Top 10 firms based on unique buyers (excluding politicians who sold shares):

1. AT&T Inc: 8 individuals (Sessions, Gibbs, Rogers, Keating, Malliotakis, Lofgren, Foxx, Mccaul)

2. Microsoft Corp: 7 individuals (Sessions, Moore, Foxx, Burgess, Keating, Case, Hern)

3. Amazon.com Inc: 7 individuals (Brooks, Graves, Sessions, Axne, Newman, Kustoff, Hern)

4. Walt Disney Co: 7 individuals (Pelosi, Moore, Ross, Allen, Lofgren, Greene, Burgess)

5. Visa Inc: 7 individuals (Harshbarger, Axne, Curtis, Lofgren, Greene, Hern, Newhouse)

6. Procter & Gamb: 6 individuals (Doggett, Manning, Clark, Miller, Keating, Newhouse)

7. Caterpillar In: 6 individuals (Manning, Curtis, Lofgren, Greene, Wittman, Keating)

8. Nvidia Corp: 6 individuals (Pelosi, Sessions, Lowenthal, Rouzer, Greene, Newhouse)

9. Lockheed Marti: 6 individuals (Manning, Evans, Axne, Roe, Greene, Hern)

10. Adv Micro Devi: 6 individuals (Ross, Gottheimer, Curtis, Greene, Khanna, Kustoff)

InvestingProximity

[[0,0,0,1,0,0,0,0,0,0],[0,0,1,0,1,0,0,0,1,0],[0,1,0,1,0,0,0,0,0,0],[0,1,0,0,0,0,0,0,0,0],[0,0,0,0,0,1,0,0,0,0],[0,0,0,0,1,0,1,0,0,1],[0,0,0,0,0,1,0,0,0,0],[0,0,0,0,0,0,0,0,1,0],[1,1,0,0,0,0,0,0,0,0],[1,0,0,0,0,0,0,0,0,0],[0,0,0,0,0,0,0,0,0,1],[0,0,1,0,0,0,0,0,0,0],[0,0,0,1,1,0,1,1,1,1],[0,0,0,0,1,0,0,0,0,0],[0,1,1,0,1,0,0,0,1,0],[1,1,0,0,0,1,1,0,0,0],[0,0,0,0,0,0,0,0,0,1],[0,0,1,0,0,0,0,0,0,1],[1,0,0,1,1,0,1,0,0,0],[0,0,0,0,0,0,0,1,0,0],[1,0,0,0,0,0,0,0,0,0],[0,0,0,0,0,1,1,0,1,0],[1,0,0,0,0,0,0,0,0,0],[0,0,0,0,1,1,0,1,0,0],[0,0,1,0,0,0,0,0,0,0],[1,0,0,0,0,0,0,0,0,0],[0,0,0,1,0,0,0,0,0,1],[0,0,0,0,0,0,0,1,0,0],[1,1,1,0,0,0,0,1,0,0],[0,1,0,1,0,0,0,0,0,0],[0,0,0,0,0,1,0,0,0,0],[0,0,0,0,0,0,1,0,0,0]]

VotingProximity

[[1,-1,1,1,1,1,1,1,1,1,-1,-1,1,1],[1,1,1,1,1,1,1,1,1,1,1,1,1,1],[0,1,1,1,1,1,1,1,1,-1,-1,-1,1,1],[1,1,1,1,1,1,1,1,1,1,1,1,1,1],[1,1,1,1,1,1,1,1,1,-1,1,1,1,1],[1,1,1,1,1,1,1,1,1,-1,-1,-1,1,1],[1,1,1,1,1,1,1,1,1,1,1,1,1,1],[1,1,1,1,1,1,1,1,1,1,1,1,1,1],[1,-1,1,1,1,1,1,1,1,1,-1,-1,1,1],[1,-1,1,1,0,1,1,1,1,1,-1,-1,1,1],[1,1,1,0,1,1,1,1,1,1,1,1,1,1],[1,-1,1,1,1,1,1,1,1,1,-1,-1,1,1],[-1,-1,1,1,-1,-1,1,1,-1,0,-1,-1,1,-1],[1,-1,0,1,1,1,1,1,1,1,-1,-1,1,-1],[1,-1,1,1,1,1,1,1,1,-1,-1,-1,1,1],[1,1,1,1,1,1,1,1,1,1,1,1,1,1],[1,1,1,1,1,1,1,1,1,-1,1,1,1,1],[1,1,1,1,1,1,1,1,1,1,-1,-1,1,1],[1,1,1,1,1,1,1,1,1,1,1,1,1,1],[1,1,1,1,1,1,1,1,1,-1,1,1,1,1],[1,-1,1,1,1,1,1,1,1,1,-1,-1,1,1],[1,1,1,1,1,1,1,1,1,1,1,1,1,1],[1,1,1,1,1,1,1,1,1,1,-1,-1,1,1],[1,1,1,1,1,1,1,1,1,1,-1,-1,1,1],[1,1,1,1,1,1,1,1,1,1,1,1,1,1],[1,1,1,1,1,1,1,1,1,1,-1,-1,1,1],[1,1,1,1,1,1,1,1,1,1,1,1,1,1],[1,-1,1,1,1,1,1,1,1,1,-1,-1,1,1],[1,-1,1,1,1,1,1,1,-1,-1,-1,-1,1,1],[1,1,1,1,1,1,1,1,1,1,-1,-1,1,1],[1,-1,1,1,1,1,1,1,1,1,-1,-1,1,1],[1,-1,1,1,1,1,1,1,1,1,-1,-1,1,1]]

