

Supplementary Material

FIGURE A1

Comparison of $\text{INTAN}_{i(t+1)}$ to Other Measures in the Literature

Figure A1 plots the cross-sectional medians of our measure of growth in intangibles investment $\text{INTAN}_{i(t+1)}$ in the dashed line (- - -) and growth in intangibles investment $\text{INTAN}_{i(t+1)}^{\text{PT}}$ in the straight line (—) from [Peters and Taylor \(2017\)](#).

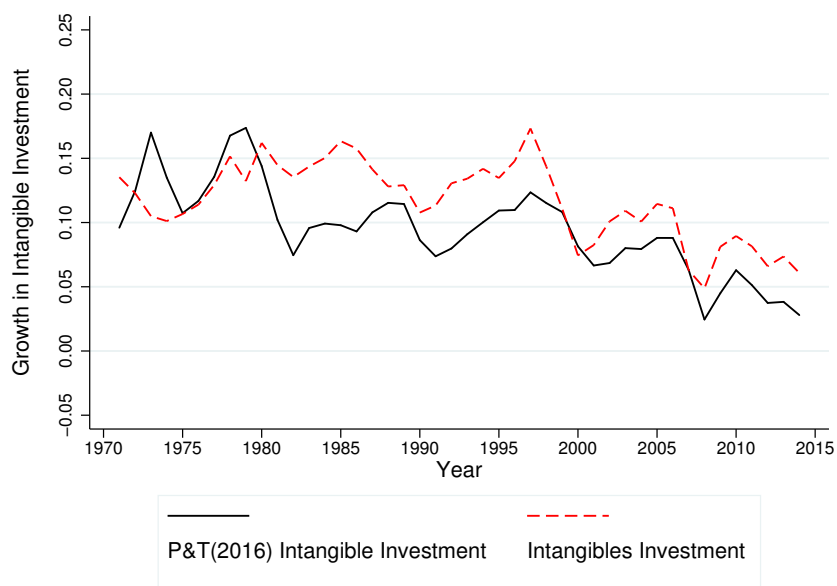


FIGURE A2

Comparison of σ_{it}^{CF} to other Measures in the Literature

Figure A2 plots the cross-sectional medians of cash flow uncertainty $\sigma_{it}^{CF}(S)$ in the dashed line (- - -) and the standard deviation of quarterly sales growth over the trailing 5 calendar years σ_{it}^{QSG} from Kelly et al. (2013) in the straight line (—).

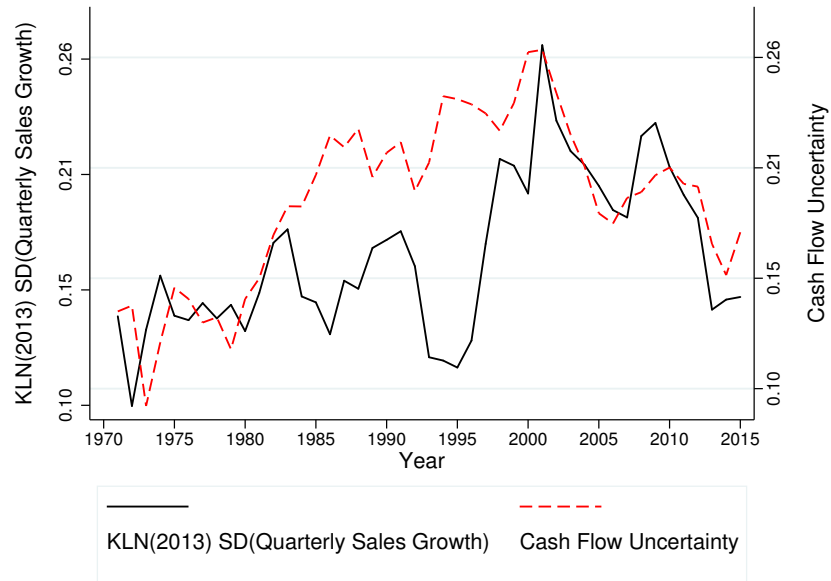


TABLE A1

Tangible Investment Regressions

Table A1 reports OLS regression for different specifications of our cash flow uncertainty measures $\sigma_{it}^{CF}(S)$ and $\sigma_{it}^{CF}(C)$ using different numbers of overlapping year panels (3, 5 and 7 years) and nonoverlapping year panels (1, 2 and 3 years). The dependent variable in all columns is investment in tangibles $TANG_{i(t+1)}$. The regressions in this table cover the entire sample years 1971–2015. The rest of the covariates are defined in Table 1. t -statistics are reported in parentheses. FE denotes fixed effects. Standard errors are double clustered at the year and firm level. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

TABLE A1 (continued)

Panel A. Different Specifications for σ_{it}^{CF} Overlapping Windows

| Variable | Dependent Variable: Tangibles Investment ($TANG_{i(t+1)}$) | | | | | |
|--|--|------------------------|------------------------|------------------------|------------------------|------------------------|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| $\log(TA_{it})$ | -0.0354*** (-12.00) | -0.0357*** (-12.19) | -0.0359*** (-12.23) | -0.0352*** (-11.90) | -0.0355*** (-12.04) | -0.0356*** (-12.13) |
| Q_{it} | 0.0475*** (25.01) | 0.0474*** (24.92) | 0.0474*** (24.93) | 0.0475*** (25.06) | 0.0475*** (24.99) | 0.0474*** (24.96) |
| $CF_{it}/BA_{i(t-1)}$ | 0.1171*** (7.59) | 0.1144*** (7.55) | 0.1135*** (7.49) | 0.1181*** (7.65) | 0.1169*** (7.64) | 0.1164*** (7.59) |
| BD_{it}/BA_{it} | -0.1292*** (-9.05) | -0.1293*** (-9.06) | -0.1293*** (-9.04) | -0.1289*** (-9.02) | -0.1290*** (-9.01) | -0.1290*** (-9.02) |
| σ_{it}^{SR} | -0.2221*** (-9.35) | -0.2214*** (-9.42) | -0.2217*** (-9.45) | -0.2230*** (-9.37) | -0.2229*** (-9.40) | -0.2230*** (-9.44) |
| \bar{r}_{it} | 0.6536*** (15.35) | 0.6504*** (15.53) | 0.6502*** (15.59) | 0.6564*** (15.48) | 0.6550*** (15.58) | 0.6546*** (15.56) |
| σ_{it}^{AR} | -0.0697** (-2.58) | -0.0652** (-2.53) | -0.0638** (-2.53) | -0.0736** (-2.66) | -0.0707** (-2.62) | -0.0704** (-2.62) |
| $\log(CASH_{it}/K_{i(t-1)})$ | 0.0414*** (32.33) | 0.0414*** (32.41) | 0.0414*** (32.39) | 0.0414*** (32.37) | 0.0414*** (32.44) | 0.0414*** (32.44) |
| $\sigma_{it}^{CF}(S) _{3yr}^{overlapping}$ | -0.0593*** (-5.55) | | | | | |
| $\sigma_{it}^{CF}(S) _{5yr}^{overlapping}$ | | -0.0751*** (-7.35) | | | | |
| $\sigma_{it}^{CF}(S) _{7yr}^{overlapping}$ | | | -0.0808*** (-7.70) | | | |
| $\sigma_{it}^{CF}(C) _{3yr}^{overlapping}$ | | | | -0.0445*** (-4.44) | | |
| $\sigma_{it}^{CF}(C) _{5yr}^{overlapping}$ | | | | | -0.0522*** (-5.57) | |
| $\sigma_{it}^{CF}(C) _{7yr}^{overlapping}$ | | | | | | -0.0561*** (-5.76) |
| No. of obs. | 100,059 | 100,059 | 100,059 | 100,059 | 100,059 | 100,059 |
| R^2 | 0.438 | 0.439 | 0.439 | 0.438 | 0.438 | 0.438 |
| Firm FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Year FE | Yes | Yes | Yes | Yes | Yes | Yes |

TABLE A1 (continued)

Panel B. Different Specifications for σ_{it}^{CF} Nonoverlapping Windows

| Variables | Dependent Variable: Tangibles Investment ($TANG_{i(t+1)}$) | | | | | |
|---|--|------------------------|------------------------|------------------------|------------------------|------------------------|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| $\log(TA_{it})$ | -0.0349*** (-11.78) | -0.0351*** (-11.89) | -0.0352*** (-11.89) | -0.0348*** (-11.73) | -0.0350*** (-11.80) | -0.0351*** (-11.83) |
| Q_{it} | 0.0475*** (25.14) | 0.0475*** (25.17) | 0.0475*** (25.21) | 0.0475*** (25.04) | 0.0475*** (25.10) | 0.0475*** (25.17) |
| $CF_{it}/BA_{i(t-1)}$ | 0.1203*** (7.75) | 0.1180*** (7.65) | 0.1173*** (7.64) | 0.1214*** (7.81) | 0.1201*** (7.76) | 0.1183*** (7.67) |
| BD_{it}/BA_{it} | -0.1287*** (-8.99) | -0.1290*** (-9.01) | -0.1289*** (-9.02) | -0.1286*** (-8.99) | -0.1287*** (-8.99) | -0.1287*** (-9.00) |
| σ_{it}^{SR} | -0.2236*** (-9.27) | -0.2230*** (-9.26) | -0.2230*** (-9.22) | -0.2243*** (-9.30) | -0.2238*** (-9.32) | -0.2230*** (-9.29) |
| \bar{r}_{it} | 0.6591*** (15.43) | 0.6563*** (15.42) | 0.6557*** (15.35) | 0.6608*** (15.56) | 0.6589*** (15.53) | 0.6567*** (15.41) |
| σ_{it}^{AR} | -0.0765** (-2.61) | -0.0738** (-2.65) | -0.0723** (-2.64) | -0.0798** (-2.66) | -0.0779*** (-2.71) | -0.0730*** (-2.71) |
| $\log(CASH_{it}/K_{i(t-1)})$ | 0.0414*** (32.27) | 0.0414*** (32.35) | 0.0414*** (32.41) | 0.0414*** (32.32) | 0.0414*** (32.34) | 0.0414*** (32.44) |
| $\sigma_{it}^{CF}(S) _{1yr}^{no-overlapping}$ | -0.0409*** (-4.19) | | | | | |
| $\sigma_{it}^{CF}(S) _{2yr}^{no-overlapping}$ | | -0.0522*** (-4.75) | | | | |
| $\sigma_{it}^{CF}(S) _{3yr}^{no-overlapping}$ | | | -0.0545*** (-5.25) | | | |
| $\sigma_{it}^{CF}(C) _{1yr}^{no-overlapping}$ | | | | -0.0280*** (-3.69) | | |
| $\sigma_{it}^{CF}(C) _{2yr}^{no-overlapping}$ | | | | | -0.0340*** (-3.84) | |
| $\sigma_{it}^{CF}(C) _{3yr}^{no-overlapping}$ | | | | | | -0.0427*** (-4.76) |
| No. of obs. | 100,059 | 100,059 | 100,059 | 100,059 | 100,059 | 100,059 |
| R^2 | 0.438 | 0.438 | 0.438 | 0.438 | 0.438 | 0.438 |
| Firm FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Year FE | Yes | Yes | Yes | Yes | Yes | Yes |

TABLE A2

Intangible Investment Regressions

Table A2 reports OLS regression for different specifications of our cash flow uncertainty measures $\sigma_{it}^{CF}(S)$ and $\sigma_{it}^{CF}(C)$ using different numbers of overlapping year panels (3, 5 and 7 years) and nonoverlapping year panels (1, 2 and 3 years). The dependent variable in all columns is investment in intangibles $INTAN_{i(t+1)}$. The regressions in this table cover the entire sample years 1971–2015. The rest of the covariates are defined in Table 1. t -statistics are reported in parentheses. Standard errors are double clustered at the year and firm level. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

