

Dataset Reminders

Our database includes all insider buys and sells from 2009-2024 (~900k trades)

The insider trades are pulled from the SEC EDGAR database

We filter out over 80% of all insider trades before running our analysis because they contain an error, are planned trades, or are too small (or the company is too small). Read about how we filter trades [here](#).

All returns are calculated using the “next trading day open price after the filing was made public,” as this best reflects the price we would be able to buy/sell the stock.

- For example, for an insider trade filed on a Wednesday (regardless of what time it is filed), we use the open price on Thursday

The returns in the charts are “adjusted returns,” which just means we include dividends, stock splits, etc.

The dataset includes stocks that were acquired, delisted, went bankrupt, etc. This prevents survivorship bias.

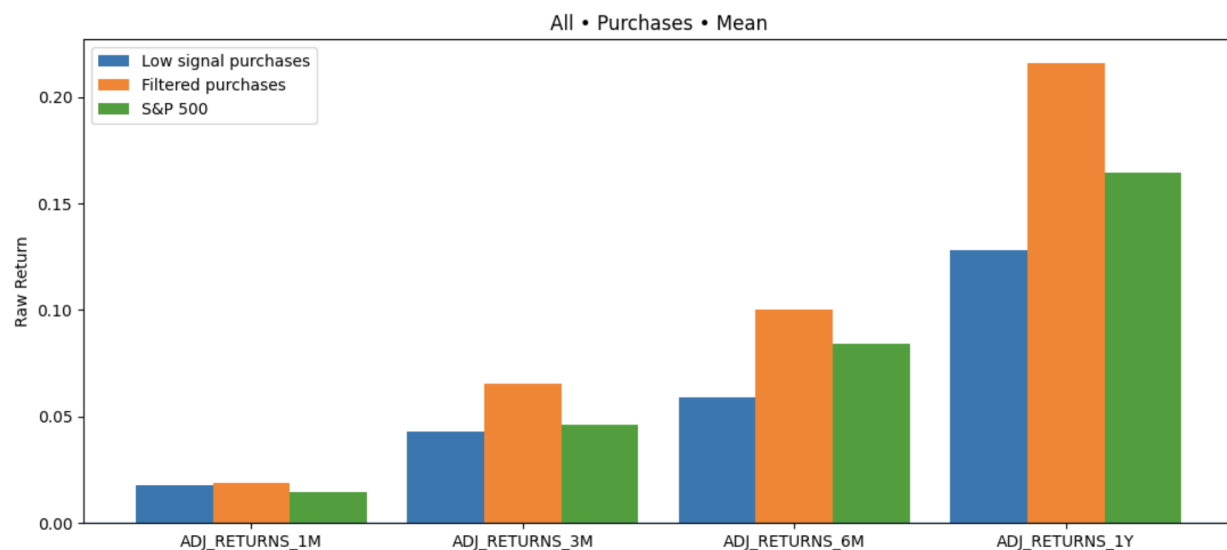
80% of Insider Trades are Noise (and how to filter out the low-signal trades)

Over 80% of insider trades are noise.

They include tax sales, dividend reinvestments, employee stock purchase plans, planned trades, private placements, compensation plans (like options and RSUs), etc.

These are low-signal trades that should be ignored because they significantly underperform the non-low-signal trades.

Low-signal insider purchases average 12.4% 1y returns (equally weighted), whereas filtered purchases average 21.6% (a **massive** 9.2% spread).



Astute readers will notice that the S&P's average 1y return in the bar chart is significantly above the actual average S&P 1y return from 2009-2024 (16.4% v 13.3%). This is because we compare each insider purchase to the S&P's returns on that same date, so the S&P returns in this chart are the returns you would have gotten if you had bought the S&P rather than copying the insider purchases. Insiders time their purchases very well, so the S&P returns are higher when weighted on the days when more insiders are buying.

Let's walk through the data

Our raw dataset includes 895,012 insider trades (about 184 per day). 70% of the trades are sales, and 30% are buys.

Once we apply our "low signal" filters (discussed below), the number of trades falls to 158,210 (an 82% decrease). This comes out to about 34 trades per day. 73% are sales, and 27% are buys.

Errors

The first thing we look for is errors in the filing.

We found 3,887 mismatched codes (0.4% of all trades), indicating the filing reported it as a purchase in one spot but a sale in another (or vice versa).

15,561 filings (1.7%) were delayed. Filings are required by law within 2 business days of the transaction. However, over 15,000 were marked as delayed by our system, and we don't mark them as delayed until 30 days have passed.

17,136 filings (1.9%) had a share price that was more than +/- 20% the actual share price the stock was trading at when the trade was filed. This can be due to an error in the filing (a missing decimal point occurs occasionally), an off-market transaction, or a significant price move between the insider's purchase and the filing.

Overall, 33,582 (3.7%) of all trades had at least one of these errors.

Too small

The next step is to filter out all companies/trades we deem "too small."

We have many institutional investors using our data, so we must limit the stocks we focus on to those that they can trade. However, for your personal account, you may want to keep these small companies in your universe.

We use a market cap floor of \$50M (at the date of the filing). 81,745 (9.1%) of the trades fall below this floor and are excluded.

We also filter out trades under \$25,000 (222,234; 24.8% of all trades) and trades with a share price under \$1 (44,502; 4.9%).

Overall, 251,338 (28%) trades were marked as "too small" because they met one (or more) of these conditions.

However, this affects purchases far more than sales. 60% of purchases are <\$25,000 v only 14% of sales.

Officers and directors

Three types of insiders must file trades: Executives, Directors, and 10% Owners (entities that own at least 10% of the company).

While there are certainly some 10% Owners worth paying attention to, on average, they perform much worse than Executives and Directors (particularly for purchases). So we also exclude 10% Owners when looking for High Signal Trades.

Overall, 96,395 (10.7%) trades are from 10% Owners.

Purchase filters

For purchases, we then filter out another 7 types of trades: employee stock purchase plans (ESPP), dividend reinvestments (DRIP), private placement, public offerings, purchase agreements, 10b5-1 plans, and recurring purchases (purchases that may not be marked as a 10b5-1 plan, but happen every month or every year).

Of the 271,460 purchases, 37,926 (14%) are filtered out for one (or more) of these reasons.

The breakdown is: 9,065 (3.3%) for ESPP, 12,448 (4.6%) for DRIP, 1800 (0.7%) for purchase agreements, 3962 (1.5%) for public offerings, 1474 (0.5%) for private placements, 13,440 (5.0%) for 10b5-1 plans, and 6,637 (2.4%) for recurring purchases.

Sell filters

For sales, we filter out 4 types of trades: tax sales, 10b5-1 plans, recurring sales, and when an insider is exercising and selling options/RSUs (which typically are received as part of their compensation plan and immediately exercised and sold when they vest).

