Internet Appendix

A Robustness to Alternative Industry Classification

This appendix demonstrates the robustness of our main findings to an alternative industry classification. Specifically, we perform the analysis in Section 3.2 using the 24 industries defined by the Global Industry Classification System (GICS) in lieu of the 49 Fama-French industries. Figure A.1 presents similar results as those in Figure 3 using these more broadly defined industries.

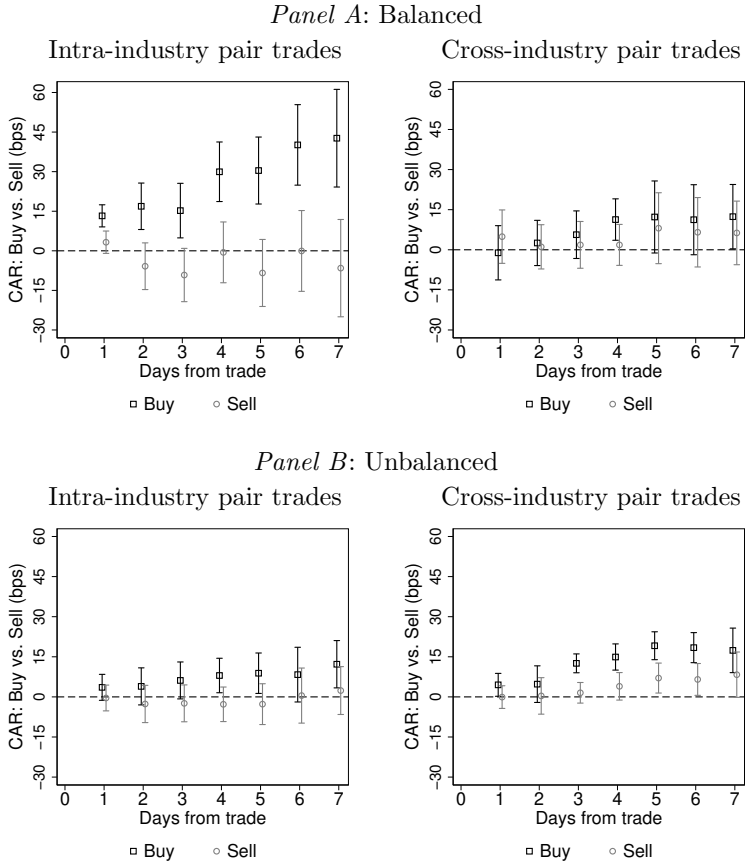
B Robustness to Alternative Trade Imbalance Thresholds

This appendix demonstrates the robustness of INSFIT's profitability to the trade imbalance threshold, which determines whether the dollar-denominated amount of stock purchased and sold within an industry is balanced. As described in Section 2.2, our main analysis identifies INSFIT by imposing a maximum intra-industry trade imbalance, IMB, of 0.05. Using IMB thresholds other than 0.05 for the maximum manager-industry-day trade imbalance, Figure B.1 illustrates the robustness of INSFIT's profitability to these alternatives based on 10-day CAR spreads estimated according to equation (2). Nevertheless, INSFIT's average profitability declines from 73bps to 40bps as the IMB threshold is relaxed, highlighting the importance of industry neutrality.

C Other Robustness Tests

This section conducts three robustness tests. First, to confirm the potential importance of firm-specific signals regarding relative industry performance, we examine industry competition. Second, to confirm the importance of return volatility, we examine temporal variation in INSFIT. Third, we confirm that INSFIT is distinct from Puckett and Yan (2011)'s study

Figure A.1: **GICS Industry Classification**
Balanced versus Unbalanced: Treatment versus Control.
This figure displays average cumulative abnormal returns (CARs) following buy and sell trades in the treatment group (intra-industry pair trades) and control group (cross-industry pair trades) conditional on whether the pair trade is balanced or unbalanced. Average post-trade CARs are estimated using equation (2). Point estimates and 95% confidence intervals are plotted each day, with standard errors double-clustered by fund and date.

