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Institutional ownership and aggregate volatility risk

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ABSTRACT

The paper shows that the difference in aggregate volatility risk can explain why several anomalies are stronger among the stocks with low institutional ownership (IO). Institutions tend to stay away from the stocks with extremely low and extremely high levels of firm-specific uncertainty because of their desire to hedge against aggregate volatility risk or exploit their competitive advantage in obtaining and processing information, coupled with the dislike of idiosyncratic risk. Thus, the spread in uncertainty measures is wider for low IO stocks, and the same is true about the differential in aggregate volatility risk.

1. Introduction

Institutional ownership (henceforth IO) is long recognized to be driven by a long list of firm characteristics[1], many of which can proxy for systematic risk. However, the existing asset pricing studies usually use IO as a proxy for either investor sophistication[2] or short sale constraints.[3] Therefore, the link between IO and numerous anomalies is usually interpreted as the evidence that these anomalies stem from investors' data-processing biases and persist because of limits to arbitrage.

This paper presents a risk-based story that explains why several important anomalies - the value effect (Fama and French, 1993), the idiosyncratic volatility effect (Ang et al., 2006), the turnover effect (Datar et al., 1998), and the analyst disagreement effect (Diether et al., 2002) - are stronger for low IO firms. The explanation is aggregate volatility risk: in the subsample with low IO, the arbitrage portfolios that exploit the aforementioned anomalies severely underperform the CAPM when expected aggregate volatility increases.

Aggregate volatility risk is the risk of losing value when expected aggregate volatility unexpectedly increases. Campbell (1993) creates a model where increasing aggregate volatility is synonymous with decreasing expected future consumption. Investors would require a lower risk premium from the stocks the value of which correlates positively with aggregate volatility news, because these stocks provide additional consumption precisely when investors have to cut their current consumption for consumption-smoothing motives. Chen (2002) adds in the precautionary savings motive and concludes that the positive correlation of asset returns with aggregate volatility changes is desirable, because such assets deliver additional consumption when investors have to consume less in

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[1] See, e.g., Falkenstein (1996), Del Guercio (1996), Gompers and Metrick (2001)
[2] Bartov et al. (2000), Collins et al. (2003)
[3] Nagel (2005), Asquith et al. (2005)

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order to boost precautionary savings. Ang et al. (2006) confirm this prediction empirically and coin the notion of aggregate volatility risk. They show that the stocks with the most positive sensitivity to aggregate volatility increases have abnormally low expected returns and that the portfolio tracking expected aggregate volatility earns a significant risk premium.

Several recent papers (Barinov, 2011, 2013, 2014) show that higher firm-specific uncertainty and more option-like equity imply lower aggregate volatility risk. Barinov (2011) shows that an aggregate volatility risk factor (FVIX) explains the idiosyncratic volatility effect and the value effect, while Barinov (2013, 2014) present similar evidence for the analyst disagreement effect and the turnover effect, respectively. All three papers also show that the negative effects of firm-specific uncertainty on expected returns are stronger for option-like (growth or distressed) firms and that this evidence is also explained by aggregate volatility risk.

The economic mechanism behind the evidence in Barinov (2011, 2013, 2014)) is two-fold. First, firm-specific uncertainty increases when aggregate volatility goes up (see Campbell et al., 2001, and Barinov, 2013, for empirical evidence). One possible economic mechanism behind the comovement between average idiosyncratic risk and aggregate volatility is operating leverage. In recessions, when profit margins are low, a fixed absolute shock to input/output prices leads to a larger percentage change in profits, and thus a larger percentage change in expected cash flows and stock prices. This logic applies both to market volatility (if one considers market-wide shocks that affect every firm's profits) and (average) firm-specific volatility (if one considers firm-specific shocks to input/output prices).

Higher firm-specific uncertainty during periods of high aggregate volatility means that the value of option-like equity becomes less sensitive to the value of the underlying asset (because the delta of the option declines in volatility) and the option-like equity becomes therefore less risky precisely when risks are high. This effect is stronger for the firms with higher firm-specific uncertainty. Hence, firms with high firm-specific uncertainty and option-like equity will have procyclical market betas and will suffer smaller losses when aggregate volatility increases and the risk and expected returns of all firms go up.

