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Trading Events: Earnings volatility (Part 4); Consistent winners

Options Research

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Consistent winners for volatility buying and selling

In our "Trading Events" series, we study the behavior of stocks & options around 30,000 earnings events in the past 15 years for all US stocks with liquid options at any time during the period. In this edition, we identify those stocks which show a consistent pattern of higher volatility than is priced into the options market. We find that strangle buying on these 20 stocks has produced an average return on premium of +37% over the past five years. For options sellers, we identify 20 stocks where earnings moves are consistently small and strangle selling has produced profits 84% of the time for an average of +26% return on premium.

Buy options on big movers; sell options on stable stocks

We find the biggest driver of profitability for strangle buying strategies is the realized moves on earnings rather than the options prices ahead of earnings. While options prices for the option buying and selling lists have been about the same ahead of earnings, strong profitability for the option buying list has been driven by realized moves double that of the option selling list (8% vs 4%). We believe fundamental investors have an advantage in identifying those stocks more likely to see high volatility each quarter. This belief is core to our investment process and drives the trade recommendations in our *Weekly Options Watch*.

Recommendation and Risks

This earnings season, we favor a balanced approach of options buying and selling. We highlight 20 strangle buying and 20 strangle selling opportunities based on historical profitability. Investors that buy strangles risk losing their premium paid. Investors that sell strangles risk unlimited loss in the case of the call sale and risk losing the strike price minus the premium collected in the case of the put sale.

Stocks that showed consistent volatility buying or selling profitability
based on average profit, hit-rate, and Sharpe ratio over the past 15 years

Strangle **BUYING** was consistently profitable				Strangle **SELLING** was consistently profitable			
AKAM	GD	MDR	RL	ABT	FRX	MCD	SO
AVP	KR	MRK	TAP	AET	HNZ	MO	TJX
CLX	LEN	MYL	WFM	BMY	KSS	NBL	UPS
CMCSA	LSI	QLGC	YUM	DHR	LTD	NE	WMT
CSCO	M	RIMM	ZMH	FHN	MAR	PAYX	XLNX
Avg profit: +37%, average hit-rate 55%				**Avg profit: +26%, average hit-rate 84%**			

Source: Goldman Sachs Research estimates.

Stocks where option buying/selling showed consistent profitability

We analyzed stock and options trades around 30,000 earnings events over the past 15 years on a stock by stock basis to identify consistent profitability patterns. Based on our study as well as our experience we believe there is a persistence to profitability for options strategies around earnings for some stocks. We identify the 20 stocks which have been the most consistently profitable option buying opportunities over the past 15 years and the 20 stocks that have been the most consistently profitable options selling opportunities.

We focused on three metrics for isolating those stocks where systematic options trading produced consistent profitability:

(1) **Profit: The strategy was profitable over the past 5 & 15 years.** The strangle buying candidates showed an average profit of +37% over the past five years. The strangle selling candidates showed an average profit of +26% over the past five years.

(2) **Hit-rate: The strategy was frequently profitable relative to other stocks.** On average, systematic strangle buying was profitable 35% of the time for the average stock in our universe. The strangle buying candidates on our list were profitable 55% of the time; the strangle selling candidates were profitable 84% of the time.

(3) **Sharpe Ratio: The strategy showed high risk adjusted returns.** We calculate a modified Sharpe ratio by dividing the average profit by the standard deviation of profits over the period. The average stock on our strangle buying candidates list showed a Sharpe ratio of 1.5 over the past five years; the average stock on our strangle selling candidates list showed a Sharpe ratio of 2.9.

Realized moves, not implied moves, matter most for options profitability: We found that the biggest driver of profitability for strangle buying strategies was the realized moves on earnings rather than the implied moves (i.e. options prices) ahead of earnings. On average, the volatility buying candidates had about the same options prices ahead of earnings as the volatility selling candidates (11% vs 10% strangle breakevens), but because their realized earnings moves were two-times as large as the option selling candidates (8% vs 4%), the option buying candidates were much more profitable for option buyers. We believe this finding runs contrary to the popular belief that buying options that are cheap relative to their own history is the key driver of profitability.

Buy options in Info Tech, Staples, and Consumer Discretionary: We found that 3/4ths of the names in our strangle buying candidates list were Info Tech, Staples, and Discretionary companies. Options selling opportunities were more uniformly distributed across sectors.

