

Discussion of:
*Tax-Timing
Options and the
Demand for
Idiosyncratic
Volatility*
by Oliver Boguth
and
Luke C.D. Stein

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Motivation
The Evidence
Time Series
Cross-Sectional
Specification
Result exists
Lack of
Identification

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April 29, 2017

Motivation

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- ▶ Income tax structure generates a tax-timing option.
 - ▶ Natural to relate the value of this option to individual stock return volatility.
 - ▶ However evidence suggests little or no tax effects in equity returns.
 - ▶ Studies examining ex-dividend day:
 - ▶ Boyd and Jagannathan (94 *RFS*)
 - ▶ Fama and French (98 *JF*)
 - ▶ Erickson and Maydew (98 *AR*)
 - ▶ Direct evidence on value of tax-timing option: Chay, Choi, and Pontiff (2006 *JF*):
\$1 in realized gains \approx \$0.93 in unrealized gains.
 - ▶ Who is marginal investor?
 - ▶ Green and Ødegaard (1997 *JF*) argue that dealers / liquidity providers who are traders are positioned to be marginal in liquid markets. In particular they find significant tax effects in 70's and early 80's, but no tax effects in US Treasuries since 1986 tax law in US T-Bonds.

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(Idiosyncratic) Volatility

- ▶ Cross-sectionally idiosyncratic volatility is strongly inversely correlated with expected return.
 - ▶ Robust finding
 - ▶ Even can explain other puzzles –e.g., *betting against beta*.
 - ▶ Kogan and Papanikolaou (2013 *RFS*):
 - ▶ Long-Short Ivol portfolio has annual return standard deviation of 37%
 - By contrast high-low P/E portfolio's σ is 20%.
 - ▶ But CAPM r^2 of 20%.
 - ▶ They infer that this portfolio has (a lot of) systematic risk.
 - ▶ They suggest that it could be exposure to a technology shock.
(High-Ivol firms can adapt more readily to a technology shock.)
 - ▶ My own work: Ivol is complementary to size:
 - We *really* don't like large, high-Ivol stocks, and we really like small, low-Ivol stocks.

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This paper brings these two ideas together

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This seems sensible.

Not the first to do so:

- ▶ Lamoureux and Poon (87 *JF*) argue that the reason we saw a positive return to a clean and material stock split announcement is that the split increases the stocks $Ivol$ (Ohlson and Penman 1985 *JFE*). (Analysis prior to 1986 Tax Reform Act.)
- ▶ Jiang, Xu, and Yao (2009 *JFQA*) show that high $Ivol$ predicts poor future earnings, which can explain the lower future returns, and argue that the tax timing option channel is mute on this point.

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Time-Series

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Period: 1963 - 2015.

- ▶ Paper claims that the value of the timing option is increasing in: interest rate, (realized capital gains) tax rate (assuming 0 on unrealized gains/losses), and embedded gains.
- ▶ Confuses me – the value will depend on (Q-measure) expectations of these things, which may or may not be related to their current levels.
- ▶ Paper shows statistically significant correlations between the lvol premium and Treasury rates and a capital gains tax rate.

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Time-Series 2.

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- ▶ Novy-Marx: When a trading strategy's *expected* returns vary slowly over time, then OLS regressions confer spurious power explaining returns on any slow moving 'predictive variable' (Ferson, Sarkissian, and Simin 2003 *JF*).
- ▶ Novy-Marx in particular notes the spurious nature of sentiment's ability to predict the idiosyncratic volatility premium. The *Ivol* premium is significantly larger when Mars and Saturn are opposed (t-statistics of 3.6), monthly data July 1973 - December 2010. (*Ivol* is also larger when sentiment is high.)
- ▶ Run the regressions in first differences to address the *pseudo-predictability problem*.

The story

The hypothesis in the paper is that “the Ivol premium is stronger among stocks that are more exposed to taxation.”

Problems:

- ▶ This is not necessarily true:
 - ▶ *Marginal investor* not necessarily reflected by holdings (Dybvig and Ross 1986 *JF*).
(Strong case that “liquidity providers” are marginal in prices in US equity market.)
- ▶ I know of no convincing evidence that:
 - ▶ ... there are cross-sectional differences in stocks’ exposures to taxation (Since even if there are multiple marginal investors, expectations—not current levels—matter.)
 - ▶ ... we can measure a stock’s “exposure to taxation.”

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Proxies for *exposure to taxation*

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- ▶ %^{ge} of shares owned by institutions.
 - ▶ Seyhun and Skinner (1994 *JB*): Only 5 - 7% of retail investors show any tax-motivated trading, and this is not persistent.
- ▶ Whether stock has paid a dividend over past 12 months.
 - ▶ Grinstein and Michaely (2005 *JF*): Institutions avoid non-dividend paying stocks.
- ▶ Dividend yield.
- ▶ Implied rate from ex-dividend behavior.

