THE OPTION MARKET'S ANTICIPATION OF INFORMATION CONTENT IN EARNINGS ANNOUNCEMENTS

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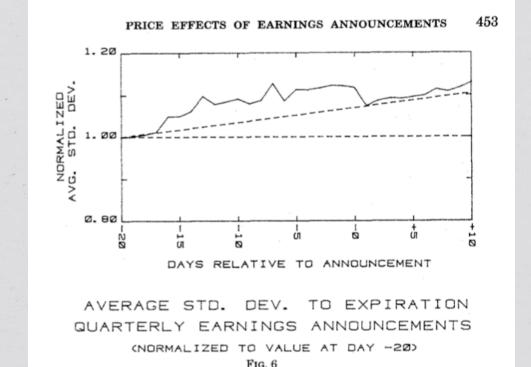
October 23, 2010

Research question

* How does information content in earnings announcements manifest in the option market?

Earnings announcements increase stock price volatility (Beaver, 1968).

(Patell and Wolfson, 1981)



The option's implied volatility reflects this.

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Research question (rephrased)

* Does the option market's anticipation of volatility-induced spikes in stock prices reflect sophistication beyond simply noting that the uncertainty surrounding earnings releases increases stock price volatility?

Potential contributions

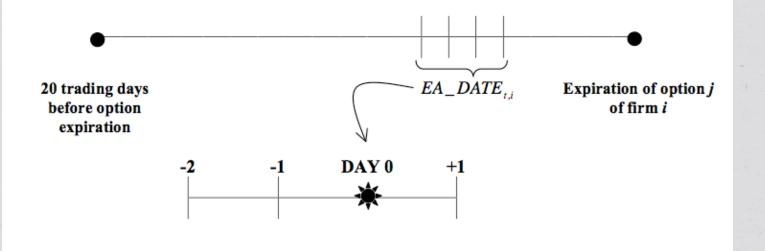
- * We develop a volatility-driven measure of anticipated information content (the AIC) that separates the effect of earnings uncertainty from the stock price's sensitivity to earnings news
- * In so doing, we offer researchers a frequently available, ex ante, firm- and quarter-specific approach to studying information content
- * Our option-market approach facilitates the study of information content in new settings

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Which options do we study?

We study: 1) short-dated (i.e., within 20 days of expiration), 2) at-the-money options that 3) expire soon after an anticipated earnings announcement

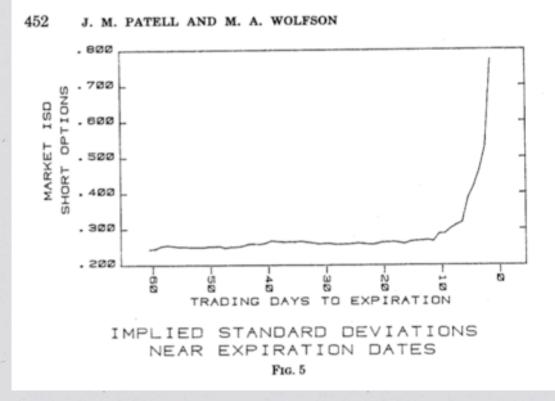
Earnings announcement date & option expiration EA_DATE, falls in the 20 trading days before option expiration.



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Absent a volatility-increasing event, shortdated, ATM options should be virtually worthless.

Yet, evidence suggests that these options trade for non-trivial market values if they expire soon after an anticipated earnings announcement



Example

Current stock price = \$50 per share.	PUT =
Strike price = \$50.	~36 cents.
Time-to-expiration = 2 days.	
Normal volatility = 25% per year (1.58% per day).	CALL = ~37 cents.
Interest rate = 4% per year.	~37 cents.

Now, assume that the market expects an earnings announcement tomorrow that has the potential to cause a one-day, absolute (i.e., +/-) 3-sigma movement in stock price.

New option value = ~\$2.37 (=\$50*1.58%*3).

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$AIC \equiv -$

STDEV

OPTPRC

of analysts' forecasts

Why deflate by STDEV?