Methodology:

We studied stock and options price moves around earnings events. Throughout this study we show the returns for (1) buying stock five business days prior to their earnings event and selling one day after the event, and (2) buying the first out-of-the-money listed put and/or call of the nearest maturity that included the event day. The option was held for the same period. Throughout this study, we refer to this six day period as the "earnings event period." The average returns shown for strangle buying is calculated as the return on premium.

We use OptionMetrics listed options data for our options calculations and screen for liquidity. We show the results for strategies at mid-market prices. A consistently positive bar on subsequent charts indicates a profitable stock/option buying strategy and a consistently negative bar indicates a profitable stock/option selling strategy. We screen our list of 30,000 earnings events to isolate those events where bid-mid spreads were less than 10% of the option premium. Over the period of our study, we find that the average bid-mid spread has been 4.5% and more recently has dropped below 3%. We believe our spread

Other reports in this series:

Trading Events: Earnings volatility (Part 1), July 14, 2011.

Trading Events: Earnings volatility (Part 2); Options Sticker Shock, July 19, 2011.

Trading Events: Earnings volatility (Part 3); Conditional on VIX, October 5, 2011.

estimates are conservative due to the tendency for bid-ask spreads to be wider at the close (the data we use) than during the middle of the trading day (when most investors trade).

Exhibit 1: BUY options on these stocks which consistently realize larger moves on earnings than implied by options.

Average profit statistics for buying strangles ahead of earnings 1996-2011

	Past 5 years			Full Period (1996-2011)					
Ticker	Avg profit for strangle buying	Hit Rate	Sharpe Ratio	Avg profit for strangle buying	Hit Rate	Sharpe Ratio	Mkt Cap (bn$)	Upcoming Earnings	Avg stock move (%)
WFM	42%	61%	**2.3**	54%	53%	3.1	12.1	2-Nov-11	14%
CLX	48%	68%	**2.2**	36%	48%	2.4	8.8	2-Nov-11	4%
RIMM	39%	53%	**2.0**	35%	50%	2.1	12.8	15-Dec-11	17%
LEN	41%	58%	**1.8**	47%	49%	2.3	2.3	10-Jan-12	11%
AKAM	39%	63%	**1.7**	25%	53%	1.6	4.3	26-Oct-11	12%
LSI	39%	53%	**1.7**	10%	36%	0.8	3.3	26-Oct-11	11%
MYL	38%	47%	**1.6**	31%	40%	1.9	7.6	26-Oct-11	7%
CMCSA	48%	53%	**1.6**	24%	42%	1.8	48.0	2-Nov-11	7%
TAP	39%	63%	**1.6**	25%	46%	1.4	6.8	2-Nov-11	6%
RL	32%	56%	**1.5**	18%	41%	1.6	8.8	9-Nov-11	8%
CSCO	41%	50%	**1.3**	13%	35%	1.0	91.5	9-Nov-11	6%
ZMH	25%	47%	**1.3**	25%	51%	1.8	10.2	27-Oct-11	8%
GD	19%	53%	**1.3**	32%	45%	1.9	22.2	26-Oct-11	4%
AVP	28%	53%	**1.3**	29%	43%	1.9	9.2	27-Oct-11	7%
MDR	55%	65%	**1.3**	38%	48%	1.5	3.3	7-Nov-11	10%
M	24%	50%	**1.2**	21%	52%	1.4	11.9	9-Nov-11	8%
MRK	56%	47%	**1.2**	21%	41%	1.2	98.4	28-Oct-11	6%
YUM	22%	53%	**1.1**	44%	52%	2.3	23.9	1-Feb-12	5%
KR	27%	50%	**1.1**	71%	47%	2.4	13.6	1-Dec-11	5%
QLGC	28%	50%	**1.0**	27%	44%	1.9	1.4	27-Oct-11	8%
average	**37%**	**55%**	**1.5**	**31%**	**46%**	**1.8**			**8%**

Source: Goldman Sachs Research estimates.

