The Availability Heuristic and Investors' Reaction to Company-Specific Events.

Context

-**Positive / Negative Outcome.** We use the daily market returns the magnitude of the outcome availability effect is negatively correlated with firms' market capitalization, and positively correlated with stock beta, as well as with historical return volatility
-**Risk Volatility**. Regarding risk availability, we find that on days of substantial stock market moves, abnormal stock price reactions to upgrades are weaker, and abnormal stock price reactions to downgrades are stronger. Both availability effects remain significant even after controlling for additional company-specific and event-specific factors, including market capitalization, stock beta, historical volatility of stock returns, cumulative excess stock returns over one month preceding the recommendation revision, rating category before the revision, and number of categories changed in the revision.

Observations

We employ the general market tendency as a proxy for outcome availability and find that **excess market adjusted stock returns are (i) higher on the days of recommendation upgrades if the contemporaneous daily index returns are positive and (ii) lower on the days of recommendation downgrades if the contemporaneous daily index returns are negative.**

We also document that **the magnitude of the effect of outcome availability is negatively correlated with firms 'market capitalization and positively correlated with their Stock beta and historical return volatility.** With respect to the latter availability aspect, risk availability, we find that event day abnormal stock returns are lower on the days of substantial market returns, when risky investment scenarios are more available to investors.

Short-term price reaction is found to be a function of the strength of the recommendation, the size of the recommended firm, the contemporaneous earnings forecast revision, the magnitude of the recommendation change, the recommending analyst reputation, and the size of the brokerage house.

Possibilités D'application A la Société Générale.

Both large and small traders react to recommendations; however, large investors appear to trade more in response to the amount of information contained in the analyst recommendations.

Psychological Background

Mullainathan [2002] develops a model of memory limitations based on two psychological concepts that are related to the availability heuristic: **(i) "rehearsal," suggesting that remembering an event once makes it easier to remember again, and (ii) "associativeness," asserting that current events can trigger recollection of past events with similar aspects**.

Lee et al. [2005] discuss the **"recency bias," which is the tendency of people to make judgments about the likelihood of events based on their recent experience.**
They find that analysts' forecasts of firms' long-term growth in earnings per share tend to be relatively optimistic when the economy is expanding and relatively pessimistic when the economy is contracting.

A- Outcome Availability :

Data Description

NYSE (New York stock exchange listed companies)

TABLE 1
Descriptive Statistics for Firms Making Up Working Sample.

		Market Capitalization, $ millions				Market Model beta				St. Dev. of historical stock returns, percent			
Sector	Num-ber of firms	Avg	StDev	Max	Min	Avg	StDev	Max	Min	Avg	StDev	Max	Min
1. Basic materials	187	36,498	219,538	2,696,471	59.0	1.62	0.53	3.23	0.14	2.34	0.65	5.71	0.99
2. Conglomerates	9	53,654	103,589	334,175	1,722.2	1.01	0.25	1.44	0.59	1.18	0.22	1.62	0.83
3. Consumer goods	173	11,434	34,861	353,027	91.8	0.97	0.40	2.21	0.20	1.86	0.77	4.99	0.70
4. Financial	285	23,149	168,977	2,701,406	67.6	0.94	0.32	1.98	0.09	1.44	0.50	4.32	0.63
5. Healthcare	92	18,798	33,718	179,607	143.7	0.81	0.30	1.82	0.22	2.00	1.22	11.50	0.77
6. Industrial goods	134	7,880	24,721	231,761	76.9	1.34	0.45	2.94	0.26	2.01	0.77	6.19	0.87
7. Services	272	6,618	16,167	194,026	38.7	1.05	0.42	2.51	0.05	1.95	0.70	5.60	0.85
8. Technology	134	37,770	114,662	1,084,704	131.8	1.18	0.46	2.79	0.34	2.04	0.73	5.03	0.81
9. Utilities	87	7,838	15,367	129,458	119.5	0.86	0.35	2.24	0.19	1.34	0.58	4.23	0.68
Total sample	1373	19,091	119,636	2,701,406	38.7	1.11	0.48	3.23	0.05	1.86	0.78	11.50	0.63

Table 1 provides basic descriptive statistics of the working sample by sectors of the economy.
Firms' market capitalization ranges from 38.7 to 2,701,406 millions of dollars with a standard deviation of 119,636.
Market Model beta estimated over days -251 to -2 relative to the event day varies from 0.05 to 3.23, and the standard deviation of daily stock returns over the same period is from 0.63–11.50%, with standard deviations of 0.48 and 0.78, respectively.

