**BoardEx and ExecuComp Project Documentation (100322)**

Summary of Main Processing Pipeline

|  |  |  |
| --- | --- | --- |
|  | Task | Comments |
| **1** | **Get ISINs and Company Names for Firms of Interest** | |
| 1.1 | Start with a table of gvkeys and ISINs (“firms of interest”), and save the list of gvkeys as a .txt file. |  |
| 1.2 | Search on WRDS using the gvkeys with no ISINs to get the ISINs. Multiple ISINs usually appear for every gvkey. These ISINs were added to the ISINs of interest. |  |
| 1.3 | Search on WRDS using all gvkeys to get the company names. These company names were added as an additional variable to the firms of interest. |  |
| **2** | **Download ExecuComp Data from WRDS** | |
| 2.1 | The “ExecuComp Data” comprises 15 tables. For tables that can be queried using gvkeys, the list of gvkeys was provided and the data downloaded. For tables that cannot be queried using gvkeys, the full dataset was downloaded on SAS Studio. | * The date range was set to be as close as possible to 2000-current. * All files are in .sas7bdat. |
| **3** | **Download BoardEx Data on Box** | |
| 3.1 | The “BoardEx Data” comprises 116 tables: 4 regions (NA, Europe, ROW, UK), each with the same set of 29 tables. | * The WRDS account does not have access to BoardEx data on WRDS. Instead, the data is downloaded from a Box folder maintained by Booth, named ‘BoardEx\_Rest\_of\_World\_2021’. * All files are in .xlsx. |
| 3.2 | Open “Board Summary.xlsx” for all 4 regions, and collate a table of CompanyIDs, ISINs and Company Names. After removing duplicates (i.e. entries where all 3 fields are the same), there are 37323 entries. | * Checks described below. |
| 3.3 | First check if the ISINs of interest match the BoardEx ISINs. While most boardex ISINs appear only once, a few appear twice, and 5 such ISINs matched the ISINs of interest. 1 case had the 2 ISINs refer to different firms (the wrong one was replaced with the correct one), while the other 4 cases had the 2 ISINs refer to the same firm (the second ISIN was added). |  |
| 3.4 | The unmatched gvkeys were then filtered out. Fuzzy matching was done between the company names from WRDS and the company names in BoardEx. The top 2 matches in BoardEx were saved, and manual comparison was done to check for matches. The gvkeys of the matched firms were then linked to the company IDs in BoardEx. |  |
| 3.5 | Save the final list of company IDs as a .xlsx file. |  |
| **4** | **Filter BoardEx files based on the company IDs.** | |
| 4.1 | Filter BoardEx files based on the company IDs. The processing is done on Mercury, sped up with multiple job submission and parallelized code. The code will do nothing for files without “company ID” as a variable. |  |
| 4.2 | For each file type (e.g. Europe Compensation), combine the filtered segments into a bigger file. |  |

Details of ExecuComp Tables

|  |  |
| --- | --- |
| **Table** | **Status** |
| ANNCOMP | Web Query, Non-Empty Result |
| CODIRFIN | Web Query, Non-Empty Result |
| COLEV | SAS Studio |
| COPEROL | SAS Studio |
| DEFERREDCOMP | Web Query, Non-Empty Result |
| DIRECTORCOMP | Web Query, Non-Empty Result |
| EXNAMES | SAS Studio |
| EX\_BLACK | SAS Studio |
| EX\_HEADER | SAS Studio |
| LTAWDTAB | Web Query, Non-Empty Result |
| OUTSTANDINGAWARDS | Web Query, Non-Empty Result |
| PENSION | Web Query, Non-Empty Result |
| PERSON | SAS Studio |
| PLANBASEDAWARDS | Web Query, Empty Result |
| STGRTTAB | Web Query, Non-Empty Result |

Details of ExecuComp Tables

* Of the 29 tables, there are 13 tables for Directors, 13 analogous tables for SMDE (Senior Management, Disclosed Earners), and 3 separate tables (which should be for both Directors and SMDEs).
* The total size of all 29 tables is ~150GB. Big tables are split into multiple files.