NOTE: OPTPRC equals the pre-earnings-announcement price of an option expiring after the market might reasonably expect a quarterly earnings announcement

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STDEV serves as our *ex ante* measure of earnings uncertainty

* Kinney, Burgstahler and Martin (2002) demonstrate that the standard deviation of analysts' forecasts strongly correlates with *ex post* earnings surprise

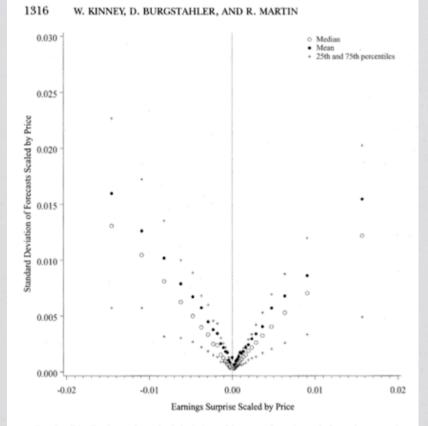
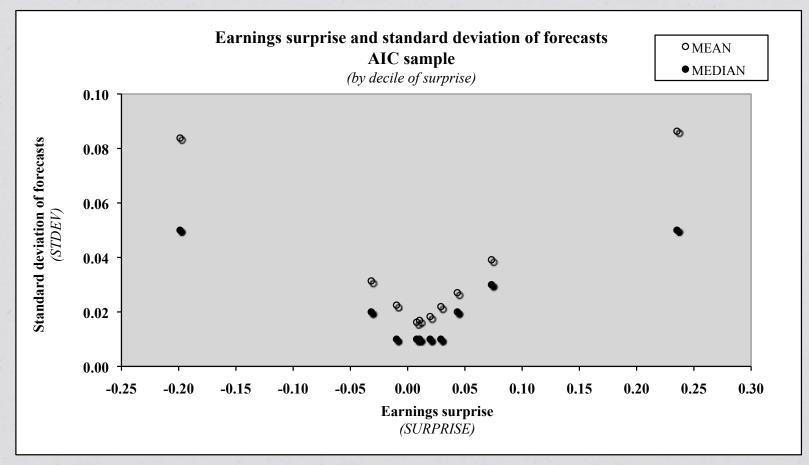


FIG. 3.—Distributions of standard deviation of forecasts for price-scaled earnings surprise portfolios of 500 observations.

A similar relation exists in our data



After forming portfolios based on earnings surprise, we observe a <u>0.54</u> correlation between STDEV and |SURPRISE|.

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OPTPRC STDEV

of analysts' forecasts

a ratio that reflects the fact that for any given level of earnings uncertainty, the option price should increase with the forecasted elasticity of the stock market's response to earnings information.

 $AIC \equiv$

Market Reaction

Earnings Uncertainty

similar to an ERC ...

NOTE: OPTPRC equals the pre-earnings-announcement price of an option expiring after the market might reasonably expect a quarterly earnings announcement

Traditional ERC

RETURN = *a* + *b* **UNEXPECTED EARNINGS** + *e*.

* measured as an estimated slope coefficient in the regression of a measure of returns on a measure of earnings

* requires averaging

- 1. across firms (cross-sectional regression)
- 2. across time (time-series regression)
- 3. both (pooled regression)

The AIC represents an *ex ante* measure of the stock price response per given level of uncertainty.



similar to an ERC . . . yet, different . . .

Notable differences between the AIC and the ERC

- * Although both measure information content of earnings, volatility drives the AIC. In addition:
 - The AIC responds to forecasted volatility associated with the *entire* earnings announcement
 - The firm- and quarter-specific nature of the AIC calculation differs fundamentally from the traditional, pooled regression approach to estimating an ERC
 - The option-market focus (along with the need for analyst forecast data) cause a study of the AIC to focus on a sample of firms that operate in particularly rich information environments

Data

* We combine data from OptionMetrics and I/B/E/S (from 1996 through 2006) to obtain option and analyst forecast data for all options with an earnings announcement within the last month of an option's life

➡ 4,363 firms / 55,936 firm-quarters / 651,811 options

* On a relative basis, at-the-money options' prices are most affected by the phenomenon we are studying. Thus, we restrict this sample to options having strike prices within 5% of the current stock price.

⇒ 3,327 firms / 18,214 firm-quarters / 39,443 options

- * To estimate our cross-sectional regressions, we require additional data from Compustat and CRSP
- ⇒ 2,757 firms / 14,907 firm-quarters / 30,641 options

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Does the AIC correlate with the magnitude of the *ex post* stock market reaction to unexpected earnings?

