Resch
Interdisciplinary Project – Topic

„Short term performance of female vs male directors‘ dealings in shares of Nasdaq Composite Index companies in the period 2000 - 2023“

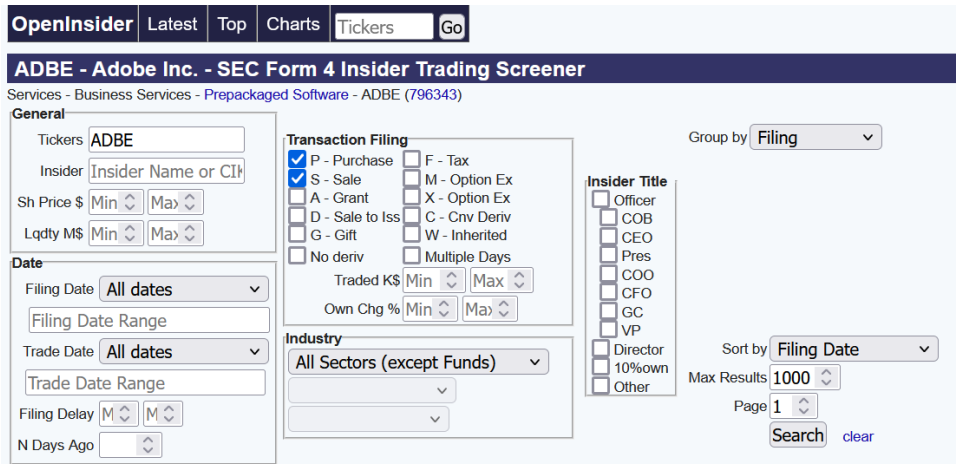
Tasks

The topic is based on chapter 8.2 in PEF_8 (Project and Enterprise Financing) (pages 32-55). In this project directors‘ dealings (DD) in shares of companies included in the Nasdaq Composite index should be analyzed, distinguishing between female and male directors. The DD of interest are either pure purchase or pure sale transactions of managers of the company they are working at. The data can be found on the Web-Site:

http://www.openinsider.com/

It contains a summary of SEC Form 4 Filings of (legal) insider transactions.

(Step 1) Collection of **all** directors‘ dealings (DD) of the type „*Purchase*“ and „*Sale*“ (*Transaction Filing*) for the **period ‘All dates’** (i.e. *Section Date: Filing Date: **All dates***) for each company. Here is an example for the company Adobe with the Ticker Symbol ADBE:



And part of the result:

701 results. Finviz - SEC - Yahoo - Stockcharts - Tradingview
TC cnt 1d 1w 1m 6m
P 5 -0 +1 -1 +22
S 530 +0 +0 +2 +8

X	Filing Date	Trade Date	Ticker	Insider Name	Title	Trade Type	Price	Qty	Owned	ΔOwn	Value
	2022-02-01 17:45:06	2022-01-28	ADBE	Rao Dana	EVP, Gen. Counsel, Secretary	S - Sale	$507.25	-5,300	17,776	-23%	-$2,688,425
D	2022-01-26 17:12:50	2022-01-25	ADBE	Lewnes Ann	EVP, CMO, Corp Strategy, Dev	S - Sale+OE	$507.63	-10,004	25,672	-28%	-$5,078,348
	2022-01-19 17:47:39	2022-01-19	ADBE	Warnock John E	Dir	S - Sale	$518.73	-4,000	429,662	-1%	-$2,074,938
M	2022-01-10 17:33:15	2022-01-06	ADBE	Desmond Laura	Dir	P - Purchase	$513.64	+973	28,979	+3%	+$499,770
	2021-12-23 16:46:11	2021-12-23	ADBE	Chen Gloria	EVP, Chief People Officer	S - Sale	$568.96	-42	12,846	0%	-$23,896
	2021-12-21 18:28:17	2021-12-20	ADBE	Garfield Mark S.	SVP, CAO, Corp. Controller	S - Sale	$545.61	-474	1,108	-30%	-$258,619
	2021-12-21 18:28:07	2021-12-20	ADBE	Belsky Scott	EVP, CPO, Creative Cloud	S - Sale	$545.61	-2,750	21,497	-11%	-$1,500,428
	2021-11-24 19:08:02	2021-11-24	ADBE	Chen Gloria	EVP, Chief People Officer	S - Sale	$654.73	-42	12,775	0%	-$27,499
D	2021-10-26 17:12:09	2021-10-26	ADBE	Rao Dana	EVP, Gen. Counsel, Secretary	S - Sale+OE	$650.91	-489	14,579	-3%	-$318,295

Attached is also the full result of this example downloaded in an MS-Excel file (*DD_Example – Adobe.xlsx)*).

As the max number of downloads is limited by 1000 it is best to download the DD information company by company. The key is the ticker symbol (e.g. ADBE for Adobe). Attached is also an Excel file of all companies included in the Nasdaq Composite index (2004-2023).

The Ticker Symbol is the key to find DD for the corresponding company and is to be inserted in the field *General: Tickers*.

(Step 2) Generate, based on the directors' name (column "Insider Name" in the example sheet), for all transactions downloaded in step 1 one extra column identifying the corresponding director as female or male (e.g., 1 for female, 0 for male).

(Step 3) Calculate daily Abnormal Returns (ARs) for the period ± 20 trading days around each DD transaction (event day t=0 is the announcement day of the transaction), based on the Market Model Adjusted Return method (see e.g. PEF_8 pages 32-40 as well as the start literature). Use for all calculations and analyses R as programming language.

➔ If several DD of the same person take place on the same day, then these transactions should be condensed to one transaction.

➔ As soon as steps 1 and 2 are finished Datastream total return indices will be provided for each company. These total return indices can then directly be used to calculate daily returns. They include normal as well as all artificial share price changes (i.e., e.g., dividend payments, correction factors due to stock splits or SEOs, etc.).

(Step 4) Calculate Cumulative Abnormal Returns (CARs) for the periods -20 to -1 trading days, 0 to 5 trading days, 0 bis 10 trading days, and 0 to 20 trading days, using the ARs calculated in step 3.

➔ Include these CARs in the Table generated in step 1.

(Step 5) Cross sectional analyses: Analyze the distribution of CARs (i.e., all companies, all transactions) for the groups:

(5a) All purchases of female directors
(5b) All purchases of male directors
(5c) All sales of female directors
(5d) All sales of male directors

➔ Calculation of important distribution parameters of CARs for each of these groups: mean, median, standard deviation, minimum, maximum

➔ Significance test for each group for the following null hypotheses:
(i) CAR-mean = 0, (ii) CAR-median = 0

Use the following significance tests:
For (i): Adjusted Standardized Cross-Sectional Test based on Kolari and Pynnönen (2010), pp. 4002-4003 especially; parametric test.
For (ii): Generalized Rank Test based on Kolari and Pynnönen (2011), pp. 955-956 especially; non-parametric test.

➔ Comparison of groups 5a and 5b, as well as 5c and 5d based on mean and median values. Are the differences in (i) means of CARs and (ii) medians of CARs of the groups (i.e., 5a vs 5b as well as 5c vs 5d) significant different from each other? Perform corresponding significance tests.

➔ The analysis should also include a section with descriptive statistics of the data sample used (i.e. the DD and the returns), including the process of generating the final data sample (based on data availability).

- Correlation corporate position and effect? (size of announcement effect)
- magnitude of effect depends heavily on transaction size?