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Abstract

This study aims to uncover the relationship between market frictions, measured by price delay, and consensus analyst recommendations on stocks. Analyst recommendations are publicly available to investors, and under the framework of the Efficient Market Hypothesis, should contribute to the efficiency of a stock's pricing mechanism by providing information to the market that would otherwise not be available. We find evidence that the more favorable recommended stocks in our sample command a higher price delay than less favorably recommended stocks. In other words, the most optimistically recommended stocks are priced less efficiently than other less favorably recommended stocks. We also find evidence that consensus analyst recommendations affect price delay only for stocks recommended better than "hold". Stocks with consensus recommendations worse than "hold" do not show a significant relationship between consensus analyst recommendations and price delay. The results are robust to other factors that have been shown to affect delay.

1. Introduction

It can be argued, in the context of the efficient market hypothesis, that the more information there is available to the markets, the more efficient stock prices ought to be. Stock analysts have been traditionally thought of as "information" agents: they perform very costly security analysis to obtain private information on a stock, ultimately leading to a recommendation, in varying degrees, of whether to buy, hold or sell the stock. It has been documented in previous studies that stock analysts tend to be overoptimistic with regards to the stocks they cover[1][2]. This study aims to uncover a possible side effect to this over optimism, one that questions the information role of stock analysts.

Using Hou and Moskowitz (2005) measure of price delay, we analyze whether optimism in stock analyst recommendations lead to stocks having higher price delay. In other words, are analysts' recommendations making the price mechanism of stocks less efficient? We find that in fact it is: those stocks in our sample which command the most favorable consensus analyst recommendations display a higher degree of price delay than stocks with less positive recommendations, except for stocks with the least favorable consensus recommendations which exhibit price delay levels similar to the most favorably recommended stocks. In order to account for firm size effects, we utilize both individual price delay measures and portfolio price delay measures, as defined in Hou and Moskowitz (2005).

The results in this paper become very relevant when we look at the distribution of analyst recommendations during the entire sample period for approximately 5000 stocks, corresponding to the stock universe from the period of March 1996 to April 2008. We use the following scale for analysts' recommendations: 1 signals a "strong buy" opinion, 2 a "buy", 3 a "hold", 4 a "sell" and 5 signals a "strong sell" opinion. During the entire sample period, 90% of the observed consensus analysts' recommendations were "hold" or better (less than or equal to 3). We find that for the entire sample, present quarter consensus analyst recommendations and previous quarter consensus recommendation are negatively related to price delay (a higher recommendation translates into a worse opinion about a stock as an investment opportunity). In other words, on average, the less favorable the recommendation for a stock, the more efficiently a stock is being priced, holding everything else equal.

However, Hou and Moskowitz (2005) show that stocks rejected by stock analysts (characterized by showing negative returns, small, illiquid, low investor recognition, etc.) exhibit higher price delay than otherwise good stocks with positive returns, high investor recognition, high liquidity and big market capitalization. Therefore, in order to better understand the effect of analyst recommendations on price delay, we sorted our sample into five portfolios based on consensus analyst recommendations. In accordance with our hypothesis, mean price delay increases as we move through portfolios with the worst recommendations to the portfolios with the best recommendations. However, the portfolio with the least favorable recommendations presents a higher mean price delay than other portfolios except for the portfolio with the best recommendations. We find that the difference in price delay, for both

[1] Stickel (1995), Barbet et al (2001), Brav et al (2002) and Chan, Karcesky and Lakonishok (2003)
[2] Do Security Analysts Speak in Two Tongues? Ulrike Malmendier and Devin Shanthikumar

individual and portfolio measures, between the two portfolios are not statistically significant. So we find some evidence in support of Hou and Moskowitz that bad stocks command a higher price delay than good stocks. But we also find that good stocks, as proxied by consensus analyst recommendations, exhibit price delay levels similar to bad stocks.

As a result of the seeming contradiction in the results discussed above, we divide our sample between two categories: observations with less than a consensus analyst recommendation of 3 are named "favored" stocks, and those with more than 3 are named "unfavored" stocks. We do this in order to isolate the over optimism effect of recommendations on price delay and therefore consolidate our hypothesis with Hou and Moskowitz results. We run regression analysis on the two sub samples and find that for the "favored" stock sample our hypothesis holds that lower (more positive) analyst recommendations have a positive effect on price delay. However, there is no statistically significant relationship between price delay and analyst recommendations for the "unfavored" stocks sample. The reasons for relatively higher price delay between winning stocks and losing stocks are different for each group: losing stocks show high price delay because of their intrinsic characteristics that defines them as losing stocks, while winning stocks, which should command lower price delay than losing stocks, exhibit high price delay because of overtly positive analyst opinion. We controlled for several factors that we believe explain delay: market capitalization (to account for firm size), turnover (to account for liquidity), return in the previous quarter (to account for momentum), price of the stock and the number of analysts covering the stock in each quarter (in part to account for heterogeneity of opinions). If we look at the excess or "abnormal" price delay in each regression, represented by the regression intercept, we notice that the "favored" sample is described as having higher excess price delay after accounting for the factors mentioned above than the "unfavored" sample. What could be driving price delay in the "unfavored" sample is how much investor recognition a stock has, since only the number of analysts covering a stock each quarter and price had a statistically significant effect on price delay. Market capitalization, turnover and last quarter's stock return had no effect on price delay.