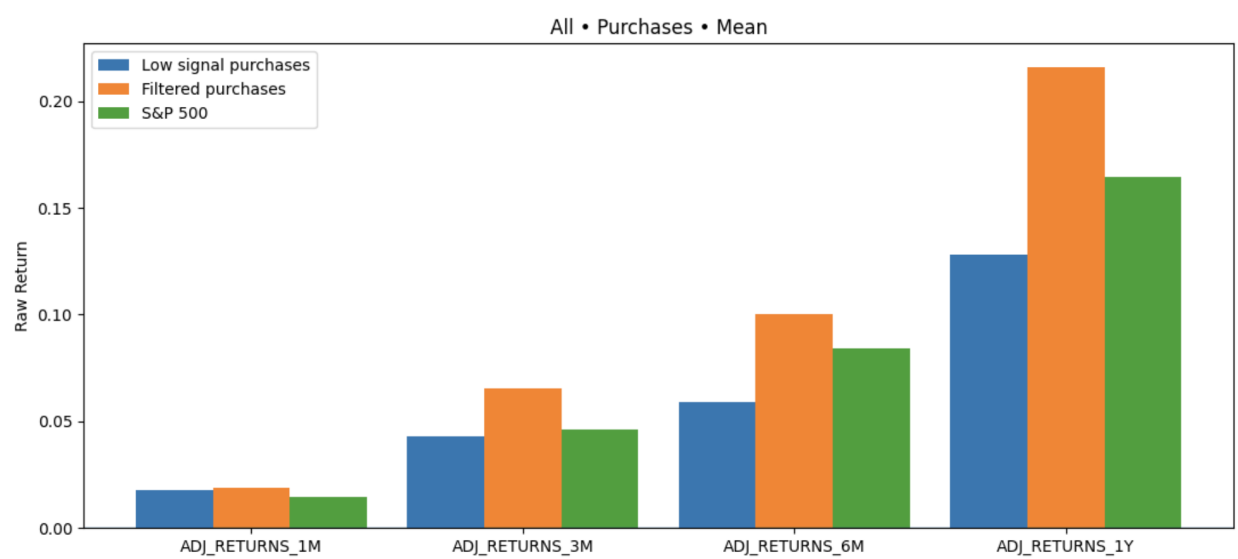
Of the 623,552 sales, 405,526 (65%) are filtered out for one (or more) of these reasons.

The breakdown is: 60,386 (9.7%) for tax sales, 267,011 (42.8%) for 10b5-1 plans, 90,227 (14.5%) for recurring sales, and 205,849 (33%) for exercising and selling options/RSUs.

Overall

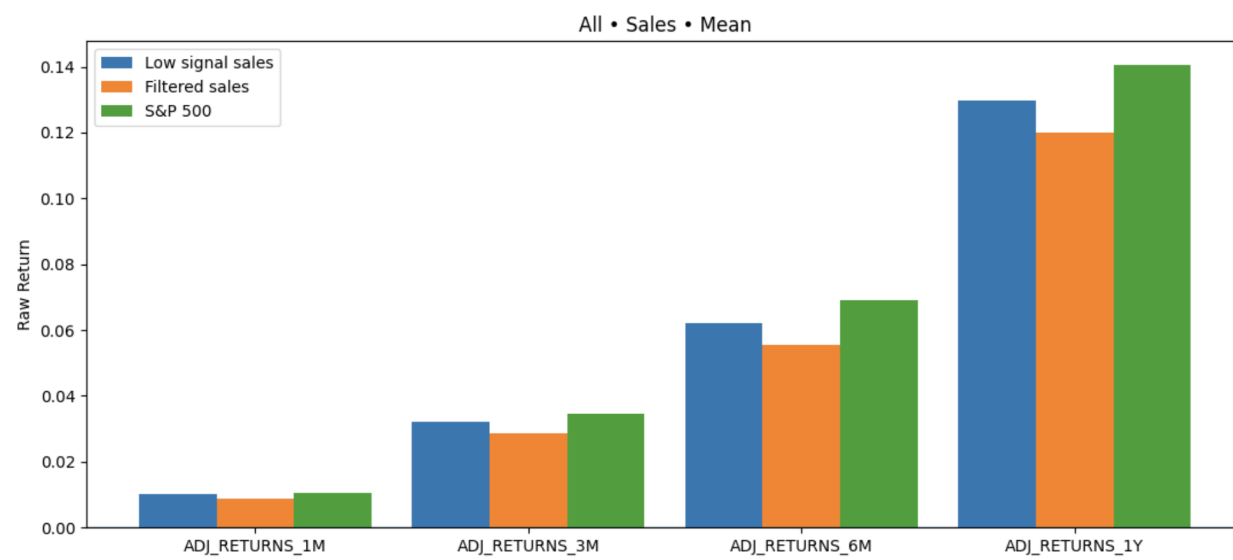
These filters remove ~82% of all insider trades, leaving us with ~34 non-low-signal trades per day.

The filtered purchases outperform the low-signal purchases by over 9 points after one year (21.6% v 12.4%).



For sales, the filtering has a much less dramatic effect, with the filtered sales underperforming the low-signal sales by 1 point (11.9% v 12.9%). As a reminder, we use *insider sales* as a bearish signal, so worse performance is better.

Insider sales underperform the market on average, but it is much harder to find insider sales that lead to negative returns.

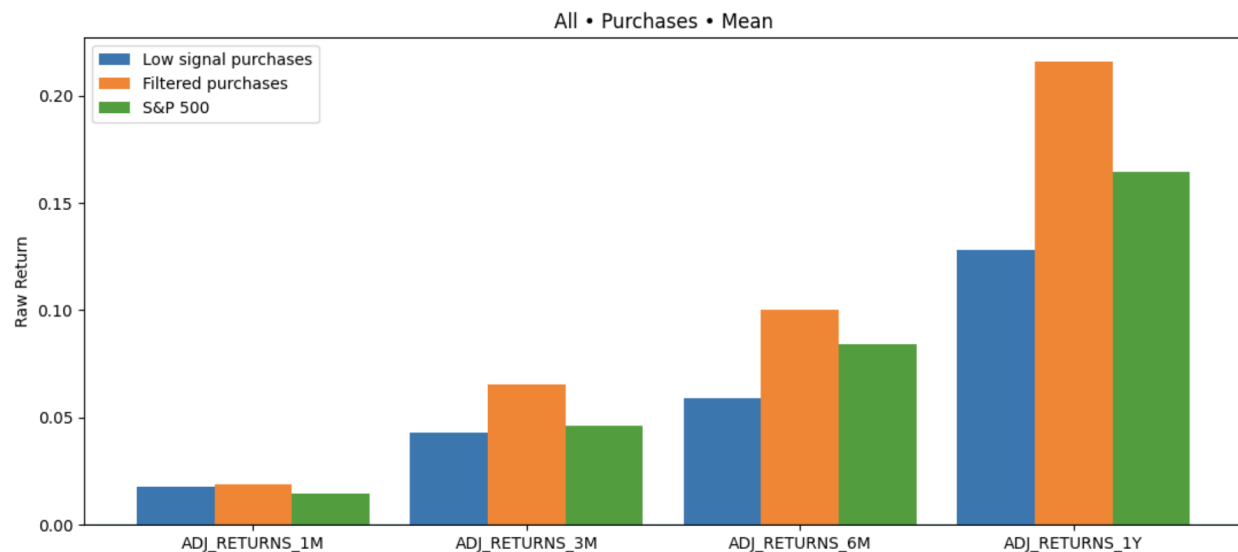


Filtering out low signal insider trades is just the first step in identifying High Signal Insider Trades, which have the highest likelihood of significantly outperforming the market. We will explore the different factors that go into identifying High Signal Insider Trades in future write-ups.