Observations :

-On the days when certain factors cause, for example, **a positive market index return, investors may react more strongly to recommendation upgrades, as they are made available by the factors above.**
-On the days when **the market index rises for other reasons, the index increase itself enhances the availability of positive investment scenarios, which results in stronger positive price reactions to recommendation upgrades.**

By testing for stock price reactions to recommendation revisions conditioned on the sign of index returns, we are able to **identify the effect of outcome availability on the perception of company-specific events by investors**

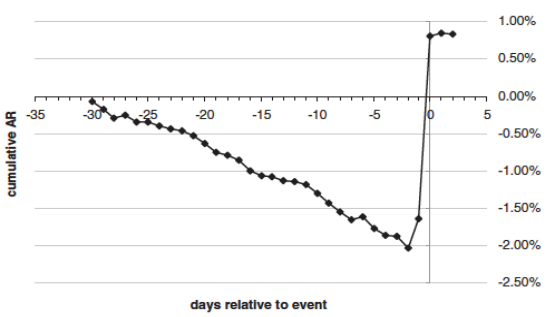

FIGURE 1 Cumulative average daily ARs around recommendation upgrades.

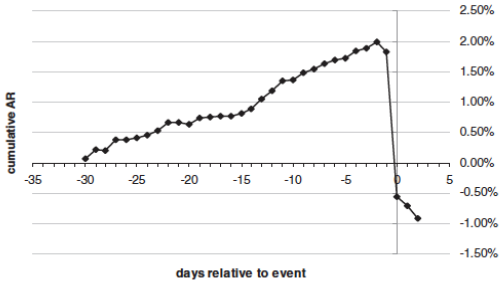

FIGURE 2 Cumulative average daily ARs around recommendation downgrades.

H0: Stock returns are not affected by the availability of positive or negative investment outcomes.
H1 (upgrades): ARs around upgrades are higher, the more available are positive investment outcomes, as reflected by positive contemporaneous MRs.
H1 (downgrades): ARs around downgrades are lower, the more available are negative investment outcomes, as reflected
by negative contemporaneous MRs.

TABLE 5
Effect of Outcome Availability on Event-days ARs.

	Average AR on Day -1,%			Average AR on Day 0,%		
Type of recommendation revision	MR-1>0	MR-1<0	Difference (t-statistic)	MR0>0	MR0<0	Difference (t-statistic)
Upgrades	0.68	0.02	***0.66 (4.54)	2.82	1.89	***0.93 (5.54)
Downgrades	0.22	−0.75	***0.98 (6.14)	−1.82	−3.04	***1.22 (7.00)

Asterisks denote 2-tailed p-values: *p <0.10; **p <0.05; ***p <0.01.

Mr for market return and **AR** for average return.

Results:

The results provide **strong support for the existence of the outcome availability effect on the ARs related to the analyst recommendation revisions**.
All the estimated differences are positive and highly significant, meaning that event-driven ARs are higher for upgrades if the contemporaneous daily MRs are positive and lower for downgrades if the contemporaneous daily MRs arenegative.We note also that the availability-driven AR differences are larger on day 0 than on day -1, and for downgrades than for upgrades.

Statement :
-stocks of low capitalization, growth, and highly volatile stocks are especially likely to be disproportionately sensitive to broad waves of investor sentiment.
-the effect of outcome availability tends to decrease with market capitalization and increase with stock beta.

Results:

TABLE 6
Effect of Outcome Availability on Event-driven ARs, by Market Capitalization and Beta Groups: Upgrades, Day0.