It appears to be that the incentives that are put in place that result in analysts over optimism about stocks they cover has implications for the efficiency of the stock market. This furthers puts into question the role of stock analysts[3]. It is difficult to explain why this phenomenon happens, as it is more a matter of investor psychology than fundamental analysis, and further analysis is needed to articulate the reasons. It would be interesting to compare this matter with a similar topic of discussion regarding credit ratings on a company and whether positive information disseminated by credit rating agencies portray a similar effect on the price mechanism of stocks as do analyst recommendations.

The rest of the paper is structured in the following: in Section II we discuss the existing literature on the subject and formulate our hypothesis. In Section III we present our results. Section IV concludes.

2. Literature Review and Hypothesis

The academic literature has well documented the role of stock analysts in providing private information to the markets. It also has shown that stock analysts tend to provide biased positive recommendations

[3] On the Information Role of Stock Recommendation Revision by Oya Altinkilic and Robert Hansen

to the stocks they cover. Other studies have examined the market value of analysts' output [Stickel (1995), Barber et al. (2001), Brav et al. (2002), Chan, Karceski and Lakonishok (2003)]. Altinkilic and Hansen (2007) question the traditional view that stock analysts are information agents in the market when it comes to recommendation revisions. They find that analyst recommendation changes add little value because they piggyback from previous returns, corporate events and news. Therefore they argue that analyst recommendation changes do not carry with them new information. However, Juergens (1999) shows that analyst recommendations have a substantial and immediate impact on market returns. According to Grossman and Stiglitz (1980) view of efficient markets, stock analyst's output such as recommendations and earnings forecasts should have investment value in order to compensate for the cost of obtaining private information. To our knowledge, no study has been done with regards to the effects of overtly positive analyst recommendations on the efficiency of the pricing mechanism of stocks. We would like to argue that stock analysts stock picking, through the dissemination of recommendations, distorts market efficiency by increasing price delay in stocks which are favorably recommended.

This study is based off the idea presented in Hou and Moskowitz (2005) that investor recognition variables such as institutional ownership, number of analysts covering the stock, among other factors, have very strong explanatory power in explaining price delay. Stocks with high investor recognition typically display less price delay than otherwise if they had less recognition. We suppose that glamorous stocks and winning stocks of big, established firms would receive a lot of stock analysts' attention. According to McNichols and O'Brien (1997), stock analysts tend to self-select the stocks they cover based on their own expectations of a stocks future performance. If a stock analyst believes a stock has a good future performance, then they would start coverage of that stock. Additionally, analysts will tend to grant a "strong buy" recommendation to those stocks they just begun covering[4]. Furthermore, stock analysts have incentives to cover stocks that are likely to be granted a favorable recommendation, in part due to close underwriting relationships with another company, or its own investment banking division[5]. Malmendier and Shanthikumar (2007) find that affiliated analysts issue more optimistic recommendations than unaffiliated analysts, but at the same time issue more pessimistic earnings forecast compared to unaffiliated analysts in an effort to cater to different group of investors. The stocks with the most favorable recommendations in our sample show a much greater concentration of stock analyst coverage (measured by the total sum of number of analysts covering the stocks in each quarter) than those with least favorable recommendations. We would expect lower price delay in those stocks that receive favorable recommendations if we assume that more analysts covering a stock translate into more heterogeneity of opinion regarding the future prospects of a stock. This goes in accordance with Merton (1987), and we find evidence that supports both Merton and Hou and Moskowitz that the number of analyst covering a stock is negatively related to price delay, and in consequence, to stock returns. We want to test if despite controlling for the number of analysts covering a stock, optimism in analyst recommendations still has a positive effect on price delay. We formulate our hypothesis as:

[4] See McNichols and O'Brien (1997)
[5] See Dugar and Nathan (1995) and Lin and McNichols (1998)

H1: Stocks with more favorable analyst recommendations exhibit greater price delay than stocks with less favorable analyst recommendations.

Barber et al (2001) analyze a trading strategy based on analyst recommendations where they go long the stocks with the most favorable recommendations and short stocks with the least favorable recommendations. They find substantial positive abnormal return in this strategy, gross of trading costs. This hints towards the idea that despite the fact that analyst recommendations are considered to be public information, investors could exploit inefficiencies created by overtly optimistic analyst recommendations. Micro-structure issues and trading costs could hamper the ability to exploit these price inefficiencies.

3. Empirical Results

3.1 Data Analysis

We have utilized data on the universe of stocks pulled from the CRSP database. The time horizon under study covers quarterly data from March 1996 to April 2008. This covers 49 quarters for a stock; however, most of the stocks have data for less than 10 quarters. We have calculated individual delay and portfolio delay as explained before using Hou and Moskowitz method. The summary statistics for the variables of interest are presented in Table 1.1.