Exhibit 2: SELL options on these stocks which consistently realize smaller moves on earnings than implied by options

Average profit statistics for selling strangles ahead of earnings 1996-2011

	Past 5 years			Full Period (1996-2011)					
Ticker	Avg profit for strangle selling	Hit Rate	Sharpe Ratio	Avg profit for strangle selling	Hit Rate	Sharpe Ratio	Mkt Cap (bn$)	Upcoming Earnings	Avg stock move (%)
MCD	29%	95%	**6.2**	13%	80%	1.6	92.2	20-Oct-11	3%
MO	30%	89%	**4.7**	18%	78%	2.7	57.6	27-Oct-11	2%
LTD	40%	89%	**4.3**	26%	83%	4.8	12.4	16-Nov-11	6%
SO	31%	89%	**4.0**	29%	93%	5.3	36.6	26-Oct-11	2%
DHR	39%	84%	**3.7**	25%	77%	3.6	30.3	20-Oct-11	3%
KSS	24%	80%	**3.3**	14%	74%	2.3	13.5	10-Nov-11	4%
NBL	25%	84%	**3.3**	13%	76%	2.3	14.2	20-Oct-11	4%
ABT	30%	89%	**3.2**	6%	75%	0.6	82.0	19-Oct-11	3%
UPS	22%	84%	**3.0**	10%	78%	0.8	50.1	25-Oct-11	3%
BMY	20%	79%	**2.9**	7%	70%	1.2	56.2	27-Oct-11	3%
MAR	34%	74%	**2.8**	20%	76%	1.7	9.8	13-Feb-12	5%
HNZ	21%	85%	**2.7**	30%	90%	5.2	16.4	18-Nov-11	2%
FHN	30%	79%	**2.3**	22%	79%	2.8	1.7	17-Oct-11	9%
NE	20%	79%	**2.1**	18%	81%	2.1	7.7	19-Oct-11	5%
AET	22%	84%	**1.8**	7%	74%	0.7	13.6	27-Oct-11	5%
WMT	27%	74%	**1.8**	16%	71%	1.8	188.6	15-Nov-11	3%
FRX	25%	95%	**1.6**	8%	82%	0.5	8.9	18-Oct-11	3%
PAYX	22%	83%	**1.5**	9%	75%	1.0	10.1	19-Dec-11	4%
XLNX	15%	72%	**1.2**	13%	71%	2.3	7.8	19-Oct-11	4%
TJX	22%	84%	**1.1**	30%	87%	2.2	22.1	15-Nov-11	3%
average	**26%**	**84%**	**2.9**	**17%**	**79%**	**2.3**			**4%**

Source: Goldman Sachs Research estimates.

Choosing consistent winners are based on three metrics

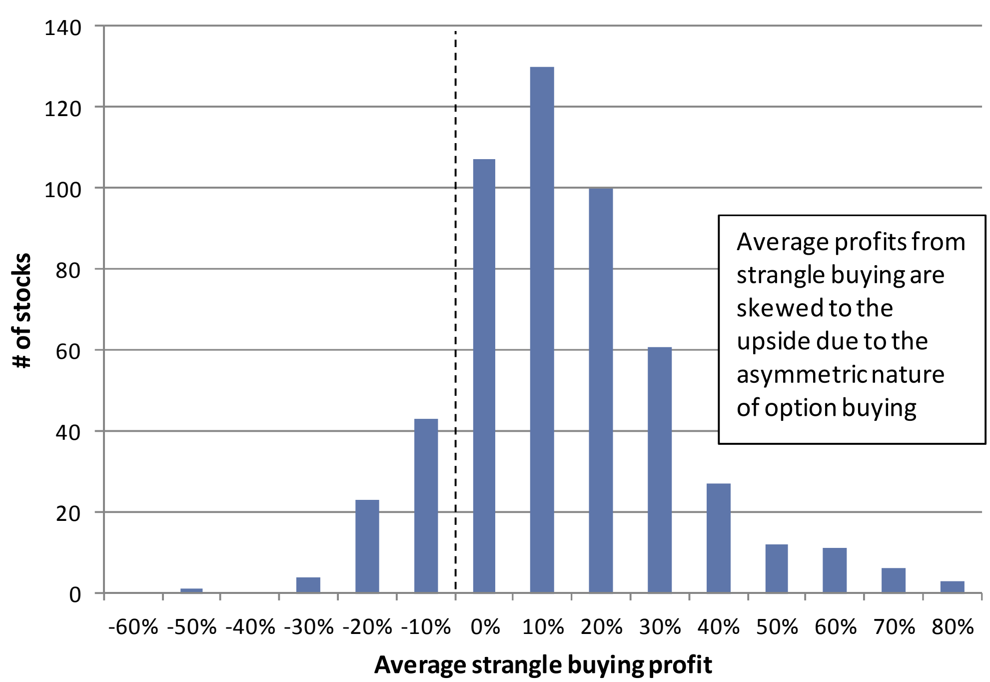
We focus on three metrics for determining which stocks qualify as consistent volatility buying or selling winners. We believe the combination of these metrics help us identify those stocks where options trading around earnings has consistently produced high profits.