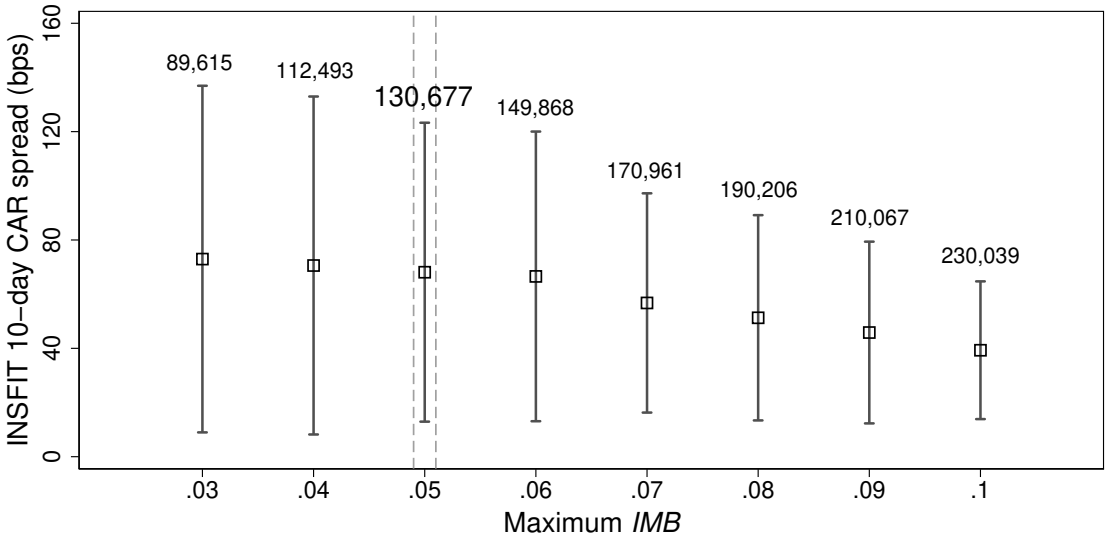


of round-trip interim trades.

C.1 INSFIT and Industry Competition

The cumulative abnormal return spread associated with INSFIT is mostly attributable to buy trades, while sell trades induce temporary negative returns that likely capture price pressure. Akepanidtaworn, Di Mascio, Imas, and Schmidt (2021) also report that the sell trades of institutional investors are driven by heuristics rather than information.

Figure B.1: **INSFIT Profitability for Alternative Balanced Trade Thresholds.**
This figure displays average INSFIT profits as a function of the IMB threshold. Intra-industry balanced pair trades are identified based on $IMB < IMB^{\max}$, with $IMB^{\max} \in \{0.03, 0.04, \ldots, 0.10\}$. For each threshold, an average 10-day CAR spread is estimated using equation (2). Point estimates and 95% confidence intervals are then plotted, with standard errors double-clustered by fund and date. The number of pair trades underlying INSFIT is also reported above each confidence interval.



Nevertheless, in competitive industries, a positive private signal for one firm is more likely to imply a negative private signal for an industry rival. Therefore, to highlight relative valuation's role in INSFIT, we examine balanced intra-industry pair trades in competitive industries where the underlying sell trades are predicted to have more persistent negative post-trade abnormal returns. Post-trade abnormal returns for buy trades and sell trades underlying INSFIT are also predicted to be more symmetric in competitive industries.

We construct industry-level measures of competition using the average product market fluidity measures of Hoberg, Phillips, and Prabhala (2014).[44] We first sort the 49 industries into quartiles of product market fluidity each year. We then calculate the proportion of balanced intra-industry pair trades relative to all main-sample trades by industry and year. The median proportion of balanced intra-industry trades increases monotonically from 1%

[44]This measure captures the extent of competitive threats against a firm in the product market. Data and detailed descriptions are available at http://hobergphillips.tuck.dartmouth.edu/.

Table C.1: **INSFIT and Industry Competition.**
This table presents average cumulative abnormal returns (CARs) for the sell trades and buy trades underlying INSFIT. Each year, CARs are computed for these trades in industries with high and low average product market fluidity (Hoberg, Philips, and Prabhala 2014) based on the annual median. For each industry subsample, average post-trade CARs after 1, 3, 5, 7, and 10 days are estimated using equation (2). The standard errors reported in parentheses are double-clustered by fund and date. Symbols ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

