| | Firms that Invest too Much vs Firms that Invest too Little | | | | Firms that Invest too Much vs Non-deviation Firms | | | | Firms that Invest too Much vs Firms that Invest too Little & Non-deviation Firms | | | |
|--|--|--------------------------------|------------------------------|-----------------------------|---|-----------------------------|------------------------------|------------------------------|---|--------------------------------|-----------------------------|-----------------------------|
| | (1) Investment | (2) Investment | (3) Investment | (4) Deviation | (5) Investment | (6) Investment | (7) Investment | (8) Deviation | (9) Investment | (10) Investment | (11) Investment | (12) Deviation |
| Over-investment | 0.201*** (0.000) | 0.200*** (0.000) | 0.190*** (0.000) | 0.190*** (0.000) | 0.143*** (0.000) | 0.142*** (0.000) | 0.133*** (0.000) | 0.133*** (0.000) | 0.168*** (0.000) | 0.168*** (0.000) | 0.158*** (0.000) | 0.158*** (0.000) |
| LT Investors Purchases * Over-investment | - 0.382*** (0.000) | - 0.380*** (0.000) | -0.327** (0.010) | -0.326** (0.016) | - 0.285*** (0.000) | - 0.290*** (0.001) | -0.200** (0.010) | -0.204** (0.019) | - 0.345*** (0.000) | - 0.347*** (0.000) | - 0.269*** (0.000) | -0.271** (0.014) |
| LT Investors Sales * Over-investment | 0.072 | 0.070 | 0.120 | 0.119 | 0.061 | 0.056 | 0.139 | 0.135* | 0.097 | 0.093 | 0.164** | 0.161* |
| LT Investors Purchases | (0.399) 0.153*** (0.001) | (0.374) 0.149*** (0.001) | (0.321) 0.089* (0.097) | (0.352) 0.086 (0.234) | (0.393) 0.058 (0.222) | (0.503) 0.057 (0.241) | (0.135) -0.041 (0.430) | (0.100) -0.042 (0.314) | (0.121) 0.114*** (0.000) | (0.135) 0.112*** (0.002) | (0.047) 0.026 (0.439) | (0.084) 0.025 (0.447) |
| LT Investors Sales | -0.054 (0.185) | -0.054 (0.179) | -0.066 (0.272) | -0.066 (0.187) | -0.035 (0.389) | -0.032 (0.469) | -0.070* (0.089) | -0.070* (0.082) | -0.066** (0.019) | -0.063** (0.042) | -0.091** (0.014) | -0.090** (0.015) |
| ST Investors * Over-investment | -0.092 (0.197) | -0.089 (0.300) | -0.050 (0.483) | -0.047 (0.577) | -0.035 (0.660) | -0.036 (0.703) | -0.003 (0.971) | -0.005 (0.957) | -0.053 (0.455) | -0.053 (0.444) | -0.019 (0.808) | -0.019 (0.840) |
| ST Investors | 0.091 (0.131) | 0.086 (0.116) | 0.060 (0.214) | 0.055 (0.197) | 0.040 (0.425) | 0.040 (0.516) | 0.014 (0.847) | 0.015 (0.802) | 0.035 (0.307) | 0.033 (0.438) | 0.009 (0.849) | 0.008 (0.857) |
| Own. Concentration LT | -0.072 (0.435) | -0.071 (0.435) | -0.113 (0.293) | -0.113 (0.155) | 0.015 (0.847) | 0.015 (0.872) | -0.017 (0.817) | -0.016 (0.838) | -0.051 (0.456) | -0.050 (0.454) | -0.073 (0.238) | -0.073 (0.303) |
| Own. Concentration ST | 0.430 (0.544) | 0.461 (0.470) | 0.174 (0.823) | 0.201 (0.824) | -0.606 (0.515) | -0.522 (0.585) | -1.328* (0.062) | -1.288 (0.205) | -0.160 (0.764) | -0.097 (0.833) | -0.620 (0.365) | -0.581 (0.319) |
| Market-to-Book | 0.003 (0.166) | 0.003 (0.297) | -0.002 (0.154) | -0.003 (0.153) | 0.004** (0.032) | 0.004** (0.021) | -0.000 (0.820) | -0.000 (0.763) | 0.005*** (0.000) | 0.005*** (0.001) | 0.000 (0.776) | 0.000 (0.785) |
| Cash-flows | 0.159*** (0.000) | 0.156*** (0.000) | 0.081 (0.100) | 0.078* (0.074) | 0.158*** (0.000) | 0.156*** (0.000) | 0.110** (0.010) | 0.109*** (0.002) | 0.183*** (0.000) | 0.180*** (0.000) | 0.130*** (0.000) | 0.128*** (0.002) |
| Leverage | 0.208*** (0.000) | 0.209*** (0.000) | 0.164*** (0.000) | 0.166*** (0.000) | 0.221*** (0.000) | 0.223*** (0.000) | 0.182*** (0.000) | 0.183*** (0.000) | 0.255*** (0.000) | 0.256*** (0.000) | 0.208*** (0.000) | 0.209*** (0.000) |
| Size | 0.129*** (0.000) | 0.129*** (0.000) | 0.131*** (0.000) | 0.131*** (0.000) | 0.119*** (0.000) | 0.119*** (0.000) | 0.118*** (0.000) | 0.118*** (0.000) | 0.117*** (0.000) | 0.117*** (0.000) | 0.114*** (0.000) | 0.114*** (0.000) |