Exposure to taxation implies the tax-sensitivity of the marginal *investor*.

Sequential Sorts

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The first set of cross-sectional evidence entails:

- ▶ sort stocks into terciles by the tax proxy
- ▶ Within those terciles sort by $Ivol$
- ▶ Already a vast literature on the relationships between $Ivol$ and institutional holding: Institutions avoid high $Ivol$ and institutional holding: Institutions avoid high $Ivol$ stocks. Institutions like liquidity which is strongly inversely correlated with share price, and low price stocks have high $Ivol$.

Everything is endogenous

- ▶ Literature points to endogeneity problems:
 - ▶ Jankensgard and Vilhelmsson (Lund Univ): Inverse relationship between trading volume and lvol, trading vol depends on shareholder base, so causality runs from investor base to lvol.
 - ▶ Campbell, Lettau, Malkiel, and Xu (2001 *JF*), Dennis and Strickland (2001 *UVA*), Sias (1996 *RFS*), Xu and Malkiel (2003 *JB*) all find positive relationship between IO and IV in the cross-section and link the increase in aggregate IV to rising IO.
 - ▶ Boone and White (2015 *JFE*): (An exogenous increase in) Institutional ownership increases: management disclosure, analyst following, and liquidity: in turn lower volatility.

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Everything is endogenous -2-

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- ▶ Literature points to endogeneity problems:
 - ▶ Barinov (2017 *JEF*): Fund managers avoid high lvol stocks; also very low lvol stocks. In fact, he argues that this feature of funds' preferences for lvol "explains why several anomalies[—including the lvol effect—] are stronger for firms with low institutional ownership.
 - ▶ Cao and Petrasek (2014 *JFM*): Institutional ownership affects stocks' liquidity risks. Although effect is heterogeneous wrt institution type: largest for financials, opposite effect for hedge funds.

Short Selling Constraints?

- ▶ Nagel (2005 *JFE*): Institutional ownership can explain a variety of cross-sectional *anomalies*, including the volatility effect.
- ▶ His rationale: low institutional ownership is a proxy for short-selling constraints.
- ▶ Here's a portion of his Table 2. The portfolios across the columns are sorted from Low to high (residual) institutional ownership. These are intersected with independent volatility sorts (rows).

Panel E: intersection with sort on volatility (VOL)^a

P1	(Low)	1.39	1.50	1.48	1.43	1.60	0.21	(1.37)
P2		1.28	1.42	1.40	1.42	1.41	0.13	(1.02)
P3		1.00	1.28	1.31	1.29	1.42	0.42	(3.43)
P4		0.65	1.02	1.22	1.16	1.34	0.69	(3.98)
P5	(High)	0.08	0.55	0.81	0.96	1.15	1.07	(4.38)
P1-P5	Raw	1.31	0.95	0.67	0.47	0.45	0.86	(3.07)
	(<i>t</i> -statistic)	(2.31)	(1.86)	(1.50)	(1.16)	(1.22)		
P1-P5	CAPM α	2.01	1.60	1.20	0.97	0.96	1.05	(2.88)
	(<i>t</i> -statistic)	(3.28)	(3.01)	(2.47)	(2.25)	(2.46)		
P1-P5	FF3F α	1.36	1.05	0.70	0.52	0.59	0.77	(2.29)
	(<i>t</i> -statistic)	(3.02)	(2.89)	(2.16)	(1.72)	(1.86)		

Fama MacBeth regressions

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These reshuffle the problems with the sequential sorts (they can't remedy them).

- ▶ There is no theory to support linearity.
- ▶ The strong linkages between $Ivol$ and the tax proxies.

Motivation is unclear: disentangle the price of risk from the quantity of risk. What risk?

Nagel also reports the same FM regressions. He finds the same thing: When he interacts volatility with IO the coefficient on volatility -13 (2) and on Vol X INST 13 (2). (Nagel has scaled the variables for ease of interpretation.)

Time series of cross-section

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The last table looks at the link between the persistent time-series variables and the ability of the “tax proxy” to explain the $Ivol$ premium.

Two possible issues:

- ▶ Mars and Saturn might do even better;
- ▶ the endogeneity of $Ivol$ itself.

Big Picture: The Granger and Newbold (1974) spurious regression arises because the dependent variable and the independent variable are affected by the passage of time. We could think of them both as being endogenous. We have exactly the same problem in the cross-section. Is Nagel’s story better than the story in this paper? How can we test this? We can’t without proper identification.