	Low-competition industries			High-competition industries		
	Sell	Buy	Spread	Sell	Buy	Spread
$R(t)$	7.3	−9.0	−16.4	−8.8***	−6.9**	1.9
	(7.4)	(7.4)	(14.8)	(3.3)	(3.2)	(6.6)
$CAR(t, t+1)$	0.0	25.1***	25.2*	−12.1**	2.0	14.1
	(7.6)	(7.5)	(15.0)	(4.8)	(5.0)	(9.9)
$CAR(t, t+3)$	4.2	61.6***	57.5*	−22.7***	20.4***	43.1***
	(16.8)	(16.6)	(33.4)	(7.9)	(7.8)	(15.7)
$CAR(t, t+5)$	42.1*	130.8***	88.7*	−8.3*	26.5***	34.8***
	(24.9)	(24.4)	(49.3)	(4.9)	(4.2)	(9.1)
$CAR(t, t+7)$	52.2**	146.9***	94.7*	−19.5***	21.7***	41.2***
	(25.3)	(24.7)	(50.0)	(5.4)	(5.4)	(10.8)
$CAR(t, t+10)$	40.9	205.2***	164.3	−2.2	25.8***	28.0***
	(50.3)	(49.9)	(100.2)	(1.8)	(3.8)	(5.6)
Observations	38,470	38,470		92,207	92,207	

in the least competitive industries to over 2% in the most competitive industries.[45] This finding highlights the importance of relative valuation to the identification of INSFIT.

We then estimate equation (2) within high competition and low competition industries. Table C.1 finds evidence of greater INSFIT as well as greater post-trade abnormal return symmetry between the buy trades and sell trades underlying INSFIT in competitive industries. Specifically, for high-competition industries, sell trades underlying INSFIT produce negative CARs during the subsequent 10 trading days. In contrast, for low-competition in-

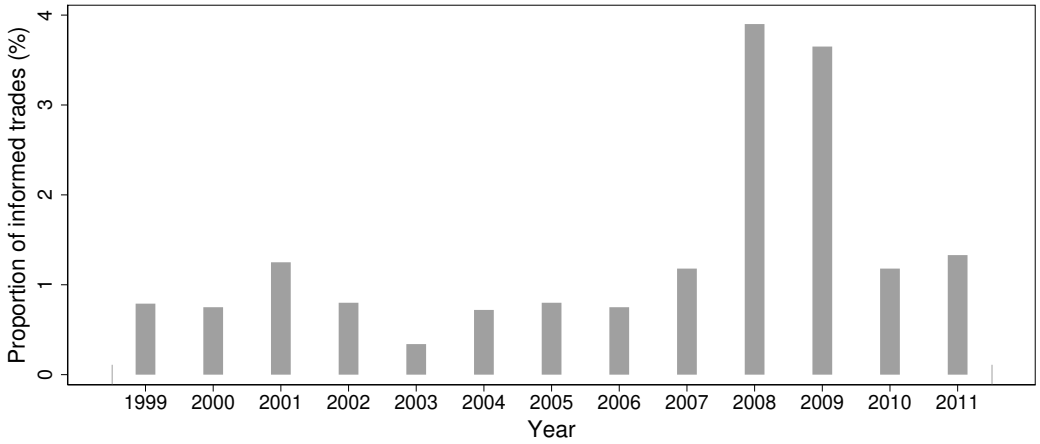
[45]This analysis controls for industry and year, while the higher 3% likelihood reported earlier represents an unconditional likelihood.

dustries, these sell trades produce positive CARs over this horizon. These positive returns may reflect a lack of firm-specific information in less competitive industries since positive short-horizon private signals are less likely to imply a negative short-horizon private signal for an industry peer in less competitive industries. Furthermore, while INSFIT occurs less frequently in low-competition industries, the buy trades underlying INSFIT are more profitable.

C.2 Temporal Variation in INSFIT

Our next analysis finds INSFIT varies during the sample period. Consistent with cash constraints tightening with larger outflows, INSFIT is higher in periods of financial turmoil. Higher INSFIT may also reflect an increase in the number of underpriced stocks, hence greater investment opportunities, during periods of financial turmoil. However, financial turmoil does not necessarily increase the availability of private signals. Instead, widespread undervaluation (due to a reduction in market-wide liquidity for example) reflects public information.

Figure C.1: **INSFIT Over Time.**
This figure illustrates the likelihood of INSFIT during our sample period. Each year, the total number of balanced intra-industry buy trades a fund manager executes is divided by the total number of buy trades executed during the year. This annual ratio is then averaged across fund managers, with equal weights, and plotted over time.



