From: Scott, Brian 1
To: QMR
Subject: market vol and IC for domestic RE: FURS Performance Report
Date: Thursday, December 28, 2023 1:41:09 PM
Attachments: image001.png
image005.png
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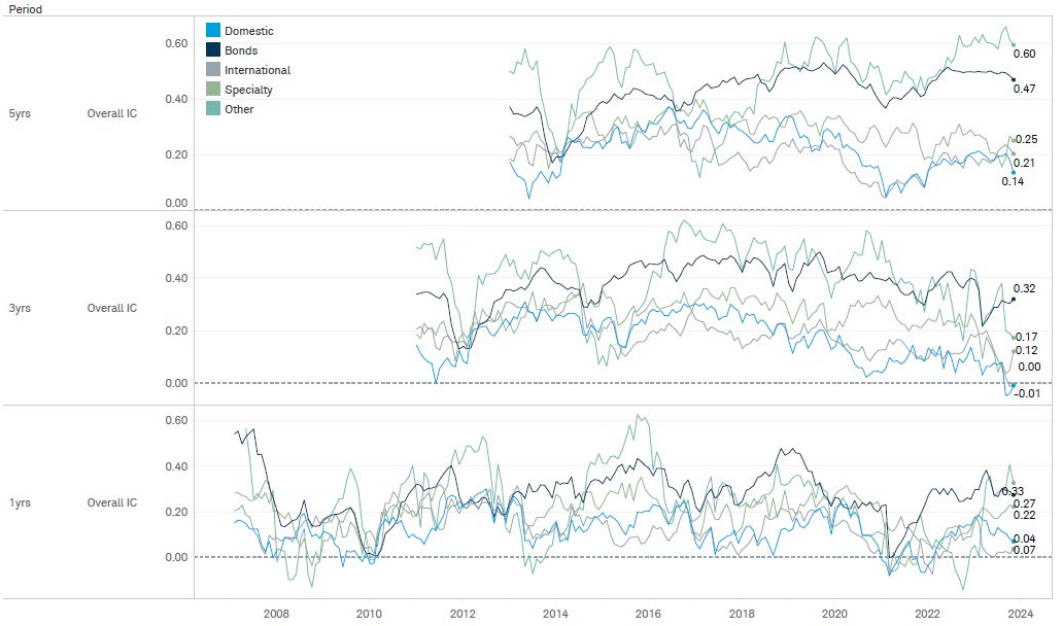
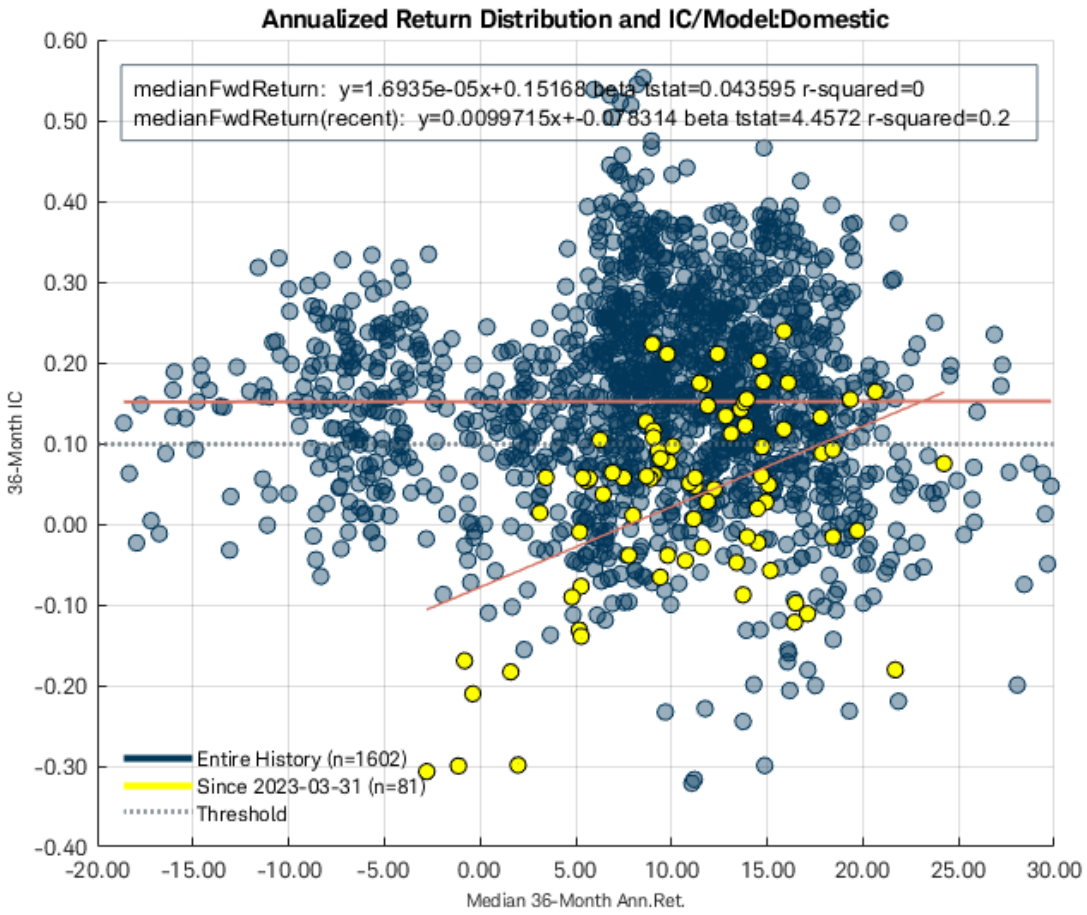
[redacted] Was doing stuff with the domestic model to see if any "top down" analysis could explain some of the poor IC performance as shown below. MI has made a few comments on perf recently and wanted to be ready w response. Additionally, there is some new MRO language in whitepaper section four regarding a case study, this could perhaps suffice if at some point they demand it.