TABLE A2 (continued)

Panel A. Different Specifications for σ_{it}^{CF} Overlapping Windows

| Variables | Dependent Variable: Intangibles Investment ($INTAN_{i(t+1)}$) | | | | | |
|--|---|------------------------|------------------------|------------------------|------------------------|------------------------|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| $\log(TA_{it})$ | -0.0376*** (-9.52) | -0.0380*** (-9.53) | -0.0383*** (-9.52) | -0.0374*** (-9.50) | -0.0377*** (-9.49) | -0.0378*** (-9.50) |
| Q_{it} | 0.0423*** (16.89) | 0.0422*** (16.87) | 0.0422*** (16.82) | 0.0423*** (16.89) | 0.0423*** (16.91) | 0.0422*** (16.88) |
| $CF_{it}/BA_{i(t-1)}$ | 0.1135*** (7.72) | 0.1101*** (7.59) | 0.1084*** (7.50) | 0.1154*** (7.90) | 0.1136*** (7.74) | 0.1127*** (7.79) |
| BD_{it}/BA_{it} | -0.1979*** (-11.09) | -0.1982*** (-11.12) | -0.1982*** (-11.13) | -0.1977*** (-11.07) | -0.1978*** (-11.07) | -0.1978*** (-11.08) |
| σ_{it}^{SR} | -0.2398*** (-9.53) | -0.2386*** (-9.49) | -0.2387*** (-9.52) | -0.2409*** (-9.54) | -0.2404*** (-9.53) | -0.2404*** (-9.56) |
| \bar{r}_{it} | 0.5203*** (11.87) | 0.5158*** (11.79) | 0.5145*** (11.79) | 0.5237*** (11.84) | 0.5215*** (11.80) | 0.5205*** (11.77) |
| σ_{it}^{AR} | -0.0824*** (-2.83) | -0.0751*** (-2.76) | -0.0718*** (-2.71) | -0.0880*** (-2.93) | -0.0836*** (-2.90) | -0.0820*** (-2.89) |
| $\log(CASH_{it}/K_{i(t-1)})$ | 0.0199*** (13.81) | 0.0199*** (13.81) | 0.0199*** (13.80) | 0.0199*** (13.78) | 0.0199*** (13.78) | 0.0199*** (13.78) |
| $\sigma_{it}^{CF}(S) _{3yr}^{overlapping}$ | -0.0406*** (-3.36) | | | | | |
| $\sigma_{it}^{CF}(S) _{5yr}^{overlapping}$ | | -0.0620*** (-4.39) | | | | |
| $\sigma_{it}^{CF}(S) _{7yr}^{overlapping}$ | | | -0.0728*** (-5.17) | | | |
| $\sigma_{it}^{CF}(C) _{3yr}^{overlapping}$ | | | | -0.0242** (-2.30) | | |
| $\sigma_{it}^{CF}(C) _{5yr}^{overlapping}$ | | | | | -0.0345*** (-2.85) | |
| $\sigma_{it}^{CF}(C) _{7yr}^{overlapping}$ | | | | | | -0.0405*** (-3.11) |
| No. of obs. | 93,058 | 93,058 | 93,058 | 93,058 | 93,058 | 93,058 |
| R^2 | 0.230 | 0.230 | 0.230 | 0.230 | 0.230 | 0.230 |
| Firm FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Year FE | Yes | Yes | Yes | Yes | Yes | Yes |

TABLE A2 (continued)

Panel B. Different Specifications for σ_{it}^{CF} Nonoverlapping Windows

| Variables | Dependent Variable: Intangibles Investment ($INTAN_{i(t+1)}$) | | | | | |
|---|---|------------------------|------------------------|------------------------|------------------------|------------------------|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| $\log(TA_{it})$ | -0.0372*** (-9.46) | -0.0373*** (-9.39) | -0.0373*** (-9.50) | -0.0371*** (-9.42) | -0.0372*** (-9.41) | -0.0371*** (-9.48) |
| Q_{it} | 0.0423*** (16.93) | 0.0423*** (16.90) | 0.0423*** (16.90) | 0.0423*** (16.94) | 0.0423*** (16.92) | 0.0423*** (16.91) |
| $CF_{it}/BA_{i(t-1)}$ | 0.1169*** (7.95) | 0.1160*** (7.91) | 0.1161*** (8.11) | 0.1185*** (8.05) | 0.1173*** (8.08) | 0.1175*** (8.14) |
| BD_{it}/BA_{it} | -0.1976*** (-11.05) | -0.1977*** (-11.07) | -0.1977*** (-11.06) | -0.1976*** (-11.04) | -0.1976*** (-11.05) | -0.1976*** (-11.05) |
| σ_{it}^{SR} | -0.2415*** (-9.56) | -0.2413*** (-9.53) | -0.2414*** (-9.57) | -0.2423*** (-9.59) | -0.2418*** (-9.56) | -0.2419*** (-9.56) |
| \bar{r}_{it} | 0.5256*** (11.92) | 0.5246*** (11.82) | 0.5248*** (11.85) | 0.5277*** (11.90) | 0.5262*** (11.80) | 0.5265*** (11.87) |
| σ_{it}^{AR} | -0.0907*** (-2.86) | -0.0899*** (-2.95) | -0.0901*** (-2.90) | -0.0952*** (-2.90) | -0.0926*** (-2.90) | -0.0930*** (-2.88) |
| $\log(CASH_{it}/K_{i(t-1)})$ | 0.0199*** (13.77) | 0.0199*** (13.77) | 0.0199*** (13.78) | 0.0199*** (13.75) | 0.0199*** (13.75) | 0.0199*** (13.77) |
| $\sigma_{it}^{CF}(S) _{1yr}^{no-overlapping}$ | -0.0195** (-2.12) | | | | | |
| $\sigma_{it}^{CF}(S) _{2yr}^{no-overlapping}$ | | -0.0236* (-1.82) | | | | |
| $\sigma_{it}^{CF}(S) _{3yr}^{no-overlapping}$ | | | -0.0222* (-1.69) | | | |
| $\sigma_{it}^{CF}(C) _{1yr}^{no-overlapping}$ | | | | -0.0075 (-0.82) | | |
| $\sigma_{it}^{CF}(C) _{2yr}^{no-overlapping}$ | | | | | -0.0136 (-1.27) | |
| $\sigma_{it}^{CF}(C) _{3yr}^{no-overlapping}$ | | | | | | -0.0120 (-1.07) |
| No. of obs. | 93,058 | 93,058 | 93,058 | 93,058 | 93,058 | 93,058 |
| R^2 | 0.230 | 0.230 | 0.230 | 0.230 | 0.230 | 0.230 |
| Firm FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Year FE | Yes | Yes | Yes | Yes | Yes | Yes |

TABLE A3

Employment Growth Regressions

Table A3 reports OLS regression for different specifications of our cash flow uncertainty measures $\sigma_{it}^{\text{CF}}(S)$ and $\sigma_{it}^{\text{CF}}(C)$ using different numbers of overlapping year panels (3, 5 and 7 years) and nonoverlapping year panels (1, 2 and 3 years). The dependent variable in all columns is employment growth $\text{EMP}_{i(t+1)}$. The regressions in this table cover the entire sample years 1971–2015. The rest of the covariates are defined in Table 1. t -statistics are reported in parentheses. Standard errors are double clustered at the year and firm level. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

TABLE A3 (continued)

Panel A. Different Specifications for σ_{it}^{CF} Overlapping Windows

| Variables | Dependent Variable: Employment Growth ($EMP_{i(t+1)}$) | | | | | |
|--|--|------------------------|------------------------|------------------------|------------------------|------------------------|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| $\log(TA_{it})$ | -0.0299*** (-12.41) | -0.0302*** (-12.51) | -0.0304*** (-12.61) | -0.0299*** (-12.35) | -0.0302*** (-12.45) | -0.0303*** (-12.54) |
| Q_{it} | 0.0205*** (20.89) | 0.0205*** (20.81) | 0.0205*** (20.86) | 0.0205*** (20.90) | 0.0205*** (20.90) | 0.0205*** (20.90) |
| $CF_{it}/BA_{i(t-1)}$ | 0.0651*** (6.58) | 0.0632*** (6.42) | 0.0615*** (6.20) | 0.0655*** (6.61) | 0.0635*** (6.49) | 0.0625*** (6.29) |
| BD_{it}/BA_{it} | -0.0099 (-1.33) | -0.0101 (-1.35) | -0.0102 (-1.36) | -0.0098 (-1.31) | -0.0099 (-1.32) | -0.0100 (-1.33) |
| σ_{it}^{SR} | -0.2074*** (-15.62) | -0.2069*** (-15.67) | -0.2066*** (-15.69) | -0.2078*** (-15.62) | -0.2073*** (-15.66) | -0.2072*** (-15.70) |
| \bar{r}_{it} | 0.6377*** (20.22) | 0.6353*** (20.25) | 0.6338*** (20.23) | 0.6388*** (20.24) | 0.6367*** (20.23) | 0.6356*** (20.22) |
| σ_{it}^{AR} | -0.0700*** (-3.25) | -0.0665*** (-3.27) | -0.0633*** (-3.32) | -0.0716*** (-3.27) | -0.0673*** (-3.29) | -0.0656*** (-3.31) |
| $\log(CASH_{it}/K_{i(t-1)})$ | 0.0122*** (18.34) | 0.0122*** (18.32) | 0.0122*** (18.34) | 0.0122*** (18.33) | 0.0122*** (18.35) | 0.0122*** (18.39) |
| $\sigma_{it}^{CF}(S) _{3yr}^{overlapping}$ | -0.0290*** (-4.58) | | | | | |
| $\sigma_{it}^{CF}(S) _{5yr}^{overlapping}$ | | -0.0403*** (-6.32) | | | | |
| $\sigma_{it}^{CF}(S) _{7yr}^{overlapping}$ | | | -0.0505*** (-6.92) | | | |
| $\sigma_{it}^{CF}(C) _{3yr}^{overlapping}$ | | | | -0.0225*** (-4.08) | | |
| $\sigma_{it}^{CF}(C) _{5yr}^{overlapping}$ | | | | | -0.0332*** (-6.13) | |
| $\sigma_{it}^{CF}(C) _{7yr}^{overlapping}$ | | | | | | -0.0393*** (-6.73) |
| No. of obs. | 92,050 | 92,050 | 92,050 | 92,050 | 92,050 | 92,050 |
| R^2 | 0.282 | 0.282 | 0.282 | 0.281 | 0.282 | 0.282 |
| Firm FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Year FE | Yes | Yes | Yes | Yes | Yes | Yes |

TABLE A3 (continued)

