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* "Contracts between Firms and Shareholders"
* Journal of Accounting Research
* Updated: January, 10, 2020
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* This file creates variables and produces the main tables. The code that creates specific tables are denoted in the code comments.

* Import the data set that was exported at the end of the SAS file in the previous step.
use "C:\data\shareholder_contracts\master.dta", clear

* Create variables for sample from 1996 to 2018
gen fdate_year = year(fdate)
drop if fdate_year < 1996
drop if fdate_year > 2018

gen log_at = log(1+at)
label variable log_at "Log of Total Assets\varend"

gen log_firmvalue_m365 = log(1+firmvalue_pm5)
label variable log_firmvalue_m365 "Log of Market Value\varend"
drop if missing(log_firmvalue_m365) == 1

gen log_firmretsd_m365 = log(1+firmretsd_m365)
label variable log_firmretsd_m365 "Log of Return Volatility\varend"

gen log_zip_distance = log(1+zip_distance)
label variable log_zip_distance "Log of Geographical Separation\varend"

gen abn_returns_pm5 = firmreturns_pm5 - vwreturns_filedate_pm5
label variable abn_returns_pm5 "[-5, +5] Abn. Returns\varend"

winsor abn_returns_pm5, gen(Wabn_returns_pm5) p(.01)
label variable Wabn_returns_pm5 "[-5, +5] Abn. Returns\varend"

egen cashflows = rowtotal(fincf ivncf oancf)
gen net_cashflows = cashflows/at
label variable net_cashflows "Net Cash Flows\varend"

* The renamed variables below are from the textual analysis and are renamed to reduce confusion with the metrics computed from Compustat.
rename roa roa_count
rename leverage leverage_count

replace ibc = 0 if missing(ibc)
gen roa = ibc/at
label variable roa "ROA\varend"

replace dv = 0 if missing(dv) | dv < 0
gen div_yield = (dv*1000000)/firmvalue_m365
label variable div_yield "Dividend Yield\varend"

replace dltt = 0 if missing(dltt)
replace dlc = 0 if missing(dlc)
gen leverage = (dltt+dlc)/(at)
replace leverage = 0 if missing(leverage)
label variable leverage "Leverage\varend"

replace ch = 0 if missing(ch)
replace che = 0 if missing(che)
gen cash = (ch+che)/at
replace cash = 0 if missing(cash)
label variable cash "Cash\varend"

gen mtb = (prcc_f*csho)/ceq
label variable mtb "Market:Book\varend"

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gen btm = ceq/(prcc_f*csho)
label variable btm "Book:Market\varend"

gen rnd = xrd/at if !missing(xrd)
replace rnd = 0 if missing(rnd) == 1
label variable rnd "R\&D\varend"

gen capex = capx/at if !missing(capx)
replace capex = 0 if missing(capex)
label variable capex "CAPEX\varend"

gen ii_holdings = ii_shares_pct
replace ii_holdings = 0 if missing(ii_holdings)
replace ii_holdings = 1 if ii_holdings > 1
label variable ii_holdings "Institutional Ownership\varend"

gen company_age = filedate - st_date
gen log_company_age = log(1+company_age)
label variable log_company_age "Log of Company Age\varend"

* Create block size variable (this must be changed from text format since it was
created in the textual analysis)
* Note: these are cross-checked with Audit Analytics
gen bsize = block_size
replace bsize = "" if strlen(bsize)>5
* Empty instances with more than one '.'
encode bsize, gen(bsize2)
recast float bsize2, force
* Remove leading zeros
gen bsize4 = substr(bsize, indexnot(bsize, "0"), .)
* Locate obs with more than one '.'
gen bsize5 = substr(bsize4,(strpos(bsize4,".")+1),strlen(bsize4))
* Set obs to zero if there is more than one decimal found
replace bsize4 = "" if strpos(bsize5,".") != 0
* Convert to string
destring bsize4, gen(bsize6)
* Adjust any huge values
replace bsize6 = 1 if (bsize6 > 100 & !missing(bsize6))
sum bsize6,d
drop block_size
rename bsize6 block_size
* Generate variable for missing block size
gen missing_block_size = 0
replace missing_block_size = 1 if missing(block_size)
* Set block size to zero for missing obs
replace block_size = 0 if missing(block_size)
label variable block_size "Blockholder Ownership Level\varend"
label variable missing_block_size "Missing Blockholder Ownership\varend"

