

Internet Appendix to “Real and Financial Industry Booms and Busts”*

Index

Table IA.I Summary Statistics (Overall Sample)	1
Table IA.II Regressions Predicting Firm-level Operating Cash Flow Changes (Various Valuation Models)	2
Table IA.III Regressions Predicting Monthly Firm-level Stock Returns in Competitive Industries (Various Valuation Models)	3
Table IA.IV Regressions Predicting Monthly Firm-level Stock Returns in Concentrated Industries (Various Valuation Models)	4
Table IA.V Regressions Predicting Firm-level Operating Cash Flow Changes (Based on COMPUSTAT Public-firm-only HHI)	5
Table IA.VI Regressions predicting monthly firm-level stock returns (Based on COMPUSTAT Public-firm-only HHI)	6
Table IA.VII Regressions Predicting Firm-level Operating Cash Flow Changes (Excluding Change in EBITDA and CAPX Controls)	7
Table IA.VIII Regressions Predicting Firm-level Operating Cash Flow Changes (Excluding Observations from 1998 to 2000 Technology Boom)	8
Table IA.IX Patenting Activity and Subsequent Monthly Firm-level Stock Returns (Patents Scaled by Sales)	9
Table IA.X Regressions Predicting Annual Changes in Risk (Concentrated Industries)	10
Table IA.XI Regressions Predicting Change-in-risk Adjusted Monthly Firm-level Stock Returns (Concentrated Industries)	11
Table IA.XII Average Quintile Portfolio Abnormal Returns (Firm-level and Industry-level)	12

*Citation format: Gerard Hoberg and Gordon Phillips, 2010, Internet Appendix to “Real and Financial Industry Booms and Busts”, *Journal of Finance* 65 , 45-86, <http://www.afajof.org/IA/2010.asp>. Please note: Wiley-Blackwell is not responsible for the content or functionality of any supporting information supplied by the authors. Any queries (other than missing material) should be directed to the authors of the article.

Table IA.I
Summary Statistics (Overall Sample)

The table displays summary statistics for the overall sample. To compute relative valuation, we first fit the following model based on Pastor and Veronesi (2003) (i denotes a firm and t a year):

$$\log\left(\frac{M}{B}\right)_{i,t} = a + bAGE_{i,t} + cDD_{i,t} + dLEV_{i,t} + e\log(SIZE_{i,t}) + fVOLP_{i,t} + gROE_{i,t}.$$

The RHS variables are, respectively, minus the reciprocal of one plus firm age, a dividend dummy, book leverage, log total assets, volatility of profitability, and return on equity. We fit this model once for each industry in each year using firm observations from year $t - 10$ to $t - 1$. A firm's relative valuation is its $\log(M/B)$ in year t less the fitted value using characteristics from year t and the above model estimated using the previous 10 years. A firm's relative industry investment is computed in an analogous fashion, except we also include the firm's lagged Tobin's Q as an independent variable. A firm's new financing is the sum of its net debt and equity issuing activity, divided by its assets. For all three quantities, industry variables are the average of the given quantity for all firms in a three-digit SIC industry in year t , and firm variables are set equal to raw quantities less the industry component. Patenting activity for a given industry year is from the NBER U.S. Patent Citations data file. Operating cash flow is defined as operating income (Compustat annual item 13) divided by assets (Compustat annual item 6). A firm's abnormal return is its raw monthly return minus the monthly return of a portfolio matched on the basis of NYSE/Amex breakpoints of size, industry-adjusted book-to-market, and past-year returns as in Daniel et al. (1997).

Variable	Mean	Standard Deviation	Minimum	Maximum	Number of Observations
	Overall Sample				
Industry Relative Valuation	-0.003	0.370	-1.958	1.709	104,397
Industry New Financing	0.022	0.041	-0.408	0.766	104,397
Industry Relative Investment	-0.062	0.271	-3.034	2.447	104,397
Firm Relative Valuation	-0.022	0.661	-2.770	3.413	104,397
Firm New Financing	0.019	0.148	-0.849	1.482	104,397
Firm Relative Investment	0.020	0.795	-3.953	3.328	104,397
Number of Industry Patents	498.7	1001.1	0.000	6015	104,397
Industry Patents/Assets	8.626	17.54	0.000	1996.7	104,397
Operating Cash Flow Change	-0.010	0.125	-1.447	1.780	104,397
Abnormal Return	0.001	0.162	-1.192	9.25	1,149,927

Table IA.II
Regressions Predicting Firm-level Operating Cash Flow Changes
(Various Valuation Models)

This table replicates Table V using four alternative valuation models. To compute relative valuation, we fit the models noted in each panel header:

The simplified Pastor and Veronesi (2003) model (i denotes a firm, j an industry, and t a year):

$$\log\left(\frac{MVE}{BVE}\right)_{i,t} = \beta_{j,0} + \beta_{j,1}\log(SIZE_{i,t}) + \beta_{j,2}ROE_{i,t} + \epsilon_{i,j,t};$$

RKRV Model 3 is the third model presented in Rhodes-Kropf, Robinson, and Viswanathan (2005):

$$\log(MVE_{i,j,t}) = \beta_{j,0} + \beta_{j,1}\log(BVE_{i,j,t}) + \beta_{j,2}\log(abs(NI_{i,j,t})) + \beta_{j,3}NEGNIDUM_{i,j,t} + \beta_{j,4}LEV_{i,j,t} + \epsilon_{i,j,t};$$

RKRV Model 1 is the first model presented in Rhodes-Kropf, Robinson, and Viswanathan (2005):

$$\log(MVE_{i,j,t}) = \beta_{j,0} + \beta_{j,1}\log(BVE_{i,j,t}) + \epsilon_{i,j,t};$$

The P/E Model:

$$\log(MVE_{i,j,t}) = \beta_{j,0} + \beta_{j,1}\log(abs(NI_{i,j,t})) + \beta_{j,2}NEGNIDUM_{i,j,t} + \epsilon_{i,j,t}.$$

The variable $\log\left(\frac{MVE}{BVE}\right)_{i,t}$ is the natural log of the firm's market value of equity divided by its book value of equity. $\log(MVE_{i,j,t})$ is the natural log of the firm's market value of equity. $\log(SIZE_{i,t})$ is the natural log of total assets. $ROE_{i,t}$ is return on equity. $\log(BVE_{i,j,t})$ is the natural log of the book value of equity. $\log(abs(NI_{i,j,t}))$ is the natural log of net operating income. $NEGNIDUM_{i,j,t}$ is a dummy equal to one if net operating income is less than zero. $LEV_{i,j,t}$ is book leverage.