Panel B. Different Specifications for σ_{it}^{CF} Nonoverlapping Windows

| Variables | Dependent Variable: Employment Growth ($EMP_{i(t+1)}$) | | | | | |
|---|--|------------------------|------------------------|------------------------|------------------------|------------------------|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| $\log(TA_{it})$ | -0.0297*** (-12.31) | -0.0299*** (-12.36) | -0.0299*** (-12.40) | -0.0298*** (-12.35) | -0.0299*** (-12.36) | -0.0300*** (-12.40) |
| Q_{it} | 0.0205*** (20.92) | 0.0205*** (20.92) | 0.0205*** (21.01) | 0.0205*** (20.94) | 0.0206*** (20.89) | 0.0206*** (20.99) |
| $CF_{it}/BA_{i(t-1)}$ | 0.0667*** (6.65) | 0.0655*** (6.60) | 0.0649*** (6.50) | 0.0661*** (6.55) | 0.0647*** (6.56) | 0.0639*** (6.42) |
| BD_{it}/BA_{it} | -0.0098 (-1.30) | -0.0099 (-1.32) | -0.0098 (-1.31) | -0.0098 (-1.30) | -0.0098 (-1.31) | -0.0098 (-1.30) |
| σ_{it}^{SR} | -0.2080*** (-15.53) | -0.2077*** (-15.54) | -0.2077*** (-15.47) | -0.2079*** (-15.62) | -0.2075*** (-15.63) | -0.2072*** (-15.57) |
| \bar{r}_{it} | 0.6402*** (20.21) | 0.6386*** (20.18) | 0.6382*** (20.17) | 0.6396*** (20.21) | 0.6377*** (20.18) | 0.6369*** (20.22) |
| σ_{it}^{AR} | -0.0729*** (-3.19) | -0.0714*** (-3.28) | -0.0703*** (-3.26) | -0.0715*** (-3.18) | -0.0695*** (-3.27) | -0.0674*** (-3.26) |
| $\log(CASH_{it}/K_{i(t-1)})$ | 0.0122*** (18.31) | 0.0122*** (18.30) | 0.0122*** (18.34) | 0.0122*** (18.28) | 0.0122*** (18.32) | 0.0122*** (18.36) |
| $\sigma_{it}^{CF}(S) _{1yr}^{no-overlapping}$ | -0.0208*** (-3.52) | | | | | |
| $\sigma_{it}^{CF}(S) _{2yr}^{no-overlapping}$ | | -0.0269*** (-3.48) | | | | |
| $\sigma_{it}^{CF}(S) _{3yr}^{no-overlapping}$ | | | -0.0290*** (-3.91) | | | |
| $\sigma_{it}^{CF}(C) _{1yr}^{no-overlapping}$ | | | | -0.0210*** (-3.93) | | |
| $\sigma_{it}^{CF}(C) _{2yr}^{no-overlapping}$ | | | | | -0.0270*** (-4.52) | |
| $\sigma_{it}^{CF}(C) _{3yr}^{no-overlapping}$ | | | | | | -0.0302*** (-5.29) |
| No. of obs. | 92,050 | 92,050 | 92,050 | 92,050 | 92,050 | 92,050 |
| R^2 | 0.281 | 0.282 | 0.282 | 0.282 | 0.282 | 0.282 |
| Firm FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Year FE | Yes | Yes | Yes | Yes | Yes | Yes |

TABLE A4

Tangible Investment Overidentification IV Regressions

Table A4 reports instrumental variable results with overidentification tests where asset returns volatility σ_{it}^{AR} and stock returns volatility σ_{it}^{SR} are endogenous and instrumented with both cash flow uncertainty $\sigma_{it}^{\text{CF}}(S)$ and the customer concentration HHI_{it} . The dependent variable in this table is investment in tangible assets $\text{TANG}_{i(t+1)}$. The regressions in this table cover the years 1976–2015. For each regression, we report the first-stage F -statistic and the Hansen J -statistic. The Hansen test is a test of overidentifying restrictions where the joint null hypothesis is that the instruments are valid (i.e., uncorrelated with the error term) and that the excluded instruments are correctly excluded from the estimated equation. The first specification (columns 1 and 2) shows the results with only firm fixed effects (FE), the second specification in columns (3 and 4) shows the results with firm and year fixed effects, and the last specification (columns 5 and 6) shows the results with firm and industry-year fixed effects. The rest of the covariates are defined in Table 1. t -statistics are reported in parentheses. Standard errors are double clustered at the year and firm level. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

TABLE A4 (continued)

Panel A. Endogeneity in Asset Returns Volatility σ_{it}^{AR}

| Variables | 1st Stage - 2nd Stage | | 1st Stage - 2nd Stage | | 1st Stage - 2nd Stage | |
|------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|------------------------|
| | σ_{it}^{AR} | $TANG_{i(t+1)}$ | σ_{it}^{AR} | $TANG_{i(t+1)}$ | σ_{it}^{AR} | $TANG_{i(t+1)}$ |
| $\sigma_{it}^{CF}(S)$ | 0.1723*** (13.95) | | 0.1601*** (16.47) | | 0.1741*** (17.55) | |
| HHI_{it} | 0.0068 (1.65) | | -0.0010 (-0.69) | | 0.0011 (0.95) | |
| σ_{it}^{AR} | | -0.6987*** (-9.29) | | -0.6911*** (-9.19) | | -0.6661*** (-9.39) |
| $\log(TA_{it})$ | -0.0080** (-2.18) | -0.0368*** (-8.28) | -0.0033*** (-4.28) | -0.0348*** (-9.24) | -0.0040*** (-6.22) | -0.0393*** (-10.50) |
| Q_{it} | -0.0037*** (-3.23) | 0.0469*** (19.96) | -0.0024*** (-5.35) | 0.0466*** (21.12) | -0.0031*** (-7.68) | 0.0441*** (19.53) |
| $CF_{it}/BA_{i(t-1)}$ | -0.0394*** (-6.21) | 0.0933*** (6.13) | -0.0372*** (-7.31) | 0.0897*** (5.96) | -0.0313*** (-7.50) | 0.0831*** (6.08) |
| BD_{it}/BA_{it} | 0.0039 (0.73) | -0.1403*** (-6.83) | -0.0080 (-1.56) | -0.1456*** (-7.75) | -0.0030 (-0.77) | -0.1513*** (-8.24) |
| \bar{r}_{it} | 0.1191** (2.43) | 0.4580*** (10.64) | 0.0756*** (6.18) | 0.5115*** (12.25) | 0.0427*** (4.63) | 0.4694*** (11.55) |
| $\log(CASH_{it}/K_{i(t-1)})$ | -0.0029*** (-5.12) | 0.0417*** (26.52) | -0.0009*** (-3.86) | 0.0430*** (26.37) | -0.0008*** (-3.53) | 0.0450*** (27.20) |
| g_t^{GDP} | -0.0053** (-2.43) | 0.0012 (0.60) | | | | |
| r_t^F | -0.0014 (-0.73) | 0.0079*** (4.52) | | | | |
| No. of obs. | 53,194 | 53,194 | 53,194 | 53,194 | 53,046 | 53,046 |
| R^2 | 0.422 | 0.440 | 0.539 | 0.447 | 0.665 | 0.474 |
| Firm FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Year FE | | | Yes | Yes | | |
| Industry-year FE | | | | | Yes | Yes |
| 1st-stage F -stat. | 103.6 | | 135.8 | | 154.4 | |
| Hansen J -stat. | | 0.0503 | | 0.209 | | 0.424 |

TABLE A4 (continued)

Panel B. Endogeneity in Stock Returns Volatility σ_{it}^{SR}

| Variables | 1st Stage - 2nd Stage | | 1st Stage - 2nd Stage | | 1st Stage - 2nd Stage | |
|------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| | σ_{it}^{SR} | $TANG_{i(t+1)}$ | σ_{it}^{SR} | $TANG_{i(t+1)}$ | σ_{it}^{SR} | $TANG_{i(t+1)}$ |
| $\sigma_{it}^{CF}(S)$ | 0.0542*** (5.65) | | 0.0477*** (9.27) | | 0.0484*** (9.52) | |
| HHI_{it} | 0.0044 (1.08) | | -0.0021 (-1.21) | | -0.0003 (-0.21) | |
| σ_{it}^{SR} | | -2.1429*** (-5.56) | | -2.3317*** (-8.55) | | -2.4019*** (-8.16) |
| $\log(TA_{it})$ | -0.0113*** (-2.78) | -0.0555*** (-4.76) | -0.0068*** (-3.57) | -0.0485*** (-7.03) | -0.0082*** (-5.11) | -0.0563*** (-8.13) |
| Q_{it} | -0.0062*** (-5.83) | 0.0363*** (9.15) | -0.0057*** (-7.36) | 0.0350*** (10.51) | -0.0065*** (-8.87) | 0.0307*** (8.78) |
| $CF_{it}/BA_{i(t-1)}$ | -0.0339*** (-5.08) | 0.0489** (2.36) | -0.0364*** (-6.03) | 0.0302 (1.67) | -0.0329*** (-6.21) | 0.0248 (1.36) |
| BD_{it}/BA_{it} | 0.0377*** (5.57) | -0.0619** (-2.12) | 0.0271*** (4.35) | -0.0770*** (-3.08) | 0.0312*** (5.95) | -0.0745*** (-2.97) |
| \bar{r}_{it} | 0.7002*** (10.85) | 1.8783*** (6.52) | 0.7959*** (18.18) | 2.3175*** (9.88) | 0.8200*** (18.61) | 2.4135*** (9.27) |
| $\log(CASH_{it}/K_{i(t-1)})$ | -0.0034*** (-6.10) | 0.0364*** (16.66) | -0.0020*** (-3.32) | 0.0389*** (17.81) | -0.0022*** (-4.27) | 0.0402*** (19.09) |
| g_t^{GDP} | -0.0061** (-2.47) | -0.0082 (-1.23) | | | | |
| r_t^F | -0.0001 (-0.06) | 0.0087* (1.90) | | | | |
| No. of obs. | 53,182 | 53,182 | 53,182 | 53,182 | 53,034 | 53,034 |
| R^2 | 0.535 | 0.266 | 0.609 | 0.274 | 0.641 | 0.299 |
| Firm FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Year FE | | | Yes | Yes | | |
| Industry-year FE | | | | | Yes | Yes |
| 1st-stage F -stat. | 17.63 | | 43.01 | | 45.46 | |
| Hansen J -stat. | | 0.0911 | | 0.535 | | 0.600 |

TABLE A5

Intangible Investment Overidentification IV Regressions

Table A5 reports instrumental variable results with overidentification tests where asset returns volatility σ_{it}^{AR} and stock returns volatility σ_{it}^{SR} are endogenous and instrumented with both cash flow uncertainty $\sigma_{it}^{CF}(S)$ and the customer concentration HHI_{it} . The dependent variable in this table is investment in intangible assets $INTAN_{i(t+1)}$. The regressions in this table cover the years 1976–2015. For each regression, we report the first-stage F -statistic and the Hansen J -statistic. The Hansen test is a test of overidentifying restrictions where the joint null hypothesis is that the instruments are valid (i.e., uncorrelated with the error term) and that the excluded instruments are correctly excluded from the estimated equation. The first specification (columns 1 and 2) shows the results with only firm fixed effects, the second specification (columns 3 and 4) shows the results with firm and year fixed effects, and the last specification (columns 5 and 6) shows the results with firm and industry-year fixed effects. The rest of the covariates are defined in Table 1. t -statistics are reported in parentheses. Standard errors are double clustered at the year and firm level. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

TABLE A5 (continued)