1. Average strangle buying profit: We screen for stocks where strangle buying produced profits of greater than +15% or strangle selling profited greater than +15% in the past five years. We believe this average profit for the 6-day trade is interesting enough to warrant investor attention. The average stock in our study showed strangle buying returns of +8% over 1996-2011.

2. Hit-rate on strangle buying: We define hit-rate as the percentage of events where investors profit from buying strangles for the earnings event. We look for stocks where the hit-rate is significantly above or below the average 35% hit-rate of the stocks in our universe. For consistent winners for volatility buying we look for hit-rates above 45%. For consistent volatility selling winners, we look for hit-rates below 25%.

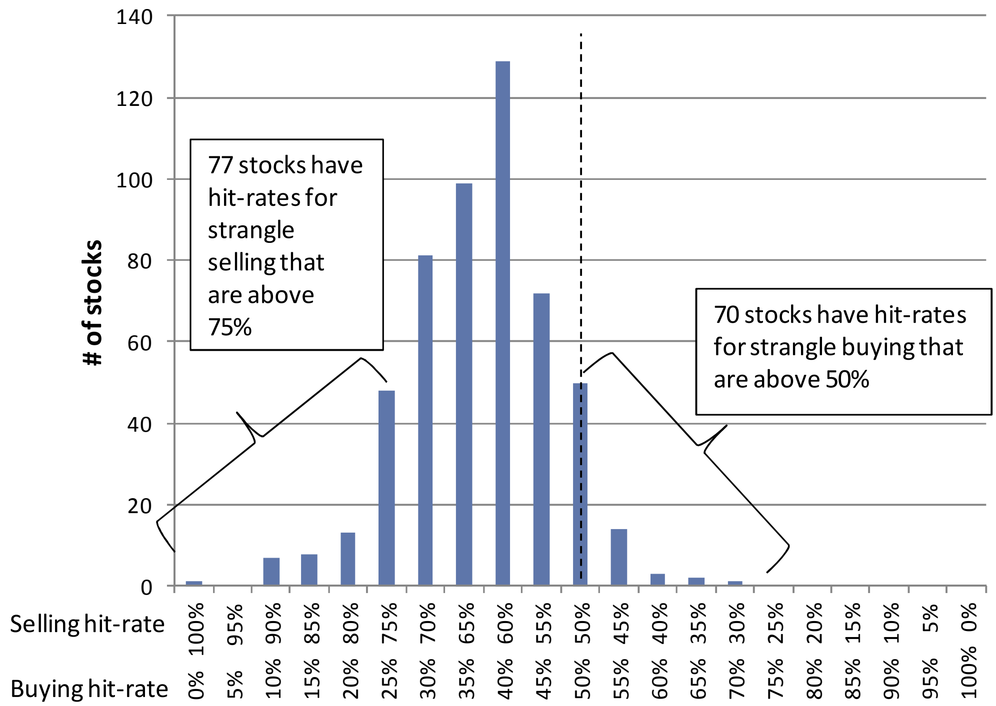
3. Sharpe ratio on strangle buying: We prefer strategies that have high returns relative to the volatility of those returns. The average Sharpe ratio for strangle buying in our universe is 0.2. We look for consistent volatility buying and selling winners where the Sharpe ratio has been greater than 1.0. When investors make money in option buying strategies, it typically means they have several large instances of profit that outweight the many instances of small losses (max return from this strategy is technically infinite). For this reason, the Sharpe ratio for volatility buying strategies tends to be lower. When strangle selling strategies have high average profit, it tends to be because returns were consistent, not because any particular instance was large (max return in any one instance is 100%).

Exhibit 3: Strangle buying tends to have high average profits…
Distribution of average strangle buying profit by stock