Variable	Simplified PV Model 2 Years	RKRV Model 3 2 Years	RKRV Model 1 2 Years	P/E Model 2 Years
Panel A: Competitive Industries				
Industry Relative Valuation	-0.0364 (-3.380) ^{a,d}	-0.0416 (-3.820) ^{a,d}	-0.0396 (-3.820) ^{a,e}	-0.0374 (-3.850) ^{a,e}
Firm Relative Valuation	-0.0022 (-1.150)	-0.0096 (-4.050) ^a	-0.0054 (-2.840) ^{a,d}	-0.0124 (-5.090) ^{a,d}
Industry Relative Investment	-0.0055 (-0.490)	0.0004 (0.040)	-0.0018 (-0.160)	-0.0051 (-0.480)
Firm Relative Investment	-0.0043 (-2.440) ^b	-0.0038 (-2.230) ^b	-0.0042 (-2.370) ^b	-0.0049 (-2.710) ^a
Industry New Financing	0.0250 (0.630)	0.0401 (1.050)	0.0363 (0.940)	0.0378 (0.940)
Firm New Financing	0.0120 (0.790)	0.0156 (1.040)	0.0147 (1.000)	0.0273 (1.690) ^c
Change in EBITDA	-0.0121 (-1.580)	-0.0106 (-1.440)	-0.0106 (-1.390)	-0.0130 (-1.750) ^c
Change in CAPX	0.0051 (0.840)	0.0043 (0.710)	0.0052 (0.860)	0.0047 (0.760)
Observations	42,914	42,947	43,034	43,314
Panel B: Concentrated Industries				
Industry Relative Valuation	-0.0103 (-2.030) ^{b,d}	-0.0125 (-2.520) ^{b,d}	-0.0202 (-4.390) ^{a,e}	-0.0128 (-2.770) ^{a,e}
Firm Relative Valuation	-0.0029 (-1.350)	-0.0083 (-4.000) ^a	-0.0112 (-5.790) ^{a,d}	-0.0040 (-2.450) ^{b,d}
Industry Relative Investment	-0.0112 (-2.320) ^b	-0.0112 (-2.340) ^b	-0.0101 (-2.110) ^b	-0.0135 (-2.680) ^a
Firm Relative Investment	-0.0065 (-3.450) ^a	-0.0061 (-3.290) ^a	-0.0063 (-3.370) ^a	-0.0081 (-4.260) ^a
Industry New Financing	-0.0373 (-1.040)	-0.0434 (-1.240)	-0.0364 (-1.050)	0.0151 (0.580)
Firm New Financing	0.0277 (1.420)	0.0306 (1.590)	0.0348 (1.820) ^c	0.0523 (2.670) ^a
Change in EBITDA	-0.0054 (-0.960)	-0.0049 (-0.890)	-0.0037 (-0.680)	-0.0052 (-0.930)
Change in CAPX	0.0020 (0.410)	0.0020 (0.410)	0.0011 (0.230)	0.0033 (0.680)
Observations	15,625	15,800	15,813	16,228

* a, b, and c denote significant differences from zero at the 1%, 5%, and 10% levels, respectively. d, e, and f denote significant differences from the opposing tercile (competitive versus concentrated industries) at the 1%, 5%, and 10% levels, respectively.

Table IA.III
Regressions Predicting Monthly Firm-level Stock Returns (Competitive Industries)
(Various Valuation Models)

This table replicates Table V using four alternative valuation models. To compute relative valuation, we fit the models noted in each panel header: The simplified Pastor and Veronesi (2003) model (i denotes a firm, j an industry, and t a year):

$$\log\left(\frac{MVE}{BVE}\right)_{i,t} = \beta_{j,0} + \beta_{j,1}\log(SIZE_{i,t}) + \beta_{j,2}ROE_{i,t} + \epsilon_{i,j,t};$$

RKR Model 3 is the third model presented in Rhodes-Kropf, Robinson, and Viswanathan (2005):

$$\log(MVE_{i,j,t}) = \beta_{j,0} + \beta_{j,1}\log(BVE_{i,j,t}) + \beta_{j,2}\log(abs(NI_{i,j,t})) + \beta_{j,3}NEGNIDUM_{i,j,t} + \beta_{j,4}LEV_{i,j,t} + \epsilon_{i,j,t};$$

RKR Model 1 is the first model presented in Rhodes-Kropf, Robinson, and Viswanathan (2005):

$$\log(MVE_{i,j,t}) = \beta_{j,0} + \beta_{j,1}\log(BVE_{i,j,t}) + \epsilon_{i,j,t};$$

The P/E Model:

$$\log(MVE_{i,j,t}) = \beta_{j,0} + \beta_{j,1}\log(abs(NI_{i,j,t})) + \beta_{j,2}NEGNIDUM_{i,j,t} + \epsilon_{i,j,t}.$$

The variable $\log\left(\frac{MVE}{BVE}\right)_{i,t}$ is the natural log of the firm's market value of equity divided by its book value of equity. $\log(MVE_{i,j,t})$ is the natural log of the firm's market value of equity. $\log(SIZE_{i,t})$ is the natural log of total assets. $ROE_{i,t}$ is return on equity. $\log(BVE_{i,j,t})$ is the natural log of the book value of equity. $\log(abs(NI_{i,j,t}))$ is the natural log of net operating income. $NEGNIDUM_{i,j,t}$ is a dummy equal to one if net operating income is less than zero. $LEV_{i,j,t}$ is book leverage.

Variable	Overall	Growth Industries	High Value Industries	High Mkt. Risk Industries
Panel A: Simplified PV Model (Competitive Industries)				
Industry Relative Valuation	-0.0015 (-0.590)	-0.0128 (-3.880) ^{a,e}	-0.0198 (-3.890) ^{a,e}	-0.0096 (-2.910) ^{a,f}
Firm Relative Valuation	-0.0020 (-5.090) ^a	-0.0022 (-4.170) ^a	-0.0019 (-2.640) ^a	-0.0026 (-4.640) ^{a,e}
Industry Relative Investment	-0.0055 (-2.130) ^b	-0.0083 (-2.410) ^b	-0.0035 (-0.800)	-0.0123 (-3.530) ^a
Firm Relative Investment	-0.0012 (-3.700) ^a	-0.0010 (-1.800) ^c	-0.0001 (-0.170) ^e	-0.0009 (-1.550)
Industry New Financing	-0.0473 (-4.110) ^{a,f}	-0.0628 (-3.760) ^{a,d}	-0.0470 (-2.950) ^{a,f}	-0.0815 (-4.180) ^{a,d}
Firm New Financing	-0.0175 (-6.150) ^a	-0.0151 (-4.270) ^a	-0.0212 (-4.650) ^a	-0.0177 (-4.760) ^a
Observations	624,616	279,726	190,752	294,591
Panel B: RKR Model 3 (Competitive Industries)				
Industry Relative Valuation	-0.0034 (-1.340)	-0.0116 (-3.590) ^{a,f}	-0.0217 (-3.940) ^{a,d}	-0.0113 (-3.470) ^{a,f}
Firm Relative Valuation	-0.0028 (-6.270) ^{a,f}	-0.0031 (-4.920) ^{a,e}	-0.0025 (-3.190) ^a	-0.0035 (-5.550) ^{a,d}
Industry Relative Investment	-0.0048 (-1.890) ^c	-0.0081 (-2.360) ^{b,f}	-0.0075 (-1.750) ^c	-0.0113 (-3.240) ^a
Firm Relative Investment	-0.0011 (-3.440) ^a	-0.0009 (-1.590)	0.0001 (0.120) ^e	-0.0007 (-1.300)
Industry New Financing	-0.0459 (-4.020) ^a	-0.0608 (-3.650) ^{a,d}	-0.0608 (-4.080) ^{a,e}	-0.0812 (-4.230) ^{a,d}
Firm New Financing	-0.0174 (-6.040) ^a	-0.0152 (-4.330) ^a	-0.0273 (-5.550) ^a	-0.0180 (-4.890) ^a
Observations	624,842	277,683	174,399	296,036
Panel C: RKR Model 1 (Competitive Industries)				
Industry Relative Valuation	-0.0011 (-0.450)	-0.0136 (-4.080) ^{a,e}	-0.0221 (-4.200) ^{a,e}	-0.0100 (-3.110) ^{a,f}
Firm Relative Valuation	-0.0019 (-4.960) ^{a,f}	-0.0023 (-4.420) ^{a,f}	-0.0018 (-2.460) ^b	-0.0025 (-4.690) ^{a,d}
Industry Relative Investment	-0.0055 (-2.170) ^b	-0.0074 (-2.170) ^{b,f}	-0.0031 (-0.680)	-0.0116 (-3.320) ^a
Firm Relative Investment	-0.0012 (-3.600) ^a	-0.0010 (-1.780) ^c	0.0000 (-0.070) ^f	-0.0008 (-1.510)
Industry New Financing	-0.0479 (-4.180) ^{a,f}	-0.0640 (-3.870) ^{a,d}	-0.0316 (-2.120) ^b	-0.0822 (-4.250) ^{a,d}
Firm New Financing	-0.0178 (-6.190) ^a	-0.0151 (-4.250) ^a	-0.0233 (-5.190) ^a	-0.0180 (-4.810) ^a
Observations	626,084	280,676	183,554	296,424
Panel D: P/E Model (Competitive Industries)				
Industry Relative Valuation	-0.0047 (-1.940) ^c	-0.0105 (-3.550) ^{a,f}	-0.0139 (-2.970) ^a	-0.0099 (-3.140) ^{a,f}
Firm Relative Valuation	-0.0026 (-7.220) ^{a,e}	-0.0029 (-5.220) ^{a,f}	-0.0011 (-2.000) ^b	-0.0031 (-5.520) ^{a,d}
Industry Relative Investment	-0.0051 (-1.960) ^b	-0.0098 (-2.770) ^{a,e}	-0.0050 (-1.350)	-0.0125 (-3.550) ^{a,e}
Firm Relative Investment	-0.0012 (-3.700) ^a	-0.0011 (-2.220) ^b	-0.0001 (-0.160) ^f	-0.0009 (-1.740) ^c
Industry New Financing	-0.0458 (-4.010) ^{a,f}	-0.0568 (-3.430) ^{a,d}	-0.0471 (-3.070) ^{a,e}	-0.0766 (-3.950) ^{a,d}
Firm New Financing	-0.0173 (-6.180) ^a	-0.0147 (-4.390) ^a	-0.0246 (-4.620) ^a	-0.0173 (-4.890) ^a
Observations	648,057	291,985	174,284	307,660