Panel A. Endogeneity in Asset Returns Volatility σ_{it}^{AR}

| Variables | 1st Stage - 2nd Stage | | 1st Stage - 2nd Stage | | 1st Stage - 2nd Stage | |
|-----------------------------------|-----------------------|------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| | σ_{it}^{AR} | INTAN $_{i(t+1)}$ | σ_{it}^{AR} | INTAN $_{i(t+1)}$ | σ_{it}^{AR} | INTAN $_{i(t+1)}$ |
| $\sigma_{it}^{CF}(S)$ | 0.1727*** (14.08) | | 0.1609*** (16.44) | | 0.1747*** (17.70) | |
| HHI $_{it}$ | 0.0079* (1.80) | | -0.0010 (-0.60) | | 0.0012 (0.88) | |
| σ_{it}^{AR} | | -0.4214*** (-3.47) | | -0.4656*** (-3.74) | | -0.3762*** (-3.47) |
| log(TA $_{it}$) | -0.0078** (-2.15) | -0.0610*** (-11.18) | -0.0027*** (-3.04) | -0.0435*** (-8.91) | -0.0036*** (-4.89) | -0.0479*** (-8.17) |
| Q_{it} | -0.0036*** (-3.06) | 0.0439*** (13.84) | -0.0022*** (-5.28) | 0.0448*** (15.10) | -0.0031*** (-8.18) | 0.0422*** (14.91) |
| CF $_{it}$ /BA $_{i(t-1)}$ | -0.0396*** (-6.17) | 0.1215*** (6.40) | -0.0371*** (-7.07) | 0.1130*** (6.05) | -0.0312*** (-7.17) | 0.1163*** (6.40) |
| BD $_{it}$ /BA $_{it}$ | 0.0043 (0.83) | -0.1696*** (-6.80) | -0.0082 (-1.63) | -0.1875*** (-7.64) | -0.0031 (-0.88) | -0.1755*** (-6.66) |
| \bar{r}_{it} | 0.1220** (2.43) | 0.3248*** (5.11) | 0.0770*** (6.17) | 0.3399*** (6.16) | 0.0443*** (4.71) | 0.3052*** (6.09) |
| log(CASH $_{it}$ /K $_{i(t-1)}$) | -0.0031*** (-4.75) | 0.0209*** (11.03) | -0.0010*** (-3.88) | 0.0225*** (11.60) | -0.0008*** (-3.28) | 0.0241*** (11.49) |
| g_t^{GDP} | -0.0054** (-2.53) | 0.0029 (1.45) | | | | |
| r_t^F | -0.0013 (-0.69) | 0.0051*** (3.15) | | | | |
| No. of obs. | 49,690 | 49,690 | 49,690 | 49,690 | 49,527 | 49,527 |
| R^2 | 0.433 | 0.267 | 0.551 | 0.272 | 0.677 | 0.313 |
| Firm FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Year FE | | | Yes | Yes | | |
| Industry-year FE | | | | | Yes | Yes |
| 1st-stage F -stat. | 106.1 | | 136.5 | | 156.9 | |
| Hansen J -stat. | | 0.0958 | | 0.727 | | 0.494 |

TABLE A5 (continued)

Panel B. Endogeneity in Stock Returns Volatility σ_{it}^{SR}

| Variables | 1st Stage - 2nd Stage | | 1st Stage - 2nd Stage | | 1st Stage - 2nd Stage | |
|-------------------------------------|-----------------------|-------------------------|-----------------------|-------------------------|-----------------------|-------------------------|
| | σ_{it}^{SR} | $\text{INTAN}_{i(t+1)}$ | σ_{it}^{SR} | $\text{INTAN}_{i(t+1)}$ | σ_{it}^{SR} | $\text{INTAN}_{i(t+1)}$ |
| $\sigma_{it}^{CF}(S)$ | 0.0551*** (5.48) | | 0.0488*** (8.74) | | 0.0499*** (9.22) | |
| HHI_{it} | 0.0051 (1.21) | | -0.0023 (-1.34) | | -0.0005 (-0.34) | |
| σ_{it}^{SR} | | -1.2533*** (-2.92) | | -1.5214*** (-3.70) | | -1.3164*** (-3.57) |
| $\log(\text{TA}_{it})$ | -0.0111** (-2.70) | -0.0716*** (-7.90) | -0.0061*** (-3.09) | -0.0516*** (-8.00) | -0.0076*** (-4.55) | -0.0566*** (-7.91) |
| Q_{it} | -0.0059*** (-5.47) | 0.0380*** (8.64) | -0.0054*** (-6.78) | 0.0376*** (9.44) | -0.0062*** (-8.25) | 0.0351*** (9.19) |
| $\text{CF}_{it}/\text{BA}_{i(t-1)}$ | -0.0359*** (-5.13) | 0.0944*** (4.00) | -0.0381*** (-5.92) | 0.0727*** (3.16) | -0.0344*** (-6.05) | 0.0830*** (3.98) |
| $\text{BD}_{it}/\text{BA}_{it}$ | 0.0376*** (5.94) | -0.1236*** (-4.27) | 0.0266*** (4.28) | -0.1430*** (-5.05) | 0.0313*** (5.99) | -0.1327*** (-4.44) |
| \bar{r}_{it} | 0.6914*** (10.71) | 1.1446*** (3.88) | 0.7871*** (17.89) | 1.5066*** (4.75) | 0.8102*** (18.25) | 1.3610*** (4.70) |
| $\log(\text{CASH}_{it}/K_{i(t-1)})$ | -0.0037*** (-6.26) | 0.0175*** (7.28) | -0.0022*** (-3.62) | 0.0195*** (8.69) | -0.0023*** (-4.43) | 0.0212*** (9.38) |
| g_t^{GDP} | -0.0063** (-2.60) | -0.0027 (-0.59) | | | | |
| r_t^F | -0.0001 (-0.03) | 0.0057* (1.93) | | | | |
| No. of obs. | 49,679 | 49,679 | 49,679 | 49,679 | 49,516 | 49,516 |
| R^2 | 0.539 | 0.236 | 0.613 | 0.233 | 0.646 | 0.287 |
| Firm FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Year FE | | | Yes | Yes | | |
| Industry-year FE | | | | | Yes | Yes |
| 1st-stage F -stat. | 16.97 | | 38.22 | | 42.55 | |
| Hansen J -stat. | | 0.0602 | | 0.494 | | 0.403 |

TABLE A6

Employment Growth Overidentification IV Regressions

Table A6 reports instrumental variable results with overidentification tests where asset returns volatility σ_{it}^{AR} and stock returns volatility σ_{it}^{SR} are endogenous and instrumented with both cash flow uncertainty $\sigma_{it}^{\text{CF}}(S)$ and the customer concentration HHI_{it} . The dependent variable in this table is employment growth $\text{EMP}_{i(t+1)}$. The regressions in this table cover the years 1976–2015. For each regression, we report the first-stage F -statistic and the Hansen J -statistic. The Hansen test is a test of overidentifying restrictions where the joint null hypothesis is that the instruments are valid (i.e., uncorrelated with the error term) and that the excluded instruments are correctly excluded from the estimated equation. The first specification (columns 1 and 2) shows the results with only firm fixed effects, the second specification (columns 3 and 4) shows the results with firm and year fixed effects, and the last specification (columns 5 and 6) shows the results with firm and industry-year fixed effects. The rest of the covariates are defined in Table 1. t -statistics are reported in parentheses. Standard errors are double clustered at the year and firm level. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

TABLE A6 (continued)

Panel A. Endogeneity in Asset Returns Volatility σ_{it}^{AR}

| Variables | 1st Stage - 2nd Stage | | 1st Stage - 2nd Stage | | 1st Stage - 2nd Stage | |
|------------------------------|-----------------------|------------------------|-----------------------|-----------------------|-----------------------|------------------------|
| | σ_{it}^{AR} | $EMP_{i(t+1)}$ | σ_{it}^{AR} | $EMP_{i(t+1)}$ | σ_{it}^{AR} | $EMP_{i(t+1)}$ |
| $\sigma_{it}^{CF}(S)$ | 0.1762*** (14.01) | | 0.1630*** (16.57) | | 0.1759*** (17.20) | |
| HHI_{it} | 0.0070 (1.66) | | -0.0008 (-0.56) | | 0.0010 (0.78) | |
| σ_{it}^{AR} | | -0.2671*** (-4.41) | | -0.3051*** (-4.82) | | -0.3201*** (-5.16) |
| $\log(TA_{it})$ | -0.0086** (-2.26) | -0.0308*** (-10.39) | -0.0040*** (-4.71) | -0.0307*** (-9.49) | -0.0047*** (-6.70) | -0.0325*** (-10.05) |
| Q_{it} | -0.0036*** (-2.91) | 0.0197*** (15.67) | -0.0023*** (-5.20) | 0.0203*** (14.61) | -0.0032*** (-7.49) | 0.0184*** (13.67) |
| $CF_{it}/BA_{i(t-1)}$ | -0.0386*** (-5.64) | 0.0579*** (5.03) | -0.0365*** (-6.70) | 0.0543*** (5.07) | -0.0308*** (-6.93) | 0.0528*** (5.05) |
| BD_{it}/BA_{it} | 0.0039 (0.72) | -0.0154 (-1.41) | -0.0071 (-1.24) | -0.0122 (-1.17) | -0.0030 (-0.67) | -0.0117 (-1.19) |
| \bar{r}_{it} | 0.1123** (2.16) | 0.4620*** (11.90) | 0.0678*** (5.15) | 0.4541*** (11.57) | 0.0386*** (3.70) | 0.4169*** (10.75) |
| $\log(CASH_{it}/K_{i(t-1)})$ | -0.0028*** (-4.74) | 0.0135*** (15.79) | -0.0008*** (-2.84) | 0.0133*** (15.67) | -0.0006** (-2.63) | 0.0143*** (16.32) |
| g_t^{GDP} | -0.0056** (-2.61) | 0.0058*** (4.42) | | | | |
| r_t^F | -0.0015 (-0.78) | -0.0021* (-1.92) | | | | |
| No. of obs. | 48,877 | 48,877 | 48,877 | 48,877 | 48,711 | 48,711 |
| R^2 | 0.428 | 0.293 | 0.547 | 0.300 | 0.666 | 0.337 |
| Firm FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Year FE | | | Yes | Yes | | |
| Industry-year FE | | | | | Yes | Yes |
| 1st-stage F -stat. | 104.0 | | 137.4 | | 149.2 | |
| Hansen J -stat. | | 0.0284 | | 0.0229 | | 0.0687 |

TABLE A6 (continued)

Panel B. Endogeneity in Stock Returns Volatility σ_{it}^{SR}

| Variables | 1st Stage - 2nd Stage | | 1st Stage - 2nd Stage | | 1st Stage - 2nd Stage | |
|------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| | σ_{it}^{SR} | $EMP_{i(t+1)}$ | σ_{it}^{SR} | $EMP_{i(t+1)}$ | σ_{it}^{SR} | $EMP_{i(t+1)}$ |
| $\sigma_{it}^{CF}(S)$ | 0.0527*** (5.36) | | 0.0457*** (8.48) | | 0.0459*** (8.46) | |
| HHI_{it} | 0.0045 (1.11) | | -0.0023 (-1.30) | | -0.0005 (-0.29) | |
| σ_{it}^{SR} | | -0.8446*** (-3.71) | | -1.1176*** (-4.48) | | -1.2400*** (-4.73) |
| $\log(TA_{it})$ | -0.0116*** (-2.78) | -0.0383*** (-8.94) | -0.0071*** (-3.40) | -0.0374*** (-9.49) | -0.0084*** (-4.65) | -0.0414*** (-9.83) |
| Q_{it} | -0.0051*** (-4.57) | 0.0164*** (8.84) | -0.0047*** (-6.02) | 0.0158*** (9.05) | -0.0056*** (-7.64) | 0.0125*** (6.86) |
| $CF_{it}/BA_{i(t-1)}$ | -0.0333*** (-4.59) | 0.0407*** (2.89) | -0.0361*** (-5.37) | 0.0248* (1.85) | -0.0326*** (-5.33) | 0.0221 (1.61) |
| BD_{it}/BA_{it} | 0.0382*** (5.69) | 0.0160 (1.18) | 0.0282*** (4.24) | 0.0215 (1.57) | 0.0326*** (5.66) | 0.0297** (2.03) |
| \bar{r}_{it} | 0.6687*** (10.29) | 0.9967*** (6.16) | 0.7670*** (17.76) | 1.2899*** (6.55) | 0.7950*** (18.22) | 1.3899*** (6.70) |
| $\log(CASH_{it}/K_{i(t-1)})$ | -0.0035*** (-5.94) | 0.0112*** (9.38) | -0.0020*** (-3.26) | 0.0113*** (9.27) | -0.0023*** (-4.11) | 0.0117*** (8.88) |
| g_t^{GDP} | -0.0062** (-2.57) | 0.0020 (0.78) | | | | |
| r_t^F | -0.0003 (-0.14) | -0.0019 (-1.32) | | | | |
| No. of obs. | 48,867 | 48,867 | 48,867 | 48,867 | 48,701 | 48,701 |
| R^2 | 0.532 | 0.247 | 0.608 | 0.220 | 0.642 | 0.237 |
| Firm FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Year FE | | | Yes | Yes | | |
| Industry-year FE | | | | | Yes | Yes |
| 1st-stage F -stat. | 16.05 | | 36.04 | | 36.16 | |
| Hansen J -stat. | | 0.0266 | | 0.0937 | | 0.133 |