TABLE 3, PANEL A	# of Obs.	AIC:ERC Correlation	Confidence Level
Without Averaging	33,111	0.1512	<.0001
Averaging variable:			
CUSIP	2,860	0.1824	<.0001
Fama-French	49	0.3194	0.0253
DNUM	360	0.3423	<.0001
SIC	65	0.5800	<.0001

ERC = a firm-specific ERC calculated following Teets and Wasley (1996).

Does the AIC exhibit cross-sectional and time-series differences similar to those documented in the traditional ERC literature?

Earnings growth	МВ	+
Firm systematic risk	BETA	-
Interest rates	I	-
Earnings persistence	тнета	+
Information environment	NUM	? (+)

Acknowledging that our sample includes the "Bubble" period.

							1 .				
	Pred.	(1))	(2)		(3)		(4)			
	Rel.	Coeff.	Pr> t	Coeff.	Pr> t	Coeff.	Pr> t	Coeff.	Pr> t		
Intercept		30.308	0.1329	35.092	0.0025	50.622	<.0001	-7.856	0.2116		
Dbubble		-36.515	0.0843	-42.948	2.948 0.0036				36		
Year effects		Yes		N	No		s	N	.		
МВ	+	63.516	<.0001	67.141	<.0001						
MB*Dbubble		-35.307	<.0001	-39.449	<.0001						
MB (post-Bubble)	+	28.209	<.0001	27.692	<.0001	28.210	<.0001	27.692	<.0001		
Beta	-	49.973	<.0001	40.154	<.0001						
Beta*Dbubble		-49.669	<.0001	-43.133	<.0001						
Beta (post-Bubble)	-	0.304	0.8507	-2.979	0.0612	0.303	0.7855	-2.979	0.0069		
1	-	-10.993	0.0002	-9.561	<.0001						
I*Dbubble		7.698	0.0470	16.302	<.0001						
l (post-Bubble)	-	-3.295	0.1808	6.741	0.0001	-3.295	0.0567	6.742	<.0001		
Theta	+	-14.542	0.0002	-6.837	0.0885						
Theta*Dbubble		28.190	<.0001	21.080	<.0001						
Theta (post-Bubble)	+	13.648	<.0001	14.243	<.0001	13.648	<.0001	14.242	<.0001		
NUM	?	2.298	<.0001	3.017	<.0001						
NUM*Dbubble		-1.504	<.0001	-2.265	<.0001						
NUM (post-Bubble)	?	0.794	<.0001	0.752	<.0001	0.794	<.0001	0.752	<.0001		
Adj. R ²		0.19	48	0.16	25	0.07	55	0.06	54		
	Dbubble Year effects MB MB*Dbubble MB (post-Bubble) Beta Beta*Dbubble Beta (post-Bubble) I I*Dbubble I (post-Bubble) Theta Theta (post-Bubble) NUM	TABLE 5Rel.InterceptDbubbleYear effectsMB+MB*Dbubble+MB (post-Bubble)+Beta-Beta (post-Bubble)-I-I-I-I-Theta+Theta (post-Bubble)-Theta (post-Bubble)-NUM?NUM?NUM (post-Bubble)?	TABLE 5 Rel. Coeff. Intercept 30.308 30.308 Dbubble -36.515 Year effects Year MB + 63.516 Year MB + 63.516 Year MB (post-Bubble) + 28.209 Beta Beta *Dbubble - 49.973 Beta *Doubble -49.669 Beta (post-Bubble) - 0.304 I -10.993 I I - -10.993 I -10.993 I -36.515 I (post-Bubble) - -10.993 I -11.504 -14.542 Theta *Dbubble - -32.95 I -14.542 -14.542 Theta (post-Bubble) + 13.648 NUM -1.504 -1.504 NUM *Dbubble ? 0.794 -1.504 -1.504 -1.504	TABLE 5 Rel. Coeff. Pr> t Intercept 30.308 0.1329 Dbubble -36.515 0.0843 Year effects Yes MB + 63.516 <.0001 MB*Dbubble -35.307 <.0001 MB (post-Bubble) + 28.209 <.0001 Beta - 49.973 <.0001 Beta (post-Bubble) - 49.973 <.0001 Beta (post-Bubble) - 0.304 0.8507 I - 0.304 0.8507 I - 10.993 0.0002 I*Dbubble - 9.49.669 <.0001 Beta (post-Bubble) - 10.993 0.0022 I*Dbubble - 3.295 0.1808 Theta + -14.542 0.0002 Theta (post-Bubble) + 13.648 <.0001 NUM 2.298 <.0001 .001 NUM (post-Bubble) ? 0.794 <.	TABLE 5 Rel. Coeff. Pr> t Coeff. Intercept 30.308 0.1329 35.092 Dbubble -36.515 0.0843 -42.948 Year effects Yes No MB + 63.516 <.0001 67.141 MB*Dbubble + 28.209 <.0001 27.692 Beta - 49.973 <.0001 40.154 Beta*Dbubble - 0.304 0.8507 -2.979 I - 0.304 0.8507 -2.979 I - 10.993 0.0002 -9.561 I*Dbubble - -32.95 0.1808 6.741 I*Dbubble - -32.95 0.1808 6.741 Theta + -14.542 0.0001 21.080 I (post-Bubble) + 13.648 <.0001 21.080 Theta (post-Bubble) + 13.648 <.0001 21.080 NUM ? 2.298 <.00	TABLE 5 Rel. Coeff. Pr> t Coeff. Pr> t Intercept 30.308 0.1329 35.092 0.0025 Dbubble -36.515 0.0843 -42.948 0.0336 Year effects Yes No No MB + 63.516 <.0001 67.141 <.0001 MB*Dbubble - 35.307 <.0001 -39.449 <.0001 MB (post-Bubble) + 28.209 <.0001 27.692 <.0001 Beta - 49.973 <.0001 40.154 <.0001 Beta (post-Bubble) - 0.304 0.8507 -2.979 0.0612 I - 10.993 0.0002 -9.561 <.0001 I*Dbubble - -3295 0.1808 6.741 0.0001 I*Dbubble - -3295 0.1808 6.741 0.0001 I*Dbubble + 13.648 <.0001 14.243 <.0001 Theta (post-Bubble)	TABLE 5 Rei. Coeff. Pr> t Coeff. Properator Properator Properator Properator Properator	TABLE 5 Rel. Coeff. Pr> t Coeff.<	TABLE 5 Rel. Coeff. Pr> t Coeff. Prot Coeff.		