* a, b, and c denote significant differences from zero at the 1%, 5%, and 10% levels, respectively. d, e, and f denote significant differences from the opposing tercile (competitive versus concentrated industries) at the 1%, 5%, and 10% levels, respectively.

Table IA.IV
Regressions Predicting Monthly Firm-level Stock Returns (Concentrated Industries)

This table replicates Table V using four alternative valuation models. To compute relative valuation, we fit the models noted in each panel header: The simplified Pastor and Veronesi (2003) model (i denotes a firm, j an industry, and t a year):

$$\log\left(\frac{MV}{BV}\right)_{i,t} = \beta_{j,0} + \beta_{j,1}\log(SIZE_{i,t}) + \beta_{j,2}ROE_{i,t} + \epsilon_{i,j,t};$$

RKR Model 3 is the third model presented in Rhodes-Kropf, Robinson, and Viswanathan (2005):

$$\log(MVE_{i,j,t}) = \beta_{j,0} + \beta_{j,1}\log(BVE_{i,j,t}) + \beta_{j,2}\log(abs(NI_{i,j,t})) + \beta_{j,3}NEGNIDUM_{i,j,t} + \beta_{j,4}LEVE_{i,j,t} + \epsilon_{i,j,t};$$

RKR Model 1 is the first model presented in Rhodes-Kropf, Robinson, and Viswanathan (2005):

$$\log(MVE_{i,j,t}) = \beta_{j,0} + \beta_{j,1}\log(BVE_{i,j,t}) + \epsilon_{i,j,t};$$

The P/E Model:

$$\log(MVE_{i,j,t}) = \beta_{j,0} + \beta_{j,1}\log(NEGNIUM_{i,j,t}) + \epsilon_{i,j,t}.$$

The variable $\log\left(\frac{MV}{BV}\right)_{i,t}$ is the natural log of the firm's market value of equity divided by its book value of equity. $\log(MVE_{i,j,t})$ is the natural log of the firm's market value of equity. $\log(SIZE_{i,t})$ is the natural log of total assets. $ROE_{i,t}$ is return on equity. $\log(BVE_{i,j,t})$ is the natural log of the book value of equity. $\log(abs(NI_{i,j,t}))$ is the natural log of net operating income. $NEGNIDUM_{i,j,t}$ is a dummy equal to one if net operating income is less than zero. $LEVE_{i,j,t}$ is book leverage.

Variable	Overall	Growth Industries	High Value Industries	High Mkt. Risk Industries
Panel A: Simplified PV Model (Concentrated Industries)				
Industry Relative Valuation	-0.0023 (-1.050)	-0.0022 (-0.590) ^e	-0.0013 (-0.230) ^e	0.0001 (0.030) ^f
Firm Relative Valuation	-0.0009 (-1.260)	-0.0005 (-0.390)	-0.0015 (-1.190)	0.0004 (0.400) ^e
Industry Relative Investment	-0.0046 (-2.390) ^b	-0.0021 (-0.610)	-0.0050 (-1.490)	-0.0059 (-1.800) ^c
Firm Relative Investment	-0.0017 (-2.460) ^b	-0.0010 (-0.920)	-0.0026 (-2.320) ^{b,e}	-0.0005 (-0.560)
Industry New Financing	-0.0154 (-1.160) ^f	0.0109 (0.640) ^d	0.0079 (0.290) ^f	-0.0016 (-0.100) ^d
Firm New Financing	-0.0251 (-4.840) ^a	-0.0164 (-2.450) ^b	-0.0237 (-2.820) ^a	-0.0266 (-3.650) ^a
Observations	140,960	44,026	41,395	60,872
Panel B: RKR Model 3 (Concentrated Industries)				
Industry Relative Valuation	-0.0030 (-1.340)	-0.0028 (-0.810) ^f	0.0067 (1.110) ^d	-0.0023 (-0.660) ^f
Firm Relative Valuation	-0.0011 (-1.390) ^f	-0.0002 (-0.130) ^e	-0.0022 (-1.680) ^c	0.0002 (0.180) ^d
Industry Relative Investment	-0.0036 (-1.950) ^c	0.0002 (0.050) ^f	-0.0003 (-0.090)	-0.0043 (-1.380)
Firm Relative Investment	-0.0016 (-2.320) ^b	-0.0010 (-0.910)	-0.0027 (-2.400) ^{b,e}	-0.0006 (-0.620)
Industry New Financing	-0.0176 (-1.330)	0.0111 (0.670) ^d	0.0079 (0.340) ^e	-0.0043 (-0.260) ^d
Firm New Financing	-0.0244 (-4.820) ^a	-0.0158 (-2.450) ^b	-0.0219 (-3.020) ^a	-0.0252 (-3.550) ^a
Observations	142,249	44,310	47,439	61,298
Panel C: RKR Model 1 (Concentrated Industries)				
Industry Relative Valuation	-0.0024 (-1.170)	-0.0014 (-0.370) ^e	0.0006 (0.090) ^e	-0.0011 (-0.310) ^f
Firm Relative Valuation	-0.0003 (-0.490) ^f	-0.0001 (-0.040) ^f	-0.0001 (-0.110)	0.0008 (0.840) ^d
Industry Relative Investment	-0.0037 (-1.980) ^b	0.0001 (0.050) ^f	-0.0033 (-0.980)	-0.0045 (-1.420)
Firm Relative Investment	-0.0016 (-2.410) ^b	-0.0009 (-0.800)	-0.0020 (-2.020) ^{b,f}	-0.0007 (-0.710)
Industry New Financing	-0.0185 (-1.400) ^f	0.0075 (0.450) ^d	0.0015 (0.060)	-0.0061 (-0.360) ^d
Firm New Financing	-0.0250 (-4.970) ^a	-0.0160 (-2.470) ^b	-0.0208 (-2.770) ^a	-0.0259 (-3.640) ^a
Observations	142,405	44,477	45,305	61,165
Panel D: P/E Model (Concentrated Industries)				
Industry Relative Valuation	-0.0040 (-2.050) ^b	-0.0025 (-0.680) ^f	-0.0082 (-1.860) ^c	-0.0021 (-0.720) ^f
Firm Relative Valuation	-0.0009 (-1.560) ^e	-0.0007 (-0.760) ^f	-0.0003 (-0.320)	0.0000 (-0.060) ^d
Industry Relative Investment	-0.0030 (-1.660) ^c	0.0011 (0.340) ^e	-0.0004 (-0.160)	-0.0021 (-0.680) ^e
Firm Relative Investment	-0.0012 (-1.900) ^c	-0.0007 (-0.790)	-0.0023 (-2.440) ^{b,f}	-0.0003 (-0.370)
Industry New Financing	-0.0136 (-1.040) ^f	0.0135 (0.800) ^d	0.0074 (0.460) ^e	0.0051 (0.310) ^d
Firm New Financing	-0.0214 (-4.440) ^a	-0.0126 (-2.060) ^b	-0.0244 (-3.200) ^a	-0.0203 (-3.000) ^a
Observations	150,030	47,553	44,754	64,180

* a, b, and c denote significant differences from zero at the 1%, 5%, and 10% levels, respectively. d, e, and f denote significant differences from the opposing tercile (competitive versus concentrated industries) at the 1%, 5%, and 10% levels, respectively.