* Create indicator for missing geographical location
gen missing_log_zip_distance = 0
replace missing_log_zip_distance = 1 if missing(log_zip_distance) == 1
replace log_zip_distance = 0 if missing(log_zip_distance) == 1
label variable missing_log_zip_distance "Missing Geographical Separation\varend"

gen intangibles = intan/(at)
replace intangibles = 0 if missing(intangibles)
label variable intangibles "Intangibles\varend"

replace analyst_following = 0 if missing(analyst_following)
label variable analyst_following "Analyst Following\varend"

gen log_analyst_following = log(1+analyst_following)
label variable log_analyst_following "Log of Analyst Following\varend"

* Contract variables (main variable is created in SAS)
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label variable iagreement "Shareholder Contract\varend"

* TABLE 1, Panel B: Statistics for investor type
* Filer category: BD = broker-dealer; BK = bank; IC = insurance company; IV = investment company; IA = investment adviser
* EP = employee benefit plan/endowment fund; HC = filer holding company; SA = savings association; CP = church plan; CO = corporation
* PN = partnership; OO = other
sum reporting_type_bd reporting_type_bk reporting_type_ic reporting_type_iv reporting_type_ia reporting_type_ep reporting_type_hc reporting_type_sa reporting_type_cp reporting_type_co reporting_type_pn reporting_type_oo

mean iagreement if reporting_type_bk == 1
mean iagreement if reporting_type_bk == 1 & iagreement == 1

mean iagreement if reporting_type_bd == 1
mean iagreement if reporting_type_bd == 1 & iagreement == 1

mean iagreement if reporting_type_co == 1
mean iagreement if reporting_type_co == 1 & iagreement == 1

mean iagreement if reporting_type_ep == 1
mean iagreement if reporting_type_ep == 1 & iagreement == 1

mean iagreement if reporting_type_hc == 1
mean iagreement if reporting_type_hc == 1 & iagreement == 1

mean iagreement if reporting_type_ic == 1
mean iagreement if reporting_type_ic == 1 & iagreement == 1

mean iagreement if reporting_type_ia == 1
mean iagreement if reporting_type_ia == 1 & iagreement == 1

mean iagreement if reporting_type_iv == 1
mean iagreement if reporting_type_iv == 1 & iagreement == 1

mean iagreement if reporting_type_pn == 1
mean iagreement if reporting_type_pn == 1 & iagreement == 1

mean iagreement if reporting_type_cp == 1
mean iagreement if reporting_type_cp == 1 & iagreement == 1

mean iagreement if reporting_type_sa == 1
mean iagreement if reporting_type_sa == 1 & iagreement == 1

mean iagreement if reporting_type_oo == 1
mean iagreement if reporting_type_oo == 1 & iagreement == 1

* Corporate owner definition
gen corporate = 0
replace corporate = 1 if reporting_type_co == 1 & !(reporting_type_hc == 1 | reporting_type_ia == 1 | reporting_type_iv == 1 | reporting_type_pn == 1 | reporting_type_cp == 1 | reporting_type_ep == 1)
label variable corporate "Corporate Investor\varend"

* Activist owner definition
gen noncorporate2 = 0
replace noncorporate2 = 1  if (reporting_type_hc == 1 | reporting_type_ia == 1 | reporting_type_iv == 1 | reporting_type_pn == 1) & !(reporting_type_cp == 1 | reporting_type_ep == 1)