Female

[[0],[1],[0],[0],[1],[0],[0],[0],[1],[0],[0],[0],[1],[1],[0],[0],[0],[0],[1],[0],[1],[1],[0],[0],[1],[0],[1],[0],[0],[0],[1],[0]]

PoliticalParty

[[1],[0],[1],[0],[0],[1],[0],[0],[1],[1],[0],[1],[1],[1],[1],[0],[0],[1],[0],[0],[1],[0],[1],[1],[0],[1],[0],[1],[1],[1],[1],[1]]

State

[2[1],

3[0],

4[1],

5[0],

6[0],

7[1],

8[0],

9[0],

10[1],

11[1],

12[0],

13[1],

14[1],

15[1],

16[1],

17[0],

18[0],

19[1],

20[0],

21[0],

22[1],

23[0],

24[1],

25[1],

26[0],

27[1],

28[0],

29[1],

30[1],

31[1],

32[1],

33[1]]

**Excluded Male and VA in order to avoid the dummy trap.**

When you multiply a matrix �*A* by its transpose ��*AT*, the resulting matrix provides some interesting insights, especially in the context you've described where �*A* represents politicians and firms with binary indicators (1 if a politician invested in a firm, and 0 otherwise).

Here’s a step-by-step explanation of what happens when you multiply �*A* by its transpose ��*AT* and how to interpret the result:

**Dimensions of �*A* and ��*AT***

* Let’s assume �*A* is an �×�*m*×*n* matrix, where �*m* is the number of politicians and �*n* is the number of firms.
* The transpose of �*A*, denoted ��*AT*, will then be an �×�*n*×*m* matrix.

**Multiplying �*A* by ��*AT***

* When you multiply �*A* by ��*AT*, you will get a new matrix �*B* that is �×�*m*×*m* in size.
* Each element of �*B*, denoted as ���*bij*​, is calculated as the dot product of the �*i*-th row of �*A* and the �*j*-th row of ��*AT*. But since the �*j*-th row of ��*AT* is the �*j*-th column of �*A*, ���*bij*​ effectively becomes the dot product of the �*i*-th and �*j*-th rows of �*A*.

**Interpreting �*B* (or ���*AAT*)**

* **Diagonal Elements (���*bii*​)**: Each diagonal element of �*B* tells you how many firms the �*i*-th politician has invested in. It is simply the sum of squares of elements in the �*i*-th row of �*A*, which in this binary context translates to the count of firms invested in by that politician.
* **Off-Diagonal Elements (���*bij*​)**: Each off-diagonal element ���*bij*​ (where �≠�*i*=*j*) tells you how many firms are commonly invested in by both the �*i*-th and �*j*-th politicians. If ���*bij*​ is zero, it means the two politicians have no common investments; if it is positive, it represents the number of common firms they have invested in.

**Practical Usage**

* This resulting matrix �*B* is very useful in understanding the relationships and commonalities among politicians in terms of their investments. It can help in identifying clusters or networks of politicians based on shared investment patterns.
* This can also be a starting point for further analysis in network theory, clustering algorithms, or in studies of political influence and economic power structures.

A math formula with black text

Description automatically generated with medium confidence

In a regression model, the coefficients represent the change in the response variable for a one unit change in the predictor variable, while holding all other predictors in the model constant.

When we use dummy variables, these are either 0 or 1. So, a “one unit change” in a dummy variable actually represents changing from the category not being present (0) to the category being present (1).

Let’s consider Dummy variable 1 which represents politician1. The coefficient of Dummy variable 1 in the regression model represents the difference in the average value of the response variable between observations for which politician1 is true (i.e., Dummy variable 1 = 1) and observations for which politician1 is not true (i.e., Dummy variable 1 = 0), assuming all other variables in the model are held constant.

In other words, the coefficient for Dummy variable 1 estimates the effect of politician1 being true, compared to when it’s not true (which is the reference category, in this case politician5), on the response variable.

The same interpretation applies to the other dummy variables in the model. Each one estimates the effect of a different politician, compared to the reference category, on the response variable.

This allows us to estimate different effects for each politician, which wouldn’t be possible if we treated politician1 and politician2 as continuous variables.