From Table 1.1 we can see that the average individual delay for a stock in the universe of stocks is 0.5248, which indicates the average degree of market friction present during the time period. After accounting for firm size effect on price delay, mean portfolio delay is 0.1142. We can infer that size and delay are highly correlated. In fact, Hou and Moskowitz show that delay return premium subsumes a significant part of size return premiums, but not all of it.

The mean recommendation for all stocks is 2.34. This shows that in the aggregate, stock analysts are biased to grant positive recommendations. The standard deviation of just 0.8 signals that there is not a lot of divergence in analyst opinions around a mean recommendation of 2.34: stocks covered by analysts in general tend to receive “buy” recommendations. It seems from the data that analysts do not change significantly their recommendations from quarter to quarter, evidenced by the mean recommendation change in a given quarter of just 0.03.

Table 1.2 shows the number of times a stock had a particular consensus estimate. We do not report consensus estimates that are between integers due to space, but the vast majority of consensus analyst recommendation observations are whole integers so it makes little difference if we include them or not.

It is interesting to note that the total number of observations for the best recommendation (“strong buy”) is 13 times higher than those observations belonging to the worst recommendation (“strong sell”). In fact, 90% of all recommendations for all stocks are 3 or better, meaning 90% of the stocks received a mean recommendation of “hold” or better, signaling stock analysts’ bias towards positive recommendations.

We have sorted the sample of stocks into 5 different portfolios, each of which is sorted based on consensus analyst recommendations. More specifically, P1 contains stocks with a consensus recommendation of 1 (strong buy), P2 between 1 and 2 (buy), P3 between 2 and 3 (hold), P4 between 3 and 4 (sell) and P5 between 4 and 5 (strong sell). Table 2.2 summarizes the data in a better way than Table 1.1 that allows us to better analyze the delay characteristics of firms in the context of analyst recommendations. Portfolio delay, market capitalization, turnover, average quarterly recommendation change and stock return in the previous quarter are included in the analysis.

Notice how as we move in ascending order to portfolios with higher (less positive) recommendations, mean portfolio delay measures are decreasing, except for the very last portfolio P5 where price delay increases compared to the value in the previous portfolio P4. This is to be expected, as firms with the worst recommendations tend to be small, illiquid and underperforming stocks, which according to Hou and Moskowitz should exhibit relatively higher price delay than other stocks. Notice in portfolio P1 that the mean recommendation change for a quarter is -1. A negative sign for this variable signals that the mean consensus among analysts is that the stock is moving towards the "buy range" and vice-versa for a positive sign. Stocks which are already recommended as good stocks tend to be further upgraded to a better recommendation. The opposite effect is present at the other end of the spectrum: stocks that are negatively recommended tend to be further downgraded to worse recommendations.

3.2 Correlation Analysis

In order to better understand the relationship between price delay and consensus analyst recommendations, we perform a correlation analysis based on both Pearson and Spearman correlation coefficients. The results are presented in Table 2.1.

Individual stock delay (*Delay)* and portfolio delay (*DelayP)* are negatively correlated to the level of consensus recommendation, number of analysts covering the stock, size of the firm, turnover (acting as proxy for liquidity), and price. Both delay measures are positively correlated with previous quarter's return (acting as a proxy for momentum) and contemporaneous returns, providing evidence that stocks which analysts tend to select for coverage are more likely to be given a favorable recommendation, and in consequence command higher price delay. The most pronounced correlations are found between number of analysts, firm size and price of the stock, being all negatively correlated. This is to be expected as large cap stocks with high prices and widespread analyst coverage tend to be high profile stocks, which empirically exhibit relatively lower price delay than other stocks. However, low price delay stemming from size, price and analyst coverage could be offset by very positive recommendations from analysts.

Of interest to us is the negative significant correlation between price delay and consensus analyst recommendations. This provides further evidence in support of our hypothesis that the most positively recommended stocks exhibit higher price delay than otherwise less positively recommended stocks.

A surprising result of the correlation analysis is that contemporaneous consensus recommendations is weakly correlated to factors such as current quarter and previous quarter returns, market capitalization, turnover and price. This leads us to ask the same question posed by McNichols and O'Brien (1997) on

whether analyst recommendations are based on fundamentals and thus on true analyst expectations about the future performance of a stock or they contain an additive positive bias influenced by strategic concerns[6].

3.3 Multivariate Analysis

We find by analyzing recommendation sorted portfolios that stocks that have more positive recommendations exhibit a greater degree of price delay than other less favorably recommended stocks. However, we also find that the average price delay for stocks with the worst recommendations exhibit an average price delay higher than those found in other portfolios, except for the portfolio with the best recommendations. By performing a t-test on the differences in mean portfolio delay between portfolio P5 and the concatenation of portfolio P1 and P2, we find that the difference in average portfolio delay is not statistically significant. This goes to say that average portfolio delay for stocks with the best recommendations is no different from those stocks with the worst recommendations. We want to investigate if consensus analyst recommendations have an effect on price delay for both groups of stocks. As a result, we have divided the sample into two categories: stocks with a recommendation lower than a 3 (better than "hold") are considered "favored" stocks and stocks with recommendations greater than 3 (worse than "hold") are considered "unfavored" stocks. We want to analyze the relationship between price delay and analyst recommendations in these two subsamples using regression analysis after controlling for a series of factors that we believe affect price delay. The results are shown in Table 3.1.

