Inelastic Hedging Demand and Intraday Momentum

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Discussion
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State of the Literature

Baltussen et al. (2021):
option dealer "gamma" predicts intraday equity price momentum

known mechanism:

(1) to earn spreads, dealers sell more options than they buy

(2) dealers delta-hedge the resulting short option position via stocks

(3) short option position is "short gamma",
i.e. stock price $\uparrow \Rightarrow$ dealers' option delta $\downarrow \Rightarrow$ dealers buy stocks

(4) such uninformed trades can have price impact
and create time series momentum in stock prices

Inelastic Hedging Demand and Intraday Momentum

this paper clarifies the mechanism

new findings:

(1) dealer gamma creates stock price momentum
when the stock price breaks the GTBR

(2) no such effect otherwise

(3) dealer gamma creates more stock price momentum,
when active option traders are also short gamma

The GTBR Range

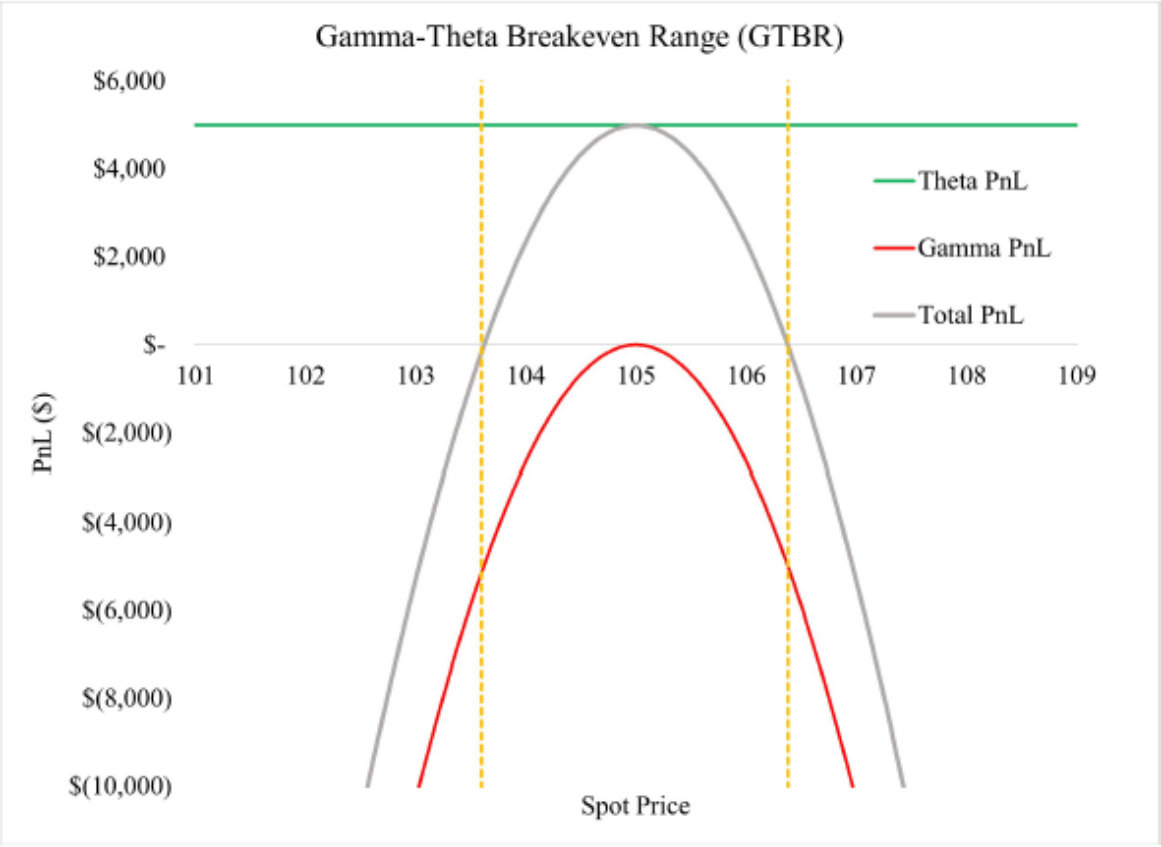

Figure 2: Intraday PnL change by spot price movement
NOTE: MM has a short option leg with its delta hedge leg at the underlying price of 105

Comment 1: Motivation

paper motivation:
Why are financial markets inelastic? (Gabaix and Koijen, 2021)

problems I see with this:

- option dealer flows: high-frequency price pressure
- IMH: low demand elasticity at the quarterly frequency
- that option dealers have inelastic stock demand
  does not explain why noone with perfectly elastic demand
  takes the other side of these trades.

Why not motivate this more directly?
We clarify an increasingly important source of price pressure.

Comment 2: Why does the GTBR range matter?

paper:

- derives the return point at which hedging should start
- argues that GTBR is the proxy that traders would use
- Do you have any evidence for this?
  Why not use the gamma hedge triggering level directly?
- Is it reasonable to model hedging as a binary choice?