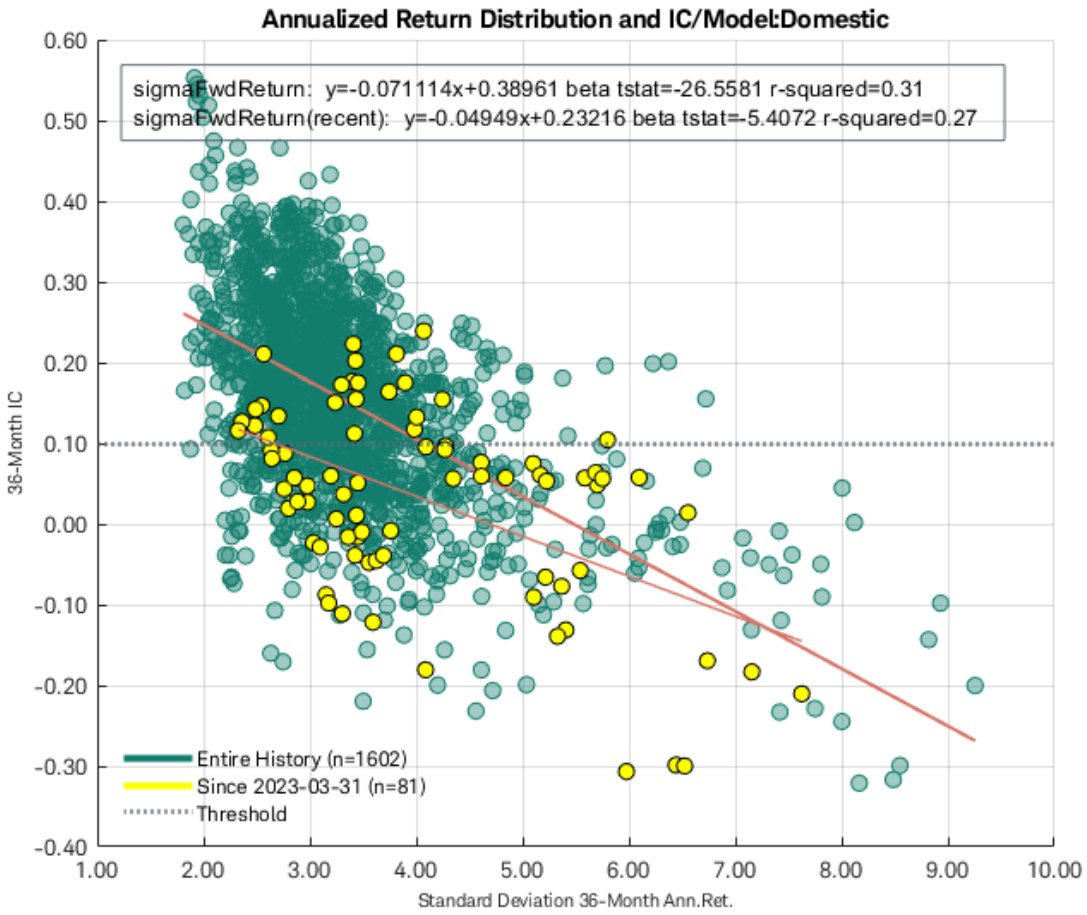


The general hypothesis: is there something specific about the distribution of annualized returns (in this case 36-month) affecting return ranks and thus IC. You will recall the equity market basically ripped for 20 months straight beginning March 2020 and there could be irrational or non-fundamental behavior baked into the 36-month annualized return figures. The two charts below show IC against median and standard deviation of the 36-month annualized return distribution per category per period for domestic categories only.