Table 3.1 shows the regression results for the category "favored" stocks. Individually each factor except *Turnover* is statistically significant in the regression with *DelayP* as the dependent variable, as shown in Panel A. According to this regression, both the contemporaneous and previous quarter consensus recommendation, the number of analysts covering a stock, the market capitalization and the price level of the stock all have a negative impact on delay, as expected. The results of the regression on *Delay* are similar to those in Panel A, as shown in Panel B. On the other end, the regression on Table 3.2 reveals some interesting details. In both regressions on *Delay* and *DelayP,* the sign on the *Reccomendation* coefficient is opposite to what we find in the "favored" sample regression. For the regression on *DelayP*, only the number of analysts covering the stock, market capitalization, contemporaneous stock return, contemporaneous market return and the price level of the stock have a statistically meaningful relationship with *DelayP*. Very similar results are obtained from the regression on *Delay.* Consensus analyst recommendations do not appear to drive delay for those stocks who received on average a rating of "hold" or worse ("sell" or "strong sell"). When we initially thought that the worst recommended stocks commanded a price delay level similar to that present in the best recommended stocks, it appears to be that those negative recommendations were not the cause of it. An explanation could be that these stocks which are rated "sell" or "strong sell" exhibit firm characteristics associated with high price delay, namely illiquid, underperforming, small, and with low investor recognition and therefore any effect a negative recommendation may have on delay has been subsumed by those characteristics. However, the more important finding is that consensus analyst recommendations affect

[6] See McNichols and O'Brien (1997)

price delay for those stocks that are favored by stock analysts. In fact, the more favorable the recommendation in this sample, the more price delay a stock exhibits. Even in the presence of factors that typically influence analyst recommendations, such as stock returns and market returns in the "favored" stocks sample, we see consensus analyst recommendations affecting price delay.

Finally, we run a regression over the entire sample to examine the relationship between price delay and analyst recommendations. We run regressions on both *Delay* and *DelayP*. As with the previous regression analysis, we include a series of other variables to further narrow in on the effect of analyst recommendations on price delay. The model is the following:

$$Delay = Intercept + \beta 1 * rec + \beta 2 * lag1rec + \beta 3 * recchange + \beta 4 * numanalysts + \beta 5 * mktvalue + \beta 6 * turnover + \beta 7 * return + \beta 8 * lag1return + \beta 9 * spret + \beta 10 * price + \epsilon t$$

$$DelayP = Intercept + \beta 1 * rec + \beta 2 * lag1rec + \beta 3 * recchange + \beta 4 * numanalysts + \beta 5 * mktvalue + \beta 6 * turnover + \beta 7 * return + \beta 8 * lag1return + \beta 9 * spret + \beta 10 * price + \epsilon t$$

Given that the regression on *DelayP* has a higher R^2 than the regression on *Delay*, we discuss results only for the former. *As* expected, *rec* and *lag1rec* are negatively related to *DelayP*. All variables except for *turnover* are statistically significant. As pointed out by Hou and Moskowtiz, investor recognition variables do a better job explaining delay than traditional liquidity measures. In fact, the same investor recognition variables could be thought of as liquidity measures, as both are highly correlated. Notice how turnover is statistically insignificant (for both regressions). A stock with a high number of analysts will likely have heterogeneous pool of opinions about a stock's future performance, resulting in an average recommendation that is not biased towards one end or the other[7]. Returns in the previous quarter appear to have a substantial impact on contemporaneous delay, more so than consensus recommendations. It is possible that positive returns in the previous quarter lead to favorable consensus recommendation in the present quarter and therefore indirectly impacts price delay. Recall that consensus recommendations and stock returns had little correlation between them, so their effects are almost independent of each other. Furthermore, the return parameters in the regression (*return, lag1return and spret*) have the biggest impact among all other variables on price delay. Analyst recommendations could be thought as proxies for past stock returns as Altinkilic and Hansen (2007) presumed.

The R^2 in both regressions is low: 0.091 for *DelayP* and 0.031 for *Delay*. Analyst recommendations might be affecting delay, but it does not, along with the other factors, do a good job in explaining the cross sectional variation in delay amongst the sample. Nevertheless, we are trying to identify a relationship between price delay and analyst recommendations, not explain price delay through analyst recommendations. For further information on price delay in stocks see Hou and Moskowitz (2005).