We report significance levels for two-tailed tests. All results hold if we include IVOL_PRE -- indeed they strengthen.

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Can we exploit characteristics of the AIC to study *changes* in the anticipated sensitivity to earnings?

* Firms with higher levels of institutional ownership experience higher levels of trading volume and greater return volatility surrounding earnings announcements (Potter 1992; Kim et al. 1997; Lang and McNichols 2007)

* We investigate whether the option market anticipates an increased sensitivity for firms that are expected (based on ownership structure) to experience more intense trading

 $\langle \bullet \rangle$

TABLE 6, Panel B	Pred.	(I) - LI	EVELS	(2) - LE	VELS	(3) - CH	ANGES
(Bushee Classifications)	Rel.	Coeff.	Pr> t	Coeff.	Pr> t	Coeff.	Pr> t
ntercept		Included					
Dbubble				Inclu	ded		
Year effects		Ye	Yes No Yes				
MB	+						
Beta	-						
I	-	Included					
Theta	+						
NUM	?						
%TRAN	+	210.385	<.0001	282.953	<.0001	155.766	<.000
%TRAN*Dbubble		-122.75	<.000	-172.17	<.0001	-109.2	<.000
%TRAN (post-Bubble)	+	87.638	<.000 I	110.782	<.0001	46.569	0.002
%DED	+	48.291	<.000	-4.971	0.6210	-59.608	0.001
%DED*Dbubble		-49.986	<.000	25.229	0.1243	81.100	0.0113
%DED (post-Bubble)	+	-1.695	0.8964	20.258	0.1153	21.492	0.402
%QIX	+	-61.315	<.0001	-69.939	<.0001	-18.687	0.264
%QIX*Dbubble		106.619	<.000	69.209	<.0001	27.857	0.234
%QIX (post-Bubble)	+	45.304	<.000 I	-0.730	0.9260	9.170	0.575
Adj. R ²		0.2 35 0.1857 0.03					

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Summary

*We shift attention from studying how earnings news influences stock prices to considering the role that earnings information plays in shaping optionmarket behavior

*We suggest an alternative approach to measuring the stock price *sensitivity* to earnings information using option prices

Potential contributions (revisited)

- * We offer researchers a 1) frequently available, 2) *ex ante*, 3) firmand quarter-specific approach to studying information content, which facilitates studies of:
 - changes in (as opposed to levels of) information content
 - the anticipation of versus reaction to an event
 - ➡ asymmetries in the effect of information
 - short-term versus long-term effects of news

ANTICIPATED QUESTIONS

Firm- and quarter-specific, ex ante approach?