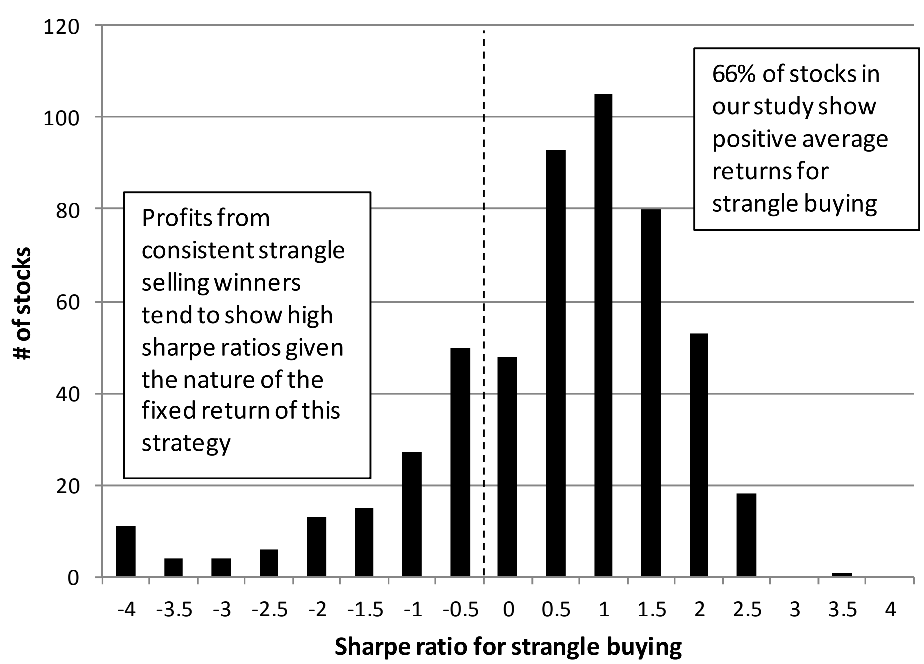
Source: Goldman Sachs Research estimates.

Exhibit 4: ...Strangle selling tends to profit in a high percentage of events...
Distribution of the hit-rate for strangle buying by stock



Source: Goldman Sachs Research estimates.

Exhibit 5: ...high percentage of stocks show positive Sharpe ratios for option buying, but option selling strategies have historically shown higher Sharpe ratios
Distribution of average strangle buying profit divided by their standard deviation



Source: Goldman Sachs Research estimates.

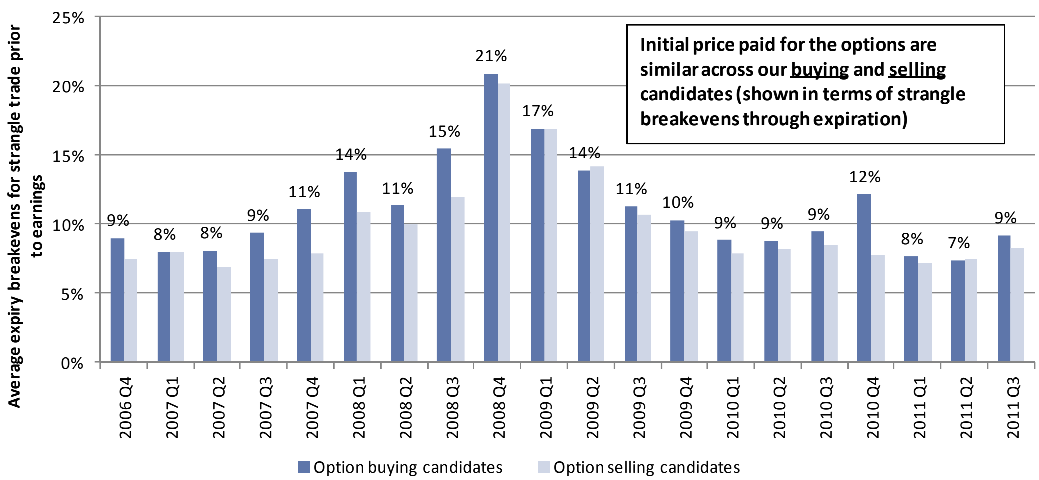
Drivers of profitability: Realized moves matter most

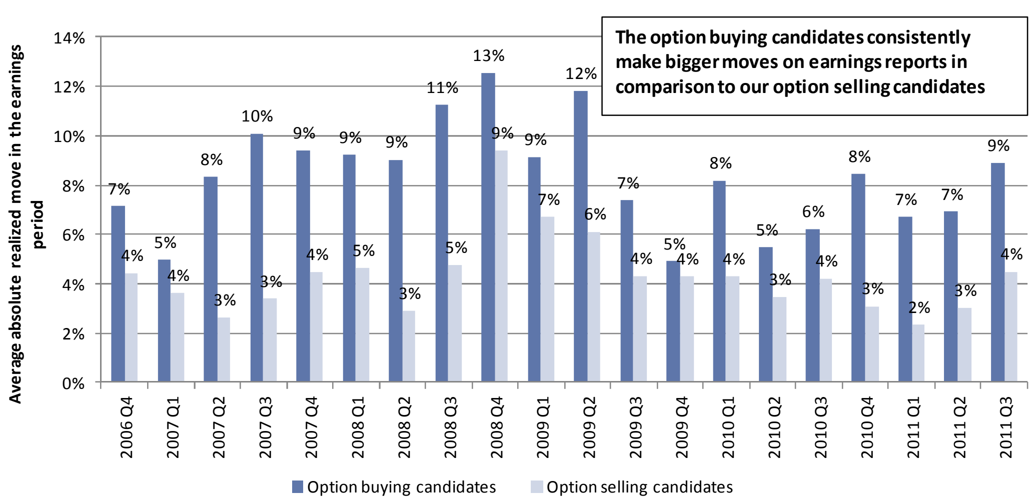
The two main drivers of profitability for strangle buying strategies ahead of earnings are (1) stock moves around earnings, and (2) options prices ahead of earnings. Our analysis of the historical implied and realized moves for the stocks that are in our volatility buying and selling lists shows it is more important to focus on stocks that make big moves.