[7] A Simple Model of Capital Market Equilibrium with Incomplete Information by Robert Merton (1987)

4. Conclusion

This study provides evidence that over optimism in stock analysts' recommendations contribute to market inefficiency in the equities market. This puts into question the information role of stock analysts and their usefulness to the investing community. In light of the private information contained in analyst recommendation reports, it is intuitive to think that stock prices would become more efficient in the presence of analyst recommendations. After controlling for other factors previously shown to affect price delay, we find a significant negative relation between previous quarter and contemporaneous consensus analyst recommendations and price delay. This issue is exacerbated by the large number of favorable recommendations compared to unfavorable recommendations granted. Interestingly, we find evidence that consensus analyst recommendations only have an effect on "favored" stocks: that is stocks that receive a recommendation better than "hold". For "unfavored" stocks, or stocks with a consensus analyst recommendation higher than "hold", consensus analyst recommendations do not have a statistically significant relationship with price delay. Although the stocks possessing the most favorable recommendations statistically exhibit price delay levels similar to those stocks least favorably recommended, the causes for each are different and opposite. Our findings contribute to findings by Hou and Moskowitz (2005) on stock characteristics that influence price delay. We have not provided a causal explanation for the findings in this paper. The fact is whether analysts are truly overoptimistic or are responding strategically to distorted incentives, they are eroding market efficiency. One could think that this optimism is greatest in boom periods, feeding the frenzy of a potential bubble, much like in the 1990's. Inefficiency in the markets caused by this over optimism can cause investors to react rather late to new information that could correct stock price behavior. This is a sub-topic of interest for future research. Additionally, it would be interesting in the future to analyze if a similar effect can be found between credit ratings assigned to a firm by credit agencies and price delay.

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Table I. Descriptive Statistics and Number of Recommendations per Category of Opinions

Descriptive statistics on selected parameters for the entire sample based on quarterly data, which includes the universe of all stocks pulled from the CRSP database from April 1996 to March 2008. *Delay* is individual stock delay and is calculated as per Hou and Moskowitz (2005) measure of price delay D1. *DelayP* is portfolio delay, where the entire sample of stocks is sorted into size deciles, and within those deciles stocks are sorted again into deciles on individual delay measures (*Delay)* in the fashion of Hou and Moskowitz (2005). Panel A reports statistics regarding stock characteristics. Panel B reports statistics regarding consensus level of recommendation and analyst coverage, represented by the number of analysts covering the stock each quarter. Panel C counts the number of times a recommendation category was observed in the entire sample.

Panel A. Firm Characteristics

	Mean	*Median*	*Standard Dev.*	*Min*	*Max*
Delay	0.5248	0.5099	0.3089	0	1
DelayP	0.1142	0.0427	0.1818	0	0.9999
Value Weighted Return	0.0189	0.023	0.0878	-0.3462	0.3987
Volume	831,883.57	223,782.50	2,551,941.54	62	66,799,682
Market Cap	6,483,116.60	944,127.18	23,161,094.59	751.5	602,432,919
Turnover	6.44	4.17	21.83	0.01	2539.56
EPS	0.71	0.24	51.88	-68.85	6442.98
Price	29.62	24.11	28.61	0.09	983.02

Panel B. Recommendation Statistics

	Mean	*Median*	*Standard Dev.*	*Min*	*Max*
Mean Recommendation	2.34	2.33	0.8	1	5
Mean Rec. Change	0.03	0	0.89	-4	4
Number of Analysts	2.49	2	2.1505	1	31

Panel C. Total number of times a stock was recommended per recommendation category

Recommendation	*Strong Buy*	*Buy*	*Hold*	*Sell*	*Strong Sell*
Total observations	6119	11147	12219	1477	463

Table 1.2 Mean Values for Consensus Recommendation Sorted Portfolios

Stocks are sorted based on consensus recommendations from analysts and placed into five portfolios, with the first portfolio P1 containing those stocks with the most favorable recommendations, moving across to the last portfolio P5 containing those stocks the least favorable recommendations during the entire sample period from April 1996 to March 2008. Mean values are reported for each portfolio, including both recommendation parameters and stock characteristics. *Rec. Change* is the mean quarterly change in consensus analyst recommendations for a stock. A negative change represents the stock is now recommended more favorably, while a positive change represents the opposite effect.

	P1	*P2*	*P3*	*P4*	*P5*
Delay	0.5521	0.5253	0.5193	0.51	0.53
DelayP	0.1439	0.1229	0.103	0.0932	0.1176
Recommendation	1	1.86	2.76	3.63	4.88
Rec. Change	-1.008	-0.1567	0.3129	0.5643	1.892
Market Cap.	3,535,549.55	8,069,356.70	6,662,027.74	4,260,049.88	2,090,392.39
Turnover	5.4	6.47	6.43	7.91	6.54
Return	0.081	0.058	0.006	-0.014	0.013
Return Prev. Quarter	0.0305	0.0257	0.0203	0.014	0.027
Volatility of Returns	0.0322	0.0318	0.0304	0.0313	0.0303
Price	28.55	32.43	28.95	24.73	22.54

Table 2.1 Correlation Analysis (Spearman and Pearson)

Pearson and Spearman rank correlation coefficients are reported between *Delay, DelayP* and *Consensus Recommendation (Recc..)* and selected parameters, including: consensus analyst recommendation, previous quarter consensus analyst recommendation, average change in consensus recommendation, number of analysts covering the stock in the quarter, market capitalization, share turnover in the quarter, stock return in the previous quarter, stock return in the present quarter, S&P 500 return in the present quarter and the closing stock price at the end of the quarter. The numbers in parentheses represents the corresponding p-values for each correlation coefficient.