Table IA.V
Regressions Predicting Firm-level Operating Cash Flow Changes
(Based on COMPUSTAT Public-firm-only HHI)

We report regression coefficients and t -statistics (in parentheses) for panel data regressions. t -statistics are adjusted for clustering over time and across industries, and are corrected for heteroskedasticity. One observation is one firm in one year, and the dependent variable is the firm's change in operating cash flow (operating income / assets) from year t to year $t+1$ (one year) or t to $t+2$ (two years). In the last column, we restrict the sample to firms in high growth industries (lowest tercile based on industry-average book-to-market ratios, which winsorized at the 1/99% level prior to taking industry averages). To compute relative valuation, we first fit the following model based on Pastor and Veronesi (2003) (i denotes a firm and t a year):

$$\log\left(\frac{M}{B}\right)_{i,t} = a + bAGE_{i,t} + cDD_{i,t} + dLEV_{i,t} + e\log(SIZE_{i,t}) + fVOLP_{i,t} + gROE_{i,t}.$$

The RHS variables are, respectively, minus the reciprocal of one plus firm age, a dividend dummy, book leverage, log total assets, volatility of profitability, and return on equity. We fit this model once for each industry in each year using firm observations from year $t - 10$ to $t - 1$. A firm's relative valuation is its $\log(M/B)$ in year t less the fitted value using characteristics from year t and the above model estimated using the previous 10 years. A firm's relative industry investment is computed in an analogous fashion, except we also include the firm's lagged Tobin's Q as an independent variable. A firm's new financing is the sum of its net debt and equity issuing activity, divided by its assets. For all three quantities, industry variables are the average of the given quantity for all firms in a SIC-3 industry in year t , and firm variables are set equal to raw quantities less the industry component.

Competitive and concentrated industries are those in the lowest and highest tercile based on the past year's industry concentration (HHI) measured using raw COMPUSTAT sales only (public-firm-only HHI). Change in EBITDA and CAPX are the past year's changes in earnings before interest and taxes plus depreciation and capital expenditures, winsorized at the 1/99% level.

Variable	Overall 1 Year	Overall 2 Years	Growth Industries 2 Years
Panel A: Competitive Industries			
Industry Relative Valuation	-0.0012 (-0.120)	-0.0409 (-3.270) ^{a,d}	-0.0883 (-4.360) ^{a,d}
Firm Relative Valuation	0.0041 (2.170) ^b	-0.0041 (-1.770) ^{c,e}	0.0005 (0.150) ^e
Industry Relative Investment	-0.0655 (-2.940) ^a	-0.0568 (-1.600)	-0.0738 (-1.450)
Firm Relative Investment	-0.0056 (-1.740) ^{c,e}	-0.0078 (-1.830) ^{c,f}	-0.0189 (-3.100) ^{a,e}
Industry New Financing	-0.0494 (-1.250)	-0.0158 (-0.340)	-0.0088 (-0.100)
Firm New Financing	-0.0284 (-2.180) ^b	0.0166 (1.100)	0.0195 (0.950)
Change in EBITDA	0.0009 (0.170)	-0.0093 (-1.290)	-0.0058 (-0.510)
Change in CAPX	-0.0109 (-2.150) ^b	0.0021 (0.360)	-0.0118 (-1.040)
Observations	53,113	47,513	20,709
Panel B: Concentrated Industries			
Industry Relative Valuation	0.0014 (0.240)	-0.0047 (-0.500) ^d	0.0082 (0.510) ^d
Firm Relative Valuation	0.0016 (0.570)	-0.0089 (-2.340) ^{b,e}	-0.0060 (-0.880) ^e
Industry Relative Investment	-0.0137 (-0.900)	-0.0349 (-1.760) ^c	0.0214 (0.710)
Firm Relative Investment	0.0065 (1.150) ^e	-0.0004 (-0.040) ^f	-0.0024 (-0.210) ^e
Industry New Financing	-0.0750 (-2.520) ^b	-0.0720 (-1.800) ^c	-0.1463 (-2.000) ^b
Firm New Financing	-0.0221 (-1.300)	0.0116 (0.480)	0.0586 (1.770) ^c
Change in EBITDA	-0.0005 (-0.110)	-0.0009 (-0.180)	0.0077 (0.910)
Change in CAPX	-0.0033 (-0.930)	-0.0022 (-0.490)	0.0036 (0.430)
Observations	10,250	9,410	3,776
Panel C: Industries with Declining Concentration			
Industry Relative Valuation	-0.0051 (-0.560)	-0.0544 (-3.550) ^{a,e}	-0.0869 (-4.580) ^{a,e}
Firm Relative Valuation	0.0038 (1.770) ^c	-0.0073 (-2.870) ^a	-0.0081 (-2.220) ^b
Industry Relative Investment	-0.0519 (-2.130) ^{b,f}	-0.0158 (-0.400)	-0.0210 (-0.410)
Firm Relative Investment	-0.0030 (-0.730)	-0.0096 (-1.740) ^c	-0.0217 (-3.020) ^a
Industry New Financing	-0.0603 (-2.380) ^b	-0.0083 (-0.240)	0.0166 (0.310)
Firm New Financing	-0.0288 (-2.040) ^b	0.0294 (1.850) ^c	0.0367 (1.740) ^{c,e}
Change in EBITDA	0.0014 (0.270)	-0.0030 (-0.580)	0.0024 (0.290)
Change in CAPX	-0.0072 (-1.540)	-0.0021 (-0.420)	-0.0069 (-0.760)
Observations	29,130	26,205	13,247

* a, b, and c denote significant differences from zero at the 1%, 5%, and 10% levels, respectively. d, e, and f denote significant differences from the opposing tercile (competitive versus concentrated industries in Panels A and B, and decreasing versus increasing concentration in Panel C) at the 1%, 5%, and 10% levels, respectively.

Table IA.VI
Regressions Predicting Monthly Firm-level Stock Returns (Based on COMPUSTAT Public-firm-only HHI)

We report regression coefficients and t -statistics (in parentheses) for panel data regressions. t -statistics are from standard errors that are adjusted for clustering over time and across industries, and are corrected for heteroskedasticity. One observation is one firm in one month, and the dependent variable is the firm's monthly abnormal stock return: equal to a firm's raw monthly return less that of a portfolio matched on the basis of NYSE/AMEX breakpoints of size, industry-adjusted book-to-market, and past-year returns as in Daniel et al. (1997). For monthly abnormal return observations between July of year $t+1$ and June of year $t+2$, independent variables are constructed using accounting data with fiscal years ending in year t . To compute relative valuation, we first fit the following model based on Pastor and Veronesi (2003) (i denotes a firm and t a year):

$$\log\left(\frac{M}{B}\right)_{i,t} = a + bAGE_{i,t} + cDD_{i,t} + dLEV_{i,t} + e\log(SIZE_{i,t}) + fVOLP_{i,t} + gROE_{i,t}$$

The RHS variables are, respectively, minus the reciprocal of one plus firm age, a dividend dummy, book leverage, log total assets, volatility of profitability, and return on equity. We fit this model once for each industry in each year using firm observations from year $t - 10$ to $t - 1$. A firm's relative valuation is its $\log(M/B)$ in year t less the fitted value using characteristics from year t and the above model estimated using the previous 10 years. A firm's relative industry investment is computed in an analogous fashion, except we also include the firm's lagged Tobin's Q as an independent variable. A firm's new financing is the sum of its net debt and equity issuing activity, divided by its assets. For all three quantities, industry variables are the average of the given quantity for all firms in a SIC-3 industry in year t , and firm variables are set equal to raw quantities less the industry component. Competitive and concentrated industries are those in the lowest and highest tercile based on the past year's industry concentration (HHI) measured using raw COMPUSTAT sales only (public-firm-only HHI). The growth, high valuation, and high market risk industry groupings are based on terciles constructed annually from the past year's industry-average book-to-market ratios, relative industry valuation, and the industry's average market beta.