TABLE A7

Principal Component Regressions

Table A7 reports OLS regressions where the main independent variable of interest is the statistical principal component of stock returns volatility and cash flow uncertainty $PC[\sigma_{it}^{SR}, \sigma_{it}^{CF}(S)]$. The regressions in this table cover the entire sample years 1971–2015. The rest of the covariates are defined in Table 1. The dependent variable in columns 1–3 is tangibles investment $TANG_{i(t+1)}$, in columns 4–6 is intangibles investment $INTAN_{i(t+1)}$, and in columns 7–9 is employment growth $EMP_{i(t+1)}$. t -statistics are reported in parentheses. Standard errors are double clustered at the year and firm level. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

TABLE A7 (continued)

| Variables | Tangibles Investment | | | Intangibles Investment | | | Employment Growth | | |
|---|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| $PC[\sigma_{it}^{CF}(S), \sigma_{it}^{SR}]$ | -0.0212*** (-9.59) | -0.0236*** (-12.74) | -0.0237*** (-13.72) | -0.0199*** (-7.60) | -0.0233*** (-9.77) | -0.0245*** (-11.10) | -0.0175*** (-11.00) | -0.0187*** (-14.70) | -0.0191*** (-15.77) |
| $\log(TA_{it})$ | -0.0325*** (-10.63) | -0.0360*** (-12.30) | -0.0383*** (-13.59) | -0.0450*** (-12.16) | -0.0384*** (-9.47) | -0.0402*** (-9.23) | -0.0293*** (-14.42) | -0.0305*** (-12.29) | -0.0305*** (-13.67) |
| Q_{it} | 0.0489*** (23.95) | 0.0477*** (25.09) | 0.0451*** (24.74) | 0.0437*** (17.14) | 0.0425*** (16.90) | 0.0397*** (17.53) | 0.0212*** (21.83) | 0.0208*** (20.82) | 0.0194*** (20.16) |
| $CF_{it}/BA_{i(t-1)}$ | 0.1201*** (8.08) | 0.1121*** (7.67) | 0.1019*** (7.44) | 0.1139*** (7.86) | 0.1067*** (7.39) | 0.0998*** (7.08) | 0.0623*** (6.17) | 0.0592*** (6.21) | 0.0583*** (6.47) |
| BD_{it}/BA_{it} | -0.1357*** (-8.99) | -0.1309*** (-9.19) | -0.1365*** (-9.51) | -0.1955*** (-10.96) | -0.2005*** (-11.23) | -0.1971*** (-10.39) | -0.0155* (-1.94) | -0.0126 (-1.67) | -0.0171** (-2.28) |
| \bar{r}_{it} | 0.5045*** (10.96) | 0.6120*** (17.01) | 0.6109*** (17.85) | 0.4115*** (8.87) | 0.4610*** (10.69) | 0.4648*** (11.69) | 0.5565*** (17.69) | 0.5785*** (19.86) | 0.5660*** (20.23) |
| σ_{it}^{AR} | -0.0640** (-2.38) | -0.0609** (-2.44) | -0.0662** (-2.55) | -0.0428 (-1.49) | -0.0685** (-2.58) | -0.0818*** (-3.81) | -0.0598*** (-3.24) | -0.0598*** (-3.20) | -0.0480*** (-3.21) |
| $\log(CASH_{it}/K_{i(t-1)})$ | 0.0410*** (33.49) | 0.0415*** (32.60) | 0.0425*** (33.35) | 0.0184*** (12.63) | 0.0200*** (13.92) | 0.0221*** (15.78) | 0.0122*** (16.86) | 0.0124*** (18.75) | 0.0129*** (20.46) |
| g_t^{GDP} | 0.0035** (2.32) | | | 0.0044** (2.56) | | | 0.0065*** (5.76) | | |
| r_t^F | 0.0078*** (6.75) | | | 0.0063*** (6.49) | | | -0.0024** (-2.49) | | |
| No. of obs. | 100,059 | 100,059 | 100,004 | 93,058 | 93,058 | 93,004 | 92,050 | 92,050 | 91,973 |
| R^2 | 0.433 | 0.438 | 0.458 | 0.226 | 0.230 | 0.258 | 0.273 | 0.281 | 0.312 |
| Firm FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year FE | | Yes | | | Yes | | | Yes | |
| Industry-year FE | | | Yes | | | Yes | | | Yes |

TABLE A8

Alternative Depreciation Assumptions for Intangible Investment

Table A8 reports the OLS results for intangible investment $\text{INTAN}_{i(t+1)}$ constructed using alternative assumptions for the depreciation rate δ^I . The original measure for intangibles assumes a depreciation rate of δ^I of 10%. In this table, we report the results using 0%, 5%, 15%, and 20%. The regressions in this table cover the entire sample years 1971–2015. All covariates are as defined in Table 1. t -statistics are reported in parentheses. Standard errors are double clustered at the year and firm level. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

TABLE A8 (continued)

| | INTAN $_{i(t+1)}^{\delta^I=0\%}$ | | INTAN $_{i(t+1)}^{\delta^I=5\%}$ | | INTAN $_{i(t+1)}^{\delta^I=15\%}$ | | INTAN $_{i(t+1)}^{\delta^I=20\%}$ | |
|------------------------------|----------------------------------|------------------------|----------------------------------|------------------------|-----------------------------------|------------------------|-----------------------------------|------------------------|
| Variables | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| $\sigma_{it}^{CF}(S)$ | -0.0673*** (-3.76) | -0.0640*** (-4.15) | -0.0642*** (-3.54) | -0.0645*** (-4.11) | -0.0686*** (-3.80) | -0.0731*** (-4.62) | -0.0706*** (-3.78) | -0.0774*** (-4.79) |
| $\log(TA_{it})$ | -0.0572*** (-17.26) | -0.0409*** (-10.51) | -0.0564*** (-16.62) | -0.0419*** (-10.70) | -0.0551*** (-15.38) | -0.0438*** (-10.67) | -0.0547*** (-14.43) | -0.0451*** (-10.61) |
| Q_{it} | 0.0469*** (17.58) | 0.0464*** (16.87) | 0.0479*** (17.90) | 0.0473*** (17.16) | 0.0488*** (18.14) | 0.0481*** (17.62) | 0.0494*** (18.23) | 0.0486*** (17.89) |
| $CF_{it}/BA_{i(t-1)}$ | 0.1117*** (6.92) | 0.1034*** (6.49) | 0.1167*** (7.06) | 0.1084*** (6.62) | 0.1232*** (7.26) | 0.1154*** (6.84) | 0.1258*** (7.44) | 0.1181*** (6.99) |
| BD_{it}/BA_{it} | -0.1640*** (-9.53) | -0.1774*** (-10.27) | -0.1757*** (-10.19) | -0.1876*** (-10.84) | -0.1954*** (-11.09) | -0.2041*** (-11.48) | -0.2026*** (-11.36) | -0.2100*** (-11.74) |
| σ_{it}^{SR} | -0.1742*** (-5.64) | -0.2115*** (-8.02) | -0.1797*** (-5.85) | -0.2173*** (-8.30) | -0.2083*** (-6.69) | -0.2432*** (-9.70) | -0.2192*** (-7.06) | -0.2551*** (-10.24) |
| \bar{r}_{it} | 0.3852*** (7.34) | 0.4588*** (9.18) | 0.4014*** (7.60) | 0.4740*** (9.43) | 0.4464*** (7.87) | 0.5126*** (10.05) | 0.4653*** (8.11) | 0.5345*** (10.49) |
| σ_{it}^{AR} | -0.0366 (-1.45) | -0.0632*** (-2.81) | -0.0483 (-1.65) | -0.0762*** (-2.76) | -0.0519* (-1.71) | -0.0797** (-2.64) | -0.0520* (-1.71) | -0.0799** (-2.63) |
| $\log(CASH_{it}/K_{i(t-1)})$ | 0.0186*** (12.13) | 0.0198*** (12.85) | 0.0189*** (12.07) | 0.0202*** (12.85) | 0.0195*** (12.34) | 0.0209*** (13.12) | 0.0202*** (12.53) | 0.0217*** (13.42) |
| g_t^{GDP} | 0.0042** (2.37) | | 0.0041** (2.28) | | 0.0039** (2.09) | | 0.0041** (2.15) | |
| r_t^F | 0.0068*** (6.53) | | 0.0067*** (6.44) | | 0.0069*** (6.45) | | 0.0070*** (6.53) | |
| No. of obs. | 92,981 | 92,981 | 92,912 | 92,912 | 92,740 | 92,740 | 92,657 | 92,657 |
| R^2 | 0.236 | 0.240 | 0.239 | 0.243 | 0.251 | 0.255 | 0.257 | 0.261 |
| Firm FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year FE | | Yes | | Yes | | Yes | | Yes |

TABLE A9

Robustness Regressions Using Alternative Measures for Intangibles

Table A9 reports OLS regression results showing robustness to the use of alternative measure for investment in intangible capital. Specifically, we use intangible investment data from [Peters and Taylor \(2017\)](#) to test if our measure of cash flow uncertainty yields similar results. The regressions in this table cover the entire sample years 1971–2015. Columns 1–3 report OLS regression results where the dependent variable is the growth in the overall investment in intangible capital, columns 4–6 report OLS regression results where the dependent variable is growth in organization intangible capital, and finally columns 7–9 report OLS regression results where the dependent variable is growth in knowledge intangible capital. All of these variables are made available by [Peters and Taylor \(2017\)](#). The rest of the covariates are defined in Table 1. *t*-statistics are reported in parentheses. Standard errors are double clustered at the year and firm level. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