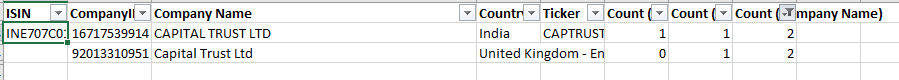
Checks for Boardex “Board Summary.xlsx”

* All company IDs are unique.
* 11864 entries don’t have an ISIN. 35 ISINs appeared twice. All the other ISINs appeared once.
* The “ISIN” of a few entries is actually a list of multiple ISINs, e.g. “DE0006211162, DE0006211170, … US0727352025”.
* After checking the 35 ISINs against the ISINs of interest, there are 5 matches. The actions taken are described as follows:

|  |  |  |  |
| --- | --- | --- | --- |
| **ISIN** | **CompanyID\*** | **Company Name** | **Action Taken** |
| AU000000AFG9 | 7.86E+09 | ALLCO FINANCE GROUP LTD (Record Investments Ltd prior to 07/2006) (De-listed 09/2009) | Initial Match, Removed |
| AU000000AFG9 | 2.36E+10 | AUSTRALIAN FINANCE GROUP LTD (AFG) | Added |
| US00770C1018 | 21032458 | ADVANCED EMISSIONS SOLUTIONS INC (ADA-ES Inc prior to 07/2013) (De-listed 02/2015) | Initial Match, Retained |
| US00770C1018 | 2.56E+10 | ADVANCED EMISSIONS SOLUTIONS INC | Added |
| US0453271035 | 1.71E+11 | ASPEN TECHNOLOGY INC | Initial Match, Retained |
| US0453271035 | 5.44E+08 | ASPEN TECHNOLOGY INC (De-listed 02/2008) | Added |
| US41043F2083 | 2.03E+08 | HANGER INC (Hanger Orthopedic Group Inc prior to 06/2012) (De-listed 02/2016) | Initial Match, Retained |
| US41043F2083 | 3.07E+11 | HANGER INC | Added |
| US5298981086 | 1.71E+11 | LIBBEY INC (De-listed 06/2020) | Initial Match, Retained |
| US5298981086 | 2.57E+09 | LIBBEY INC (De-listed 04/2009) | Added |

* All company names are unique, except for “CAPITAL TRUST LTD” which appeared twice. However, there are companies with duplicate entries, under names like “COMVERSE TECHNOLOGY INC (De-listed 02/2007)” and “COMVERSE TECHNOLOGY INC (De-listed 02/2013)”. These entries will have different company IDs but the same ISIN.