C1:


Annualized Return Distribution and IC/Model:Domestic
medianFwdReturn: y=1.6935e-05x+0.15168 beta tstat=0.043595 r-squared=0
medianFwdReturn(recent): y=0.0099715x+-0.078314 beta tstat=4.4572 r-squared=0.2
Entire History (n=1602)
Since 2023-03-31 (n=81)
Threshold
36-Month IC
Median 36-Month Ann.Ret.
0.60
0.50
0.40
0.30
0.20
0.10
0.00
-0.10
-0.20
-0.30
-0.40
-20.00
-15.00
-10.00
-5.00
0.00
5.00
10.00
15.00
20.00
25.00
30.00

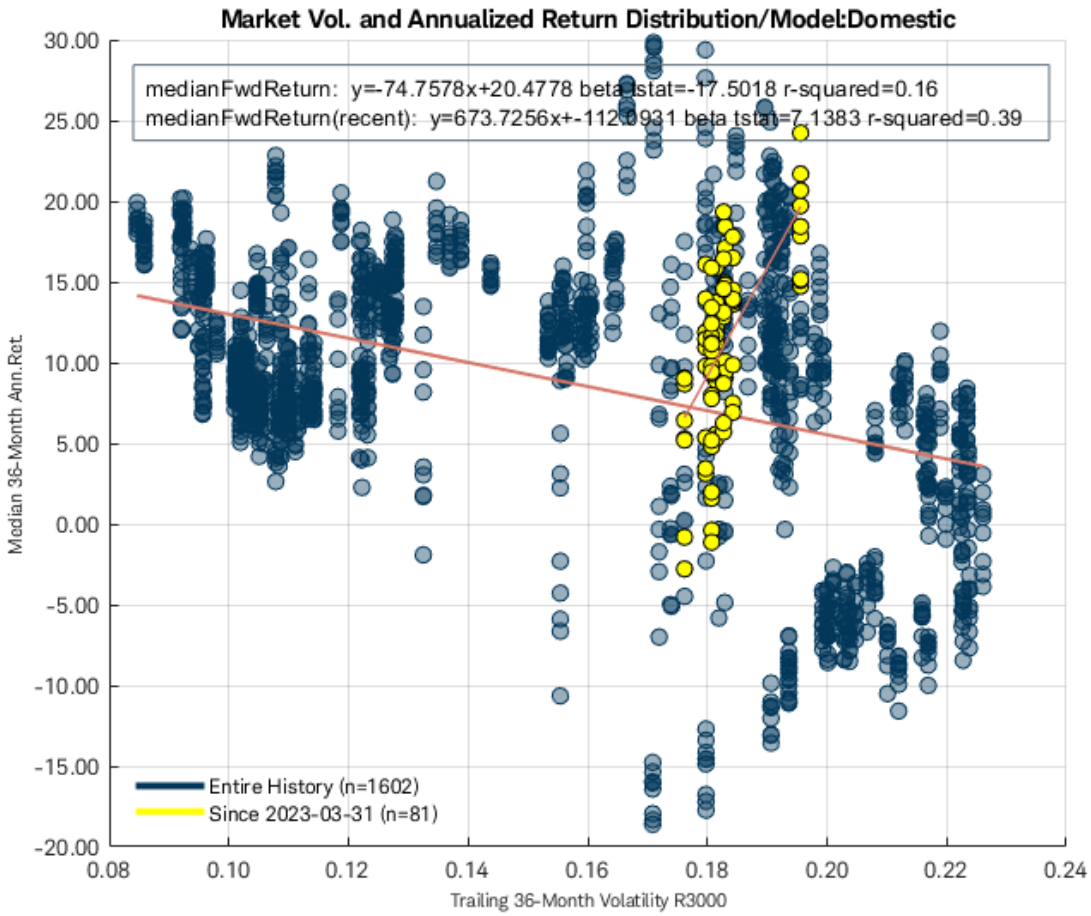
C2:



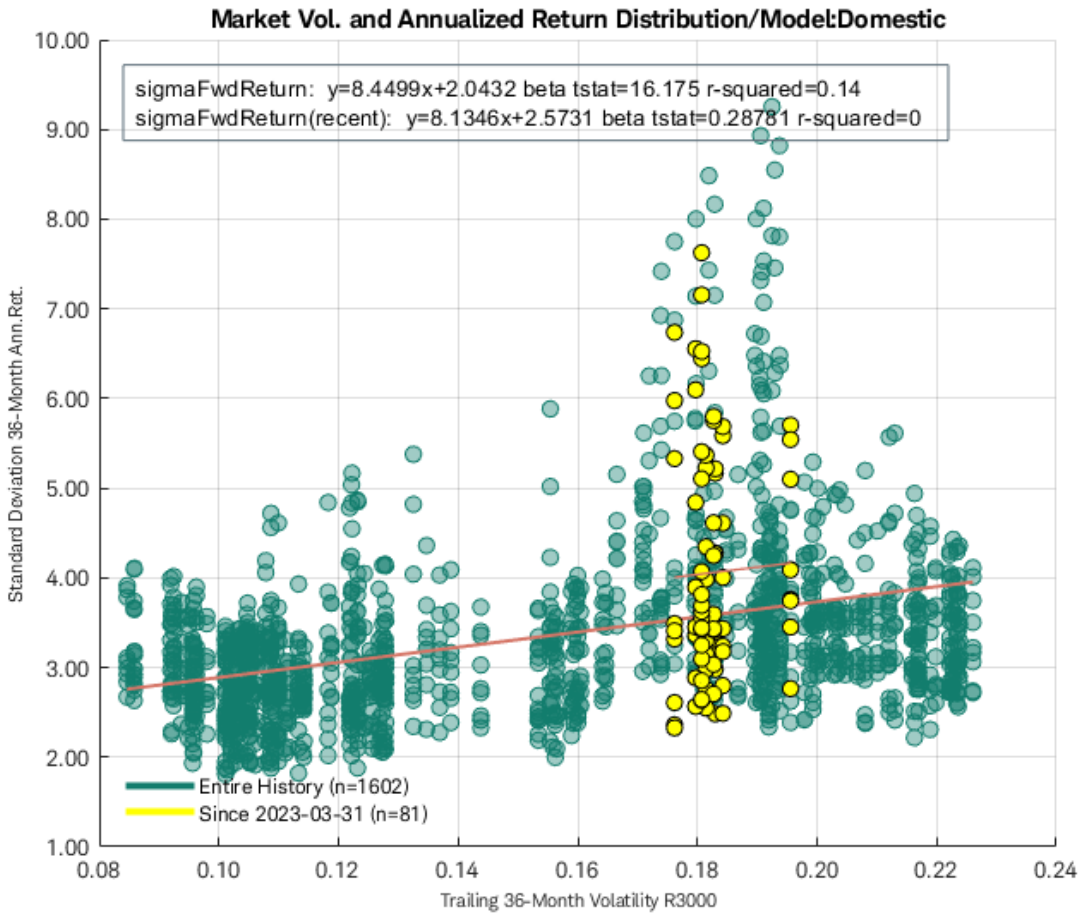
The median returns in C1 do not seem to support the hypotheses. If it did I would expect to see some kind of horseshoe pattern, where extreme low/high median returns indicate extreme return distributions and thus low IC. In addition to median I also tested min, max, quartiles, quintiles, percent ranks, and z-scores. This torturing of the data did not tell me what I wanted to hear. The standard deviation in C2, however, does seem to indicate the dispersion of the annualized returns can be a symptom of disordered returns and thus lower IC. I would say the entire range of IC occurs at lower dispersion, where mostly only low IC occur at high dispersion.

A this point I want to know if exogenous factors are affecting these return distributions, specifically the broader market. I compute the trailing 36-month annualized volatility of the Russell 3000 index. This is the vol of the market between rating and return dates. Now I make the independent variables from the above charts the dependent variables and make market vol the independent variable. C3 and C4 below show median and standard deviation. C3 seems to show a relationship to market vol: generally higher clustered returns in lower vol, dispersed returns in higher vol, and perhaps low active returns at the highest vol. (This is also interesting from the perspective of assessing some kind of optimal environment for active management.) C4 below seems to indicate a more straightforward relationship: higher market vol means higher dispersion of active returns.