TABLE A9 (continued)

| Variables | INTAN ^{PT} _{i(t+1)} | | | INTAN ^{ORGANIZATION} _{i(t+1)} | | | INTAN ^{KNOWLEDGE} _{i(t+1)} | | |
|------------------------------|---------------------------------------|-----------------------|-----------------------|---|-----------------------|-----------------------|--|-----------------------|-----------------------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| $\sigma_{it}^{CF}(S)$ | -0.0558*** (-4.59) | -0.0408*** (-3.65) | -0.0548*** (-5.10) | -0.0604*** (-4.56) | -0.0274*** (-3.14) | -0.0347*** (-4.05) | -0.1444*** (-8.22) | -0.0810*** (-5.59) | -0.0761*** (-5.39) |
| $\log(TA_{it})$ | -0.0332*** (-11.65) | -0.0160*** (-4.75) | -0.0178*** (-4.94) | -0.0258*** (-6.26) | 0.0113*** (3.76) | 0.0119*** (4.03) | -0.0289*** (-6.16) | 0.0088** (2.12) | 0.0102** (2.51) |
| Q_{it} | 0.0397*** (23.57) | 0.0411*** (22.30) | 0.0384*** (21.83) | 0.0302*** (18.27) | 0.0331*** (19.59) | 0.0301*** (19.31) | 0.0265*** (11.78) | 0.0297*** (13.03) | 0.0270*** (12.84) |
| $CF_{it}/BA_{i(t-1)}$ | 0.0883*** (5.19) | 0.0751*** (4.83) | 0.0683*** (4.59) | 0.0543*** (3.86) | 0.0368*** (3.22) | 0.0304*** (2.90) | 0.0736*** (5.03) | 0.0672*** (4.87) | 0.0647*** (4.85) |
| BD_{it}/BA_{it} | -0.0295** (-2.07) | -0.0461*** (-3.48) | -0.0446*** (-3.50) | 0.0706*** (5.93) | 0.0377*** (3.52) | 0.0383*** (3.53) | 0.0218 (1.49) | -0.0046 (-0.30) | -0.0050 (-0.34) |
| σ_{it}^{SR} | -0.0658*** (-3.37) | -0.1223*** (-7.09) | -0.1265*** (-7.78) | 0.0236 (1.12) | -0.0322** (-2.15) | -0.0439*** (-3.19) | 0.0076 (0.29) | -0.0186 (-0.69) | -0.0366 (-1.43) |
| \bar{r}_{it} | 0.2017*** (5.53) | 0.2913*** (8.35) | 0.2860*** (8.22) | 0.0160 (0.36) | 0.1340*** (4.09) | 0.1484*** (5.03) | -0.0377 (-0.77) | 0.0204 (0.47) | 0.0484 (1.22) |
| σ_{it}^{AR} | 0.0077 (0.41) | -0.0337*** (-3.29) | -0.0438*** (-3.37) | 0.0114 (0.75) | -0.0193* (-1.87) | -0.0337** (-2.47) | 0.0387 (1.25) | 0.0138 (0.66) | -0.0202 (-0.73) |
| $\log(CASH_{it}/K_{i(t-1)})$ | 0.0155*** (15.21) | 0.0159*** (13.85) | 0.0168*** (15.00) | 0.0136*** (14.68) | 0.0136*** (14.17) | 0.0142*** (16.14) | 0.0158*** (10.53) | 0.0150*** (9.54) | 0.0156*** (10.54) |
| g_t^{GDP} | 0.0042** (2.19) | | | 0.0043* (1.86) | | | 0.0031* (1.86) | | |
| r_t^F | 0.0090*** (7.82) | | | 0.0124*** (6.99) | | | 0.0124*** (7.99) | | |
| No. of obs. | 91,543 | 91,543 | 91,490 | 92,278 | 92,278 | 92,222 | 55,588 | 55,588 | 55,377 |
| R^2 | 0.291 | 0.300 | 0.328 | 0.431 | 0.459 | 0.490 | 0.413 | 0.429 | 0.461 |
| Firm FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year FE | | Yes | | | Yes | | | Yes | |
| Industry-year FE | | | Yes | | | Yes | | | Yes |

TABLE A10

Cash Flow Uncertainty Robustness Regressions

Table A10 reports OLS regression results showing robustness to the inclusion of quarterly sales growth volatility σ_{it}^{QSG} from [Kelly et al. \(2013\)](#) to the relationship between cash flow uncertainty $\sigma_{it}^{\text{CF}}(S)$ and our 3 outcome variables (investment in tangible assets $\text{TANG}_{i(t+1)}$, investment in intangible assets $\text{INTAN}_{i(t+1)}$, and employment growth $\text{EMP}_{i(t+1)}$). Panel A shows both impacts of σ_{it}^{QSG} and σ_{it}^{CF} on the results where both measures are included in the analysis. Panel B shows the impact of σ_{it}^{QSG} on the outcomes where σ_{it}^{CF} is removed from the analysis. Panel C shows the impact from the statistical principal component of both measures $\text{PC}[\sigma_{it}^{\text{QSG}}, \sigma_{it}^{\text{CF}}]$. We follow [Kelly et al. \(2013\)](#) and calculate σ_{it}^{QSG} as the standard deviation of quarterly sales growth (over the same quarter the previous year) over the past trailing years t to $t - 4$. The regressions in this table cover the entire sample years 1971–2015. Columns 1–3 report OLS regression results where the dependent variable is $\text{TANG}_{i(t+1)}$, columns 4–6 report OLS regression results where the dependent variable is $\text{INTAN}_{i(t+1)}$, and finally columns 7–9 report OLS regression results where the dependent variable is $\text{EMP}_{i(t+1)}$. The rest of the covariates are defined in Table 1. t -statistics are reported in parentheses. Standard errors are double clustered at the year and firm level. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

TABLE A10 (continued)

Panel A. Additional Impact of σ_{it}^{QSG} on the Results

| | TANG $_{i(t+1)}$ | | | INTAN $_{i(t+1)}$ | | | EMP $_{i(t+1)}$ | | |
|------------------------------|-------------------------|-------------------------|--------------------------|--------------------------|-------------------------|-------------------------|--------------------------|--------------------------|--------------------------|
| Variables | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| $\sigma_{it}^{CF}(S)$ | -0.061535*** (-4.46) | -0.058837*** (-4.72) | -0.064480*** (-4.72) | -0.021816 (-1.27) | -0.031110* (-1.96) | -0.031324** (-2.19) | -0.028593*** (-3.81) | -0.032418*** (-4.41) | -0.045725*** (-5.48) |
| σ_{it}^{QSG} | -0.000125*** (-3.29) | -0.000117*** (-3.13) | -0.000124*** (-3.13) | -0.000050 (-1.09) | -0.000051 (-1.14) | -0.000066 (-1.41) | -0.000042 (-1.52) | -0.000040 (-1.48) | -0.000039 (-1.58) |
| $\log(TA_{it})$ | -0.024364*** (-8.30) | -0.027881*** (-9.60) | -0.030361*** (-10.32) | -0.036562*** (-9.32) | -0.030935*** (-7.43) | -0.033271*** (-7.53) | -0.027028*** (-13.20) | -0.028330*** (-11.49) | -0.028605*** (-12.48) |
| Q_{it} | 0.044299*** (17.10) | 0.042892*** (17.46) | 0.041341*** (17.21) | 0.036046*** (15.03) | 0.034692*** (15.56) | 0.032865*** (15.07) | 0.019392*** (15.61) | 0.018966*** (14.92) | 0.018287*** (14.88) |
| $CF_{it}/BA_{i(t-1)}$ | 0.121324*** (6.24) | 0.113041*** (6.01) | 0.100558*** (5.60) | 0.117077*** (6.20) | 0.108445*** (6.04) | 0.100811*** (5.88) | 0.077243*** (6.07) | 0.073067*** (6.05) | 0.071402*** (6.15) |
| BD_{it}/BA_{it} | -0.115897*** (-8.09) | -0.110879*** (-8.18) | -0.114195*** (-8.52) | -0.206642*** (-10.09) | -0.211193*** (-9.96) | -0.202149*** (-9.44) | -0.017419** (-2.06) | -0.014170* (-1.75) | -0.017888** (-2.23) |
| σ_{it}^{SR} | -0.149036*** (-5.28) | -0.192385*** (-8.41) | -0.185986*** (-9.18) | -0.184865*** (-6.58) | -0.234243*** (-8.66) | -0.242332*** (-9.42) | -0.199670*** (-10.30) | -0.222070*** (-13.54) | -0.206435*** (-14.11) |
| \bar{r}_{it} | 0.435033*** (8.78) | 0.564131*** (14.08) | 0.547643*** (14.90) | 0.488563*** (10.20) | 0.571290*** (12.05) | 0.558191*** (12.33) | 0.581756*** (16.17) | 0.627509*** (17.42) | 0.597321*** (16.77) |
| σ_{it}^{AR} | -0.052150*** (-3.04) | -0.058271*** (-3.51) | -0.067084*** (-3.20) | -0.038079 (-1.15) | -0.076310** (-2.47) | -0.093387*** (-3.67) | -0.046023*** (-3.92) | -0.054603*** (-3.75) | -0.042241*** (-3.19) |
| $\log(CASH_{it}/K_{i(t-1)})$ | 0.036305*** (23.11) | 0.036786*** (23.26) | 0.037516*** (23.48) | 0.017566*** (12.60) | 0.019397*** (13.77) | 0.021170*** (14.62) | 0.010979*** (12.55) | 0.010982*** (13.52) | 0.011523*** (13.90) |
| g_t^{GDP} | 0.003434** (2.32) | | | 0.004473*** (2.91) | | | 0.006120*** (5.39) | | |
| r_t^F | 0.007735*** (6.98) | | | 0.005166*** (4.93) | | | -0.002314** (-2.31) | | |
| No. of obs. | 76,572 | 76,572 | 76,500 | 71,911 | 71,911 | 71,831 | 71,621 | 71,621 | 71,530 |
| R^2 | 0.421 | 0.427 | 0.449 | 0.194 | 0.198 | 0.232 | 0.259 | 0.267 | 0.303 |
| Firm FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year FE | | Yes | | | Yes | | | Yes | |
| Industry-year FE | | | Yes | | | Yes | | | Yes |

TABLE A10 (continued)

Panel B. Impact of σ_{it}^{QSG} on the Results

| Variables | TANG $_{i(t+1)}$ | | | INTAN $_{i(t+1)}$ | | | EMP $_{i(t+1)}$ | | |
|------------------------------|-------------------------|-------------------------|-------------------------|--------------------------|--------------------------|-------------------------|--------------------------|--------------------------|--------------------------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| σ_{it}^{QSG} | -0.000129*** (-3.38) | -0.000120*** (-3.21) | -0.000128*** (-3.28) | -0.000051 (-1.12) | -0.000052 (-1.18) | -0.000068 (-1.46) | -0.000043 (-1.54) | -0.000042 (-1.51) | -0.000041 (-1.65) |
| $\log(TA_{it})$ | -0.024319*** (-8.32) | -0.027191*** (-9.35) | -0.029176*** (-9.84) | -0.036589*** (-9.60) | -0.030250*** (-7.42) | -0.032711*** (-7.43) | -0.027587*** (-13.92) | -0.028440*** (-11.76) | -0.027769*** (-12.26) |
| Q_{it} | 0.044223*** (17.33) | 0.043168*** (18.08) | 0.041297*** (17.16) | 0.036548*** (15.19) | 0.035344*** (16.22) | 0.032847*** (15.06) | 0.019381*** (16.01) | 0.018985*** (15.28) | 0.018242*** (14.82) |
| $CF_{it}/BA_{i(t-1)}$ | 0.134523*** (6.90) | 0.124578*** (6.61) | 0.111626*** (6.16) | 0.122264*** (6.53) | 0.114619*** (6.39) | 0.106068*** (6.19) | 0.083892*** (6.54) | 0.080108*** (6.57) | 0.079726*** (6.86) |
| BD_{it}/BA_{it} | -0.123726*** (-8.36) | -0.118672*** (-8.48) | -0.113615*** (-8.50) | -0.206511*** (-10.29) | -0.211367*** (-10.19) | -0.201847*** (-9.41) | -0.017302** (-2.02) | -0.014120* (-1.72) | -0.017457** (-2.18) |
| σ_{it}^{SR} | -0.146047*** (-5.20) | -0.193224*** (-8.79) | -0.190551*** (-9.43) | -0.180290*** (-6.58) | -0.231277*** (-8.66) | -0.244485*** (-9.44) | -0.196726*** (-10.33) | -0.220311*** (-13.90) | -0.209434*** (-14.31) |
| \bar{r}_{it} | 0.438722*** (8.84) | 0.576046*** (14.63) | 0.560916*** (15.51) | 0.466395*** (9.58) | 0.554406*** (11.58) | 0.564522*** (12.40) | 0.579073*** (16.94) | 0.628120*** (18.08) | 0.606557*** (17.03) |
| σ_{it}^{AR} | -0.072651*** (-3.51) | -0.077713*** (-3.69) | -0.094094*** (-3.36) | -0.045053 (-1.44) | -0.086335*** (-2.80) | -0.106905*** (-3.84) | -0.056632*** (-4.12) | -0.066002*** (-3.70) | -0.060496*** (-3.42) |
| $\log(CASH_{it}/K_{i(t-1)})$ | 0.036474*** (23.57) | 0.036741*** (23.62) | 0.037526*** (23.43) | 0.017567*** (12.45) | 0.019237*** (13.42) | 0.021177*** (14.64) | 0.011097*** (12.98) | 0.011003*** (13.79) | 0.011523*** (13.85) |
| g_t^{GDP} | 0.003252** (2.21) | | | 0.004301*** (3.07) | | | 0.005874*** (5.74) | | |
| r_t^F | 0.007718*** (7.24) | | | 0.005181*** (4.99) | | | -0.002441** (-2.44) | | |
| No. of obs. R^2 | 81,225 0.421 | 81,225 0.427 | 76,500 0.448 | 76,313 0.197 | 76,313 0.200 | 71,831 0.232 | 75,959 0.261 | 75,959 0.268 | 71,530 0.302 |
| Firm FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year FE | | Yes | | | Yes | | | Yes | |
| Industry-year FE | | | Yes | | | Yes | | | Yes |