Each year and for each fund manager, we divide the number of buy trades involved in balanced intra-industry pair trades by the manager's total number of buy trades and plot this average fraction each year. Figure C.1 illustrates the stability of this fraction, which is often below 1%. However, the fraction of buy trades underlying INSFIT increases to as high as 4% during the Global Financial Crisis in 2008 and 2009.[46]

Table C.2: **INSFIT Over Time.**
This table reports same-day returns (R) and post-trade cumulative abnormal return (CAR) spreads after 1, 3, 5, 7, and 10 days associated with INSFIT in two superiods: 1/1/1999–31/12/2005 and 1/1/2006–30/09/2011. The standard errors reported in parentheses are double-clustered by fund and date. Symbols ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

	1999−2005			2006−2011		
	Sell	Buy	Difference	Sell	Buy	Difference
$R(t)$	3.4^{***}	7.7^{***}	4.3^{*}	-7.4^{***}	-14.2^{***}	-6.8
	(1.2)	(1.2)	(2.4)	(2.5)	(2.3)	(4.7)
$CAR(t,t+1)$	-3.4^{**}	7.5^{***}	10.9^{***}	-10.8^{***}	9.4^{**}	20.2^{***}
	(1.9)	(2.1)	(4.0)	(3.8)	(3.9)	(7.7)
$CAR(t,t+3)$	-7.0^{***}	14.7^{***}	21.7^{***}	-18.2^{**}	40.3^{***}	58.5^{***}
	(2.6)	(3.1)	(5.7)	(8.8)	(8.3)	(17.2)
$CAR(t,t+5)$	-6.3^{**}	28.1^{***}	34.4^{***}	12.2	70.0^{***}	57.8^{**}
	(2.8)	(3.4)	(6.2)	(13.5)	(12.6)	(26.2)
$CAR(t,t+7)$	-5.5	33.1^{***}	38.6^{***}	4.8	69.7^{***}	65.0^{**}
	(4.4)	(4.9)	(9.3)	(13.5)	(13.0)	(26.6)
$CAR(t,t+10)$	0.3	47.0^{***}	46.6^{***}	14.9	92.5^{***}	77.5^{**}
	(6.0)	(6.4)	(12.4)	(17.8)	(17.8)	(35.6)
Observations	39,813	39,813		90,864	90,864	

To address the possibility that our findings are driven by the Global Financial Crisis, we split the sample period into two subperiods. Table C.2 reports that while fewer than one-third of INSFIT observations occur in the 1999–2005 subperiod, informed trading produces a positive post-trade CAR spread of 0.466% after 10 days. While this CAR spread is lower

[46]By construction, very similar results would be obtained if the analogous ratio was calculated using sell trades.

compared to the 2006–2011 subperiod, which contains over two-thirds of INSFIT observations, the abnormal returns arising from INSFIT are not driven by the Global Financial Crisis in the later subperiod.

C.3 INSFIT versus Unwound Trades

In this subsection, we analyze the holding periods associated with INSFIT trades. This analysis confirms our findings are distinct from those of Puckett and Yan (2011) who find short-horizon (within-quarter) round-trip trades are highly profitable.

We first investigate the holding periods associated with INSFIT. Similar to Chakrabarty, Moulton, and Trzcinka (2017), for each manager-year, we require individual fund managers to remain in the sample for two years following the year in which INSFIT is executed. This requirement limits our sample period to INSFIT between January 1999 and December 2009. We then calculate the number of calendar days until a sell trade or a buy trade underlying INSFIT is fully unwound.

Figure C.2 illustrates that approximately 40% of buy trades and 20% of sell trades underlying INSFIT are unwound within 24 months. About half of this unwinding occurs within four calendar months, which indicates heterogeneity in the horizon of private signals underlying INSFIT. The diminishing rate at which trades attributable to INSFIT are unwound is distinct from the unconditional result in Chakrabarty, Moulton, and Trzcinka (2017) but consistent with the motivation in Binsbergen, Han, Ruan, and Xing (2021).