Comment 3: Main Regression Specification

Table 2: Stock intraday momentum, short gamma exposure, and GTBR

This table reports the regression of the last 30 minutes by the first 30 minutes with the interactive variables. *D_Short_Gamma* equals 1 if the MM has a short gamma position and 0 otherwise. *D_GTBR_hit* equals 1 if the underlying breaks the Gamma-Theta Breakeven Range (GTBR) at 360 minutes after the market opens and 0 otherwise. Newey and West (1986) t-statistics are in parentheses. *** is $p < 0.01$, ** $p < 0.05$, * $p < 0.1$, respectively and coefficients are multiplied by 100.

	Dependent: r_{390_360}				
Independent	(1)	(2)	(3)	(4)	(5)
r_{30_0}	1.82***	1.64***	1.22***	1.05***	-1.16***
	(18.06)	(14.82)	(7.93)	(6.49)	(-4.20)
$r_{30\_0} \cdot D\_Short\_Gamma$		0.72***		0.71***	0.56**
		(2.98)		(2.97)	(2.32)
$r_{30\_0} \cdot D\_GTBR\_hit_{360}$			0.95***	0.96***	1.18***
			(5.01)	(5.00)	(6.07)
$r_{30\_0} \cdot D\_Earning$					-2.41***
					(-5.40)
$r_{30\_0} \cdot ImpliedVol$					3.66***
					(7.84)
$Adj.R^2(\%)$	0.02	0.02	0.02	0.02	0.03
Firm F.E.	Yes	Yes	Yes	Yes	Yes
Observations	342,264	342,264	342,264	342,264	342,185

- t-stat around 18?!
- Why make dealer gamma a dummy?
- Interact dealer gamma and GTBR?

Comment 4: Option Trade Data

Table 5: Stock intraday momentum and active option traders' option holdings

This table reports the regression of the last 30 minutes on the first 30 minutes by professional investors' option holdings. $Prof\_Option\_Holding = 1$ if the active professional investor's option gamma exposure is positive and 0 otherwise. D_Short_Gamma equals 1 if the MM has a short gamma position and 0 otherwise. D_GTBR_hit equals 1 if the underlying breaks the Gamma-Theta Breakeven Range (GTBR) at 360 minutes after the market opens and 0 otherwise. Newey and West (1986) t-statistics are in parentheses. *** is $p < 0.01$, ** $p < 0.05$, * $p < 0.1$ for the regressions (1) to (6), respectively, and coefficients are multiplied by 100. The statistics for the difference is the Wald statistic following chi-squared distribution.

	Dependent: r_{390_360}								
	$Prof\_Option\_Holding = 0$			$Prof\_Option\_Holding = 1$			$Difference$		
Independent:	(1)	(2)	(3)	(4)	(5)	(6)	(4)-(1)	(5)-(2)	(6)-(3)
r_{30_0}	1.66***	1.42***	-0.92***	1.56***	0.49***	-3.02***	0.23	-0.93***	-2.10***
	(18.99)	(11.75)	(-4.63)	(14.38)	(2.93)	(-10.62)	(0.23)	(8.76)	(12.44)
$r_{30\_0} \cdot D\_Short\_Gamma$	0.83***		0.76***	-0.02		-0.40	-0.84		-1.16**
	(4.92)		(4.51)	(-0.06)		(-1.42)	(2.51)		(4.78)
$r_{30\_0} \cdot D\_GTBR\_hit_{360}$		0.76***	0.94***		1.66***	1.98***		0.90**	1.04***
		(4.95)	(6.08)		(7.97)	(9.42)		(5.29)	(6.96)
$r_{30\_0} \cdot D\_Earning$			-2.16***			-3.04***			-0.88
			(-5.59)			(-6.14)			(0.97)
$r_{30\_0} \cdot ImpliedVol$			3.29***			7.59***			4.30***
			(14.05)			(15.79)			(11.87)
FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs	241,086	241,086	241,025	101,178	101,178	101,160	342,264	342,264	342,185

- I suspect some "professional traders" are market makers, which could explain this finding.

Conclusion

This paper studies
the impact of option dealer gamma on stock price momentum,
accounting for theta and trade costs.

Very relevant work for the derivatives literature!

I have some comments on the empirics, but all of these can be addressed.

References

Baltussen, Guido, Zhi Da, Sten Lammers, and Martin Martens, 2021, Hedging demand and market intraday momentum, *Journal of Financial Economics* 142, 377–403.

Gabaix, Xavier, and Ralph SJ Koijen, 2021, In search of the origins of financial fluctuations: The inelastic markets hypothesis, Technical report, National Bureau of Economic Research.

Additional Comments

- add captions to all figures and tables
- explain dealer gamma in more detail in intro paragraph 2?
- finding 2 from page 3 is not in the abstract?
- odd sentence end under 2.2 sentence 2
- Do you need behavioral references for your mechanism (p.8)?