TABLE A10 (continued)

Panel C. Impact of the Statistical Principal Component between σ_{it}^{CF} and σ_{it}^{QSG} on the Results

| Variables | TANG $_{i(t+1)}$ | | | INTAN $_{i(t+1)}$ | | | EMP $_{i(t+1)}$ | | |
|---|-------------------------|-------------------------|--------------------------|--------------------------|-------------------------|-------------------------|--------------------------|--------------------------|--------------------------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| PC[$\sigma_{it}^{QSG}, \sigma_{it}^{CF}$] | -0.008340*** (-3.77) | -0.007779*** (-3.93) | -0.008077*** (-4.32) | -0.003004 (-1.45) | -0.003829* (-1.80) | -0.003972** (-2.11) | -0.003572** (-2.18) | -0.003828** (-2.20) | -0.004751** (-2.26) |
| log(TA $_{it}$) | -0.024362*** (-8.30) | -0.027495*** (-9.40) | -0.029836*** (-10.09) | -0.036568*** (-9.36) | -0.030718*** (-7.42) | -0.033029*** (-7.52) | -0.027037*** (-13.28) | -0.028099*** (-11.62) | -0.028162*** (-12.61) |
| Q_{it} | 0.044197*** (17.04) | 0.042886*** (17.45) | 0.041331*** (17.20) | 0.036013*** (14.94) | 0.034692*** (15.56) | 0.032860*** (15.07) | 0.019330*** (15.57) | 0.018956*** (14.91) | 0.018272*** (14.86) |
| CF $_{it}$ /BA $_{i(t-1)}$ | 0.125740*** (6.69) | 0.117167*** (6.40) | 0.105347*** (6.01) | 0.118575*** (6.45) | 0.110794*** (6.31) | 0.103049*** (6.14) | 0.079697*** (6.30) | 0.075872*** (6.28) | 0.075784*** (6.57) |
| BD $_{it}$ /BA $_{it}$ | -0.114991*** (-8.04) | -0.110312*** (-8.14) | -0.113828*** (-8.51) | -0.206332*** (-10.08) | -0.210878*** (-9.93) | -0.201977*** (-9.43) | -0.016931* (-2.01) | -0.013765* (-1.70) | -0.017525** (-2.19) |
| σ_{it}^{SR} | -0.149669*** (-5.25) | -0.193811*** (-8.46) | -0.187931*** (-9.31) | -0.185064*** (-6.57) | -0.235067*** (-8.64) | -0.243247*** (-9.41) | -0.199876*** (-10.23) | -0.222843*** (-13.46) | -0.207953*** (-14.19) |
| \bar{r}_{it} | 0.438466*** (8.82) | 0.568745*** (14.33) | 0.553265*** (15.27) | 0.489707*** (10.19) | 0.573933*** (12.04) | 0.560824*** (12.38) | 0.583481*** (16.21) | 0.630331*** (17.51) | 0.602058*** (17.00) |
| σ_{it}^{AR} | -0.061033*** (-3.28) | -0.066994*** (-3.58) | -0.078808*** (-3.32) | -0.041212 (-1.27) | -0.081517** (-2.61) | -0.099131*** (-3.73) | -0.050494*** (-3.87) | -0.059936*** (-3.80) | -0.051897*** (-3.59) |
| log(CASH $_{it}$ / $K_{i(t-1)}$) | 0.036342*** (23.15) | 0.036772*** (23.26) | 0.037514*** (23.46) | 0.017579*** (12.60) | 0.019386*** (13.77) | 0.021171*** (14.63) | 0.010996*** (12.56) | 0.010968*** (13.52) | 0.011513*** (13.88) |
| g_t^{GDP} | 0.003293** (2.20) | | | 0.004423*** (2.88) | | | 0.006047*** (5.33) | | |
| r_t^F | 0.007717*** (6.96) | | | 0.005160*** (4.93) | | | -0.002324** (-2.32) | | |
| No. of obs. | 76,572 | 76,572 | 76,500 | 71,911 | 71,911 | 71,831 | 71,621 | 71,621 | 71,530 |
| R^2 | 0.421 | 0.427 | 0.449 | 0.194 | 0.198 | 0.232 | 0.259 | 0.267 | 0.303 |
| Firm FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year FE | | Yes | | | Yes | | | Yes | |
| Industry-year FE | | | Yes | | | Yes | | | Yes |

TABLE A11

Non-linear Tobin's Q OLS Robustness Check

Table A11 tests for the possibility that the interaction between Tobin's Q and corporate investment (employment) is non-linear. We replace Tobin's Q with 2 variables that are nonlinear in Q . The regressions in this table cover the entire sample years 1971–2015. In Panel A we use the square root of Q $\sqrt{Q_{it}}$, and we show the results using the inverse of the square root of Q $1/\sqrt{Q_{it}}$ in Panel B. Columns 1–3 report OLS regression results where the dependent variable is $TANG_{i(t+1)}$, columns 4–6 report OLS regression results where the dependent variable is $INTAN_{i(t+1)}$, and finally columns 7–9 report OLS regression results where the dependent variable is $EMP_{i(t+1)}$. The rest of the covariates are defined in Table 1. t -statistics are reported in parentheses. Standard errors are double clustered at the year and firm level. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

TABLE A11 (continued)

Panel A. Using Square-Root of Tobin's Q

| Variables | TANG $_{i(t+1)}$ | | | INTAN $_{i(t+1)}$ | | | EMP $_{i(t+1)}$ | | |
|------------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| $\sigma_{it}^{CF}(S)$ | -0.0783*** (-6.78) | -0.0716*** (-7.20) | -0.0740*** (-6.62) | -0.0526*** (-3.13) | -0.0585*** (-4.11) | -0.0562*** (-4.54) | -0.0367*** (-5.22) | -0.0388*** (-6.17) | -0.0475*** (-6.48) |
| $\log(TA_{it})$ | -0.0341*** (-10.78) | -0.0356*** (-12.13) | -0.0377*** (-13.33) | -0.0468*** (-13.60) | -0.0377*** (-9.42) | -0.0391*** (-9.14) | -0.0305*** (-15.57) | -0.0300*** (-12.28) | -0.0300*** (-13.50) |
| $\sqrt{Q_{it}}$ | 0.1770*** (25.14) | 0.1753*** (27.92) | 0.1662*** (27.87) | 0.1670*** (19.37) | 0.1654*** (18.82) | 0.1557*** (19.65) | 0.0784*** (23.82) | 0.0785*** (23.38) | 0.0735*** (22.16) |
| $CF_{it}/BA_{i(t-1)}$ | 0.1150*** (7.64) | 0.1073*** (7.40) | 0.0980*** (7.15) | 0.1103*** (7.89) | 0.1024*** (7.36) | 0.0974*** (7.09) | 0.0634*** (6.17) | 0.0591*** (6.12) | 0.0584*** (6.32) |
| BD_{it}/BA_{it} | -0.1317*** (-8.75) | -0.1281*** (-8.98) | -0.1343*** (-9.36) | -0.1886*** (-10.71) | -0.1960*** (-11.03) | -0.1927*** (-10.16) | -0.0102 (-1.29) | -0.0091 (-1.22) | -0.0144* (-1.95) |
| σ_{it}^{SR} | -0.1659*** (-5.42) | -0.2090*** (-8.86) | -0.2019*** (-9.94) | -0.1853*** (-6.30) | -0.2244*** (-8.92) | -0.2369*** (-9.84) | -0.1842*** (-9.55) | -0.2008*** (-15.01) | -0.1865*** (-16.15) |
| \bar{r}_{it} | 0.4657*** (8.51) | 0.5949*** (14.38) | 0.5919*** (14.87) | 0.3864*** (7.91) | 0.4500*** (10.43) | 0.4632*** (11.42) | 0.5732*** (15.76) | 0.6068*** (19.24) | 0.5834*** (18.78) |
| σ_{it}^{AR} | -0.0556** (-2.26) | -0.0598** (-2.50) | -0.0662** (-2.60) | -0.0350 (-1.22) | -0.0694*** (-2.72) | -0.0875*** (-4.07) | -0.0573*** (-3.40) | -0.0638*** (-3.31) | -0.0539*** (-3.24) |
| $\log(CASH_{it}/K_{i(t-1)})$ | 0.0402*** (33.30) | 0.0405*** (32.26) | 0.0416*** (33.08) | 0.0174*** (12.23) | 0.0188*** (13.23) | 0.0210*** (15.23) | 0.0117*** (16.73) | 0.0117*** (18.00) | 0.0123*** (19.78) |
| g_t^{GDP} | 0.0028* (1.82) | | | 0.0034** (2.04) | | | 0.0058*** (5.18) | | |
| r_t^F | 0.0077*** (6.44) | | | 0.0062*** (6.55) | | | -0.0024** (-2.59) | | |
| No. of obs. | 100,059 | 100,059 | 100,004 | 93,058 | 93,058 | 93,004 | 92,050 | 92,050 | 91,973 |
| R^2 | 0.436 | 0.442 | 0.461 | 0.228 | 0.232 | 0.260 | 0.277 | 0.284 | 0.314 |
| Firm FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year FE | | Yes | | | Yes | | | Yes | |
| Industry-year FE | | | Yes | | | Yes | | | Yes |

TABLE A11 (continued)