	Recc.	Recc. Previous Quarter	Rec. Change	# Analysts	Market Cap.	Turnover	Return Prev. Quarter	Return	S&P 500 Return	Price
Delay										
Pearson	-0.01399	-0.01539	0.0032	-0.09013	-0.07978	-0.01588	0.03843	0.04189	0.08847	-0.1116
	(-0.002)	(-0.0007)	*(-0.4779)*	*(<0.0001)*	*(<0.0001)*	*(0.0004)*	*(<0.0001)*	(<0.0001)	(<0.0001)	*(<0.0001)*
Spearman	-0.01267	-0.01146	0.00488	-0.09209	-0.22313	-0.07464	0.0232	0.04344	0.08983	-0.1511
	(-0.0051)	*(-0.0012)*	*(-0.2806)*	*(<0.0001)*	*(<0.0001)*	*(<0.0001)*	*(<0.0001)*	*(<0.0001)*	*(<0.0001)*	*(<0.0001)*
DelayP										
Pearson	-0.04831	-0.05203	0.00527	-0.1472	-0.11053	-0.01445	0.0994	0.08803	0.12831	-0.18421
	(<0.0001)	(<0.0001)	(-0.2523)	*(<0.0001)*	*(<0.0001)*	*(0.0017)*	*(<0.0001)*	(<0.0001)	(<0.0001)	*(<0.0001)*
Spearman	-0.03331	-0.05835	0.01969	-0.2211	-0.56638	-0.07396	0.03771	0.05285	0.09263	-0.3927
	(<0.0001)	*(<0.0001)*	*(<0.0001)*	*(<0.0001)*	*(<0.0001)*	*(<0.0001)*	*(<0.0001)*	*(<0.0001)*	*(<0.0001)*	*(<0.0001)*
Recc.										
Pearson	1	0.22367	0.57019	0.05762	-0.03847	0.00973	-0.03914	-0.0963	0.01933	-0.0806
		(<0.0001)	*(<0.0001)*	*(<0.0001)*	*(<0.0001)*	*(0.0314)*	*(<0.0001)*	*(<0.0001)*	*(<0.0001)*	(<0.0001)
Spearman	1	0.222	0.52831	0.04878	-0.04184	-0.00865	-0.0397	-0.0997	0.02443	-0.121
		(<0.0001)	*(<0.0001)*	*(<0.0001)*	*(<0.0001)*	*(0.0557)*	*(<0.0001)*	*(<0.0001)*	*(<0.0001)*	*(<0.0001)*

Table 3.1 Regression Analysis on "Favored" Stocks

Standard OLS regression analysis is performed on the sub-sample labeled "favored" stocks, which is comprised of all stocks with a consensus analyst recommendation better than "Hold" (that represents a consensus recommendation of less than 3). Each column represents a regression of the independent variable (*Delay* or *DelayP)* on consensus analyst recommendation and one other parameter. The last column is a regression that includes all previous parameters. The numbers in parentheses represent p-values. The last row reports the adjusted R squared for the regression that includes all the parameters. Panel A reports results for the independent variable *DelayP* and Panel B reports results for the independent variable *Delay*.

Panel A. Dependent Variable = *DelayP*											
Intercept	0.14464	0.16366	0.15882	*0.16864*	0.15173	*0.14564*	*0.13746*	0.13686	0.14112	0.1873	**0.21966**
	(<0.0001)	*(<0.0001)*	*(<0.0001)*	*(<0.0001)*	*(<0.0001)*	*(<0.0001)*	*(<0.0001)*	*(<0.0001)*	*(<0.0001)*	*(<0.0001)*	*(<0.0001)*
Recommendation	-0.01302	-0.01112	-0.0193	-0.01009	-0.0136	-0.01303	-0.0107	-0.01191	-0.01339	-0.01601	**-0.01171**
	(<0.0001)	*(<0.0001)*	*(<0.0001)*	*(<0.0001)*	*(<0.0001)*	*(<0.0001)*	*(<0.0001)*	*(<0.0001)*	*(<0.0001)*	*(<0.0001)*	*(<0.0001)*
Rec. Prev. Quarter		-0.01023									**-0.01326**
		(<0.0001)									*(<0.0001)*
Rec. Change			0.00927								**0.0042**
			(<0.0001)								*(0.0016)*
# Analysts				-0.01237							**-0.00781**
				(<0.0001)							*(<0.0001)*
Market Cap					-8.44E-10						**-3.50E-10**
					(<0.0001)						*(<0.0001)*
Turnover						-0.00015					**-0.00004**
						(0.0006)					*(0.3239)*
Stock Quaterly Return							0.05296				**0.05205**
							(<0.0001)				*(<0.0001)*
Prev. Quarter Return								0.22212			**0.24328**
								(<0.0001)			*(<0.0001)*
S&P500 Return									0.29337		**0.23398**
									(<0.0001)		*(<0.0001)*
Price										-0.00119	**-0.00122**
										(<0.0001)	*(<0.0001)*
Adj. R^2											**0.0916**