C3:


Market Vol. and Annualized Return Distribution/Model:Domestic
medianFwdReturn: y=-74.7578x+20.4778 beta tstat=-17.5018 r-squared=0.16
medianFwdReturn(recent): y=673.7256x+-112.0931 beta tstat=7.1383 r-squared=0.39
Median 36-Month Ann.Ret
Trailing 36-Month Volatility R3000
Entire History (n=1602)
Since 2023-03-31 (n=81)
30.00
25.00
20.00
15.00
10.00
5.00
0.00
-5.00
-10.00
-15.00
-20.00
0.08
0.10
0.12
0.14
0.16
0.18
0.20
0.22
0.24

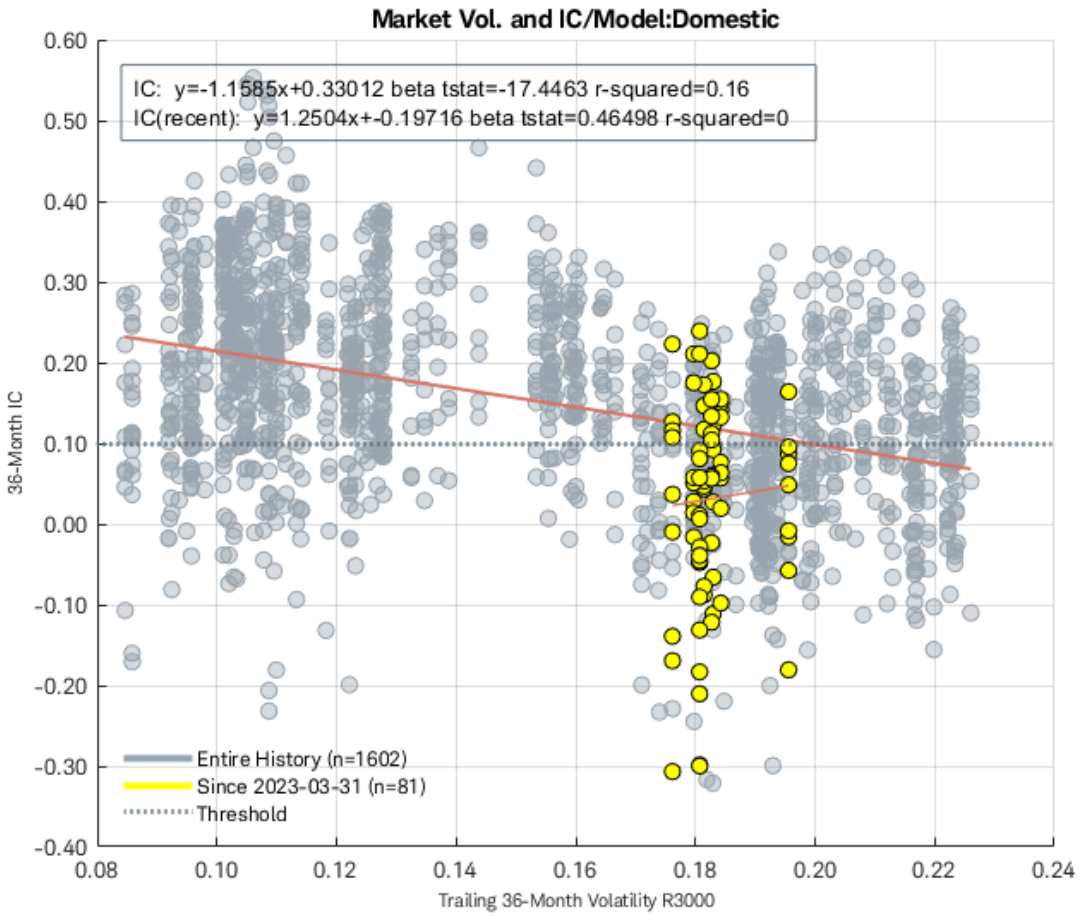
C4:



Now it seems like we can do some transitivity things (if a is in b and b is in c then a is in c) and say if low IC is a result of return dispersion, and return dispersion is a result of market vol, then low IC is a result of market vol. This is shown in C5 below. In this case I don't think it's so cut and dry but I do think the following is true: considering a performance monitoring threshold of 0.10, low IC can happen during times of lower market vol, but it mostly happens during times of higher market vol; and higher IC happens during any kind of market vol, but higher and highest IC mostly happened during times of lower market vol.

Of course, I would just say this is a single factor. And of course this isn't anything new as Jonathan advises on this factor/effect all the time. And it's likely some "bottom-up" analysis would provide the best insight (like go find what factors/subcomponents contributed to the funds unexpected performance or mis-ranking during times of market stress). But at least here is some top-down empirical work.

C5:



From: Scott, Brian 1
Sent: Friday, December 22, 2023 7:56 AM

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