Panel B. Using the Inverse Square-Root of Tobin's Q

| Variables | TANG _{i(t+1)} | | | INTAN _{i(t+1)} | | | EMP _{i(t+1)} | | |
|------------------------------|------------------------|------------------------|------------------------|-------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| $\sigma_{it}^{CF}(S)$ | -0.0759*** (-6.65) | -0.0640*** (-6.46) | -0.0650*** (-5.84) | -0.0513*** (-3.01) | -0.0500*** (-3.45) | -0.0463*** (-3.65) | -0.0358*** (-5.09) | -0.0349*** (-5.58) | -0.0431*** (-5.89) |
| $\log(TA_{it})$ | -0.0375*** (-11.23) | -0.0373*** (-12.62) | -0.0394*** (-13.92) | -0.0503*** (-15.32) | -0.0389*** (-9.56) | -0.0402*** (-9.27) | -0.0321*** (-16.90) | -0.0306*** (-12.45) | -0.0305*** (-13.66) |
| $1/\sqrt{Q_{it}}$ | -0.3125*** (-22.16) | -0.3172*** (-24.96) | -0.2988*** (-25.51) | -0.3270*** (-18.65) | -0.3302*** (-17.76) | -0.3135*** (-17.94) | -0.1467*** (-18.48) | -0.1491*** (-19.75) | -0.1383*** (-18.70) |
| $CF_{it}/BA_{i(t-1)}$ | 0.1135*** (7.62) | 0.1040*** (7.33) | 0.0960*** (7.14) | 0.1058*** (7.80) | 0.0964*** (7.22) | 0.0925*** (6.97) | 0.0619*** (5.98) | 0.0569*** (5.88) | 0.0569*** (6.15) |
| BD_{it}/BA_{it} | -0.1429*** (-9.52) | -0.1412*** (-9.93) | -0.1469*** (-10.29) | -0.1975*** (-11.27) | -0.2075*** (-11.79) | -0.2038*** (-10.84) | -0.0145* (-1.83) | -0.0145* (-1.94) | -0.0197** (-2.65) |
| σ_{it}^{SR} | -0.1513*** (-4.72) | -0.2027*** (-8.22) | -0.1988*** (-9.50) | -0.1631*** (-5.61) | -0.2115*** (-8.30) | -0.2259*** (-9.36) | -0.1750*** (-9.12) | -0.1959*** (-14.29) | -0.1832*** (-15.44) |
| \bar{r}_{it} | 0.4490*** (8.06) | 0.5849*** (14.21) | 0.5864*** (14.85) | 0.3363*** (7.04) | 0.4074*** (9.38) | 0.4226*** (10.16) | 0.5565*** (15.22) | 0.5944*** (18.92) | 0.5744*** (18.36) |
| σ_{it}^{AR} | -0.0416* (-1.83) | -0.0525** (-2.45) | -0.0612** (-2.58) | -0.0177 (-0.60) | -0.0601** (-2.63) | -0.0789*** (-4.03) | -0.0504*** (-3.38) | -0.0600*** (-3.39) | -0.0510*** (-3.30) |
| $\log(CASH_{it}/K_{i(t-1)})$ | 0.0403*** (33.49) | 0.0405*** (32.61) | 0.0417*** (33.46) | 0.0171*** (12.29) | 0.0183*** (13.06) | 0.0205*** (15.11) | 0.0116*** (17.14) | 0.0116*** (18.24) | 0.0122*** (19.97) |
| g_t^{GDP} | 0.0022 (1.31) | | | 0.0026 (1.57) | | | 0.0054*** (4.91) | | |
| r_t^F | 0.0077*** (6.10) | | | 0.0062*** (6.60) | | | -0.0025** (-2.66) | | |
| No. of obs. R^2 | 100,059 0.435 | 100,059 0.441 | 100,004 0.460 | 93,058 0.230 | 93,058 0.234 | 93,004 0.261 | 92,050 0.277 | 92,050 0.284 | 91,973 0.314 |
| Firm FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year FE | | Yes | | | Yes | | | Yes | |
| Industry-year FE | | | Yes | | | Yes | | | Yes |

TABLE A12

Robustness Check Using Different Subsamples across the Time Series

Table A12 reports the consistency of our results across different subsamples in the time-series. Specifically, we show the relationship between the cash flow uncertainty $\sigma_{it}^{CF}(S)$ and our 3 outcome variables (investment in tangible assets $TANG_{i(t+1)}$, investment in intangible assets $INTAN_{i(t+1)}$, and employment growth $EMP_{i(t+1)}$) using the years 1985–2000 in Panel A, and 2001–2015 in Panel B. Columns 1–3 report OLS regression results where the dependent variable is $TANG_{i(t+1)}$, columns 4–6 report OLS regression results where the dependent variable is $INTAN_{i(t+1)}$, and finally columns 7–9 report OLS regression results where the dependent variable is $EMP_{i(t+1)}$. The rest of the covariates are defined in Table 1. t -statistics are reported in parentheses. Standard errors are double clustered at the year and firm level. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

TABLE A12 (continued)

Panel A. 1985 to 2000

| Variables | TANG _{<i>i(t+1)</i>} | | | INTAN _{<i>i(t+1)</i>} | | | EMP _{<i>i(t+1)</i>} | | |
|------------------------------|-------------------------------|-----------------------|-----------------------|--------------------------------|-----------------------|------------------------|------------------------------|------------------------|------------------------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| $\sigma_{it}^{CF}(S)$ | -0.0760*** (-5.46) | -0.0771*** (-5.67) | -0.0840*** (-5.56) | -0.0539** (-2.21) | -0.0523** (-2.38) | -0.0421** (-2.17) | -0.0302** (-2.63) | -0.0338** (-2.92) | -0.0372** (-2.89) |
| $\log(TA_{it})$ | -0.0368*** (-7.26) | -0.0458*** (-8.73) | -0.0458*** (-8.72) | -0.0667*** (-10.45) | -0.0573*** (-9.62) | -0.0550*** (-10.19) | -0.0449*** (-11.00) | -0.0491*** (-17.42) | -0.0474*** (-18.50) |
| Q_{it} | 0.0477*** (13.71) | 0.0464*** (13.44) | 0.0455*** (13.96) | 0.0360*** (9.09) | 0.0357*** (9.37) | 0.0371*** (10.14) | 0.0183*** (12.71) | 0.0177*** (12.90) | 0.0170*** (12.14) |
| $CF_{it}/BA_{i(t-1)}$ | 0.1225*** (7.76) | 0.1215*** (7.71) | 0.1135*** (7.24) | 0.1089*** (5.02) | 0.1079*** (4.89) | 0.1068*** (4.67) | 0.0688*** (4.94) | 0.0665*** (4.80) | 0.0679*** (4.72) |
| BD_{it}/BA_{it} | -0.1875*** (-9.73) | -0.1748*** (-8.96) | -0.1843*** (-9.73) | -0.2691*** (-8.26) | -0.2773*** (-8.44) | -0.2755*** (-7.94) | -0.0291* (-1.82) | -0.0261 (-1.66) | -0.0329** (-2.17) |
| σ_{it}^{SR} | -0.2344*** (-7.33) | -0.2445*** (-9.27) | -0.2376*** (-8.87) | -0.2902*** (-6.92) | -0.2850*** (-6.98) | -0.2794*** (-7.32) | -0.2103*** (-8.20) | -0.2221*** (-14.70) | -0.2094*** (-12.25) |
| \bar{r}_{it} | 0.6016*** (11.26) | 0.6443*** (15.88) | 0.6337*** (15.24) | 0.5379*** (7.45) | 0.5602*** (8.21) | 0.5555*** (8.73) | 0.5863*** (14.77) | 0.6227*** (17.95) | 0.6120*** (16.93) |
| σ_{it}^{AR} | -0.0405* (-1.84) | -0.0368* (-1.85) | -0.0380* (-1.83) | -0.0690 (-1.55) | -0.0541 (-1.53) | -0.0745** (-2.31) | -0.0579** (-2.35) | -0.0563** (-2.36) | -0.0434** (-2.80) |
| $\log(CASH_{it}/K_{i(t-1)})$ | 0.0422*** (27.09) | 0.0426*** (26.50) | 0.0427*** (25.75) | 0.0254*** (13.92) | 0.0243*** (13.19) | 0.0250*** (13.55) | 0.0141*** (14.76) | 0.0142*** (13.39) | 0.0142*** (12.96) |
| g_t^{GDP} | 0.0064 (1.74) | | | 0.0098*** (3.21) | | | 0.0083** (2.89) | | |
| r_t^F | 0.0027 (0.75) | | | -0.0002 (-0.07) | | | -0.0043 (-1.38) | | |
| No. of obs. | 42,435 | 42,435 | 42,413 | 38,666 | 38,666 | 38,642 | 38,044 | 38,044 | 38,010 |
| R^2 | 0.495 | 0.498 | 0.511 | 0.296 | 0.298 | 0.319 | 0.330 | 0.335 | 0.357 |
| Firm FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year FE | | Yes | | | Yes | | | Yes | |
| Industry-year FE | | | Yes | | | Yes | | | Yes |

TABLE A12 (continued)

Panel B. 2001 to 2015

| Variables | TANG _{<i>i(t+1)</i>} | | | INTAN _{<i>i(t+1)</i>} | | | EMP _{<i>i(t+1)</i>} | | |
|------------------------------|-------------------------------|-----------------------|-----------------------|--------------------------------|-----------------------|-----------------------|------------------------------|-----------------------|-----------------------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| $\sigma_{it}^{CF}(S)$ | -0.0637*** (-3.97) | -0.0667*** (-4.32) | -0.0722*** (-4.34) | -0.0561** (-2.23) | -0.0551** (-2.19) | -0.0531* (-2.11) | -0.0272*** (-3.61) | -0.0284*** (-3.79) | -0.0460*** (-5.46) |
| $\log(TA_{it})$ | -0.0271*** (-5.57) | -0.0277*** (-5.42) | -0.0279*** (-5.52) | -0.1009*** (-8.84) | -0.0954*** (-7.92) | -0.0995*** (-7.41) | -0.0363*** (-8.18) | -0.0346*** (-6.25) | -0.0325*** (-5.81) |
| Q_{it} | 0.0430*** (12.91) | 0.0428*** (13.43) | 0.0422*** (13.45) | 0.0336*** (6.35) | 0.0358*** (6.51) | 0.0327*** (6.35) | 0.0185*** (12.84) | 0.0202*** (11.39) | 0.0192*** (12.44) |
| $CF_{it}/BA_{i(t-1)}$ | 0.0782*** (4.89) | 0.0743*** (4.83) | 0.0679*** (4.75) | 0.0838*** (4.22) | 0.0800*** (3.99) | 0.0823*** (4.07) | 0.0438** (2.43) | 0.0400** (2.24) | 0.0380** (2.31) |
| BD_{it}/BA_{it} | -0.0894*** (-4.69) | -0.0863*** (-4.75) | -0.0925*** (-5.74) | -0.1501*** (-4.03) | -0.1472*** (-3.86) | -0.1374*** (-3.59) | -0.0315** (-2.40) | -0.0229* (-1.86) | -0.0295** (-2.36) |
| σ_{it}^{SR} | -0.1625*** (-4.26) | -0.1817*** (-4.46) | -0.1588*** (-4.74) | -0.1524*** (-3.75) | -0.1727*** (-4.37) | -0.1994*** (-5.56) | -0.1693*** (-5.36) | -0.1783*** (-5.99) | -0.1534*** (-7.83) |
| \bar{r}_{it} | 0.3419*** (6.81) | 0.4304*** (7.82) | 0.4104*** (8.39) | 0.3595*** (3.74) | 0.3641*** (4.51) | 0.3895*** (5.81) | 0.4914*** (9.90) | 0.4956*** (8.80) | 0.4579*** (9.39) |
| σ_{it}^{AR} | -0.1136*** (-4.08) | -0.0871*** (-3.67) | -0.0688** (-2.25) | -0.0688 (-1.74) | -0.1024** (-2.89) | -0.0960** (-2.61) | -0.0686*** (-3.38) | -0.0760*** (-3.42) | -0.0514** (-2.18) |
| $\log(CASH_{it}/K_{i(t-1)})$ | 0.0504*** (15.43) | 0.0499*** (15.05) | 0.0502*** (15.54) | 0.0304*** (10.03) | 0.0302*** (10.35) | 0.0307*** (10.17) | 0.0175*** (11.93) | 0.0164*** (11.40) | 0.0163*** (10.58) |
| g_t^{GDP} | 0.0002 (0.22) | | | 0.0037* (1.82) | | | 0.0048*** (3.35) | | |
| r_t^F | 0.0071*** (4.15) | | | -0.0006 (-0.19) | | | -0.0009 (-0.44) | | |
| No. of obs. | 36,340 | 36,340 | 36,340 | 34,428 | 34,428 | 34,427 | 34,090 | 34,090 | 34,079 |
| R^2 | 0.495 | 0.497 | 0.512 | 0.267 | 0.269 | 0.293 | 0.337 | 0.343 | 0.370 |
| Firm FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year FE | | Yes | | | Yes | | | Yes | |
| Industry-year FE | | | Yes | | | Yes | | | Yes |