Table 3.1 Continued

Panel B. Dependent Variable = *Delay*											
Intercept	0.53816	0.54787	0.54619	*0.56434*	0.54697	*0.54018*	*0.53177*	0.5333	0.5342	0.58264	**0.60927**
	(<0.0001)	*(<0.0001)*	*(<0.0001)*	*(<0.0001)*	*(<0.0001)*	*(<0.0001)*	*(<0.0001)*	*(<0.0001)*	*(<0.0001)*	*(<0.0001)*	*(<0.0001)*
Recommendation	-0.00534	-0.00438	-0.0089	-0.00214	-0.00607	-0.00537	-0.00329	-0.0047	-0.00578	-0.00847	**-0.00494**
	(0.0159)	*(0.0510)*	*(0.0007)*	*(0.3340)*	*(0.0060*	*(0.0154)*	*(0.1392)*	*(0.0340)*	*(0.0088)*	*(0.0001)*	*(0.0827)*
Rec. Prev. Quarter		-0.00523									**-0.00845**
		(0.0060)									*(<0.0001)*
Rec. Change			0.00525								**0.00268**
			(0.0108)								*(0.2443)*
# Analysts				-0.01355							**-0.00864**
				(<0.0001)							*(<0.0001)*
Market Cap					-1.05E-09						**-5.49E-10**
					(<0.0001)						*(<0.0001)*
Turnover						-0.00031					**-0.00019**
						(<0.0001)					*(0.0094)*
Stock Quarterly Return							0.04739				**0.03774**
							(<0.0001)				*(<0.0001)*
Prev. Quarter Return								0.14168			**0.15694**
								(<0.0001)			*(<0.0001)*
S&P500 Return									0.33325		**0.28836**
									(<0.0001)		*(<0.0001)*
Price										-0.00124	**-0.00119**
										(<0.0001)	*(<0.0001)*
Adj. R^2											**0.0916**

Table 3.2 Regression Analysis on "Unfavored" Stocks

Standard OLS regression analysis is performed on the sub-sample labeled "unfavored" stocks, which is comprised of all stocks with a consensus analyst recommendation of "Hold" or worse (that represents a consensus recommendation of 3 or more). Each column represents a regression of the dependent variable (*Delay* or *DelayP)* on consensus analyst recommendation and one other parameter. The last column is a regression that includes all previous parameters. The numbers in parentheses represent p-values. The last row reports the adjusted R squared for the regression that includes all the parameters. Panel A reports results for the dependent variable *DelayP* and Panel B reports results for the dependent variable *Delay*.

Panel A. Dependent Variable = *DelayP*											
Intercept	-0.04796	-0.04037	-0.02611	*0.05096*	-0.01297	*-0.04787*	*-0.0441*	-0.04884	-0.04251	0.00089	**0.13812**
	(0.0041)	*(0.0247)*	*(0.1919)*	*(0.0193)*	*(0.4411)*	*(0.0043)*	*(0.0084)*	*(0.0035)*	*(0.0109)*	*(0.9567)*	*(<0.0001)*
Recommendation	0.03798	0.03837	0.03104	0.01796	0.03116	0.03798	0.03701	0.03835	0.03569	0.03434	**0.0066**
	(<0.0001)	*(<0.0001)*	*(<0.0001)*	*(0.0005)*	*(<0.0001)*	*(<0.0001)*	*(<0.0001)*	*(<0.0001)*	*(<0.0001)*	*(<0.0001)*	*(0.2793)*
Rec. Prev. Quarter		-0.00327									**-0.0053**
		(0.2468)									*(0.0758)*
Rec. Change			0.00612								**0.004**
			(0.0468)								*(0.2217)*
# Analysts				-0.00779							**-0.00648**
				(<0.0001)							*(<0.0001)*
Market Cap					-2.21E-09						**-1.26E-09**
					(<0.0001)						*(<0.0001)*
Turnover						-0.000007					**0.000053**
						(0.8876)					*(0.3267)*
Stock Return							0.02734				**0.02469**
							(<0.0001)				*(0.0005)*
Prev. Quarter Return								-0.03059			**0.01351**
								(0.2404)			*(0.5920)*
S&P500 Return									0.163		**0.16703**
									(<0.0001)		*(<0.0001)*
Price										-0.00141	**-0.00141**
										(<0.0001)	*(<0.0001)*
Adj. R^2											**0.108**

Table 3.2 Continued

Panel B. Dependent Variable = *Delay*											
Intercept	0.38777	0.38386	0.38371	*0.48401*	0.4212	*0.38737*	*0.38849*	0.38838	0.39957	0.4303	**0.54463**
	(<0.0001)	*(<0.0001)*	*(<0.0001)*	*(<0.0001)*	*(<0.0001)*	*(<0.0001)*	*(<0.0001)*	*(<0.0001)*	*(<0.0001)*	*(<0.0001)*	*(<0.0001)*
Recommendation	0.03269	0.03249	0.03398	0.01321	0.02617	0.03798	0.03251	0.03244	0.02772	0.02952	**0.00581**
	(0.0003)	*(0.0003)*	*(0.0033)*	*(0.2204)*	*(0.0040)*	*(0.0003)*	*(0.0003)*	*(0.0003)*	*(0.0021)*	*(0.0010)*	*(0.6571)*
Rec. Prev. Quarter		0.00168									**-0.00333**
		(0.7731)									*(0.6028)*
Rec. Change			-0.00114								**-0.00175**
			(0.8584)								*(0.8026)*
# Analysts				-0.00758							**-0.00641**
				(0.0010)							*(0.0064)*
Market Cap					-2.1154E-09						**0.00000**
					(<0.0001)						*(0.0041)*
Turnover						0.00004					**0.00008**
						(0.7623)					*(0.4472)*
Stock Return							0.00505				**-0.02349**
							(0.7178)				*(0.1227)*
Prev. Quarter Return								0.02110			**0.04439**
								(0.6954)			*(0.4120)*
S&P500 Return									0.35230		**0.42820**
									(<0.0001)		*(<0.0001)*
Price										-0.00123	**-0.00122**
										(<0.0001)	*(<0.0001)*
Adj. R^2											**0.10800**