Susquehann	a Finan	cial Group, L	LLP, Membe
Volume St	atistics		
			20-Day
	_	Volume	Avg
Equity O		18,550,012 2,104,728	14,349,285
	Index Options		1,068,929
Equity P		0.45	0.59
Index Pa		1.09	1.56
		ity Options	
Symt		Volume	Avg Vol
JOE		50,586	3,256
UIS		24,211	1,760
HOC	2	6,922	526
ASM	ASML		515
TIN		16,084	1,646
Notably Av	ctive ETF	Options	
Symt	loi	Volume	Avg Vol
EWA		8,585	1,084
MOG	0	11,997	1,786
VTI		1,115	210
UUR	>	84,248	19,010
KR		9.026	2.221
Volatility I	leasures		
Volatility			
Index	Index	Last	1-Day ∆
VIX	SPX	19.07	0.7%
VXN	NDX	20.47	-0.3%
OVX	USO	33.19	-0.2%
Volatility N	tovers -	90Day Chang	es
Up		Do	wn
Symbol		Symbol	
ISRG	2.5	CSX	(3.0)
WMB	1.9	CTXS	(2.7)

 $\langle \bullet \rangle$

2.5 1.9 1.6 1.5 1.5	CSX CTXS LLTC ETFC	(3.0) (2.7) (2.4) (2.0)			
1.6 1.5	LLTC ETFC	(2.4)			
1.5	ETFC				
		(2.0)			
1.5					
	HST	(1.8)			
1.2	NTAP	(1.8)			
1.0	SHLD	(1.6)			
1.0	PTV	(1.6)			
1.0	MA	(1.6)			
0.9	SPG	(1.6)			
Source: SFG Research, Bloomberg, OCC					
Market Intelligence Team					
	1.0 1.0 0.9 3 Research elligenc y/Strateg	1.0 PTV 1.0 MA 0.9 SPG 3 Research, Bloomberg,			

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SIG Derivatives Daily HIGHLIGHTS

We highlight protective trades in both the SPY and QQQQ, vol buyers in the XLU (utilities), another 1x2 call spread in the VXX (selling one to buy hea), call supers in the KRE (regional bank), more put buyers in MOQ (agribusiness), and November ; buyers in the XLL (industrial).

Refer to Appendix for important disclosure info

- ad of Google's (GOOG: Wolk Positive) 3Q ear
- risk reversal as a low-cost way to protect positions and tal w decreases for those shareholders not vet ready to exit p Catalyst Catcher for 10/14:
- - Earnings: AMD, FCS, GOOG, GWW, INFY, SWY, WGO Economic Releases: Trade Balance, PPI, Initial and Cont

OBSERVATION/STRATEGY

- the option-implied earnings ings moves, long October op king slightly loses a
- hile SFG Internet analyst Marianne Wolk remains bullish on GOOG's long-t s that rising ns more difficult

G Internet analyst Marianne Wolk remains bullish on shares of Google (GOOG), which s with a Positive rating and a \$650 price target. On Monday, Wolk publis used on the company's display ad opportunity, summarizing:

t meetings with Google's display ad team, we have incr

ce in Google's long-term growth from display ads. As it ap	proaches			
Figure 1. GOOG Earnings Volatility				
Date	Event	One-Day Move		
7/15/2010	GOOG 2Q10	-7.0%		
4/15/2010	GOOG 1Q10	-7.6%		
1/21/2010	GOOG 4Q09	-5.7%		
10/15/2009	GOOG 3Q09	3.8%		
Average	6.0%			
Median (6.3%			
At-the-Mor	At-the-Money Straddle			

Source: Bloomberg

"Ahead of **GOOGLE**'s 3Q earnings release this afternoon, we discuss owning short-term October options given an implied move that looks slightly low relative to recent earnings moves and heightened investor expectations."