We next demonstrate directly that INSFIT is distinct from the interim trades identified by Puckett and Yan (2011) that are unwound before the end of the quarter. Using ANcerno data, Puckett and Yan (2011) report that these unwound trades comprise a quarter of all institutional trades. However, the vast majority of trades underlying INSFIT are not unwound within the same quarter. More important, excluding these unwound trades does not alter the returns associated with INSFIT.

Figure C.2: **Fraction of Trades Underlying INSFIT Unwound Within 24 Months.** This figure illustrates the fraction of the long and short positions underlying INSFIT that are fully unwound within a two-year post-trade horizon.

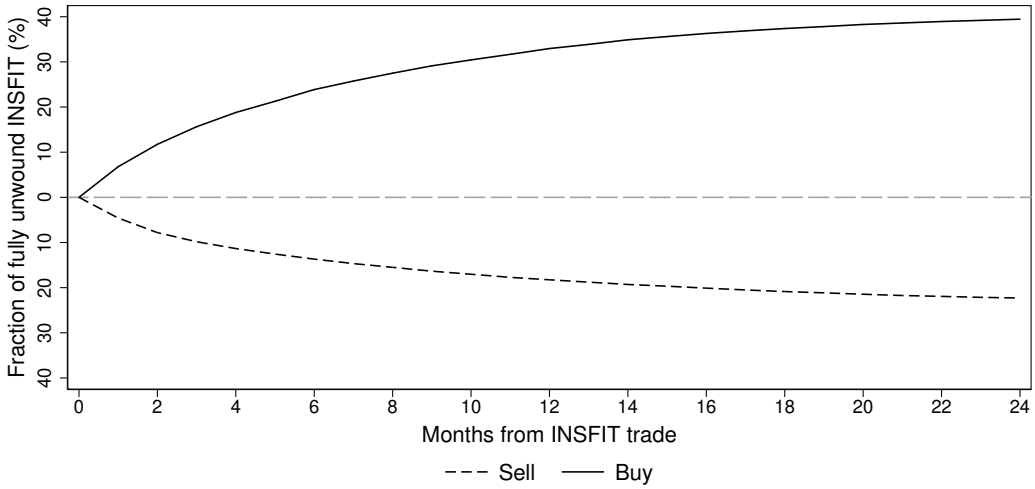


Table C.3 reports that 12% of buy trades and 7% of sell trades underlying INSFIT are fully unwound before the end of the quarter. These proportions increase as less restrictive benchmarks define unwound trades by only requiring a fraction $x \in \{0.9, 0.8, 0.7, 0.6, 0.5\}$ of the initial trade to be unwound by the quarter's end. More important, Table C.3 indicates that the CAR spreads following INSFIT are unaffected by excluding fully or partially unwound trades. The result is consistent with the illustration of INSFIT's profitability in Figure C.3, which stabilizes around day 20 without a subsequent reversal.

Our results indicate that fund managers do not necessarily unwind an informed buy trade once a stock's undervaluation is corrected. Instead, fund managers may hold the stock position to minimize tracking error or until unwinding the position provides liquidity (Christoffersen, Keim, Musto, and Rzeznik 2022). Overall, the short-horizon positive private signals that motivate INSFIT dictate entering into stock positions rapidly, but do not specify when to eventually exit these positions.

Table C.3: **INSFIT Excluding Round-Trip Trades.**
This table presents the average spread for same-day returns (R) and cumulative abnormal returns (CARs) between sell and buy trades according to equation (2). The sample excludes INSFIT observations whose underlying trades are fully or partially unwound by the quarter's end, where the proportion of unwound trades is denoted $x \in \{1.0, 0.9, 0.8, 0.7, 0.6, 0.5\}$. After excluding unwound trades, the average same-day return spread between buy trades and sell trades underlying INSFIT along with the post-trade CAR spreads after 1, 3, 5, 7, and 10 days are reported. The standard errors reported in parentheses are clustered by fund and date. Symbols ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