| | | | | | | | | | | | | |
|-------------------------------|--------------------|---------------------|-------------------|-------------------|---------------------|----------------------|---------------------|---------------------|---------------------|---------------------|--------------------|--------------------|
| ROA | 0.063** (0.012) | 0.062*** (0.000) | 0.028 (0.441) | 0.028 (0.432) | 0.095*** (0.000) | 0.095*** (0.000) | 0.042*** (0.002) | 0.041*** (0.004) | 0.079*** (0.000) | 0.079*** (0.000) | 0.038** (0.043) | 0.038** (0.047) |
| Share Turnover | | 5.512** (0.029) | | 4.329 (0.146) | | 3.338 (0.213) | | -0.555 (0.817) | | -0.023** (0.011) | | -0.017* (0.063) |
| Past Returns | | -0.021** (0.033) | | -0.018 (0.258) | | -0.027*** (0.010) | | -0.022* (0.059) | | 5.264*** (0.008) | | 1.995 (0.258) |
| S&P 500 | -0.003 (0.312) | -0.003 (0.297) | -0.005 (0.112) | -0.005 (0.120) | -0.003 (0.423) | -0.002 (0.369) | -0.001 (0.736) | -0.001 (0.737) | 0.002 (0.497) | 0.002 (0.482) | 0.002 (0.313) | 0.002 (0.357) |
| Entrenchment Index | 0.002** (0.042) | 0.002 (0.116) | 0.001 (0.462) | 0.001 (0.545) | 0.001 (0.383) | 0.001 (0.358) | -0.000 (0.997) | -0.000 (0.992) | 0.001 (0.195) | 0.001 (0.121) | 0.000 (0.720) | 0.000 (0.704) |
| Control Variables | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| Cluster at the Firm Level | YES | YES | NO | NO | YES | YES | NO | NO | YES | YES | NO | NO |
| Cluster at the Industry Level | NO | NO | YES | YES | NO | NO | YES | YES | YES | YES | YES | YES |
| Observations | 5,748 | 5,747 | 5,748 | 5,747 | 7,463 | 7,463 | 7,463 | 7,463 | 10,680 | 10,679 | 10,680 | 10,679 |
| R-squared | 0.433 | 0.434 | 0.363 | 0.364 | 0.303 | 0.304 | 0.240 | 0.241 | 0.328 | 0.329 | 0.259 | 0.259 |

Table VIII.a: Firms' Investment and Institutional Investors Purchases – IV Regressions