* Winsorize variables one at a time (high only for variables with lower bound of zero)
winsor btm, gen(Wbtm) p(.01)
label variable Wbtm "Book:Market\varend"

winsor leverage, gen(Wleverage) p(.01) highonly
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label variable Wleverage "Leverage\varend"

winsor roa, gen(Wroa) p(.01)
label variable Wroa "ROA\varend"

winsor div_yield, gen(Wdiv_yield) p(.01) highonly
label variable Wdiv_yield "Dividend Yield\varend"

winsor intangibles, gen(Wintangibles) p(.01) highonly
label variable Wintangibles "Intangibles\varend"

winsor rnd, gen(Wrnd) p(.01) highonly
label variable Wrnd "R\&D\varend"

winsor cash, gen(Wcash) p(.01) highonly
label variable Wcash "Cash\varend"

winsor capex, gen(Wcapex) p(.01) highonly
label variable Wcapex "CAPEX\varend"

winsor log_company_age, gen(Wlog_company_age) p(.01) highonly
label variable Wlog_company_age "Log of Company Age\varend"

winsor abn_firmreturns_m365, gen(Wabn_firmreturns_m365) p(.01)
label variable Wabn_firmreturns_m365 "$[-365, -5)$ Abnormal Returns\varend"

winsor block_size, gen(Wblock_size) p(.01) highonly
label variable Wblock_size "Shareholder Ownership Level\varend"

winsor log_firmspread_m365, gen(Wlog_firmspread_m365) p(.01) highonly
label variable Wlog_firmspread_m365 "Log of Percent Bid-Ask Spread\varend"

winsor log_firmamihud_m365, gen(Wlog_firmamihud_m365) p(.01) highonly
label variable Wlog_firmamihud_m365 "Log of Amihud Illiquidity\varend"

winsor log_firmretsd_m365, gen(Wlog_firmretsd_m365) p(.01) highonly
label variable Wlog_firmretsd_m365 "Log of Return Volatility\varend"

winsor log_zip_distance, gen(Wlog_zip_distance ) p(.01) highonly
label variable Wlog_zip_distance "Log of Geographical Separation\varend"

winsor log_firmvalue_m365, gen(Wlog_firmvalue_m365) p(.01) highonly
label variable Wlog_firmvalue_m365 "Log of Market Value\varend"

winsor log_analyst_following, gen(Wlog_analyst_following) p(.01) highonly
label variable Wlog_analyst_following "Log of Analyst Following\varend"

winsor firmreturns_m365, gen(Wfirmreturns_m365) p(.01)
label variable Wfirmreturns_m365 "$[-365, -5)$ Returns\varend"

winsor ii_holdings, gen(Wii_holdings) p(.01) highonly
label variable Wii_holdings "Institutional Holdings\varend"

winsor net_cashflows, gen(Wnet_cashflows) p(.01)
label variable Wnet_cashflows "Net Cash Flows\varend"

* Create global variable to define variables used later
global controls_used "Wcash Wnet_cashflows Wdiv_yield Wbtm Wrnd Wcapex Wintangibles
Wlog_company_age Wleverage Wroa Wfirmreturns_m365 block_size missing_block_size
log_firmvalue_m365"

* Analysis of information rights in Section 5
gen private_info = (info_informationrights == 1 | info_accesstoinfo == 1 |
info_accessandinfo == 1 | info_accesstodocs == 1 | info_visitinspect == 1 |
info_communicationacct == 1 | info_fullaccess == 1)

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* Create variable that equals 1 if SC contains an accounting word
gen acct_word = 0
replace acct_word = 1 if (net_income == 1 | earnings == 1 | ebit == 1 | cash_flow == 1 | roa_count == 1 | roe == 1 | book_value == 1 | net_worth == 1 | leverage_count == 1 | current_ratio == 1)

* Included words
global acctwords "book_value cash_flow current_ratio earnings ebit leverage_count net_income net_worth roa_count roe acct_word"

* All words
label variable net_income "Net Income"
label variable earnings "Earnings"
label variable ebit "EBIT"
label variable cash_flow "Cash Flow"
label variable roa_count "Return on Assets"
label variable roe "Return on Equity"
label variable book_value "Book Value"
label variable net_worth "Net Worth"
label variable leverage_count "Leverage"
label variable current_ratio "Current Ratio"