Variable	Overall	Growth Industries	High Value Industries	High Mkt. Risk Industries
Panel A: Competitive Industries				
Industry Relative Valuation	-0.0032 (-0.990)	-0.0173 (-3.340) ^{a,f}	-0.0179 (-2.500) ^b	-0.0128 (-2.690) ^{a,f}
Firm Relative Valuation	-0.0024 (-5.000) ^a	-0.0022 (-3.090) ^a	-0.0018 (-2.040) ^{b,f}	-0.0022 (-3.150) ^a
Industry Relative Investment	-0.0291 (-3.110) ^{a,e}	-0.0161 (-1.240)	-0.0209 (-1.320)	-0.0358 (-3.020) ^{a,d}
Firm Relative Investment	-0.0026 (-3.070) ^a	-0.0032 (-2.630) ^a	-0.0025 (-1.610)	-0.0027 (-2.290) ^b
Industry New Financing	-0.0466 (-3.450) ^{a,e}	-0.0605 (-2.630) ^{a,f}	-0.0637 (-3.270) ^{a,e}	-0.0839 (-3.550) ^{a,d}
Firm New Financing	-0.0170 (-5.560) ^a	-0.0138 (-3.540) ^a	-0.0209 (-4.410) ^a	-0.0168 (-4.300) ^{a,d}
Observations	653,240	253,195	198,748	286,877
Panel B: Concentrated Industries				
Industry Relative Valuation	-0.0061 (-2.260) ^b	-0.0067 (-1.600) ^f	-0.0047 (-0.680)	-0.0019 (-0.460) ^f
Firm Relative Valuation	-0.0014 (-1.490)	-0.0005 (-0.330)	0.0012 (0.870) ^f	-0.0003 (-0.170)
Industry Relative Investment	-0.0053 (-0.830) ^e	-0.0019 (-0.190)	-0.0130 (-1.400)	0.0093 (0.890) ^d
Firm Relative Investment	-0.0010 (-0.510)	-0.0008 (-0.270)	-0.0030 (-0.890)	-0.0030 (-1.120)
Industry New Financing	-0.0101 (-0.960) ^e	-0.0019 (-0.120) ^f	-0.0080 (-0.540) ^e	-0.0044 (-0.250) ^d
Firm New Financing	-0.0245 (-5.800) ^a	-0.0183 (-3.120) ^a	-0.0205 (-3.010) ^a	-0.0316 (-6.260) ^{a,d}
Observations	135,812	51,382	38,893	48,938
Panel C: Industries with Declining Concentration				
Industry Relative Valuation	-0.0071 (-1.810) ^c	-0.0181 (-2.660) ^a	-0.0167 (-2.280) ^{b,e}	-0.0183 (-2.880) ^a
Firm Relative Valuation	-0.0028 (-4.020) ^a	-0.0031 (-3.000) ^a	-0.0025 (-2.380) ^{b,f}	-0.0023 (-2.250) ^b
Industry Relative Investment	-0.0187 (-1.900) ^c	-0.0079 (-0.620)	-0.0317 (-2.100) ^{b,e}	-0.0143 (-1.080)
Firm Relative Investment	-0.0017 (-1.450)	-0.0026 (-1.730) ^c	-0.0025 (-1.630)	-0.0031 (-2.100) ^b
Industry New Financing	-0.0321 (-2.940) ^a	-0.0433 (-2.530) ^b	-0.0577 (-3.520) ^{a,f}	-0.0503 (-2.600) ^a
Firm New Financing	-0.0146 (-3.310) ^{a,f}	-0.0105 (-1.900) ^{c,f}	-0.0208 (-4.060) ^{a,e}	-0.0127 (-2.200) ^{b,e}
Observations	367,279	169,804	131,061	172,857

* a, b, and c denote significant differences from zero at the 1%, 5%, and 10% levels, respectively. d, e, and f denote significant differences from the opposing tercile (competitive versus concentrated industries in Panels A and B, and decreasing versus increasing concentration in Panel C) at the 1%, 5%, and 10% levels, respectively.

Table IA.VII
Regressions Predicting Firm-level Operating Cash Flow Changes
(Excluding Change in EBITDA and CAPX Controls)

We report regression coefficients and t -statistics (in parentheses) for panel data regressions. t -statistics are adjusted for clustering over time and across industries, and are corrected for heteroskedasticity. One observation is one firm in one year, and the dependent variable is the firm's change in operating cash flow (operating income / assets) from year t to year $t+1$ (one year) or t to $t+2$ (two years). In the last column, we restrict the sample to firms in high growth industries (lowest tercile based on industry-average book-to-market ratios, which winsorized at the 1/99% level prior to taking industry averages). To compute relative valuation, we first fit the following model based on Pastor and Veronesi (2003) (i denotes a firm and t a year):

$$\log\left(\frac{M}{B}\right)_{i,t} = a + bAGE_{i,t} + cDD_{i,t} + dLEV_{i,t} + e\log(SIZE_{i,t}) + fVOLP_{i,t} + gROE_{i,t}.$$

The RHS variables are, respectively, minus the reciprocal of one plus firm age, a dividend dummy, book leverage, log total assets, volatility of profitability, and return on equity. We fit this model once for each industry in each year using firm observations from year $t - 10$ to $t - 1$. A firm's relative valuation is its $\log(M/B)$ in year t less the fitted value using characteristics from year t and the above model estimated using the previous 10 years. A firm's relative industry investment is computed in an analogous fashion, except we also include the firm's lagged Tobin's Q as an independent variable. A firm's new financing is the sum of its net debt and equity issuing activity, divided by its assets. For all three quantities, industry variables are the average of the given quantity for all firms in a SIC-3 industry in year t , and firm variables are set equal to raw quantities less the industry component. Competitive and concentrated industries are those in the lowest and highest tercile based on the past year's industry concentration (HHI). Change in EBITDA and CAPX are the past year's changes in earnings before interest and taxes plus depreciation and capital expenditures, winsorized at the 1/99% level.

Variable	Overall 1 Year	Overall 2 Years	Growth Industries 2 Years
Panel A: Competitive Industries			
Industry Relative Valuation	-0.0068 (-0.620)	-0.0540 (-3.740) ^{a,d}	-0.1189 (-5.190) ^{a,d}
Firm Relative Valuation	0.0057 (2.820) ^{a,e}	-0.0038 (-1.450) ^e	0.0003 (0.090) ^d
Industry Relative Investment	-0.0681 (-3.040) ^a	-0.0421 (-1.250)	-0.0891 (-1.930) ^c
Firm Relative Investment	-0.0072 (-2.260) ^{b,e}	-0.0103 (-2.420) ^{b,e}	-0.0207 (-3.380) ^{a,f}
Industry New Financing	-0.0531 (-1.510)	0.0255 (0.590)	0.0159 (0.210)
Firm New Financing	-0.0354 (-2.570) ^b	0.0130 (0.830)	0.0171 (0.820)
Observations	43,626	38,536	17,861
Panel B: Concentrated Industries			
Industry Relative Valuation	0.0129 (2.670) ^a	-0.0028 (-0.430) ^d	0.0025 (0.220) ^d
Firm Relative Valuation	0.0003 (0.130) ^e	-0.0113 (-4.360) ^{a,e}	-0.0164 (-3.370) ^{a,d}
Industry Relative Investment	-0.0114 (-0.760)	-0.0374 (-1.960) ^b	-0.0190 (-0.570)
Firm Relative Investment	0.0097 (1.630) ^e	0.0118 (1.620) ^e	0.0072 (0.630) ^f
Industry New Financing	-0.0464 (-1.700) ^c	-0.0393 (-1.080)	-0.0917 (-1.150)
Firm New Financing	-0.0074 (-0.480)	0.0196 (1.060)	0.0428 (1.580)
Observations	15,821	14,540	4,545
Panel C: Industries with Declining Concentration			
Industry Relative Valuation	-0.0230 (-2.820) ^{a,d}	-0.0546 (-6.330) ^{a,d}	-0.0726 (-5.620) ^{a,f}
Firm Relative Valuation	0.0046 (2.340) ^b	-0.0066 (-2.590) ^a	-0.0043 (-1.110)
Industry Relative Investment	-0.0669 (-3.380) ^{a,d}	-0.0649 (-2.150) ^{b,f}	-0.0705 (-1.830) ^c
Firm Relative Investment	-0.0031 (-0.770)	-0.0002 (-0.050)	-0.0079 (-1.210)
Industry New Financing	-0.0952 (-3.440) ^{a,f}	-0.0241 (-0.710)	-0.0665 (-1.300) ^e
Firm New Financing	-0.0304 (-1.730) ^c	0.0189 (1.030)	0.0215 (0.880)
Observations	35,619	30,469	14,720