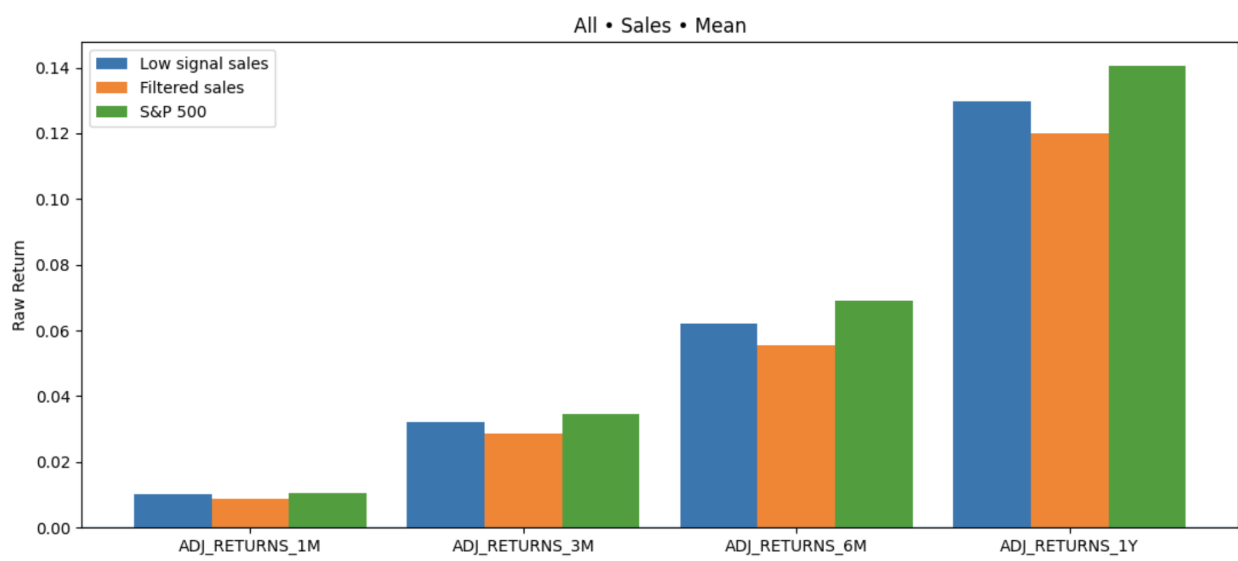
Insider Trades Return Distributions

Mean Returns

In the previous write-up ([link](#)), we showed how we filter out low-signal insider trades, which significantly increases the average returns of insider purchases (21.6% 1y returns for filtered purchases v 12.4% for low signal purchases).



It also slightly improves the average returns of insider sales (ie the stocks go up less after filtered insider sales). Stocks from filtered sales underperform the low-signal sales by 1 point over the following year (11.9% v 12.9%).

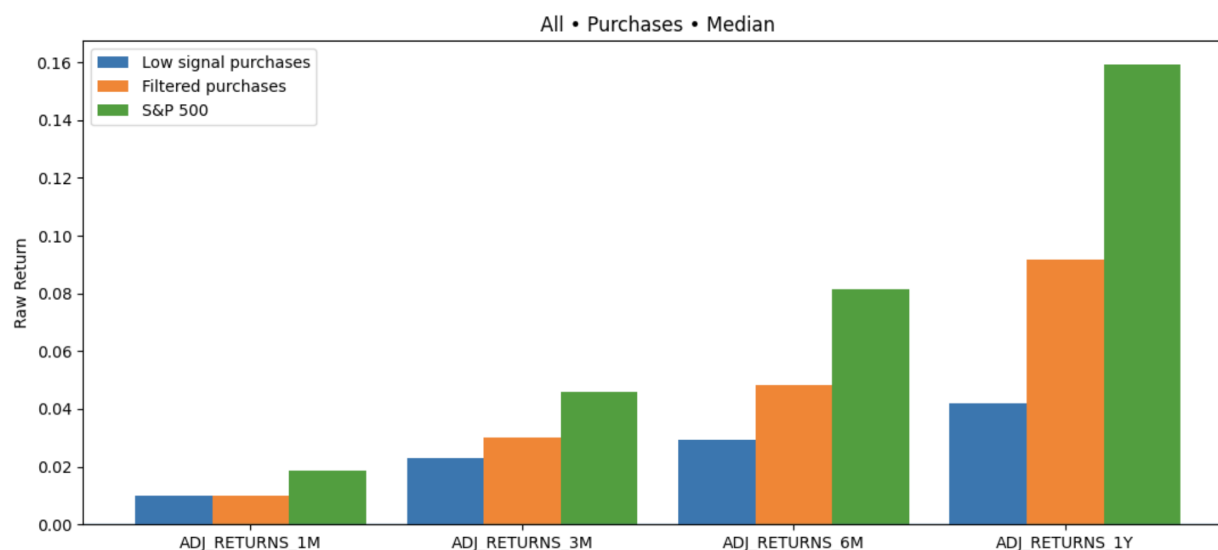


Interestingly, the charts above show that low-signal purchases actually have lower 1y returns than low-signal insider sales (10.6% v 12.3%). You definitely want to avoid low-signal purchases.

Median Returns

Unsurprisingly, median returns paint a less rosy picture.

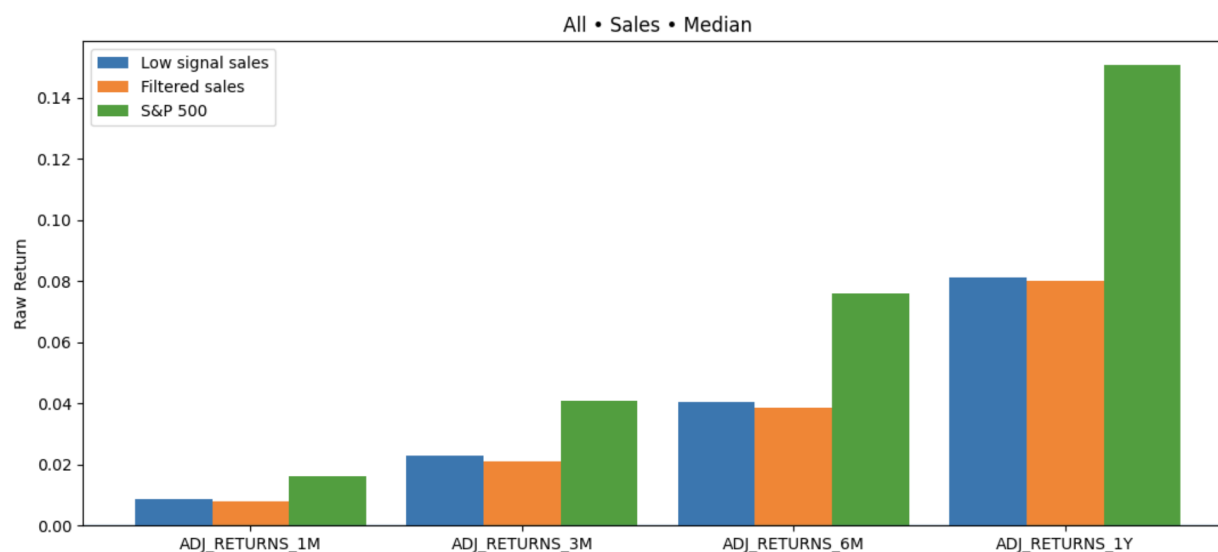
The median 1y return for filtered insider purchases was 9.2% versus 4.2% for the low-signal purchases and 15.9% for the S&P.