Average AR on days of positive/negative MR0,% (No. of events)

Panel A: ARs on days of positive and negative market returns

Beta	Low	Medium	High	Total
Market capitalization				
High	1.60/1.14 (176)	1.25/1.53 (149)	1.49/0.87 (130)	1.47/1.21 (455)
Medium	2.81/2.23 (169)	2.86/1.66 (150)	3.40/2.00 (149)	3.02/1.98 (468)
Low	3.83/1.70 (92)	3.74/2.59 (174)	4.04/3.12 (184)	3.88/2.56 (450)
Total	2.50/1.69 (437)	2.74/1.93 (473)	3.16/2.04 (463)	2.82/1.89 (1373)

Panel B: Availability-driven AR differences

AR difference (t-statistic)

Beta				
Market capitalization				
High	*0.46 (1.66)	−0.28 (−0.99)	*0.62 (1.67)	0.26 (1.45)
Medium	0.58 (1.42)	***1.20 (2.72)	***1.40 (2.68)	***1.04 (3.93)
Low	**2.13 (2.52)	**1.15 (2.03)	0.92 (1.52)	***1.32 (3.58)
Total	***0.81 (2.98)	***0.81 (2.95)	***1.12 (3.51)	***0.93 (5.54)

Asterisks denote 2-tailed p-values: *p <0.10; **p <0.05; ***p <0.01.

TABLE 9
Multifactor Regression Analysis of Event-driven ARs: Effect of Outcome Availability.

		Coefficient estimates,% (t-statistics)			
		Upgrades		Downgrades	
Explanatory variables	Regression coefficients	Day -1	Day 0	Day -1	Day 0
MR_dum	$\gamma 1$	***0.66 (4.53)	***0.88 (5.46)	***0.95 (5.91)	***1.06 (6.29)
MCap	$\gamma 2$	−0.02 (−0.30)	***−0.70 (−8.26)	0.02 (0.19)	***0.62 (6.73)
beta	$\gamma 3$	−0.10 (−1.24)	−0.12 (−1.27)	*−0.18 (−1.85)	0.01 (0.07)
SR_volat	$\gamma 4$	***0.23 (2.59)	***0.36 (3.71)	0.17 (1.62)	***−0.49 (−4.39)
Magnitude	$\gamma 5$	0.69 (1.56)	−0.33 (−0.67)	0.76 (1.59)	−0.66 (−1.29)
AR_30_2	$\gamma 6$	−0.08 (−1.20)	*−0.15 (−1.90)	*** 0.24 (2.86)	0.10 (1.10)
from1[a]	$\varphi 1$			***−1.96 (−2.59)	***−2.15 (−2.66)
from2	$\varphi 2$	**−1.32 (−2.38)	***1.88 (3.07)	***−1.49 (−2.91)	***−2.24 (−4.16)
from3	$\varphi 3$	−0.66 (−1.42)	***2.38 (4.63)	***−1.76 (−3.41)	***−2.53 (−4.64)
from4	$\varphi 4$	−0.74 (−1.46)	***1.86 (3.30)	−0.84 (−0.74)	−0.58 (−0.48)
from5[a]	$\varphi 5$	−1.42 (−0.66)	1.92 (0.82)		

Asterisks denote 2-tailed p-values: *p <0.10; **p <0.05; ***p <0.01.
[a]Dummy variable *from5i* (*from1i*) is included in the regression analysis only for upgrades (downgrades).

Formula For **AR :**

where MR_dum_{it} is the dummy variable, taking the value 1 if the market return corresponding to day t for event i is positive, and 0 otherwise,[11] *MCapi* is the natural logarithm of the firm's market capitalization corresponding to event i, normalized in the cross-section, *betai* is the estimated CAPM beta for event i, normalized in the cross-section, *SR_volati* is the standard deviation of stock returns over the days -251 to -2 corresponding to event i, normalized in the cross-section, *Magnitudei* is the number of categories changed in the revision, *AR_30_2i* is the cumulative abnormal return over the days -30 to -2 corresponding to event i, normalized in the cross-section, and *fromsi* are the dummy variables, taking the value 1 if the initial rating category (according to the numerical scale) before recommendation revision is s (with j equal to 1 for downgrades and 2 for upgrades, to span all possible recommendation revisions within each regression).

$$AR_{it} = \gamma_1 MR\_dum_{it} + \gamma_2 MCap_i + \gamma_3 beta_i + \gamma_4 SR\_volat_i + \gamma_5 Magnitude_i + \gamma_6 AR\_30\_2_i + \sum_{s=j}^{j+3} \varphi_s from_{si} + \varepsilon_{it}$$

Obeservations :

-Investors' ***reactions to recommendation revisions on day 0 are significantly stronger for small firms.*** *That is, according to the signs of the coefficients on MCap, for low capitalization firms, positive Ars following upgrades are higher, and negative ARs following downgrades are lower.*
-Controlling for all the variables appearing in the regression, the hypothesis that the magnitude of the outcome availability effect is independent of the stock CAPM betas cannot be rejected.
-Investors' reactions to recommendation revisions are significantly stronger for more volatile stocks. That is, for the stocks with higher historical volatility of returns, positive ARs following upgrades are higher and negative Ars following downgrades are lower.
-The evidence on the effect of Magnitude on the event driven ARs is mixed. Nevertheless, including Magnitude in the regression assures that the effect of outcome availability on investors' reactions to news remains significant even after controlling for the number of rating categories changed.