Strangle breakevens ahead of earnings are typically similar for our option buying and selling candidates. Options investors measure the cost of an options strategy in terms of how much the stock needs to move prior to expiry for the strategy to profit. We calculate these “strangle breakevens” each quarter for each stocks. We find that on average strangle breakevens were 11% for stocks in the option buying candidates list and 10% for the options selling candidates. While this implies we are suggesting investors buy more expensive options, we find that on average, the profitability is driven by realized moves.

Stock moves on earnings have been much larger for the volatility buying candidates than our volatility selling candidates. On average, we find the stocks on our volatility buying candidates list move +/- 8% during their six day earnings period, while the stocks on our volatility selling candidates list move only +/- 4% over the same six day earnings period. We find that this is the key metric driving the consistent profitability between the lists.

Exhibit 6: Initial options prices are similar, but average earnings moves are consistently higher for the vol buying list
Average strangle breakeven prior to earnings; average earnings period stock move for our buying and selling candidates





Source: Goldman Sachs Research estimates.

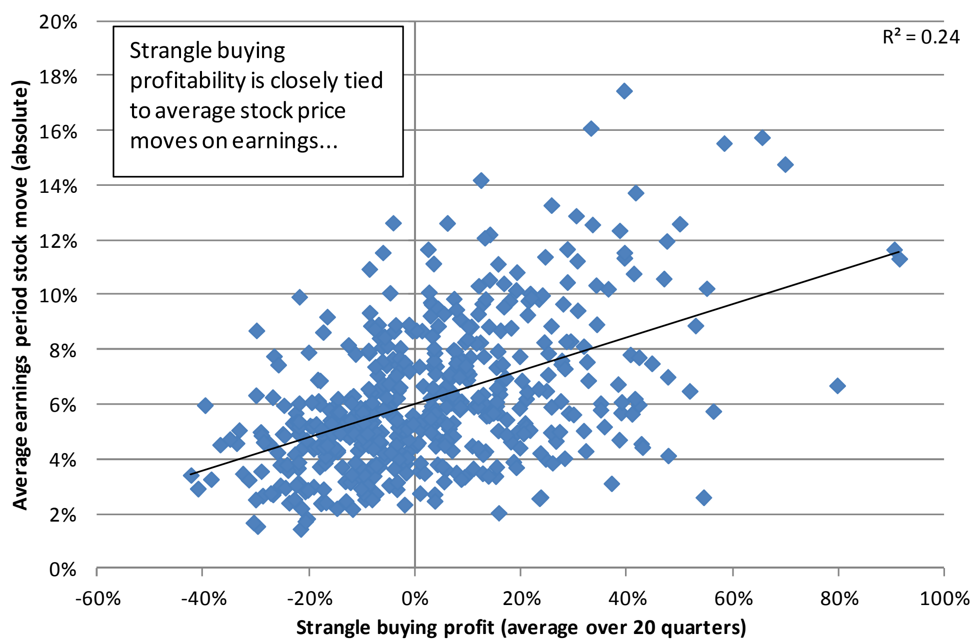
We find that realized earnings moves matter more on average as we look across the broad universe of all stocks in our study. Average stock moves explain 24% of the variation in strangle buying profit. Options prices prior to the event only explain a marginal amount of the profitability.

Average stock moves explain 24% of variation in strangle buying profit: Stocks that typically make large moves on earnings also tend to show larger strangle buying profit. While this ex-post observation is consistent with expectations, it is notable because it appears to be the dominant factor in determining profit, overshadowing all other individual explanatory variables.