I say this is unsurprising because most stocks actually lose money in the long term ([link](#)), and most stocks underperform the S&P each year. From 1926 through 2014, the mean annual return for stocks was 14.74% while the median was only 5.23% ([link](#)).

The stock market is driven by positive outliers.

This works in favor of insider sales, as the median 1y return is way below the S&P (8.0% for filtered sales, 8.1% for low-signal sales, and 15.0% for the S&P).



As I've mentioned before, using insider sales to identify stocks likely to underperform the S&P is easy. Finding stocks likely to deliver negative returns is much harder.

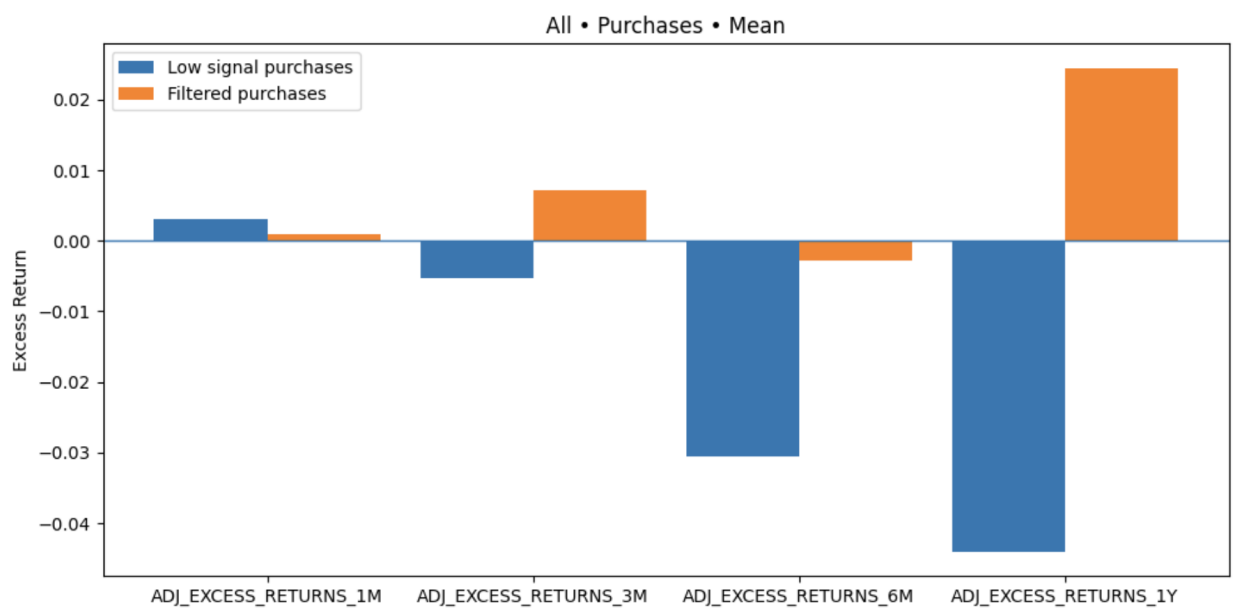
Win Rates

Filtered insider purchases also have significantly higher 1y win rates (i.e., the 1y return is $> 0\%$) than the low-signal insider purchases. Filtered purchases have a 60% 1y win rate versus 55% for low-signal purchases.

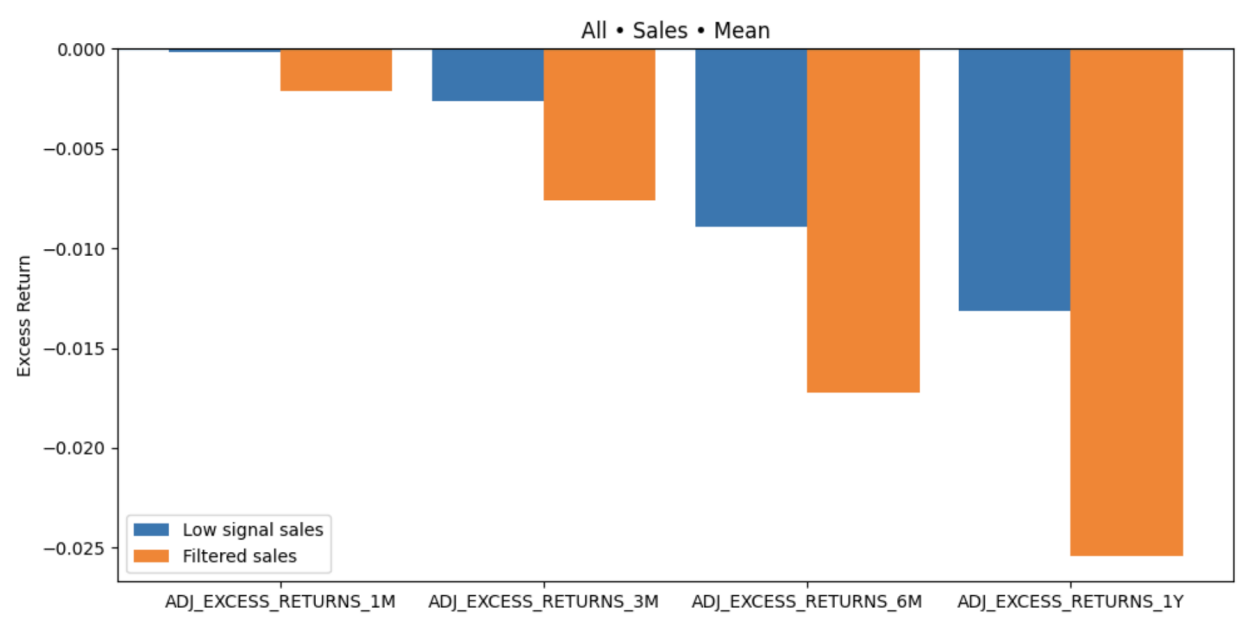
Filtered insider sales actually have a slightly worse 1y win rate (i.e., the 1y return is $< 0\%$) than the low-signal sales. Filtered sales have a 39% 1y win rate, versus 40% for low-signal sales.

Returns Versus the Benchmark

Using the S&P as the benchmark, we can see that properly filtering insider purchases is the difference between underperforming and outperforming the benchmark. Filtered insider purchases outperform buying the S&P by 2.4% while the low-signal purchases underperform by 4.4%.



As mentioned previously, finding insider sales that underperform the market is fairly easy. Filtered insider sales underperform the S&P by 2.5% while the low-signal insider sales underperform by 1.3%.



As expected, the win rates for insider purchases when compared to the benchmark (ie, the stock outperformed the S&P) are under 50%. Filtered purchases have a 44% 1y win rate verses 37% for low-signal purchases.

Insider sales have a better than 50% win rate versus the benchmark (ie, the stock underperformed the S&P). Filtered insider sales have a 58% 1y win rate, versus 57% for low-signal sales.

Conclusion

With proper filtering, the average insider purchase meaningfully outperforms the S&P over the following year. However, as with the market itself, the returns on insider purchases are driven by positive outliers.