> "Over the company's last four earnings releases, shares have seen a one-day absolute earnings move on average of +/- ~6%. Currently, it appears as if the options market is pricing in a move slightly less than the average, just over ~4%."

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Firm- and quarter-specific, ex ante approach?

CREDIT SUISSE

October 18th, 2010 Americas **Equity Derivatives** Market Commentary

Single Stock Options

Edward K. Tom [212] 325-3584 Terry Wilson* [212] 325-4511 Dmitry Novikov [212] 325-0714 Mandy Xu

Earnings Roadmap Signals from the Derivatives Market – Week of October 18th

9628

The Earnings Roadmap uses key signals from the derivatives market to analyze the coming week's earnings results. Using a combination of these signals and fundamental views, we suggest trade ideas on the second page.

Implied Moves: Highlighted below, we list the option implied stock price move on earnings day. For example, this week the option market is pricing-in a 5.4% move for Apple (AAPL) stock on Tuesday, following results on Monday right. This compares to the stock's average move of 3.3% on earnings day for the past four quarters.

Spikes in Open Interest: Changes in open interest help identify investor interest in a particular stock. We saw a spike in call option open interest for Starbucks (SBUX), concentrated in the Nov' expiry which will capture results on 11/4.

Changes in Skew: Recall skew is a measure of demand for out-of-the money (QTM) puts relative to QTM calls. Thus, an increasing skew (steepening) implies an increasing demand for downside protection. Skew continues to flatten for Apole (AAPL) ahead of results, and now trades at 1-year lows.

Stock	Earnings Date	Implied Move (%)	Average Move* (%)	Recent Activity In"	CDS Change
AAPL	10/18/2010	5.3	3.3	Cals	n/a
BAC	10/19/2010	3.2	5.1	Cals	Wider
GS	10/19/2010	2.9	2.6	Cals	Wider
CAT	10/21/2010	6.2	3.3	Cals	Flat
т	10/21/2010	2.2	1,1	Cals	Tighter

Spikes in Open Interest						
	CALL OPTIONS			PUT OPTIONS		
Stock	Open Interest	Increase**	Stock	Open Interest	Increase**	
AVP	68,948	74%	HRB	201,731	77%	
MTB	52,400	55%	URBN	50,612	67%	
HUM	54,089	53%	AVP	60.233	585	
GPS	59,987	34%	JCP	181,416	505	
SBUX	131,957	34%	TSN	122,743	425	

kew Change by Sector"

"[T]his week the option market is pricing-in a 5.4% move for **APPLE** [AAPL] stock on Tuesday, following results on Monday night. This compares to the stock's average move of 3.3% on earnings day for the past four quarters."

Stock	Earnings Date	Implied Move (%)
AAPL	10/18/2010	5.3
BAC	10/19/2010	3.2
GS	10/19/2010	2.9
CAT	10/21/2010	6.2
Т	10/21/2010	2.2
	10/21/2010	2.2

What "information content" does the AIC capture?

- * Because earnings announcements include additional information (above and beyond current earnings), the AIC will include the implications of *all* information in an earnings release
- * Yet, for this information to influence the AIC, it must be
 - anticipatable (i.e., traders can forecast both content and timing of delivery)
 - value-relevant (i.e., information for which an impact on stock price is expected)
 - unsigned (i.e., information to which traders cannot assign a direction)

What about OTM options?

What if it's an OTM call with strike equal to \$55?

Current stock price = \$50 per share. Strike price = \$55. Time-to-expiration = 2 days. Normal volatility = 25% per year (1.58% per day). Interest rate = 4% per year.

Now, assume that the market expects an earnings announcement tomorrow that has the potential to cause a one-day, absolute (i.e., +/-) 3-sigma movement in stock price.

New option value = \$0 (=MAX[\$0,(\$50*1.58%*3)-(\$55-\$50]).

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What about ITM options?

What if it's an ITM call with strike equal to \$45?

Current stock price	=	\$50 per share.	
Strike price	=	\$45.	
Time-to-expiration	=	2 days.	
Normal volatility	=	25% per year (1.58% per day).	
Interest rate	=	4% per year.	

Now, assume that the market expects an earnings announcement tomorrow that has the potential to cause a one-day, absolute (i.e., +/-) 3-sigma movement in stock price.

