DATA ANALYSIS REPORT

Data Inspection

. inspect cshr

cshr: Number of Observations

------- ---------------------------------------

Total Integers Nonintegers

| Negative - - -

| Zero - - -

| Positive - - -

| ----------- ----------- -----------

| Total - - -

| Missing 229,371

+---------------------- -----------

. -9.0e+307 229,371

(0 unique value)

.

Shareholders Data

. codebook cshr

--------------------------------------------------------------------------------------------------------

cshr (unlabeled)

--------------------------------------------------------------------------------------------------------

type: string (str10)

unique values: 25,332 missing "": 0/229,371

examples: "0.702"

"11"

"4.417"

"NA"

.

Shareholders for CSHO

. codebook csho

--------------------------------------------------------------------------------------------------------

csho (unlabeled)

--------------------------------------------------------------------------------------------------------

type: string (str9)

unique values: 60,267 missing "": 0/229,371

examples: "11.009"

"2.438"

"3.963"

"53.571"

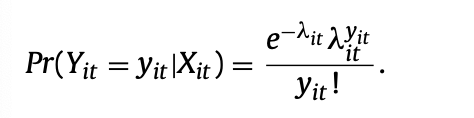
.

DATASET VARIABLES OF INTEREST

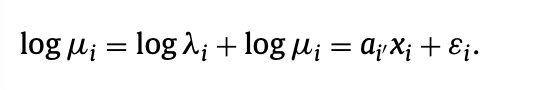
1. Date Date
2. cusip: ID\_CUSIP
3. Acctstd: accounting Standard
4. acqniintc: Net Interest Income Contribution
5. che: Cash Equivalents
6. bcltbl: Benefits and Claims - Total (Business Line)
7. bcnlr: Benefits Ceded - Nonlife
8. ci: Comprehensive Income – Total
9. dcvsr: Debt - Senior Convertible
10. dd1: Long-Term Debt Due in One Year
11. do: Disc Operations
12. dt: Debt tax
13. ea: Earnings
14. emp: Estimated Market Price
15. mrc3: Rental Commitments - Minimum – 3rd Year
16. mrc4: Rental Commitments - Minimum – 4th Year
17. pncwia: Core Pension w/o Interest Adjustment After-tax
18. pncwid: Core Pension w/o Interest Adjustment Diluted EPS Effect
19. pncwieps: Core Pension w/o Interest Adjustment Basic EPS Effect
20. prstkc: Purchase of Common and Preferred Stock
21. pvpl: Provision - Pension Liabilities
22. re: Retained Earnings
23. ulcm: Current Liabilities – Miscellaneous
24. upmpfs: Premium on Preferred Stock\*
25. uxinst: Interest On Short-Term Debt – Utility
26. wda: Writedowns After-tax
27. City:
28. county
29. dlrsn: Research Co Reason for Deletion
30. fax:
31. Phone:
32. State
33. financialyear:
34. l3\_numpatents:
35. l3\_ncites

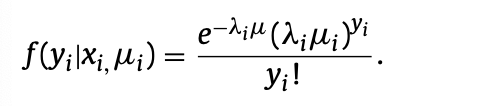
DATA MODELLING

Poisson Model



Negative Binomial Model





STRUCTURE OF DATA UNDER ANALYSIS

. codebook l3\_numpatents gp sale linkdt dltt intan capx aqs

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l3\_numpatents (unlabeled)

--------------------------------------------------------------------------------------------------------

type: numeric (int)

range: [0,4422] units: 1

unique values: 876 missing .: 0/229,371

mean: 6.74919

std. dev: 65.2302

percentiles: 10% 25% 50% 75% 90%

0 0 0 0 4

--------------------------------------------------------------------------------------------------------

gp (unlabeled)

--------------------------------------------------------------------------------------------------------

type: string (str9)

unique values: 118,917 missing "": 0/229,371

examples: "123.693"

"210.532"

"383.37"

"662.506"

--------------------------------------------------------------------------------------------------------

sale (unlabeled)

--------------------------------------------------------------------------------------------------------

type: string (str10)

unique values: 150,963 missing "": 0/229,371

examples: "146.148"

"24.751"

"4.924"

"68.846"

--------------------------------------------------------------------------------------------------------

linkdt (unlabeled)

--------------------------------------------------------------------------------------------------------

type: string (str10)

unique values: 7,001 missing "": 0/229,371

examples: "1966-09-12"

"1974-05-01"

"1985-08-14"

"1993-03-04"

--------------------------------------------------------------------------------------------------------

dltt (unlabeled)

--------------------------------------------------------------------------------------------------------

type: string (str10)

unique values: 88,850 missing "": 0/229,371

examples: "0.215"

"1398"

"29.636"

"58.011"

--------------------------------------------------------------------------------------------------------

intan (unlabeled)

--------------------------------------------------------------------------------------------------------

type: string (str10)

unique values: 45,546 missing "": 0/229,371

examples: "0"

"0.052"

"19.689"

"792.4"

--------------------------------------------------------------------------------------------------------

capx (unlabeled)

--------------------------------------------------------------------------------------------------------

type: string (str9)

unique values: 56,988 missing "": 0/229,371

examples: "0.6"

"137.291"

"3.661"

"72.2"

--------------------------------------------------------------------------------------------------------

aqs (unlabeled)

--------------------------------------------------------------------------------------------------------

type: string (str9)

unique values: 14,174 missing "": 0/229,371

examples: "0"

"0"

"2.813"

"NA"

.