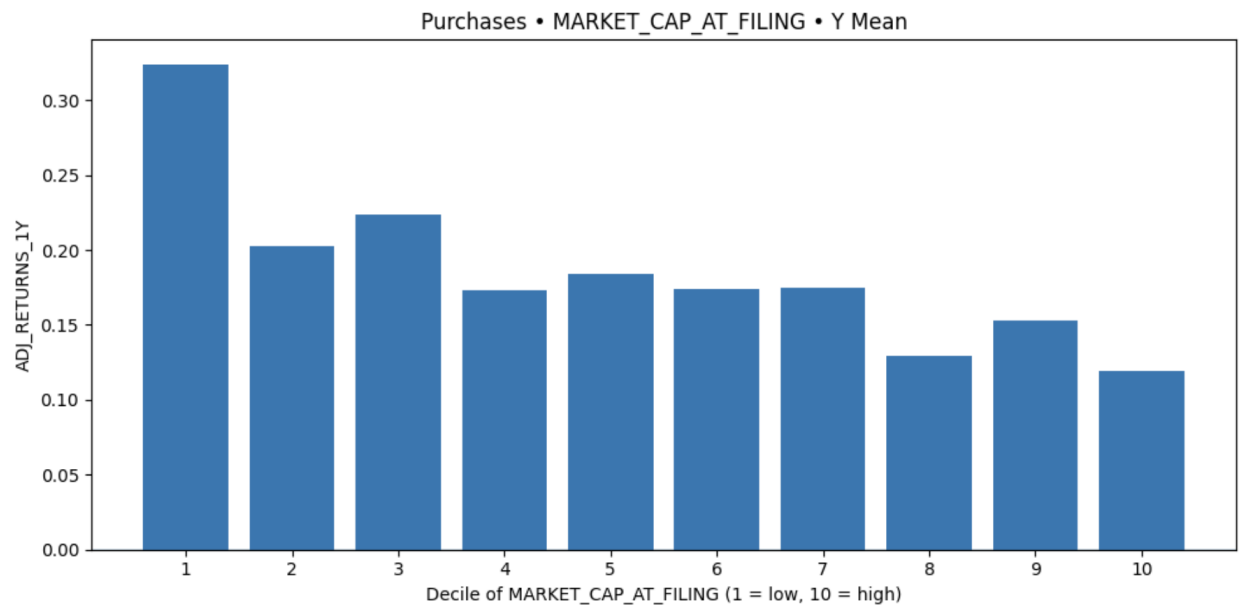
For insider sales, most underperform the S&P. However, the stocks still have positive average returns.

In future write-ups, we'll explore other factors that can help identify insider trades with even better mean and median returns.

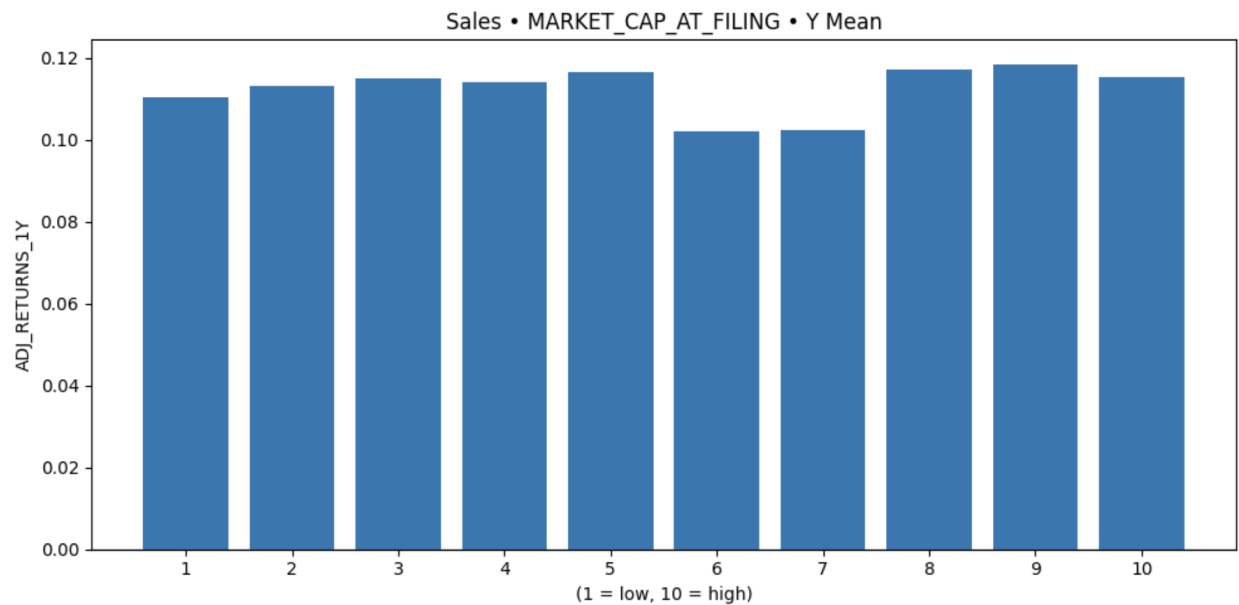
Market Cap

A pretty consistent finding in stock market research is that small-cap stocks outperform large-cap stocks, and the same holds for insider trades.

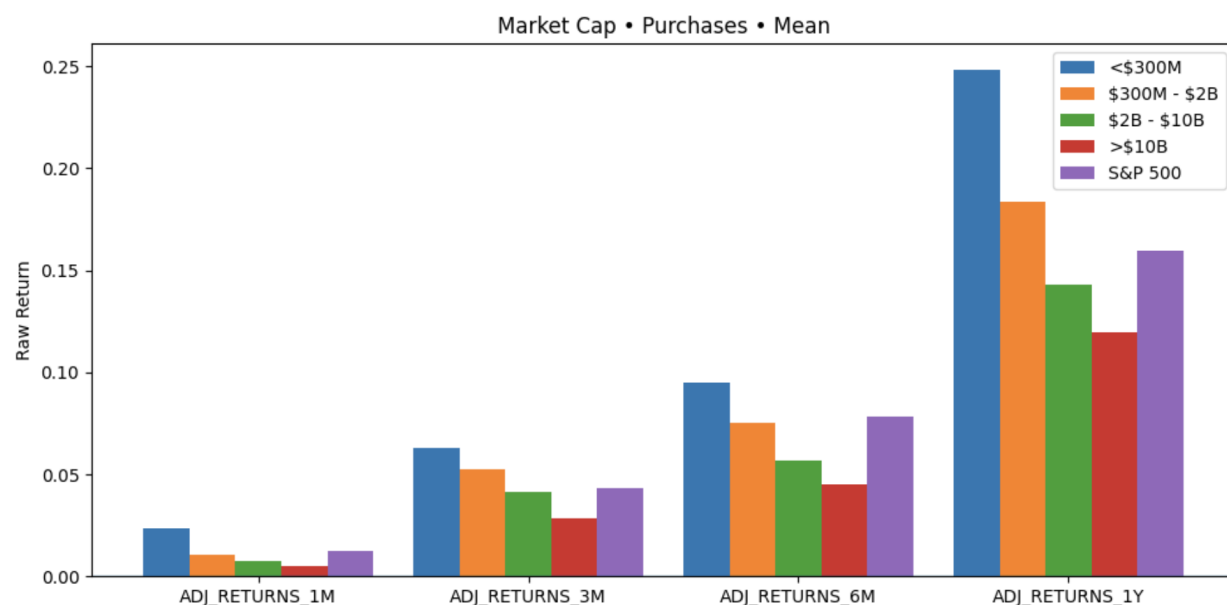
The smallest decile of companies (<\$150M market cap) averages over 30% 1y returns after insider purchases, while the largest decile (>\$10B market cap) is under 15%.