This table focuses on firms that invest too much and presents Instrumental Variables OLS regressions with robust standard errors. A firm invests too much if: (1) it invests more than its average investment in the previous 3 years (Titman et al. (2004)), and (2) it invests too much with respect to its industry peers (Harvey et al. (2004)), and (3) it invests too much given its growth opportunities, cash-flows, leverage, firm and industry time-invariant characteristics, and trend in investment (Richardson (2006)). Investment is measured as the change in the firm's investment between time $(t-1)$ and time (t) . For each long-term investor purchases in firm i is measured as the increase in the ownership stake she owned between time $(t-2)$ and time $(t-1)$. Individual purchases and sales made by long-term investors are then aggregated at the firm level. We use the inclusion in the S&P 500 in year as an instrument for the purchases of long-term institutional investors (LT Investors Purchases). Columns from (1) to (4) show results using as independent variable the purchases of *all* long-term institutional investors, while columns from (5) to (8) show results excluding from the pool of investors those that can be classified as quasi-indexers following the definition in Section IV.A. S&P 500 is a dummy variable equal to one if the firm is a member of the S&P 500 Index. Columns (1), (3), (5) and (7) show the first stage of the instrumental variable analysis, while the rest of the columns report the second stage. The following control variables are included in the analysis: Market-to-Book, Cash-flows, Leverage, Size, ROA, Share Turnover, Past Returns, S&P 500 Dummy and the Entrenchment Index. Change in Past Returns and change in Share Turnover are measured between time $(t-1)$ and time (t) , all the other control variables are measured as the change between time $(t-2)$ and time $(t-1)$. Variables definitions are found in the Appendix. Errors are clustered at the firm level. All variables are winsorized at the 5th and 95th percentiles. All regressions include the constant term, but the coefficient is not reported. Standard errors are White-corrected for heteroskedasticity. P-values are in parentheses. * indicates significance at 1% (***), 5% (**), 10% (*).

| | Long-Term Investors | | | | Long-Term Investors Excluding Quasi-indexer Investors | | | |
|---|---------------------|----------------------|---------------------|----------------------|--|----------------------|----------------------|----------------------|
| | LT Investors | | LT Investors | | LT Investors | | LT Investors | |
| | Purchases | Investment | Purchases | Investment | Purchases | Investment | Purchases | Investment |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| LT Investors Purchases | | -1.282*** (0.000) | | -1.284*** (0.000) | | -2.892*** (0.000) | | -2.898*** (0.000) |
| S&P 500 | 0.030*** (0.000) | | 0.030*** (0.000) | | 0.013*** (0.000) | | 0.013*** (0.000) | |
| Own. Concentration LT | 0.087*** (0.000) | 0.105* (0.052) | 0.087*** (0.000) | 0.109** (0.044) | 0.042*** (0.000) | 0.085 (0.107) | 0.042*** (0.000) | 0.089* (0.091) |
| Market-to-Book | 0.001** (0.010) | 0.003 (0.251) | 0.001** (0.014) | 0.003 (0.273) | 0.001*** (0.001) | 0.003 (0.235) | 0.001*** (0.003) | 0.003 (0.271) |
| Cash-flows | -0.007 (0.652) | 0.145*** (0.009) | -0.006 (0.696) | 0.142** (0.010) | 0.004 (0.524) | 0.153*** (0.004) | 0.005 (0.431) | 0.153*** (0.005) |
| Leverage | -0.028** (0.012) | -0.165*** (0.000) | -0.026** (0.018) | -0.164*** (0.000) | -0.011** (0.015) | -0.157*** (0.000) | -0.009** (0.028) | -0.156*** (0.000) |
| Size | 0.022*** (0.000) | -0.074*** (0.000) | 0.020*** (0.000) | -0.076*** (0.000) | 0.008*** (0.000) | -0.082*** (0.000) | 0.007*** (0.000) | -0.084*** (0.000) |
| ROA | 0.022** (0.029) | 0.059* (0.097) | 0.022** (0.035) | 0.060* (0.090) | 0.003 (0.461) | 0.038 (0.286) | 0.002 (0.657) | 0.037 (0.299) |
| Share Turnover | | | 7.130*** (0.000) | 4.427 (0.407) | | | 2.582*** (0.000) | 2.711 (0.599) |
| Returns Variability | | | -0.022* (0.079) | 0.041 (0.438) | | | -0.015*** (0.004) | 0.023 (0.663) |
| Past Returns | | | 0.007 (0.237) | -0.012 (0.548) | | | -0.005** (0.040) | -0.033* (0.084) |
| Entrenchment Index | 0.004*** (0.000) | 0.005** (0.028) | 0.004*** (0.000) | 0.005** (0.027) | 0.001*** (0.008) | 0.002 (0.374) | 0.001*** (0.008) | 0.002 (0.365) |
| Cluster at the Firm Level | YES | YES | YES | YES | YES | YES | YES | YES |
| N | 3,115 | 3,115 | 3,115 | 3,115 | 3,123 | 3,123 | 3,123 | 3,123 |
| F-test of Excluded Instruments | 104.89 (0.000) | | 105.42 (0.000) | | 106.71 (0.000) | | 107.54 (0.000) | |
| First Stage - Just-identified Estimates | 0.055*** (0.000) | | | | 0.019*** (0.000) | | | |