	Fraction unwound by quarter's end					
	1.0	0.9	0.8	0.7	0.6	0.5
Sell	7.1%	7.3%	7.6%	7.9%	8.2%	8.7%
Buy	11.9%	12.3%	12.7%	13.2%	13.8%	14.6%
	INSFIT CAR spreads excluding unwound trades					
$R(t)$	−4.3	−4.2	−4.3	−4.3	−4.4	−4.4
	(4.4)	(4.5)	(4.5)	(4.5)	(4.5)	(4.5)
$CAR(t, t+1)$	19.5***	19.4***	19.5***	19.5***	19.7***	19.8***
	(6.7)	(6.7)	(6.8)	(6.8)	(6.8)	(6.9)
$CAR(t, t+3)$	52.1***	52.1***	52.3***	52.4***	52.5***	52.6***
	(17.7)	(17.8)	(17.9)	(18.0)	(18.2)	(18.2)
$CAR(t, t+5)$	57.4**	57.5**	57.7**	57.8**	57.7**	58.2**
	(25.3)	(25.5)	(25.7)	(26.0)	(26.3)	(26.5)
$CAR(t, t+7)$	65.2**	65.2**	65.4**	65.3**	64.8**	65.2**
	(27.1)	(27.4)	(27.6)	(27.9)	(28.2)	(28.4)
$CAR(t, t+10)$	77.3**	77.5**	77.9**	78.0**	77.4**	78.1**
	(34.6)	(35.0)	(35.3)	(35.8)	(36.3)	(36.9)

D News Article Types

This appendix describes the classification of full news articles according to the textual tags provided by RavenPack Analytics. Each news article is assigned to a "group" reflecting the most general classification of news. Within each group, news is further classified into "sub-types" reflecting the second most general classification of news. Both classification criteria reflect keywords targeted by RavenPack Analytics' proprietary textual analysis algorithms.

Figure C.3: **INSFIT Alpha Over 40 Days.**
This figure illustrates the cumulative abnormal return (CAR) spreads following the buy trades and sell trades underlying INSFIT. Average post-trade CAR spreads on the s^{th} day after the execution of INSFIT, α_{1s}, are estimated using equation (2). Standard errors are double-clustered by fund and date. Point estimates and 95% confidence intervals are plotted each day.

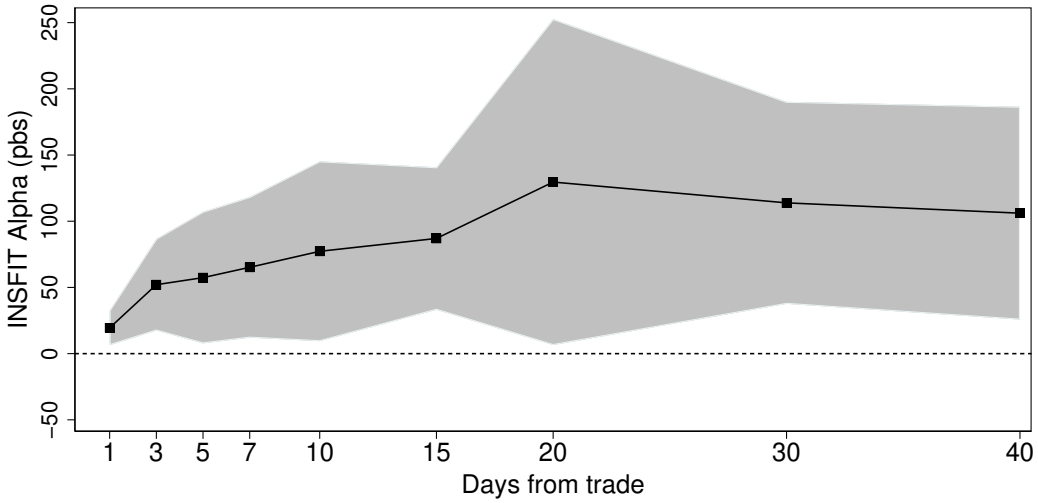


Table D.1 below summarizes the keywords used to identify news articles containing textual content that suggests a positive impact on firm value.

Table D.1: **News Article Textual Tags.** This table summarizes the "groups" and "sub-types" used to identify textual content.

Group	**Sub-type**						
analyst-ratings	positive						
credit	approval	increase	up				
credit-ratings	confirmation	positive					
dividends	above-expectations	up	approval	approved	completed	increase	rumor
earnings	above-expectations	positive	up				
equity-actions	approval	approved	bought-deal	regulatory-approval	up		
labor-issues	increase						
price-targets	upgrade						
products-services	above-expectations	gain	granted	positive	up	start	
regulatory	pass	lifted					
revenues	above-expectations	up	upgrade				
stock-prices	gain						