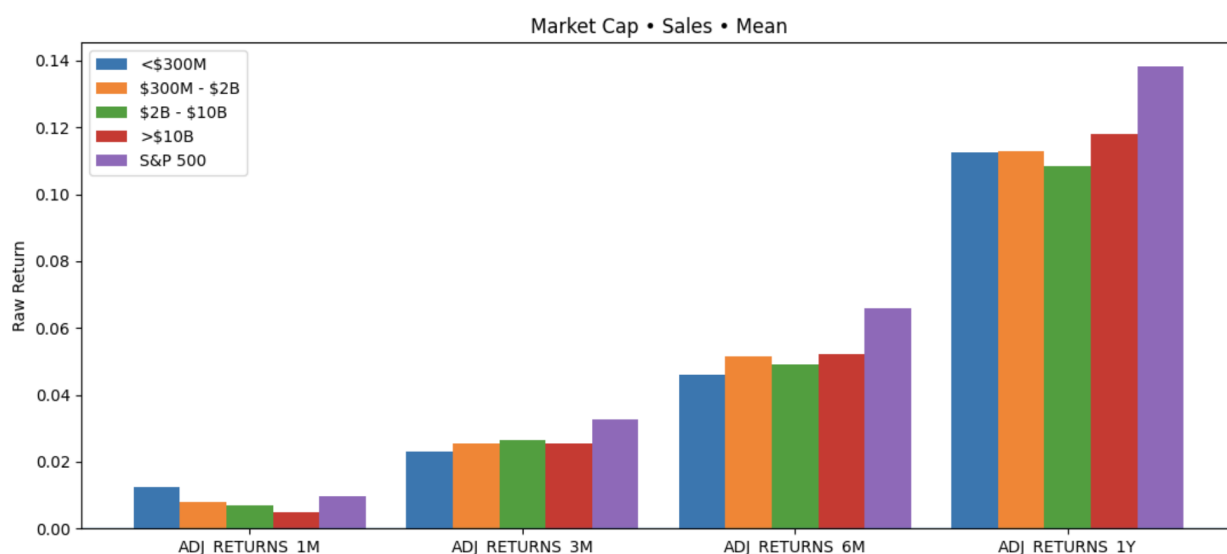
The same is not true for insider sales, where returns do not differ by company size.



When we bucket the companies into micro-cap (<\$300M), small-cap (\$300M - \$2B), mid-cap (\$2B - \$10B), and large-cap (>\$10B), we find that only insider purchases at small and micro-cap companies consistently outperform the S&P.



In insider sales, all company sizes underperform the S&P, but there is no large variation between company sizes.



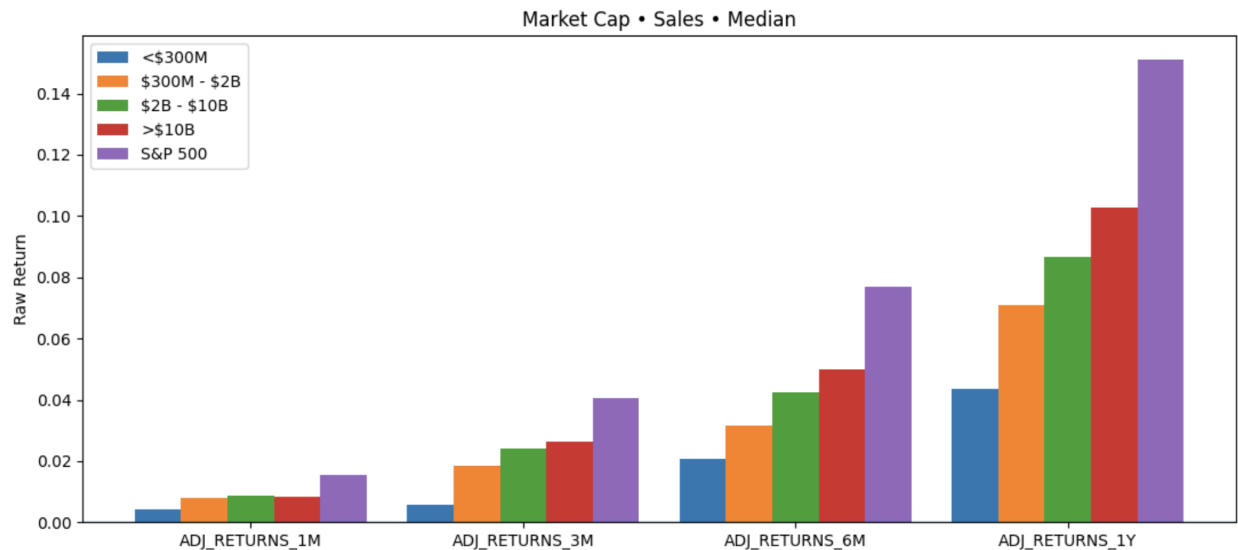
Medians and Win Rates

It's clear that insider trading performance declines as company size increases.

However, for insider purchases, median returns and win rates actually increase with company size. The performance is driven by positive outliers in small and micro-cap stocks.

While insider purchases at micro-caps have 1y mean returns of 24.8% (v 11.9% for large caps), the win rate (ie, the percent of trades with positive 1y returns) and median returns are both lower than those of large caps. The win rate for micro-caps is 54% (v 64% for large caps), and the median return is 8.2% (v 10.4% for large caps).

This does not hold true for insider sales, where insider selling at micro-caps outperforms insider selling at larger companies across both win rates and median returns.



Overall

The size effect is alive and well in insider trading land.

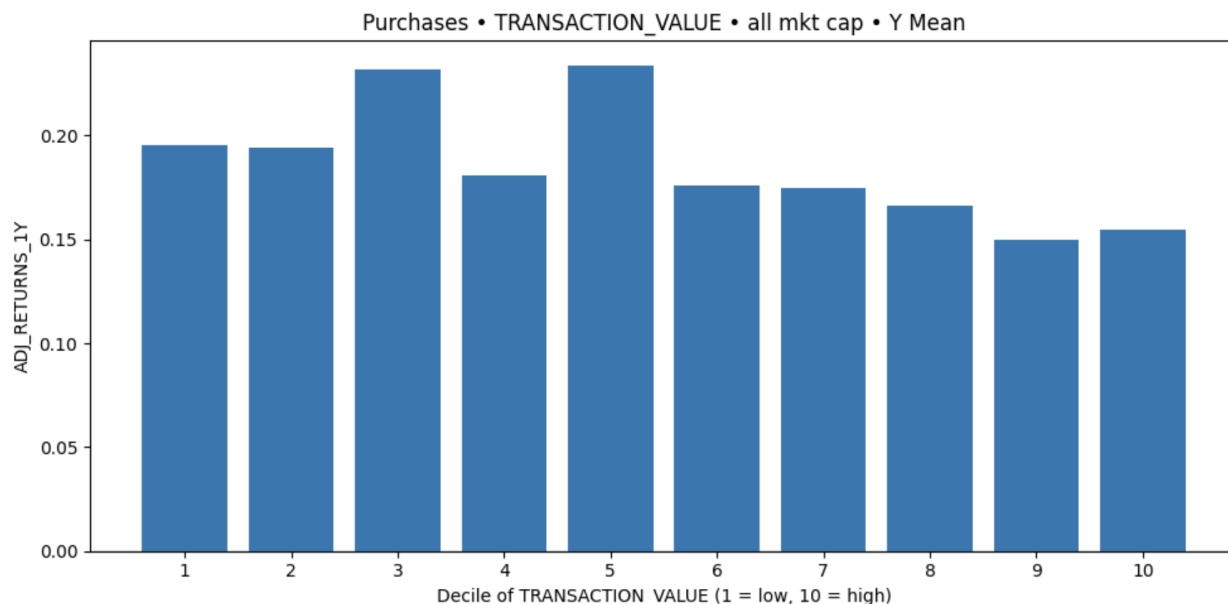
Insider trading at smaller companies outperforms that at larger companies, but the outperformance comes with greater volatility.