Table IX.a: Firms' Investment and Institutional Investors Holdings – Placebo Test

This table presents first differences OLS regressions with robust errors using the entire dataset and a dummy variable to capture the firm investment problem. The over-investment dummy is equal to one if a firm over-invests and zero if it under-invests. A firm overinvests if: (1) it invests more than its average investment in the previous 3 years (Titman *et al.* (2004)), and (2) it invests too much with respect to its industry peers (Harvey *et al.* (2004)), and (3) it invests too much given its growth opportunities, cash-flows, leverage, firm and industry time-invariant characteristics, and trend in investment (Richardson (2006)). Otherwise the firm under-invests. The dependent variables are as follows: Investment measures the change in investment and Investment Deviation is the change in industry-adjusted investment. Changes in the dependent variable are measured between time (t) and time ($t-1$). The changes in the ownership variables are measured between time ($t-3$) and time ($t-4$) in columns (1) and (2), and between time ($t-4$) and time ($t-5$) in columns (3) and (4). The changes in the control variables are measured as the change between time ($t-2$) and time ($t-1$). Change in Past Returns and change in Share Turnover are measured between time ($t-1$) and time (t). Variables definitions are found in the Appendix. Errors are clustered at the firm level when the dependent variable is investment and at the industry level when the dependent variable is Investment Deviation. Errors are also bootstrapped. All variables are winsorized at the 5th and 95th percentiles. Regressions also include the constant term, but the coefficient is not reported. Standard errors are White-corrected for heteroskedasticity. P-values are in parentheses. * indicates significance at 1% (***) , 5% (**), 10% (*).

| | Firms that Invest too Much vs Firms that Invest too Little | | | |
|--------------------------------|---|--------------------------------|---|--------------------------------|
| | Change in Ownership Measured between ($t-3$) and ($t-4$) | | Change in Ownership Measured between ($t-4$) and ($t-5$) | |
| | (1) Investment | (2) Investment Deviation | (3) Investment | (4) Investment Deviation |
| Over-investment | 0.158*** (0.000) | 0.147*** (0.000) | 0.154*** (0.000) | 0.144*** (0.000) |
| LT Investors* Over-investment | 0.009 (0.803) | -0.005 (0.841) | 0.007 (0.857) | 0.001 (0.975) |
| LT Investors | 0.029 (0.155) | 0.046** (0.019) | -0.034 (0.160) | -0.005 (0.799) |
| ST Investors * Over-investment | -0.055 (0.621) | -0.169** (0.037) | -0.034 (0.797) | -0.190* (0.057) |
| ST Investors | 0.080 (0.148) | 0.087 (0.154) | -0.074 (0.350) | -0.046 (0.547) |
| Own. Concentration LT | 0.104 (0.349) | 0.124 (0.172) | 0.041 (0.734) | 0.120 (0.371) |
| Own. Concentration ST | 5.686 (0.651) | 5.357 (0.796) | -0.662 (0.964) | 0.224 (0.961) |
| Market-to-Book | 0.003 (0.431) | -0.002 (0.505) | 0.003 (0.613) | -0.003 (0.619) |
| Cash-flows | 0.229*** (0.000) | 0.163*** (0.007) | 0.155** (0.020) | 0.101 (0.260) |
| Leverage | -0.254*** (0.000) | -0.200*** (0.000) | -0.231*** (0.000) | -0.183*** (0.009) |
| Size | -0.069*** (0.007) | -0.075*** (0.000) | -0.079*** (0.001) | -0.077*** (0.004) |
| ROA | 0.009 (0.764) | -0.017 (0.621) | 0.017 (0.694) | -0.034 (0.478) |
| S&P 500 | -0.005 (0.146) | -0.007 (0.150) | -0.006 (0.160) | -0.009** (0.020) |
| Entrenchment Index | 0.002* (0.085) | 0.002 (0.140) | 0.002 (0.271) | 0.001 (0.559) |
| Control Variables | YES | YES | YES | YES |
| Cluster at the Firm Level | YES | YES | YES | YES |
| Observations | 3,164 | 3,164 | 2,628 | 2,628 |
| R-squared | 0.418 | 0.350 | 0.413 | 0.344 |