Table 3.3 Regression Analysis on Entire Sample

Standard OLS regression analysis is performed on the entire sample of stocks, which is comprised of the universe of stocks pulled from CRSP database from March 1996 to April 2008. Each column represents a regression of the dependent variable (*Delay* or *DelayP)* on consensus analyst recommendation and one other parameter. The last column is a regression that includes all previous parameters. The numbers in parentheses represent p-values. The last row reports the adjusted R squared for the regression that includes all the parameters. Panel A reports results for the dependent variable *DelayP* and Panel B reports results for the dependent variable *Delay*.

Panel A. Dependent Variable = *DelayP*											
Intercept	0.13972	0.15706	0.15407	*0.16587*	0.14782	*0.1404*	*0.13366*	0.13292	0.13699	0.18372	**0.21866**
	(<0.0001)	*(<0.0001)*	*(<0.0001)*	*(<0.0001)*	*(<0.0001)*	*(<0.0001)*	*(<0.0001)*	*(<0.0001)*	*(<0.0001)*	*(<0.0001)*	*(<0.0001)*
Recommendation	-0.01087	-0.00867	-0.01712	-0.00901	-0.01186	-0.01085	-0.00906	-0.00999	-0.01156	-0.01431	**-0.01155**
	(<0.0001)	*(<0.0001)*	*(<0.0001)*	*(<0.0001)*	*(<0.0001)*	*(<0.0001)*	*(<0.0001)*	*(<0.0001)*	*(<0.0001)*	*(<0.0001)*	*(<0.0001)*
Rec. Prev. Quarter		-0.00973									**-0.01234**
		(<0.0001)									*(<0.0001)*
Rec. Change			0.0099								**0.00451**
			(<0.0001)								*(0.0003)*
# Analysts				-0.01222							**-0.00787**
				(<0.0001)							*(<0.0001)*
Market Cap					-8.74E-10						**-3.65E-10**
					(<0.0001)						*(<0.0001)*
Turnover						-0.000115					**-0.000019**
						(0.0023)					*(0.5952)*
Stock Return							0.05095				**0.04879**
							(<0.0001)				*(<0.0001)*
Prev. Quarter Return								0.20207			**0.22211**
								(<0.0001)			*(<0.0001)*
S&P500 Return									0.28464		**0.22844**
									(<0.0001)		*(<0.0001)*
Price										-0.0012	**-0.00124**
										(<0.0001)	*(<0.0001)*
Adj. R^2											**0.0915**

Table 3.3 Continued

Panel B. Dependent Variable = *Delay*											
Intercept	0.53712	0.54573	0.54528	*0.56512*	0.54703	*0.53839*	*0.53201*	0.5327	0.53392	0.58233	**0.61101**
	(<0.0001)	(<0.0001)	*(<0.0001)*	*(<0.0001)*	*(<0.0001)*	*(<0.0001)*	*(<0.0001)*	*(<0.0001)*	*(<0.0001)*	*(<0.0001)*	*(<0.0001)*
Recommendation	-0.00513	-0.00404	-0.00869	-0.00314	-0.00634	-0.00509	-0.00361	-0.00458	-0.00596	-0.00867	**-0.00673**
	(0.0036)	(0.0255)	*(<0.0001)*	*(0.0743)*	*(0.0003)*	*(0.0038)*	*(0.0415)*	*(0.0093)*	*(0.0007)*	*(<0.0001)*	*(0.0053)*
Rec. Prev. Quarter		-0.00483									**-0.00782**
		(0.0074)									*(0.0001)*
Rec. Change			0.00563								**0.00254**
			(0.0037)								*0.24150*
# Analysts				-0.01308							**-0.00849**
				(<0.0001)							*(<0.0001)*
Market Cap					-1.0704E-09						**0.00000**
					(<0.0001)						*(<0.0001)*
Turnover						-0.00021					**-0.00011**
						(0.0009)					*(0.0688)*
Stock Return							0.04315				**0.03069**
							(<0.0001)				*(<0.0001)*
Prev. Quarter Return								0.13286			**0.14653**
								(<0.0001)			*(<0.0001)*
S&P500 Return									0.33610		**0.30041**
									(<0.0001)		*(<0.0001)*
Price										-0.00123	**-0.00119**
										(<0.0001)	*(<0.0001)*
Adj. R^2											**0.03190**