Transaction Value

The most obvious data point for insider trading is transaction value.

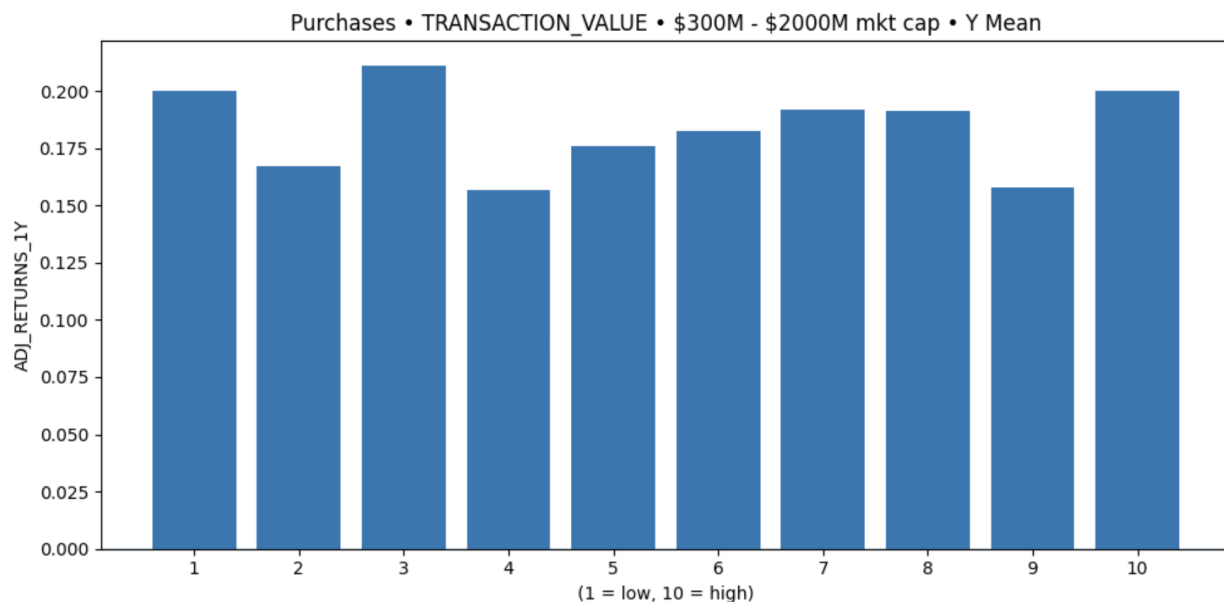
Everyone expects that insider trades are a better signal as transaction value increases, but the data does not support this.

In fact, we actually see the opposite. Mean 1Y returns actually fall slightly as transaction values increase.



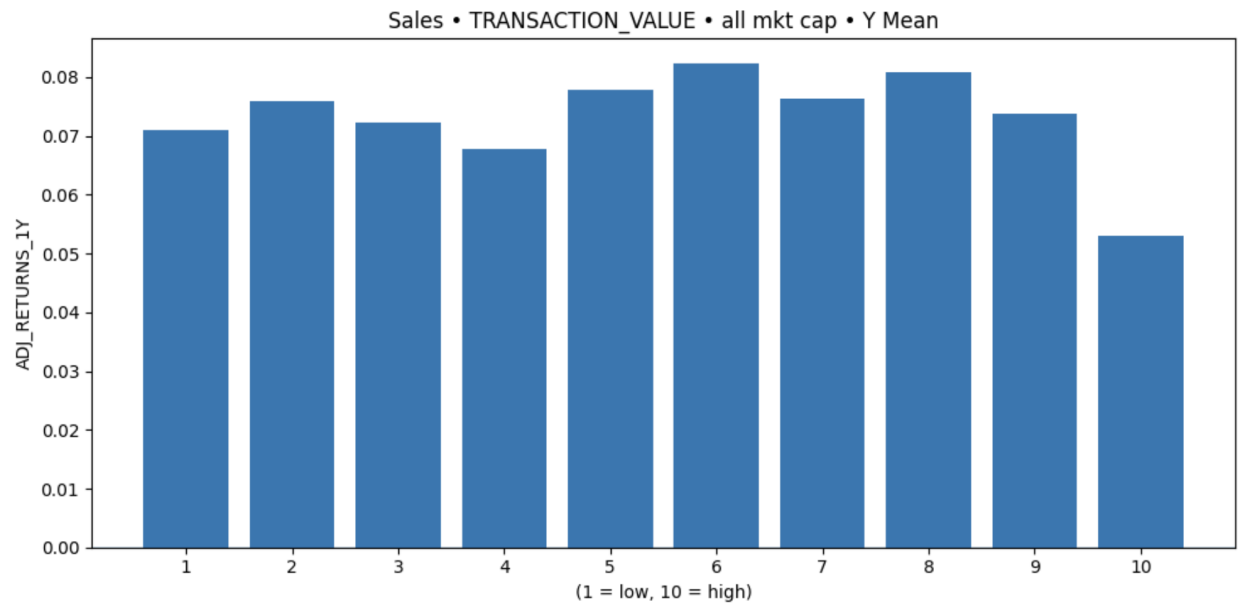
However, this is because insider purchases at smaller companies are smaller than those at larger companies, and small-cap stocks outperform large-cap stocks, as we saw in a previous write-up ([link](#)).

We can verify this by bucketing the insider purchases by market cap. For example, when looking at insider purchases in small-cap companies, there is no meaningful difference in returns across transaction sizes (and this holds across other market cap buckets).