* TABLE 1, Panel C: Statistics for year
tab raw_year
tab raw_year if iagreement == 1

tab raw_year if corporate == 1
tab raw_year if corporate == 1 & iagreement == 1

tab raw_year if noncorporate2 == 1
tab raw_year if noncorporate2 == 1 & iagreement == 1

* TABLE 1, Panel D: Statistics for industry
tab ind_code
tab ind_code if iagreement == 1

tab ind_code if corporate == 1
tab ind_code if iagreement == 1 & corporate == 1

tab ind_code if noncorporate2 == 1
tab ind_code if iagreement == 1 & noncorporate2 == 1

bysort ind_code: sum iagreement if corporate == 1
bysort ind_code: sum iagreement if noncorporate2 == 1

* Code for TABLE 1, Panel B is already provided above

* TABLE 5: Linguistic measure of contract complexity
mean flesch_reading_ease
mean flesch_reading_ease if iagreement == 1
mean flesch_reading_ease if corporate == 1 & iagreement == 1
mean flesch_reading_ease if noncorporate2 == 1 & iagreement == 1

* Define path to where tables are saved
global saveto "C:\Users\f00412r\Dropbox\Apps\ShareLaTeX\Shareholder Contracts\investoragreements\tables"

*****
eststo clear

global descriptives "iagreement Wlog_zip_distance missing_log_zip_distance Wlog_firmretsd_m365 ii_holdings Wlog_analyst_following $controls_used"

* TABLE 1, Panel A: n, means, s.d., and test for differences in descriptive statistics
eststo all: quietly estpost summarize ///
    $descriptives
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```
eststo iagreement: quietly estpost summarize ///
    $descriptives if iagreement == 1

eststo corporate: quietly estpost summarize ///
    $descriptives if corporate == 1
eststo corporatei: quietly estpost summarize ///
    $descriptives if iagreement == 1 & corporate == 1

eststo noncorporate2: quietly estpost summarize ///
    $descriptives if noncorporate2 == 1
eststo noncorporate2i: quietly estpost summarize ///
    $descriptives if iagreement == 1 & noncorporate2 == 1

eststo diff: quietly estpost ttest ///
    $descriptives, by(iagreement) unequal

esttab all iagreement corporate corporatei noncorporate2 noncorporate2i using "$saveto\descriptives.tex", ///
    cells("count(pattern(1 1 1 1 1 1 0) fmt(%20.0fc) label(N)) mean(pattern(1 1 1 1 1 1 0) label(Mean) fmt(3)) sd(pattern(0 0 0 0 0 0 0) label($\sigma$) fmt(2)) t(pattern(0 0 0 0 0 0 0) abs label(Diff.) par fmt(2))") ///
    booktabs replace label nonote mtitle("All 13D\varendone" "13D w/ SC\varendtwo" "Corp.\ 13D\varendthree" "Corp.\ 13D w/ SC\varendfour" "Activ.\ 13D\varendfive" "Activ.\ 13D w/ SC\varendsix") nonumber noobs collabels(,lhs("Variable"))

* TABLE 5: Linguistic measure of accounting based-covenants
eststo clear
* Descriptives for accounting words
eststo all: quietly estpost summarize ///
    $acctwords
eststo iagreement: quietly estpost summarize ///
    $acctwords if iagreement == 1
eststo corpiagreement: quietly estpost summarize ///
    $acctwords if corporate == 1 & iagreement == 1
eststo actiagreement: quietly estpost summarize ///
    $acctwords if noncorporate2 == 1 & iagreement == 1
eststo diff: quietly estpost ttest ///
    $acctwords if missing(ind_corporate) != 1 & iagreement == 1, by(ind_corporate) unequal
esttab all iagreement corpiagreement actiagreement diff using "$saveto\acctword.tex", ///
    cells("mean(pattern(1 1 1 1 0) label(with Word\varend) fmt(3)) t(pattern(0 0 0 0 1) abs label(Diff.) par fmt(2))") ///
    booktabs replace label nonote mtitle("Fraction of all 13Ds" "Fraction of 13Ds with SCs" "Corporate 13D w/ SC" "Activist 13D w/ SC") nonumber noobs collabels(,lhs("Word\varend"))