Trading volume analysis :

Increase in trading volumes is positively correlated with the information " surprise". And surprise is followed by stock price revision in the direction corresponding to the quality of the "surprise".

That volume may increase either with the absolute value of stock returns, reflecting the average changes in investors' expectations, or following an increase in information asymmetry

Formula

$$ABVOL_i = \frac{Vol_i - AVol_i}{STDVol_i}$$

abnormal trading volume

Formula Explanation

Where Voli is event i's trading volume on day 0, AVoli is the average trading volume over the days -251 to -2, and STDVoli is the standard deviation of the trading volume over the days
-251 to -2 corresponding to event i.

Recommendation revisions will be higher for both upgrades and downgrades on the days when the quality of news corresponds to the sign of contemporaneous market returns.

TABLE 11
Effect of Outcome Availability on Abnormal Trading Volumes on Day 0.

Type of recommendation revision	Average abnormal volume on Day 0		
	MR0>0	MR0<0	Difference (t-statistic)
Upgrades	1.91	1.55	***0.36 (3.00)
Downgrades	1.50	2.13	***−0.63 (−4.85)

Asterisks denote 2-tailed p-values: *p <0.10; **p <0.05; ***p <0.01.

B-RISK AVAILABILITY

The effect of availability on investors reactions to financial risk. Investors' awareness of financial risk and their risk attitude might be affected by environmental factors.

Numerous studies ,we suggest that **on days when risky scenarios are made available to investors or, alternatively, when investors' risk aversion is increased, they treat the "uncertainty ingredient" of any recommendation revision with more precaution, which results in lower stock returns around the revision**

On such "risky" days, the positive price reactions to upgrades should be reduced, while the negative price reactions to downgrades should be amplified.

We define the days of substantial changes in stock market index as the days when the absolute value of market return was larger than half standard deviation of the market's returns measured over the total sampling period (2001–2006).

H0: Stock returns are not affected by the availability of risky investment outcomes.
H1: ARs around both upgrades and downgrades are lower, the more available are risky investment outcomes, as reflected by substantial stock market moves. where Subreti is the dummy variable, taking the value 1 ifthe absolute value of the day-0 MR corresponding to event I exceeds half standard deviation of the MRs over the sample period, and 0 otherwise.

$$AR0_i = \gamma_0 + \gamma_1 MR\_dum0_i + \gamma_2 Subret_i + \varepsilon_i$$

TABLE 13
Combined Effect of Outcome and Risk Availability: Regression Analysis.

Explanatory variables	Regression coefficients	Coefficient estimates,% (t-statistics)	
		Upgrades	Downgrades
Intercept	$\gamma 0$	***2.04 (13.90)	***−2.92 (−19.76)
MR_dum0	$\gamma 1$	***0.94 (5.61)	***1.20 (6.91)
subret	$\gamma 2$	**−0.36 (−2.18)	*−0.31 (−1.72)

Asterisks denote 2-tailed p-values: $^{*}p < 0.10$; $^{**}p < 0.05$; $^{***}p < 0.01$.

Results / Conclusion

The results support our hypotheses.
On the days of substantial market moves, event driven positive stock price reactions following recommendation upgrades are weaker, and event-driven negative stock price reactions following recommendation downgrades are stronger. Thus, the risk availability, as reflected by the contemporaneous stock market volatility, affects event-day ARs.

The outcome availability effect remains significant when controlling for the effect of risk availability.

That is, (i) **after controlling for the substantial stock market moves, the contemporaneous rises in the market index increase investors' positive reactions to upgrades, and the contemporaneous declines in the market index increase investors' negative reactions to downgrades; (ii) after controlling for the direction of change in the market index, substantial contemporaneous market moves decrease investors' positive reactions to upgrades, and increase investors' negative reactions to downgrades**.