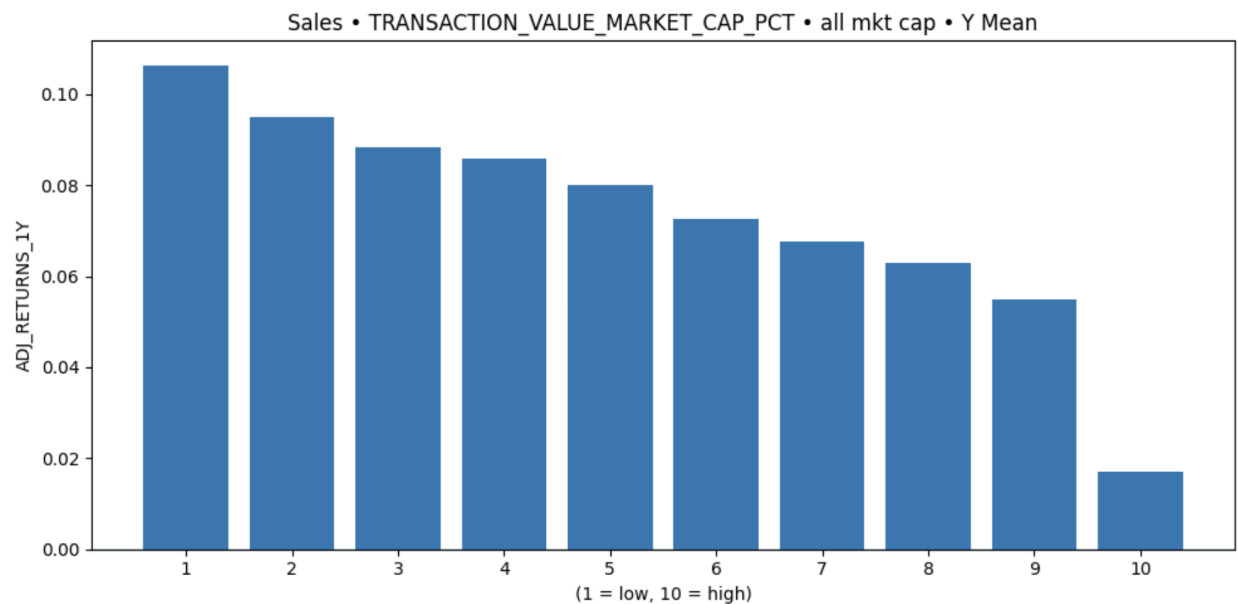


What about sales?

For sales, we don't really see any correlation between transaction size and returns (except for maybe a step down at the top decile, which is sales above \$3M).

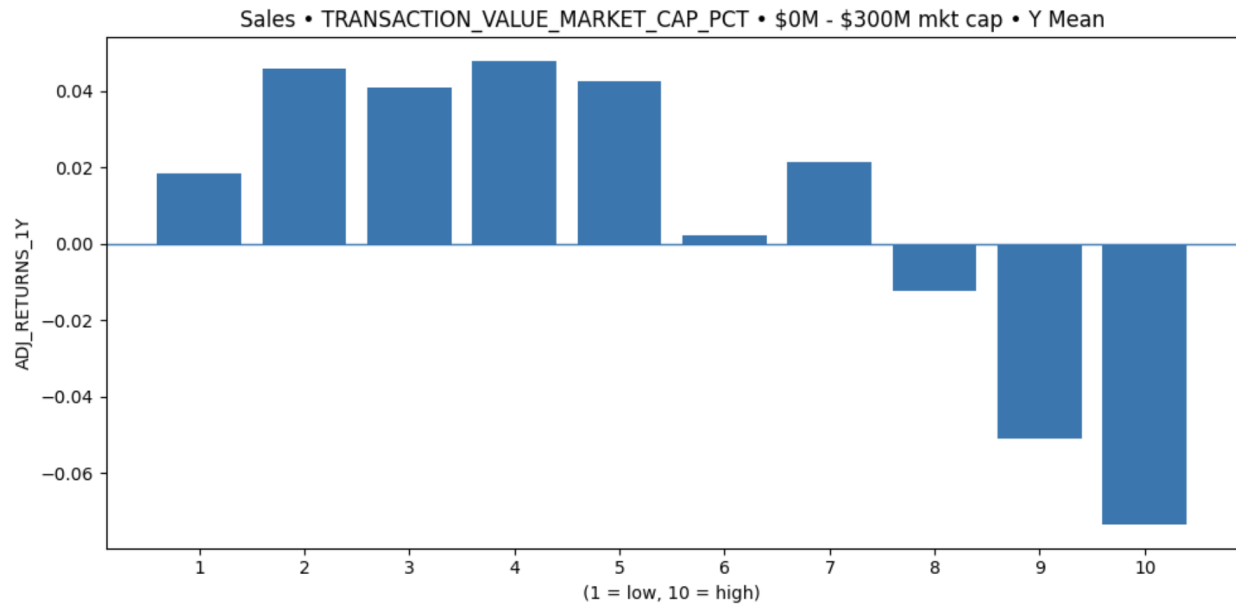


However, we do actually see a clear downward trend in returns when we measure transaction size as a percentage of the company's market cap.

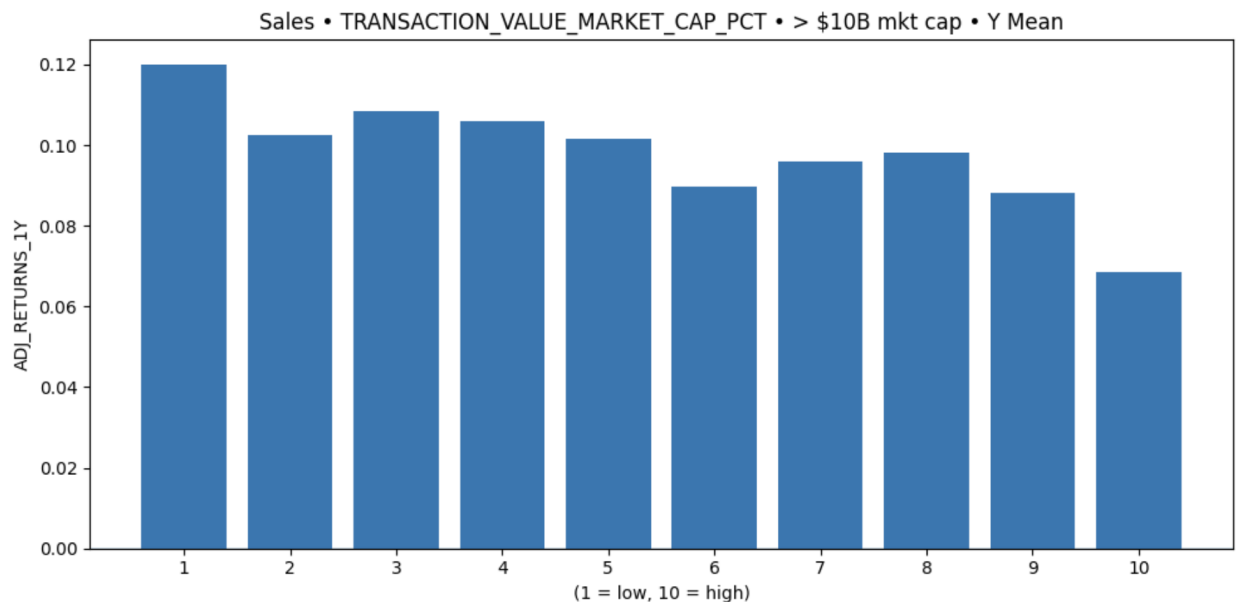


Again, this measurement could just be the size effect, where larger transaction values (relative to market cap size) happen at smaller companies.

While that certainly plays a role, we actually see a similar trend within market cap buckets. This is particularly true in micro-cap stocks, where the three largest deciles (> 1.5% of the market cap) actually average negative 1y returns.



If we look at other buckets, we see a similar trend (though not as drastic). For example, even the largest bucket shows a clear downward trend in 1y stock performance as the size of the insider sale increases.



Conclusion

For insider purchases, transaction value does not appear to correlate meaningfully with stock performance.

However, the size of insider sales does appear to correlate with stock performance, particularly when measured as a percentage of market cap.

Neither raw transaction value nor transaction value as a percentage of market cap is likely the best way to measure transaction size when identifying High Signal Insider Trades. In a perfect world, we'd know the size of this transaction relative to the insider's net worth. That data is unavailable, so the next best options would be the size of the transaction relative to their compensation or relative to their current holdings of the company's stock.

We do not currently have quality compensation data, but we will next look at the size of the transaction relative to the insider's holdings.