Second, all else equal, option-like equity increases in value when idiosyncratic volatility of the underlying asset increases (see Grullon et al. (2012)), for empirical evidence). That makes the reaction of option-like equity to the increases of aggregate volatility (usually coupled with increases in idiosyncratic volatility) less negative. This effect is also stronger for firms with high idiosyncratic volatility, therefore such firms, especially if they are option-like, tend to lose less value than other firms with similar market betas when aggregate volatility and idiosyncratic volatility both increase.

The reason why the sorts on market-to-book, idiosyncratic volatility, turnover, or analyst disagreement produce wider aggregate volatility risk differential in the low IO subsample is that, as I document in this paper, institutions tend to stay away from the firms with extreme levels of firm-specific uncertainty and option-likeness. On the one hand, portfolio managers dislike the stocks with high volatility/uncertainty (see Shleifer and Vishny (1997)), which makes them decide against owning stocks with high market-to-book, high idiosyncratic volatility, high analyst disagreement, or high turnover. On the other hand, portfolio managers dislike high aggregate volatility risk of the stocks with low levels of firm-specific uncertainty and option-likeness. Portfolio managers also recognize that they need some level of uncertainty to use their comparative advantage in access to information and in ability to process it. As a result, institutions ignore both the firms with low uncertainty (considering them unattractive) and the firms with high uncertainty (considering them too dangerous). Sorting on uncertainty measures in the low IO subsample therefore produces the widest spreads in uncertainty and, consequently, aggregate volatility risk.

The observation that the link between firm-specific uncertainty and IO takes different signs for low and high values of uncertainty helps to resolve, for example, the puzzling positive relation between IO and firm-specific uncertainty observed by Gompers and Metrick (2001) and Yan and Zhang (2009) and contested by Falkenstein (1996) and Del Guercio. In my first empirical test, I observe that in the cross-sectional regressions of IO on measures of firm-specific uncertainty measures and controls the relation between firm-specific uncertainty and IO is indeed ambiguous and depends on research design. However, once I add the squared measures of uncertainty, a strong and uniform U-shaped relation between IO and uncertainty emerges.

Another important implication of the U-shaped relation between IO and uncertainty is that, as described above, the fact that many anomalies are stronger for low IO firms does not imply, as several existing studies claim, that these anomalies are mispricing. I show that the difference in aggregate volatility risk is enough to explain why the value effect, the idiosyncratic volatility effect, the turnover effect, and the analyst disagreement effect are stronger for the firms with low IO. When I look at the CAPM and Fama-French alphas, the difference in the magnitude of these four effects between the lowest and highest IO quintiles varies between 46 and 75 bp per month. However, in the two-factor ICAPM with the market factor and FVIX this difference is reduced by more than a half and usually becomes insignificant.

To further confirm that the stronger anomalies for low IO firms do not represent mispricing, I look at earnings announcement returns. While I do observe some concentration of the four anomalies I consider at earnings announcements (though only in equal-weighted returns), I do not normally observe any pronounced relation between this concentration and IO, inconsistent with the mispricing hypothesis.

The U-shaped relation between IO and uncertainty is also helpful in explaining the positive link between IO and future returns (henceforth, the IO effect). Gompers and Metrick (2001) is one of the first studies to document the IO effect. They ascribe the IO effect either to the ability of the portfolio managers to pick the right stocks, or to the demand pressure institutions exert on prices. Yan and Zhang (2009) and Jiao and Liu (2008) show that the IO effect is stronger for small stocks, growth stocks, and high uncertainty stocks, consistent with the argument in Gompers and Metrick (2001).[4]

[4] Yan and Zhang (2009) and Jiao and Liu (2008) find that both the relation between IO and future returns (the IO effect) and the relation between institutional trading and future returns are stronger for small stocks, growth stocks, and high uncertainty stocks. My paper focuses only on the first relation and does not consider