* a, b, and c denote significant differences from zero at the 1%, 5%, and 10% levels, respectively. d, e, and f denote significant differences from the opposing tercile (competitive versus concentrated industries in Panels A and B, and decreasing versus increasing concentration in Panel C) at the 1%, 5%, and 10% levels, respectively.

Table IA.VIII
Regressions Predicting Firm-level Operating Cash Flow Changes
(Excluding Observations from 1998 to 2000 Technology Boom)

We exclude firm year observations from 1998 to 2000. We report regression coefficients and t -statistics (in parentheses) for panel data regressions. t -statistics are adjusted for clustering over time and across industries, and are corrected for heteroskedasticity. One observation is one firm in one year, and the dependent variable is the firm's change in operating cash flow (operating income / assets) from year t to year $t+1$ (one year) or t to $t+2$ (two years). In the last column, we restrict the sample to firms in high growth industries (lowest tercile based on industry-average book-to-market ratios, which winsorized at the 1/99% level prior to taking industry averages). To compute relative valuation, we first fit the following model based on Pastor and Veronesi (2003) (i denotes a firm and t a year):

$$\log\left(\frac{M}{B}\right)_{i,t} = a + bAGE_{i,t} + cDD_{i,t} + dLEV_{i,t} + e\log(SIZE_{i,t}) + fVOLP_{i,t} + gROE_{i,t}.$$

The RHS variables are, respectively, minus the reciprocal of one plus firm age, a dividend dummy, book leverage, log total assets, volatility of profitability, and return on equity. We fit this model once for each industry in each year using firm observations from year $t - 10$ to $t - 1$. A firm's relative valuation is its $\log(M/B)$ in year t less the fitted value using characteristics from year t and the above model estimated using the previous 10 years. A firm's relative industry investment is computed in an analogous fashion, except we also include the firm's lagged Tobin's Q as an independent variable. A firm's new financing is the sum of its net debt and equity issuing activity, divided by its assets. For all three quantities, industry variables are the average of the given quantity for all firms in a SIC-3 industry in year t , and firm variables are set equal to raw quantities less the industry component. Competitive and concentrated industries are those in the lowest and highest tercile based on the past year's industry concentration (HHI). Change in EBITDA and CAPX are the past year's changes in earnings before interest and taxes plus depreciation and capital expenditures, winsorized at the 1/99% level.

Variable	Overall 1 Year	Overall 2 Years	Growth Industries 2 Years
Panel A: Competitive Industries			
Industry Relative Valuation	0.0101 (1.090)	-0.0223 (-2.040) ^b	-0.0558 (-3.550) ^{a,d}
Firm Relative Valuation	0.0048 (2.240) ^{b,f}	-0.0048 (-1.630) ^d	0.0000 (-0.010) ^d
Industry Relative Investment	-0.0700 (-3.220) ^{a,f}	-0.0891 (-2.930) ^{a,f}	-0.1374 (-3.360) ^{a,f}
Firm Relative Investment	-0.0074 (-1.990) ^{b,e}	-0.0104 (-2.120) ^{b,e}	-0.0217 (-2.950) ^{a,f}
Industry New Financing	-0.0334 (-1.290)	-0.0005 (-0.010)	0.0465 (0.760)
Firm New Financing	-0.0272 (-1.690) ^c	0.0124 (0.680)	0.0196 (0.790)
Change in EBITDA	-0.0006 (-0.140)	-0.0108 (-1.890) ^c	-0.0224 (-2.070) ^b
Change in CAPX	-0.0051 (-1.150)	0.0059 (1.170)	0.0037 (0.380)
Observations	37,629	33,082	14,324
Panel B: Concentrated Industries			
Industry Relative Valuation	0.0120 (2.440) ^b	-0.0042 (-0.620)	-0.0027 (-0.230) ^d
Firm Relative Valuation	0.0003 (0.160) ^f	-0.0137 (-5.050) ^{a,d}	-0.0202 (-4.170) ^{a,d}
Industry Relative Investment	-0.0064 (-0.460) ^f	-0.0304 (-1.520) ^f	-0.0166 (-0.490) ^f
Firm Relative Investment	0.0114 (1.920) ^{c,e}	0.0131 (1.840) ^{c,e}	0.0061 (0.570) ^f
Industry New Financing	-0.0033 (-0.150)	0.0139 (0.490)	0.0096 (0.240)
Firm New Financing	-0.0041 (-0.260)	0.0153 (0.810)	0.0291 (1.130)
Change in EBITDA	0.0025 (0.700)	-0.0037 (-0.730)	0.0088 (1.070)
Change in CAPX	-0.0058 (-1.740) ^c	-0.0025 (-0.530)	-0.0031 (-0.360)
Observations	14,624	13,443	4,434
Panel C: Industries with Declining Concentration			
Industry Relative Valuation	-0.0110 (-1.590) ^d	-0.0334 (-4.800) ^{a,d}	-0.0474 (-3.900) ^{a,f}
Firm Relative Valuation	0.0046 (2.260) ^b	-0.0074 (-2.610) ^a	-0.0047 (-1.030)
Industry Relative Investment	-0.0609 (-3.300) ^{a,d}	-0.1059 (-3.910) ^{a,d}	-0.1123 (-3.030) ^a
Firm Relative Investment	-0.0024 (-0.500) ^f	0.0000 (0.000)	-0.0076 (-1.000)
Industry New Financing	-0.0573 (-2.500) ^{b,f}	-0.0051 (-0.170)	-0.0199 (-0.390) ^e
Firm New Financing	-0.0198 (-1.010)	0.0323 (1.700) ^c	0.0430 (1.720) ^c
Change in EBITDA	0.0017 (0.460)	-0.0070 (-1.640)	-0.0046 (-0.580)
Change in CAPX	-0.0055 (-1.550)	-0.0013 (-0.330)	-0.0040 (-0.510)
Observations	32,951	28,016	13,228

* a, b, and c denote significant differences from zero at the 1%, 5%, and 10% levels, respectively. d, e, and f denote significant differences from the opposing tercile (competitive versus concentrated industries in Panels A and B, and decreasing versus increasing concentration in Panel C) at the 1%, 5%, and 10% levels, respectively.