Average strangle breakevens prior to earnings do not explain profitability on their own. We find that the stocks with more expensive options ahead of earnings actually tend to show stronger profitability for strangle buying on earnings. We don't believe that buying the most expensive options is a good strategy, but we do believe that buying options on stocks that have a chance to make big moves is a good strategy. High implied moves are correlated with high subsequent realized moves, and we believe fundamental investors are well positioned to identify when the stock is likely to be more volatile than average on earnings.

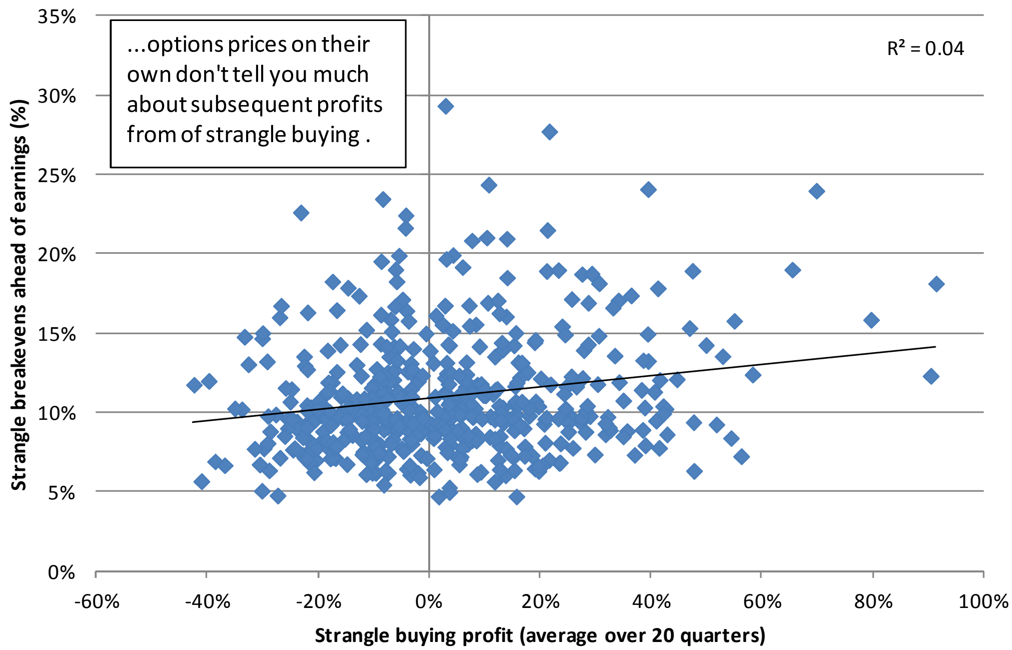
Ratio of stock moves to prior strangle breakevens explains 26% of strangle buying profitability. We find that using the ratio of the two variables above explains a large portion of the profitability by stock, but we were surprised that incorporating the cost of options prior to the event does not add much value. This increases our tendency to focus on stocks where we expect high realized moves on earnings even if options prices are a bit above what appears to be fair value.

Exhibit 7: Average stock moves on earnings drives average strangle profit on earnings
Average earnings period stock move (absolute) vs average strangle buying profit over 20 quarters



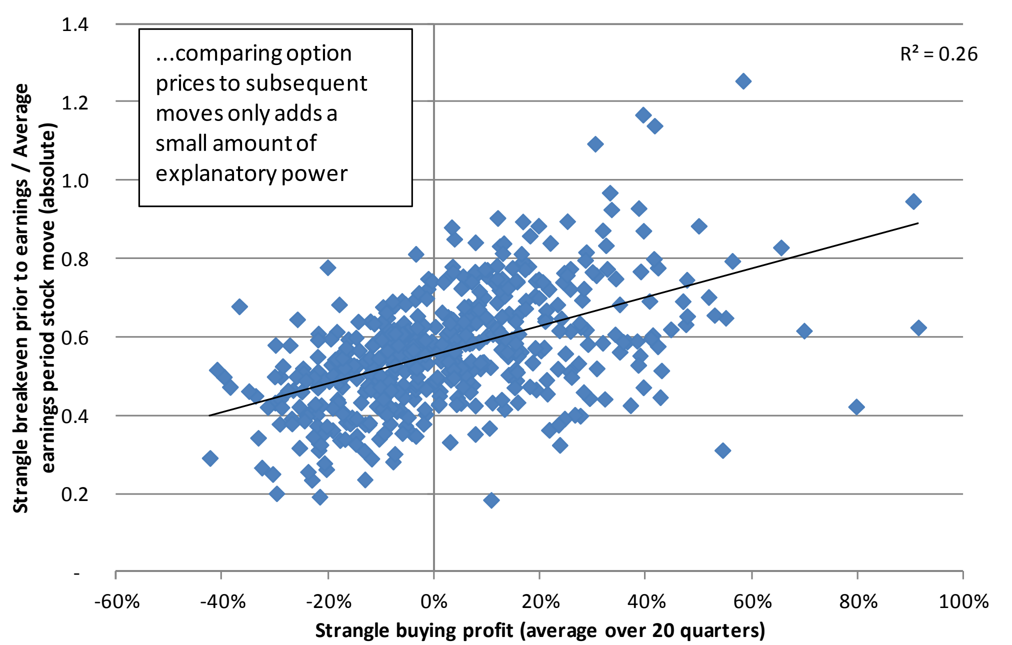
Source: Goldman Sachs Research estimates.

