**Boardex Manager and Firm Level Panel Documentation**

**Manager-Level Panel**

Get variable on whether a manager has worked in a ‘finance’ sector

* Import board summary dataset
* Drop rows with duplicate ['DirectorID\*', 'Individual Name', 'Sector'], to get a dataset where each row contains a unique (director, sector) pair
* Set ‘worked\_in\_finance’ = 1 if sector is one of the following: ['Banks', 'Investment Companies', 'Private Equity']
* Get a list of unique directorIDs corresponding to the directors who worked in finance
* Add a column to board summary, 'director\_worked\_in\_finance', which equals 1 if the directorID appears in the above-mentioned list.

Pre-process board summary

* Import board summary dataset
* Drop rows with duplicate ['DirectorID\*', 'Individual Name'], to get a dataset where each row contains a unique director. This is the base of the manager level panel.

Get variable on whether a manager has been a CEO / CFO

* Get a list of all unique roles from the ‘Individual Role’ column
* Get a list of ceo roles where the role is included if it starts with ceo, e,g, ‘CEO’, ‘CEO/MD’
* Get a list of cfo roles where the role is included if it starts with ceo, e,g, ‘CFO, ‘CFO/Chief Administration Officer’
* Add a ceo and cfo column to the pre-processed board summary where variable = 1 if the role name is in the list of ceo / cfo roles, respectively.
* Get a list of directorIDs who have been CEOs, and CFOs before.

Get director characteristics

* Import director characteristics dataset
* Merge with pre-processed board summary to add [‘Age’, ‘DOB’, ‘Nationality’] columns
* Groupby ['DirectorID\*', 'Individual Name', ‘DOB’], and apply the functions ['Age':'max', 'Nationality':'first'] to the remaining variables

Get education characteristics

* Import education characteristics dataset
* Groupby ['DirectorID\*', 'Individual Name'], and apply the functions ['Country':list, 'InstitutionID\*':list, 'Institution Name':list, 'Company Type':list, 'Qualification':list, 'Qualification Description':list] to the remaining variables
* Merge with latest board summary to add the education qualifications variables
* Get number of qualifications

Get achievements

* Import achievements dataset
* Groupby ['DirectorID\*', 'Individual Name'], and apply the functions ['Country':list, 'OrganisationID\*':list, 'OrganisationName':list, 'Achievement Date':list, 'Award/Achievement':list] to the remaining variables
* Merge with latest board summary to add the acheivements variables
* Get number of achievements

Get total and average time on board

* Import board summary dataset
* Annual Report Year: replace ‘Current’ with ‘May 2021’
* Extract month and year from annual report year
* Groupby ['DirectorID\*', 'Individual Name', 'CompanyID\*'] and apply the function ['Month':'count'] to each group of (director, company), to get the total number of months each director worked at each company
* Then, groupby ['DirectorID\*', 'Individual Name'] twice, once to get the mean and once to get the total number of months each director was on board.
* Merged with latest board summary to add the ‘ave\_time\_on\_board\_months’ and ‘sum\_time\_on\_board\_months’ variables

Save

* Save as csv

**Firm-Level Panel**

Pre-process board summary

* Import board summary dataset
* Annual Report Year: replace ‘Current’ with ‘May 2021’
* Extract month and year from annual report year
* Filter year >= 2002
* Get a table where (1 firm, 1 year) = 1 row. This is the base of the firm level panel. Drop director-related variables ('Director Type', 'DirectorID\*', 'Individual Name', 'Individual Role') to get the firm information.

Get banker for company

* Import company details dataset, get columns ['CompanyID\*', 'Bankers']

Get mean values for manager-related variables

* Import manager-level dataset, get ID
* Merge manager-level dataset with board summary on ‘DirectorID\*’
* Groupby ['CompanyID\*', 'Company Name'] and apply the mean function on the following variables: ['number\_of\_qualifications':'mean', 'number\_of\_achievements':'mean', 'ave\_time\_on\_board\_months':'mean', 'sum\_time\_on\_board\_months':'mean']

Get top 3 nationalities

* Using the manager-level dataset, get the DirectorID\* and nationality column.
* Merge board summary with nationality to get nationalities for every director.
* Groupby ['CompanyID\*', 'Company Name'] and apply a function to each group of directors associated with a company get the top 3 most common nationalities.

Merge

* Merge the new columns with the board summary
* Save as csv