Screenshots



|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **ISIN** | **CompanyID\*** | **Company Name** | **Country** | **Ticker** | **Count (ISIN)** | **Count (Company ID)** | **Count (Company Name)** |
| AU000000AFG9 | 7.86E+09 | ALLCO FINANCE GROUP LTD (Record Investments Ltd prior to 07/2006) (De-listed 09/2009) | Australia | AFG | 2 | 1 | 1 |
| AU000000AFG9 | 2.36E+10 | AUSTRALIAN FINANCE GROUP LTD (AFG) | Australia | AFG | 2 | 1 | 1 |
| AU000000MYO9 | 2.36E+10 | MYOB GROUP LTD (De-listed 05/2019) | Australia | MYO | 2 | 1 | 1 |
| AU000000MYO9 | 1.07E+10 | MYOB LTD (De-listed 01/2009) | Australia | MYO | 2 | 1 | 1 |
| AU000000NEC4 | 2.11E+10 | NINE ENTERTAINMENT CO HOLDINGS LTD | Australia | NEC | 2 | 1 | 1 |
| AU000000NEC4 | 1.71E+11 | NORTHERN ENERGY CORPORATION LTD (Poltech International Ltd prior to 02/2005) (De-listed 10/2011) | Australia | NEC | 2 | 1 | 1 |
| AU000000PCG4 | 6.62E+09 | PCH GROUP LTD (De-listed 12/2007) | Australia | PCG | 2 | 1 | 1 |
| AU000000PCG4 | 2.14E+08 | PENGANA CAPITAL GROUP LTD (Hunter Hall International Ltd prior to 06/2017) | Australia | PCG | 2 | 1 | 1 |
| CA89677E1043 | 1.06E+10 | TRISTAR OIL & GAS LTD (Real Resources Inc prior to 08/2007) (De-listed 10/2009) | Canada | TOG | 2 | 1 | 1 |
| CA89677E1043 | 6.83E+09 | TRISTAR OIL & GAS LTD (De-listed 08/2007) | Canada | TOG | 2 | 1 | 1 |
| DE0003639670, … DE0008047952 | 64899127 | LANDESBANK BERLIN HOLDING AG (Bankgesellschaft Berlin prior to 08/2006) (De-listed 08/2012) | Germany | BEB2 | #VALUE! | 1 | 1 |
| DE0006211162, … US0727352025 | 6.74E+08 | BAYERISCHE HYPO-UND VEREINSBANK AG (HVB) (De-listed 09/2008) | Germany | HVM | #VALUE! | 1 | 1 |
| GB0031880445 | 1.72E+11 | BRIGHT FUTURES GROUP PLC (De-listed 02/2013) | United Kingdom - England |  | 2 | 1 | 1 |
| GB0031880445 | 6.05E+10 | BRIGHT FUTURES GROUP PLC (De-listed 10/2007) | United Kingdom - England |  | 2 | 1 | 1 |
| GB00B09JC675 | 7.03E+10 | JARLWAY HLDGS PLC (De-listed 11/2008) | China | PFIT | 2 | 1 | 1 |
| GB00B09JC675 | 2.2E+10 | PRESSFIT HOLDINGS PLC (De-listed 01/2015) | United Kingdom - England | PFIT | 2 | 1 | 1 |
| GB00B9276C59 | 2.91E+11 | TECTONIC GOLD PLC | Australia |  | 2 | 1 | 1 |
| GB00B9276C59 | 6.63E+09 | STRATMIN GLOBAL RESOURCES PLC (Woodburne Square AG PLC prior to 03/2012) (De-listed 08/2017) | United Kingdom - England |  | 2 | 1 | 1 |
| IL0010828825 | 5.73E+08 | ATTUNITY LTD (De-listed 02/2008) | Israel | ATTU | 2 | 1 | 1 |
| IL0010828825 | 1.94E+11 | ATTUNITY LTD (De-listed 05/2019) | Israel | ATTU | 2 | 1 | 1 |
| NO0010019649 | 2.75E+11 | EVRY ASA (De-listed 12/2019) | Norway | EVRY | 2 | 1 | 1 |
| NO0010019649 | 1.51E+08 | EVRY ASA (EDB ErgoGroup ASA prior to 04/2012) (De-listed 11/2015) | Norway | EVRY | 2 | 1 | 1 |
| US00770C1018 | 21032458 | ADVANCED EMISSIONS SOLUTIONS INC (ADA-ES Inc prior to 07/2013) (De-listed 02/2015) | United States | ADES | 2 | 1 | 1 |
| US00770C1018 | 2.56E+10 | ADVANCED EMISSIONS SOLUTIONS INC | United States | ADES | 2 | 1 | 1 |
| US0431361007 | 1.71E+11 | ARTHROCARE CORP (De-listed 05/2014) | United States | ARTC | 2 | 1 | 1 |
| US0431361007 | 5.22E+08 | ARTHROCARE CORP (De-listed 01/2009) | United States | ARTC | 2 | 1 | 1 |
| US0453271035 | 1.71E+11 | ASPEN TECHNOLOGY INC | United States | AZPN | 2 | 1 | 1 |
| US0453271035 | 5.44E+08 | ASPEN TECHNOLOGY INC (De-listed 02/2008) | United States | AZPN | 2 | 1 | 1 |
| US0909311062 | 1.38E+10 | BIOSPECIFICS TECHNOLOGIES CORP (De-listed 12/2020) | United States | BSTC | 2 | 1 | 1 |
| US0909311062 | 77247980 | BioSpecifics Technologies Corp (Listed 01/2009) | United States |  | 2 | 1 | 1 |
| US18538Q1058 | 1.32E+10 | CLEARWIRE CORP (New Clearwire Corp prior to 11/2008) (De-listed 07/2013) | United States | CLWR | 2 | 1 | 1 |
| US18538Q1058 | 6.75E+09 | CLEARWIRE CORP (De-listed 11/2008) | United States | CLWR | 2 | 1 | 1 |
| US20564W1053 | 2.91E+11 | COMSCORE INC | United States | SCOR | 2 | 1 | 1 |
| US20564W1053 | 4.57E+09 | COMSCORE INC (De-listed 02/2017) | United States | SCOR | 2 | 1 | 1 |