Table IA.IX
Patenting Activity and Subsequent Monthly Firm-level Stock Returns (Patents Scaled by Sales)

We report regression coefficients and t -statistics (in parentheses) for panel data regressions. t -statistics are from standard errors that are adjusted for clustering over time and across industries, and are corrected for heteroskedasticity. One observation is one firm in one month, and the dependent variable is the firm's monthly abnormal stock return: equal to a firm's raw monthly return less that of a portfolio matched on the basis of NYSE/Amex breakpoints of size, industry-adjusted book-to-market, and past-year returns as in Daniel et al. (1997). Patenting activity for a given industry year is computed using the NBER U.S. Patent Citations data file, and is the number of patents applied for in the previous calendar year in the given industry scaled by the industry's previous calendar year sales. For monthly abnormal return observations between July of year $t+1$ and June of year $t+2$, independent variables are constructed using accounting data with fiscal-years ending in year t . To compute relative valuation, we first fit the following model based on Pastor and Veronesi (2003) (i denotes a firm and t a year):

$$\log\left(\frac{M}{B}\right)_{i,t} = a + bAGE_{i,t} + cDD_{i,t} + dLEV_{i,t} + e\log(SIZE_{i,t}) + fVOLP_{i,t} + gROE_{i,t}.$$

The RHS variables are, respectively, minus the reciprocal of one plus firm age, a dividend dummy, book leverage, log total assets, volatility of profitability, and return on equity. We fit this model once for each industry in each year using firm observations from year $t - 10$ to $t - 1$. A firm's relative valuation is its $\log(M/B)$ in year t less the fitted value using characteristics from year t and the above model estimated using the previous 10 years. A firm's relative industry investment is computed in an analogous fashion, except we also include the firm's lagged Tobin's Q as an independent variable. A firm's new financing is the sum of its net debt and equity issuing activity, divided by its assets. For all three quantities, industry variables are the average of the given quantity for all firms in a three-digit SIC industry in year t , and firm variables are set equal to raw quantities less the industry component. Competitive and concentrated industries are those in the lowest and highest tercile based on the past-year's industry concentration (HHI). The growth and high valuation industry groupings are based on terciles constructed annually from the past-year's industry-average book-to-market ratio and relative industry valuation, respectively.

Variable	Low Patent, Growth Industries	High Patent, Growth Industries	Low Patent, High Value Industries	High Patent, High Value Industries
Industry Relative Valuation	-0.0045 (-0.730)	-0.0155 (-2.100) ^{b,e}	-0.0244 (-2.430) ^{b,e}	-0.0293 (-2.230) ^{b,f}
Firm Relative Valuation	-0.0030 (-1.260) ^f	-0.0031 (-3.310) ^a	-0.0060 (-2.580) ^{a,e}	-0.0024 (-1.830) ^c
Industry Relative Investment	-0.0007 (-0.150)	-0.0096 (-1.700) ^c	0.0019 (0.360)	-0.0059 (-0.700)
Firm Relative Investment	-0.0021 (-1.600)	-0.0011 (-1.560)	-0.0018 (-1.630)	-0.0002 (-0.210)
Industry New Financing	-0.0690 (-2.790) ^{a,e}	-0.0463 (-1.610)	-0.0729 (-2.510) ^{b,d}	-0.0385 (-1.240)
Firm New Financing	-0.0085 (-0.890)	-0.0135 (-2.930) ^a	-0.0186 (-1.680) ^c	-0.0219 (-3.400) ^a
Observations	19,099	173,720	19,425	86,043
		Panel B: Concentrated Industries		
Industry Relative Valuation	0.0067 (0.790)	0.0018 (0.350) ^e	0.0040 (0.510) ^e	0.0008 (0.100) ^f
Firm Relative Valuation	0.0043 (1.350) ^f	0.0007 (0.300)	0.0024 (0.740) ^e	-0.0031 (-1.060)
Industry Relative Investment	-0.0118 (-2.200) ^b	-0.0042 (-0.990)	-0.0058 (-1.160)	0.0007 (0.160)
Firm Relative Investment	0.0002 (0.080)	-0.0017 (-1.130)	-0.0004 (-0.150)	-0.0034 (-1.830) ^c
Industry New Financing	0.0252 (0.980) ^e	0.0100 (0.230)	0.0818 (2.620) ^{a,d}	-0.0322 (-0.740)
Firm New Financing	-0.0130 (-0.810)	-0.0148 (-1.630)	-0.0323 (-1.430)	-0.0334 (-2.220) ^b
Observations	7,001	20,846	7,949	14,643

* a, b, and c denote significant differences from zero at the 1%, 5%, and 10% levels, respectively. d, e, and f denote significant differences from the opposing tercile (competitive versus concentrated industries) at the 1%, 5%, and 10% levels, respectively.

Table IA.X
Regressions Predicting Annual Changes in Risk (Concentrated Industries)

Regressions examine the effect of relative firm- and industry-level valuation, investment, and new financing on yearly changes in risk. We report regression coefficients t -statistics (in parentheses) for panel data regressions. t -statistics are from standard errors that are adjusted for clustering over time and across industries, and are corrected for heteroskedasticity. Results in both Panels are based on concentrated industries. One observation is one firm in one year. For independent variables collected using data from calendar year t , the dependent variable is the change in risk (ex post risk minus ex ante risk). Ex ante risk is measured using one year of daily firm-level data from July of year t to June of year $t+1$, and ex post risk is measured using one year of daily data from July of year $t+1$ to June of year $t+2$. Ex ante and ex post risk levels are both estimated using the following model estimated once for each firm in each year (d denotes one trading day and i denotes one firm):

$$r_{i,d} = \alpha_i + \beta_{i,1} MKT_d + \beta_{i,2} HML_d + \beta_{i,3} SMB_d + \beta_{i,4} UMD_d + \epsilon_{i,d}.$$

The dependent variable in Panel A is based on the market beta ($\beta_{i,1}$), and is the ex post exposure less the ex ante exposure. Idiosyncratic risk in Panel B is the ex post standard deviation of the residuals from the above model less the ex ante standard deviation. The explanatory variables are discussed in Table II. We also include a control for the past-year's risk exposures as risk exposures are known to mean-revert. We only examine market betas and idiosyncratic risk because the theoretical predictions we examine only relate to these items. Concentrated industries are those in the highest tercile based on the past-year's industry concentration (HHI). The growth, high valuation, and high market risk industry groupings are based on terciles constructed annually from the past-year's industry-average book-to-market ratios, relative industry valuation, and the industry's average market beta.

Variable	Concentrated Industries	Concentrated Growth Industries	Concentrated High Value Industries	Concentrated High Mkt. Risk Industries
Panel A: Changes in Market Beta				
Industry Relative Valuation	0.0868 (2.440) ^{b,d}	0.1139 (1.890) ^c	0.1213 (1.610) ^e	0.0448 (0.710) ^e
Firm Relative Valuation	0.0686 (5.830) ^{a,e}	0.0649 (2.710) ^{a,e}	0.0815 (4.310) ^{a,d}	0.0829 (4.610) ^{a,e}
Industry Relative Investment	-0.0170 (-0.610) ^d	0.0031 (0.070) ^f	-0.1021 (-2.330) ^b	-0.0097 (-0.220) ^e
Firm Relative Investment	-0.0107 (-1.020)	-0.0265 (-1.360)	-0.0273 (-1.320)	-0.0308 (-1.860) ^{c,f}
Industry New Financing	0.2444 (1.260)	0.0674 (0.260)	0.1231 (0.540)	0.1866 (0.720)
Firm New Financing	0.1740 (2.210) ^b	0.2007 (1.640)	0.2786 (2.310) ^b	0.0910 (0.750)
Lagged Market Beta	-0.5965 (-36.330) ^a	-0.6061 (-20.290) ^a	-0.6268 (-21.010) ^a	-0.5930 (-25.060) ^a
Observations	12,020	3,707	3,522	5,342
Panel B: Changes in Idiosyncratic Risk				
Industry Relative Valuation	-0.0022 (-2.320) ^b	-0.0009 (-0.890)	-0.0008 (-0.450)	-0.0040 (-2.570) ^b
Firm Relative Valuation	-0.0007 (-2.120) ^b	0.0000 (-0.100) ^e	0.0002 (0.360)	-0.0008 (-1.550)
Industry Relative Investment	0.0013 (1.910) ^c	0.0015 (1.670) ^c	0.0012 (1.230)	0.0021 (1.880) ^{c,f}
Firm Relative Investment	-0.0001 (-0.370)	0.0000 (0.110)	-0.0001 (-0.250)	0.0000 (-0.100)
Industry New Financing	0.0091 (1.760) ^c	-0.0025 (-0.530) ^e	0.0035 (0.530)	0.0018 (0.330)
Firm New Financing	0.0122 (5.180) ^a	0.0121 (4.700) ^a	0.0106 (3.670) ^a	0.0147 (5.620) ^{a,e}
Lagged Idio. Risk	-0.0967 (-3.660) ^a	-0.1732 (-5.540) ^a	-0.1649 (-3.310) ^a	-0.1256 (-2.500) ^b
Observations	12,020	3,707	3,522	5,342

* a, b, and c denote significant differences from zero at the 1%, 5%, and 10% levels, respectively. d, e, and f denote significant differences from the opposing tercile (competitive versus concentrated industries) at the 1%, 5%, and 10% levels, respectively.