Exhibit 8: Options prices ahead of earnings don't play a large role in strangle profitability
Average strangle breakeven ahead of earnings vs average strangle profit on earnings



Source: Goldman Sachs Research estimates.

Exhibit 9: The best way to explain strangle buying profitability is to use a combination of realized moves and options prices
Strangle breakevens divided by average realized stock move vs average strangle buying profit

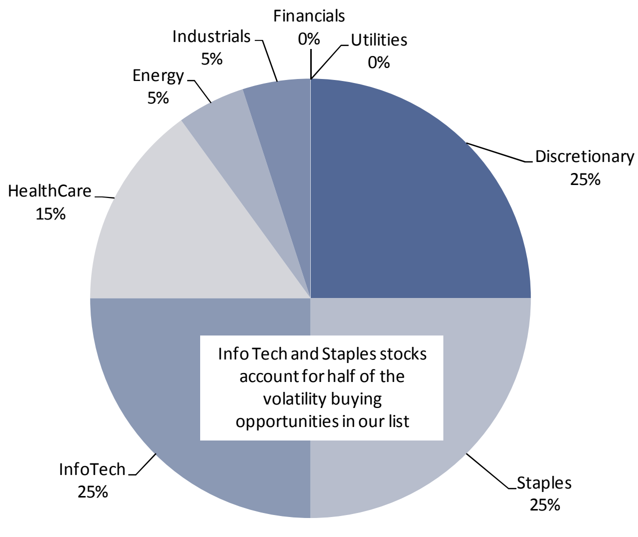


Source: Goldman Sachs Research estimates.

We find a modest sector bias to our results, suggesting there are more consistent options buying opportunities in Info Tech and Staples. Options selling opportunities are dispersed across sectors. Below, we show the percentage of each 20 stock list that appears in each sector. Info Tech and Staples sector together make up half of the volatility buying list, but only a quarter of the volatility selling list. There are no names on the volatility buying list from the Financials or Utilities sectors. Consumer Discretionary stocks are split evenly between the volatility buying and selling lists.

Exhibit 10: Sector breakdown of consistent vol buying opportunities

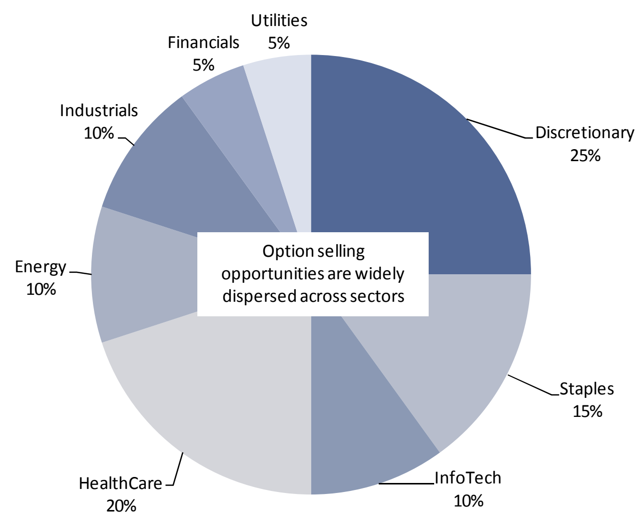
% of stocks in our list of 20 stocks where option buying consistently profits



Source: Goldman Sachs Research estimates.

Exhibit 11: Sector breakdown of consistent vol selling opportunities

% of stocks in our list of 20 stocks where option selling consistently profits



Source: Goldman Sachs Research estimates.

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