| US2058624022 | 1.2E+08 | COMVERSE TECHNOLOGY INC (De-listed 02/2007) | United States | CMVT | 2 | 1 | 1 |
| US2058624022 | 1.79E+11 | COMVERSE TECHNOLOGY INC (De-listed 02/2013) | United States | CMVT | 2 | 1 | 1 |
| US26745T1016 | 3.11E+10 | DYADIC INTERNATIONAL INC | United States | DYAI | 2 | 1 | 1 |
| US26745T1016 | 5.88E+09 | DYADIC INTERNATIONAL INC (De-listed 01/2008) | United States | DYAI | 2 | 1 | 1 |
| US29206E1001 | 1.57E+08 | EMPIRE RESOURCES INC (De-listed 01/2009) | United States | ERS | 2 | 1 | 1 |
| US29206E1001 | 2E+11 | EMPIRE RESOURCES INC (De-listed 05/2017) | United States | ERS | 2 | 1 | 1 |
| US3789734080 | 2.13E+10 | GLOBALSTAR INC | United States | GSAT | 2 | 1 | 1 |
| US3789734080 | 9.69E+09 | GLOBALSTAR INC (De-listed 12/2012) | United States | GSAT | 2 | 1 | 1 |
| US41043F2083 | 2.03E+08 | HANGER INC (Hanger Orthopedic Group Inc prior to 06/2012) (De-listed 02/2016) | United States | HNGR | 2 | 1 | 1 |
| US41043F2083 | 3.07E+11 | HANGER INC | United States | HNGR | 2 | 1 | 1 |
| US4441721002 | 2.14E+08 | HUDSON VALLEY HOLDING CORP (De-listed 06/2015) | United States | HVB | 2 | 1 | 1 |
| US4441721002 | 1.27E+10 | Hudson Valley Holding Corp (Listed 09/2009) | United States |  | 2 | 1 | 1 |
| US4484511047 | 2.09E+10 | HUTTIG BUILDING PRODUCTS INC | United States | HBP | 2 | 1 | 1 |
| US4484511047 | 2.14E+08 | HUTTIG BUILDING PRODUCTS INC (De-listed 12/2008) | United States | HBP | 2 | 1 | 1 |
| US45254P5089 | 1.71E+11 | IMPAC MORTGAGE HOLDINGS INC | United States | IMH | 2 | 1 | 1 |
| US45254P5089 | 2.2E+08 | IMPAC MORTGAGE HOLDINGS INC (De-listed 11/2008) | United States | IMH | 2 | 1 | 1 |
| US5298981086 | 1.71E+11 | LIBBEY INC (De-listed 06/2020) | United States | LBYYQ | 2 | 1 | 1 |
| US5298981086 | 2.57E+09 | LIBBEY INC (De-listed 04/2009) | United States | LBYYQ | 2 | 1 | 1 |
| US5766741053 | 1.73E+11 | MATERIAL SCIENCES CORP (De-listed 03/2014) | United States | MASC | 2 | 1 | 1 |
| US5766741053 | 2.68E+09 | MATERIAL SCIENCES CORP (De-listed 03/2009) | United States | MASC | 2 | 1 | 1 |
| US6024961012 | 2.02E+11 | MIMEDX GROUP INC (De-listed 11/2018) | United States | MDXG | 2 | 1 | 1 |
| US6024961012 | 3.38E+10 | MIMEDX GROUP INC | United States | MDXG | 2 | 1 | 1 |
| US63888P4063 | 2.9E+08 | NATURAL HEALTH TRENDS CORP (De-listed 11/2009) | United States | NHTC | 2 | 1 | 1 |
| US63888P4063 | 2.3E+10 | NATURAL HEALTH TRENDS CORP | Hong Kong SAR | NHTC | 2 | 1 | 1 |
| US6390271012 | 1.72E+11 | NATURES SUNSHINE PRODUCTS INC | United States | NATR | 2 | 1 | 1 |
| US6390271012 | 2.9E+08 | NATURES SUNSHINE PRODUCTS INC (De-listed 04/2006) | United States | NATR | 2 | 1 | 1 |
| US68827R1086 | 3.02E+11 | OSIRIS THERAPEUTICS INC (De-listed 04/2019) | United States | OSIR | 2 | 1 | 1 |
| US68827R1086 | 8.81E+08 | OSIRIS THERAPEUTICS INC (De-listed 03/2017) | United States | OSIR | 2 | 1 | 1 |
| US8269171067 | 2.88E+11 | SIGA TECHNOLOGIES INC | United States | SIGA | 2 | 1 | 1 |
| US8269171067 | 3.63E+09 | SIGA TECHNOLOGIES INC (Siga Pharmaceuticals prior to 05/2000) (De-listed 03/2015) | United States |  | 2 | 1 | 1 |
| US85916J4094 | 3.17E+10 | STEREOTAXIS INC | United States | STXS | 2 | 1 | 1 |
| US85916J4094 | 5.98E+09 | STEREOTAXIS INC (De-listed 08/2016) | United States | STXS | 2 | 1 | 1 |
| US92343X1000 | 1.72E+11 | VERINT SYSTEMS INC | United States | VRNT | 2 | 1 | 1 |
| US92343X1000 | 9.76E+08 | VERINT SYSTEMS INC (Comverse Infosys Inc prior to 02/2002) (De-listed 02/2007) | United States | VRNT | 2 | 1 | 1 |
| US9287031077 | 2.21E+10 | VOLT INFORMATION SCIENCES INC | United States | VOLT | 2 | 1 | 1 |
| US9287031077 | 4.2E+08 | VOLT INFORMATION SCIENCES INC (De-listed 01/2011) | United States | VOLT | 2 | 1 | 1 |
| US9614431081 | 1.01E+10 | WESTERN LIBERTY BANCORP (Global Consumer Acquisition Corp prior to 10/2009) (De-listed 02/2010) | United States | WLBC | 2 | 1 | 1 |
| US9614431081 | 1.74E+11 | WESTERN LIBERTY BANCORP (Global Consumer Acquisition Corp prior to 10/2009) (De-listed 10/2012) | United States | WLBC | 2 | 1 | 1 |