Table IA.XI
Regressions Predicting Change in Risk Adjusted Monthly Firm-level Stock Returns (Concentrated Industries)

Regressions examine the effect of relative firm- and industry-level valuation, investment, and new financing on monthly firm-level abnormal stock returns adjusted for changes in risk. We report regression coefficients and t -statistics (in parentheses) for panel data regressions. t -statistics are from standard errors that are adjusted for clustering over time and across industries, and are corrected for heteroskedasticity. Results are based on concentrated industries. One observation is one firm in one month, and the dependent variable is the firm's monthly abnormal return adjusted for changes in risk. To compute this variable, we start with the standard abnormal return, which is a firm's raw monthly return minus the monthly return of a portfolio matched on the basis of NYSE/Amex breakpoints of size, industry-adjusted book-to-market, and past-year returns as in Daniel et al. (1997). To adjust for changes in risk, we use a two-step procedure. First, we regress our monthly firm-level style-matched abnormal returns on changes in the four risk factors (MKT, HML, SMB, UMD) and idiosyncratic risk from year t to year $t+2$. We also include controls for the year t risk levels given that our previous section's results show that risk exposures are mean-reverting. These regressions are nonpredictive, as we examine changes in risk across the same period in which returns are measured. Second, we take the residuals of this first-stage regression and regress them on our usual set of relative valuation, relative investment, and relative financing variables. Concentrated industries are those in the highest tercile based on the past-year's industry concentration (HHI). The growth, high valuation, and high market risk industry groupings are based on terciles constructed annually from the past-year's industry-average book-to-market ratios, relative industry valuation, and the industry's average market beta.

Variable	Overall	Growth Industries	High Value Industries	High Mkt. Risk Industries
		Concentrated Industries		
Industry Relative Valuation	-0.0011 (-0.620)	-0.0010 (-0.300) ^f	-0.0007 (-0.220) ^d	-0.0014 (-0.540)
Firm Relative Valuation	-0.0009 (-1.250) ^f	-0.0004 (-0.350) ^f	-0.0014 (-1.160)	0.0005 (0.440) ^d
Industry Relative Investment	-0.0026 (-1.390)	0.0005 (0.160) ^e	-0.0016 (-0.520)	-0.0023 (-0.780) ^e
Firm Relative Investment	-0.0015 (-2.150) ^b	-0.0012 (-1.080)	-0.0027 (-2.410) ^{b,e}	-0.0008 (-0.790)
Industry New Financing	-0.0134 (-1.010) ^f	0.0037 (0.210) ^e	0.0068 (0.230)	-0.0137 (-0.870) ^e
Firm New Financing	-0.0257 (-4.940) ^a	-0.0275 (-3.760) ^a	-0.0281 (-3.240) ^a	-0.0349 (-4.490) ^{a,f}
Observations	136,221	43,401	40,863	60,683

* a, b, and c denote significant differences from zero at the 1%, 5%, and 10% levels, respectively. d, e, and f denote significant differences from the opposing tercile (competitive versus concentrated industries) at the 1%, 5%, and 10% levels, respectively.

Table IA.XII
Average Quintile Portfolio Abnormal Returns (Firm-level and Industry-level)

The table presents average risk-adjusted stock returns for various portfolios based on quintiles of key boom and bust variables noted in the first column. Reported abnormal returns are monthly returns (multiplied by twelve for convenience) reported as percentages. Results are based on the entire sample (1972 to 2004), and we report both firm-level (one observation is one firm) and industry level (one observation is one industry) average returns. Within each portfolio, one observation is one firm in one month. A firm's abnormal return is its raw monthly return minus the monthly return of a portfolio matched on the basis of NYSE/AMEX breakpoints of size, industry-adjusted book-to-market, and past-year returns as in Daniel et al. (1997). For monthly abnormal return observations between July of year $t+1$ and June of year $t+2$, portfolio assignments are constructed using accounting data with fiscal years ending in year t . Panel A includes all industries, Panel B includes competitive industries only, and Panel C includes competitive growth industries only. Competitive industries are those in the lowest tercile based on the past year's industry concentration (HHI). Growth industries are those in the lowest tercile based on the past year's industry-average book-to-market ratios (which are first winsorized at the 1/99% level prior to taking industry averages).

Variable	Firm Level Returns					Industry Level Returns				
	1	2	3	4	5	1	2	3	4	5
Industry Relative Valuation	-0.010	1.504	3.403	0.532	-2.482	-0.787	-0.693	-0.033	-1.267	-0.696
Firm Relative Valuation	2.843	1.212	1.175	0.442	-0.963					
Industry Relative Investment	1.767	2.885	0.959	-0.285	-2.093	0.144	0.277	-0.265	-1.242	-2.426
Firm Relative Investment	2.925	2.318	1.083	0.205	-1.802					
Industry New Financing	0.819	0.840	3.490	0.581	-2.611	-1.120	-0.293	0.214	-0.591	-1.700
Firm New Financing	3.297	2.839	2.619	0.539	-4.566					
Panel A: Sample-wide results										
Industry Relative Valuation	-0.471	2.671	6.616	1.385	-5.597	-1.717	-0.717	1.720	-1.858	-2.464
Firm Relative Valuation	3.881	2.269	2.375	0.888	-0.612					
Industry Relative Investment	2.138	5.211	1.664	-0.164	-4.396	0.484	0.523	0.360	-2.326	-4.224
Firm Relative Investment	3.389	3.159	2.002	1.505	-1.105					
Industry New Financing	0.821	1.629	5.941	1.517	-3.781	-0.834	0.465	-0.067	-0.267	-3.395
Firm New Financing	3.522	4.156	4.550	1.392	-4.455					
Panel B: Competitive Industries										
Industry Relative Valuation	4.199	8.116	3.462	-4.823	-9.242	-0.046	3.186	-0.759	-3.543	-4.929
Firm Relative Valuation	4.383	3.171	4.023	1.401	-0.968					
Industry Relative Investment	8.564	5.058	-0.229	-0.862	-9.559	1.442	0.965	0.589	-2.194	-6.970
Firm Relative Investment	3.964	3.743	3.422	1.310	-0.358					
Industry New Financing	3.198	2.415	7.718	1.062	-8.401	-1.233	0.731	0.924	0.273	-5.187
Firm New Financing	4.175	3.355	6.119	2.392	-3.678					
Panel C: Competitive Growth Industries										

References

Daniel, Kent, Mark Grinblatt, Sheridan Titman, and Russ Wermers, 1997, Measuring mutual fund performance with characteristic-based benchmarks, *Journal of Finance* 52, 1035–1058.

Pastor, Lubos, and Pietro Veronesi, 2003, Stock valuation and learning about profitability, *Journal of Finance* 58, 1749–1789.

Rhodes-Kropf, Matthew, David Robinson, and S. Viswanathan, 2005, Valuation waves and merger activity: The empirical evidence, *Journal of Financial Economics* 77, 561–603.