* TABLE 2: Regressions with fixed effects
eststo clear
* All 13D
eststo all13d: reghdfe iagreement corporate Wlog_zip_distance missing_log_zip_distance Wlog_firmretsd_m365 ii_holdings Wlog_analyst_following $controls_used, vce(robust) absorb(raw_year ind_code)
estadd local yfixed "Y"
estadd local industryfe "Y"

* Corporate 13D
eststo corpreg1: reghdfe iagreement Wlog_zip_distance missing_log_zip_distance Wlog_firmretsd_m365 ii_holdings Wlog_analyst_following $controls_used if corporate == 1, vce(robust) absorb(raw_year ind_code)
estadd local yfixed "Y"
estadd local industryfe "Y"

* Activist 13D
eststo activist1: reghdfe iagreement Wlog_zip_distance missing_log_zip_distance Wlog_firmretsd_m365 ii_holdings Wlog_analyst_following $controls_used if noncorporate2 == 1, vce(robust) absorb(raw_year ind_code)
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```
estadd local yfixed "Y"
estadd local industryfe "Y"

esttab all13d corpreg1 activist1 using "$saveto\regressions.tex", ///
    nonotes stats(yfixed industryfe  N r2, label("Year-Fixed Effects" "Industry-Fixed Effects" "Observations" "\$R^2$") fmt(0 0 %20.0fc 2)) label replace t(2) b(3) se star(* 0.10 ** 0.05 *** 0.01) booktabs noconstant wide collabels(none) eqlabels(none) mtitle("All 13D" "Corporate 13D" "Activist 13D") ///
    drop(_cons) order(corporate Wlog_zip_distance missing_log_zip_distance Wlog_firmretsd_m365 ii_holdings Wlog_analyst_following $controls_used) ///
    mgroups("Dependent Variable: Shareholder Contract\varend", prefix(\multicolumn{@span}{c}{) suffix(}) span erepeat(\cmidrule(lr){@span}))

* TABLE 3: Regressions and industry analysis
eststo clear
eststo ind1: reg iagreement ind_code1 corporate Wlog_zip_distance missing_log_zip_distance Wlog_firmretsd_m365 ii_holdings Wlog_analyst_following $controls_used, robust absorb(raw_year)
estadd local othervar "Y"
estadd local yfixed "Y"
estadd local industryfe "N"

eststo ind2: reg iagreement ind_code2 corporate Wlog_zip_distance missing_log_zip_distance Wlog_firmretsd_m365 ii_holdings Wlog_analyst_following $controls_used, robust absorb(raw_year)
estadd local othervar "Y"
estadd local yfixed "Y"
estadd local industryfe "N"

eststo ind3: reg iagreement ind_code3 corporate Wlog_zip_distance missing_log_zip_distance Wlog_firmretsd_m365 ii_holdings Wlog_analyst_following $controls_used, robust absorb(raw_year)
estadd local othervar "Y"
estadd local yfixed "Y"
estadd local industryfe "N"

eststo ind4: reg iagreement ind_code4 corporate Wlog_zip_distance missing_log_zip_distance Wlog_firmretsd_m365 ii_holdings Wlog_analyst_following $controls_used, robust absorb(raw_year)
estadd local othervar "Y"
estadd local yfixed "Y"
estadd local industryfe "N"

eststo ind5: reg iagreement ind_code5 corporate Wlog_zip_distance missing_log_zip_distance Wlog_firmretsd_m365 ii_holdings Wlog_analyst_following $controls_used, robust absorb(raw_year)
estadd local othervar "Y"
estadd local yfixed "Y"
estadd local industryfe "N"

eststo ind6: reg iagreement ind_code6 corporate Wlog_zip_distance missing_log_zip_distance Wlog_firmretsd_m365 ii_holdings Wlog_analyst_following $controls_used, robust absorb(raw_year)
estadd local othervar "Y"
estadd local yfixed "Y"
estadd local industryfe "N"