New option value = \$7.37 (=MAX[\$0,(\$50*1.58%*3)+(\$50-\$45)]).

 \pm

\$5.00 from moneyness

\$2.37 from EA-induced volatility spike

 $\langle \bullet \rangle$

CALL =

~\$5.01

Can we include ITM (in addition to ATM) options?

AIC =	_		BETA			
		+		-	+	? (+)

Yes. But, we'd need to either:

Adjust the numerator for the portion of the OPTPRC that stems from moneyness

OPTPRC - \$M

STDEV

Add in a measure of moneyness to control for the portion of the OPTPRC that stems from moneyness



All of our results remain if we use either approach to controlling for moneyness; further, if we limit M to fall between 0.99 and 1.01, results do not change.

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Do we introduce noise by studying total volatility, not just the spike?

AIC =			ΤΗΕΤΑ		
AIC		+	-	+	? (+)

The AIC's numerator (OPTPRC) reflects the LEVEL of normal IVOL, as well as the anticipated earnings-induced spike.

In other words, doesn't \$0.37 of the ATM option price stem from normal volatility, not the anticipated spike?

Current stock price = \$50 per share.	PUT =
Strike price = \$50.	~36 cents.
Time-to-expiration = 2 days.	
Normal volatility = 25% per year (1.58% per day).	CALL = ~37 cents.
Interest rate = 4% per year.	~37 cents.

Now, assume that the market expects an earnings announcement tomorrow that has the potential to cause a one-day, absolute (i.e., +/-) 3-sigma movement in stock price.

New option valu	e = ~\$2.37	/ (=\$50*I.58%*3).
\$0.37 from norr volatility	al +	\$2.00 from EA-induced volatility spike

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Do we introduce noise by studying total volatility, not just the spike?

AIC =	=		BETA		ТНЕТА	NUM
		+		-	+	? (+)

The AIC's numerator (OPTPRC) reflects the LEVEL of normal IVOL, as well as the anticipated earnings-induced spike.

The focus on short-dated, ATM options that should trade for very little, absent the EA should mitigate this concern

Substituting the standard deviation of daily stock returns for the prior quarter yields the same results.

Nonetheless, if we include a measure of pre-announcement, "normal" volatility



All results remain

Do we introduce noise by studying total volatility, not just the spike?

AIC =	_	МВ	BETA		THETA	NUM
	=	(+)		-	+	? (+)

The AIC's numerator (OPTPRC) reflects the LEVEL of normal IVOL, as well as the anticipated earnings-induced spike.

The focus on short-dated, ATM options that should trade for very little, absent the EA should mitigate this concern Nonetheless, if we include a measure of pre-announcement, "normal" volatility interacted with days to expiration

1	IVOL_	PRE*D	AYS_E	ХР
		+		

All results remain; indeed, results strengthen and R² increases

Does the CS variation in AIC stem from our denominator (i.e., STDEV)?

AIC =			I		NUM
		+	-	_	+

Pearson CORRELATIONS

	AIC	OPTPRC	STDEV
MB	3%	4%	1%
BETA	9%	15%	6%
I	12%	12%	-1%
THETA	2%	6%	5%
NUM	12%	11%	-3%

Does the CS variation in AIC stem from our denominator (i.e., STDEV)?

AIC		МВ	BETA	, i	THETA	NUM
	=	+	-		+	? (+)

Adjust to only use OPTPRC as DV Control for uncertainty by including STDEV

OPTPRC

- 6	 		 - A.
11			1.1
11	STL	DEV	1.1
1.1			1.1
- E.	 		 - 5.
1			1.1
		F	11
- L.	 		

All results remain, with comparable R²

Mary Billings

Does the AIC correlate with the magnitude of the *ex post* stock market reaction to unexpected earnings?

* For nearly 45% of the individual firm-quarter RESPONSE ratios, a positive (negative) SURPRISE meets a negative (positive) market reaction. Focusing on the positive RESPONSE ratios:

TABLE 3, PANEL B	RESPONSE	AIC	+ RESPONSE	- RESPONSE
RESPONSE	I	0.47421	N/A	N/A
AIC		T	0.46771	-0.49911
+ RESPONSE			I	N/A
- RESPONSE				I

RESPONSE = market reaction on EA date ÷ SURPRISE, where SURPRISE = (ACT- MEANEST).

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