"Losing Sight of the Trees for the Forest?
Attention Shifts and Pairs Trading"

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Abstract: Understanding how markets impound information into stock prices is one of the central concerns of financial economics. Against this background, this paper aims at enhancing the understanding of the profitability of pairs trading, a a relative-value arbitrage approach and popular Wall Street investment strategy. Pairs trading exploits statistical methods to identify economically linked firms. Comprehensive empirical studies on this topic are (still) very rare. This is surprising given its large seemingly abnormal returns reported in Gatev et al. (2006) as well as its apparent popularity among sophisticated practitioners. As a consequence, it is still an open question when, where, and why pairs trading is particularly profitable. We focus on the role of one specific potential driver of pairs trading profits in depth: (Time-varying) limited investor attention. By uncovering a rich set of empirical regularities related to the potentially time-varying risk-return trade-off of pairs trading, this study might be of high relevance to practitioners. From a broader perspective, our results lend support to the notion that the relative efficiency of fundamentally related assets might not be stable over time, but be affected by investor attention shifts.

Summary: This paper tests asset pricing implications of the investor attention shift hypothesis proposed in recent theoretical work (e.g. Peng and Xiong (2006)). Our objective here is to directly assess how the dynamics of investor inattention affect the relative pricing efficiency of linked assets. We thereby study a promising and so far widely neglected setting, which differs conceptually from the ones the literature on limited attention has addressed so far: Stock pairs trading (Gatev et al. (2006)), a popular proprietary relative arbitrage approach, which bets on the future performance of stocks with very similar past performance. More specifically, the major research questions dealt with are the following: How to proxy for unobservable investor attention allocation? Is the price formation of economically linked stocks affected by time-varying investor attention? More specifically, do shocks in limited attention towards firm-level information hinder market participants from keeping relative prices of stock pairs in line, thereby giving rise to cross-return predictability?

To answer these questions, we design a novel proxy for limited investor attention in the time series, which

relies on the intuition behind recent models on the dynamics of attention allocation. It aims at identifying days on which market participants are likely to be forced to spend more (or less) resources than usual on understanding "the big picture". The goal is to separate "high distraction days", during which turbulent market conditions are assumed to demand investors full attention, from "low distraction days", during which we expect sufficient resources to process complex interactions at the firm-level. We first verify the usefulness of our proxy by e.g. showing showing that is has predictive power for the magnitude of the post-earnings announcement drift (as suggested by previous work). We then test whether the proxy is able to to explain variations in the magnitude of profits to pairs trading, building on the idea that investors might "lose sight of the trees (stock-level information) for the forest (more aggregate information)".

The nature of pairs trading is very simple, though computationally costly. It consists of a formation period followed immediately by a trading period. In the formation period, one identifies those stock pairs whose historical prices have "moved together the most". In our analysis, we consider in total close to 500 million eligible stock pairs. Importantly, these firms are not only statistically, but also fundamentally linked: Their future earnings surprises show a significant comovement. In the immediately following trading period, one shorts the relatively overpriced winner and buys the relatively underpriced loser, whenever the cumulative returns have sufficiently diverged. If the future resembles the past, prices are likely to finally convergence again, thereby generating positive returns on zero-cost portfolios. Our baseline analysis here relies on findings from more than 300,000 round-trip trades. We are particularly interested in whether it makes any difference whether stocks diverge on high or low distraction days.

And indeed, we find broad, robust, and economically meaningful evidence for investor distraction effects. For instance, the average one-month return on those long-short US stock pairs in 1962 to 2008 which happen to open on high distraction days is about twice as high as the return on pairs which open on low distraction days. In line with the implications of limited investor attention, pairs diverging on high distraction days are far more likely to converge again within in the next two weeks. The type of return predictability we documente is different from the type of return predictability that has been linked to limited attention in the literature so far. Previous studies assets have analyzed the lagged price response of stocks to their own past returns, lead-lag effects between portfolios of stocks, or return predictability along the supply chain. Pairs trading, however, is about predicting the relative performance of two individual, typically rather large stocks with an often non-obvious relationship, out of which neither is the systematic leader. Linking this type of cross-predictability of returns to variations in investor distraction, is, to our knowledge, new.

These return differences appear robust. For instance, they are quite persistent over time and not sensitive

to the specific design of the distraction proxy. They exhibit little exposure to well-known risk premia such as size, value, momentum or short-term reversal. Moreover, they cannot be explained satisfactorily by proxies for time-varying arbitrage risk. Traded stocks tend to be large and liquid, and standard pair characteristics are very similar across distraction deciles. To mitigate concerns that unobserved variables might drive our results, we also examine, with similar results, returns to a subset of pairs that happen to diverge on both high and low distraction days.

Moreover, our findings are not limited to the US market. The return difference between high and low distraction days is a persistent phenomenon which, with varying degree, is observable in each of the eight major non-US stock markets we additionally study.

Alternative proxies for limited attention derived from the literature often have some incremental effect. These proxies include, for instance, down market periods, the number of competing events, or the relative demand for market-level information measured by shocks in Google search queries. Moreover, US pairs opening immediately before holidays, when investor distraction is likely to be particularly high, tend to be more profitable and to converge much more often than pairs on average. In line with our hypotheses, the impact of investor distraction appears lower for pairs consisting of firms with at least one common business segment, for pairs consisting of firms from the same industry, and for pairs consisting of whole value-weighted industries. Finally, pairs particularly neglected (covered) by the media appear more (less) profitable, and exhibit a higher (lower) sensitivity to changes in the level of investor distraction.

Collectively, our results lend broad support to the idea that the relative efficiency of linked assets might not be stable over time, but be affected by investor attention shifts.

References

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