. cii means 100 229371, poisson

-- Poisson Exact --

Variable | Exposure Mean Std. Err. [95% Conf. Interval]

-------------+---------------------------------------------------------------

| 100 2293.71 4.789269 2284.333 2303.116

. summarize cshr csho acqcshi cshtr\_c l3\_numpatents financialyear naics fyrc adjex\_f auop

Variable | Obs Mean Std. Dev. Min Max

-------------+---------------------------------------------------------

cshr | 0

csho | 0

acqcshi | 0

cshtr\_c | 0

l3\_numpate~s | 229,371 6.749192 65.2302 0 4422

-------------+---------------------------------------------------------

financialy~r | 229,371 1988.142 11.80331 1950 2005

naics | 208,831 395700.9 173488 21 999990

fyrc | 229,371 9.818076 3.421918 1 12

adjex\_f | 0

auop | 171,896 1.57593 1.146448 0 5

INSPECT STRUCTURE OF THE DATA VARIABLE

. inspect l3\_numpatents gp sale linkdt dltt intan capx aqs

l3\_numpatents: Number of Observations

---------------- ---------------------------------------

Total Integers Nonintegers

| # Negative - - -

| # Zero 182,977 182,977 -

| # Positive 46,394 46,394 -

| # ----------- ----------- -----------

| # Total 229,371 229,371 -

| # . . . . Missing -

+---------------------- -----------

0 4422 229,371

(More than 99 unique values)

gp: Number of Observations

----- ---------------------------------------

Total Integers Nonintegers

| Negative - - -

| Zero - - -

| Positive - - -

| ----------- ----------- -----------

| Total - - -

| Missing 229,371

+---------------------- -----------

. -9.0e+307 229,371

(0 unique value)

sale: Number of Observations

------- ---------------------------------------

Total Integers Nonintegers

| Negative - - -

| Zero - - -

| Positive - - -

| ----------- ----------- -----------

| Total - - -

| Missing 229,371

+---------------------- -----------

. -9.0e+307 229,371

(0 unique value)

linkdt: Number of Observations

--------- ---------------------------------------

Total Integers Nonintegers

| Negative - - -

| Zero - - -

| Positive - - -

| ----------- ----------- -----------

| Total - - -

| Missing 229,371

+---------------------- -----------

. -9.0e+307 229,371

(0 unique value)

dltt: Number of Observations

------- ---------------------------------------

Total Integers Nonintegers

| Negative - - -

| Zero - - -

| Positive - - -

| ----------- ----------- -----------

| Total - - -

| Missing 229,371

+---------------------- -----------

. -9.0e+307 229,371

(0 unique value)

intan: Number of Observations

-------- ---------------------------------------

Total Integers Nonintegers

| Negative - - -

| Zero - - -

| Positive - - -

| ----------- ----------- -----------

| Total - - -

| Missing 229,371

+---------------------- -----------

. -9.0e+307 229,371

(0 unique value)

capx: Number of Observations

------- ---------------------------------------

Total Integers Nonintegers

| Negative - - -

| Zero - - -

| Positive - - -

| ----------- ----------- -----------

| Total - - -

| Missing 229,371

+---------------------- -----------

. -9.0e+307 229,371

(0 unique value)

aqs: Number of Observations

------ ---------------------------------------

Total Integers Nonintegers

| Negative - - -

| Zero - - -

| Positive - - -

| ----------- ----------- -----------

| Total - - -

| Missing 229,371

+---------------------- -----------

. -9.0e+307 229,371

(0 unique value)

.

CHARACTERISTICS OF INNOVATION ACTIVITIES OF FIRMS BY INDUSTRY

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Characteristics of Innovation activities of firms by industry | | | | | |
| Industries | Mean | Median | Lowest | Highest | Sum (sum/total) |
| Textile |  |  |  |  |  |
| Automotive |  |  |  |  |  |
| Chemical |  |  |  |  |  |
| Electronics |  |  |  |  |  |
| Mechanics |  |  |  |  |  |
| … |  |  |  |  |  |

DESCRIPTIVE STATISTICS

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Descriptive statistics | | | | | |
| Variables | Unit | Mean | Std. Dev | Lowest | Highest |
| Patent | Number |  |  |  |  |
| Asset | Log |  |  |  |  |
| ROA | Number of years |  |  |  |  |
| Sales growth | Percent |  |  |  |  |
| Leverage | Percent |  |  |  |  |
| R&D intensity | Percent |  |  |  |  |
| Business groups | Dummy |  |  |  |  |
| Insider ownership | Percent |  |  |  |  |

CORRELATION STATISTICS

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Correlation statistics | | | | | |
| Variables |  |  |  |  |  |
| Patent |  |  |  |  |  |
| Asset |  |  |  |  |  |
| ROA |  |  |  |  |  |
| Sales growth |  |  |  |  |  |
| Leverage |  |  |  |  |  |
| R&D intensity |  |  |  |  |  |
| Business groups |  |  |  |  |  |
| Insider ownership |  |  |  |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Negative binomial analysis | | | | | |
| Explanatory Variables | Hypotheses |  |  |  |  |
| Insider Ownership | H1 |  |  |  |  |
|  |  |  |  |  |  |
| Control variables |  |  |  |  |  |
| Asset |  |  |  |  |  |
| ROA |  |  |  |  |  |
| Sales growth |  |  |  |  |  |
| Leverage |  |  |  |  |  |
| R&D intensity |  |  |  |  |  |
| Business groups |  |  |  |  |  |
| … |  |  |  |  |  |

Negative binomial analysis

1. Whether is more easy way to do this, or to replace Poisson Distribution (such as Pearson/OLS as backup plan)

The OLS model is more easy to implement than the Poisson Distribution

1. For testing two, could I just use regression of insider ownership and firm size

No .There are a lot of variable is place and choosing two variables would be like working in a blind environment that is shut from other influence factors.

1. Concerning industries? Automobile/Pharmaceutical/Communication…

Automobile Industries and Pharmaceutical Companies withstand the test of time