eststo ind7: reg iagreement ind_code7 corporate Wlog_zip_distance missing_log_zip_distance Wlog_firmretsd_m365 ii_holdings Wlog_analyst_following $controls_used, robust absorb(raw_year)
estadd local othervar "Y"
estadd local yfixed "Y"
estadd local industryfe "N"

eststo ind8: reg iagreement ind_code8 corporate Wlog_zip_distance missing_log_zip_distance Wlog_firmretsd_m365 ii_holdings Wlog_analyst_following
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$controls_used, robust absorb(raw_year)
estadd local othervar "Y"
estadd local yfixed "Y"
estadd local industryfe "N"

eststo ind9: reg iagreement ind_code9 corporate Wlog_zip_distance missing_log_zip_distance Wlog_firmretsd_m365 ii_holdings Wlog_analyst_following $controls_used, robust absorb(raw_year)
estadd local othervar "Y"
estadd local yfixed "Y"
estadd local industryfe "N"

eststo ind10: reg iagreement ind_code10 corporate Wlog_zip_distance missing_log_zip_distance Wlog_firmretsd_m365 ii_holdings Wlog_analyst_following $controls_used, robust absorb(raw_year)
estadd local othervar "Y"
estadd local yfixed "Y"
estadd local industryfe "N"

eststo ind11: reg iagreement ind_code11 corporate Wlog_zip_distance missing_log_zip_distance Wlog_firmretsd_m365 ii_holdings Wlog_analyst_following $controls_used, robust absorb(raw_year)
estadd local othervar "Y"
estadd local yfixed "Y"
estadd local industryfe "N"

eststo ind12: reg iagreement ind_code12 corporate Wlog_zip_distance missing_log_zip_distance Wlog_firmretsd_m365 ii_holdings Wlog_analyst_following $controls_used, robust absorb(raw_year)
estadd local othervar "Y"
estadd local yfixed "Y"
estadd local industryfe "N"

esttab ind1 ind2 ind3 ind4 ind5 ind6 ind7 ind8 ind9 ind10 ind11 ind12 using "$saveto\regressions_industry.tex", ///
    nonotes stats(othervar yfixed N r2, label("\tabledeterminants~Variables Included" "Year-Fixed Effects" "Observations" "\$R^2$") fmt(0 0 %20.0fc 2)) label replace t(2) b(3) se star(* 0.10 ** 0.05 *** 0.01) booktabs noconstant collabels(none) eqlabels(none) mlabels(none) ///
    drop(_cons corporate Wlog_zip_distance missing_log_zip_distance Wlog_firmretsd_m365 ii_holdings Wlog_analyst_following $controls_used) ///
    order(ind_code1 ind_code2 ind_code3 ind_code4 ind_code5 ind_code6 ind_code7 ind_code8 ind_code9 ind_code10 ind_code11 ind_code12) ///
    mgroups("Dependent Variable: Shareholder Contract\varend~(All 13D)", prefix(\multicolumn{@span}{c}{) suffix(}) span erepeat(\cmidrule(lr){@span}))

* TABLE 4: Returns
ttest Wabn_returns_pm5 = 0
ttest Wabn_returns_pm5 = 0 if iagreement == 1
ttest Wabn_returns_pm5 = 0 if iagreement == 0

ttest Wabn_returns_pm5 = 0 if corporate == 1
ttest Wabn_returns_pm5 = 0 if corporate == 1 & iagreement == 1
ttest Wabn_returns_pm5 = 0 if corporate == 1 & iagreement == 0

ttest Wabn_returns_pm5 = 0 if noncorporate2 == 1
ttest Wabn_returns_pm5 = 0 if noncorporate2 == 1 & iagreement == 1
ttest Wabn_returns_pm5 = 0 if noncorporate2 == 1 & iagreement == 0

* Ending notes: Table 5 tables are produced above. Table 6 is created manually.

* End of code
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