Disagreement and asset prices

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1. Introduction

Disagreement risk → Security Prices

How disagreement is priced in general markets without significant *short-sale constraints*, *illiquidity*, or other *trading frictions*?

- When participants in a market disagree with each other, an investor who goes out on a limb and takes a position based on his unique expectations could face a greater risk of being wrong.

- Investors who trade when disagreement exists could require additional compensation for bearing this risk.

1. Introduction

How disagreement risk affects expected returns and asset prices in the literature?

1. Divergence in beliefs or opinions should lead to a positive risk premium.

> For example, Varian (1985, 1989), Abel (1989), David (2008), and many others argue that the equity premium puzzle could be explained in terms of a risk premium for heterogeneous beliefs or differences of opinion, or both.

2. Differences of opinion in the market can lead to lower expected returns (higher prices) when short-sale constraints are present. (Miller, 1977)

> Chen, Hong, and Stein (2002) and Diether, Malloy, and Scherbina (2002) find compelling support for the **Miller hypothesis** in several markets in which there are binding short-sale constraints.
>
> However, Boehme, Danielsen, Kumar, and Sorescu (2009) and Avramov, Chordia, Jostova, and Philipov (2009) find evidence to the contrary.

1. Introduction

Study a market with several key characteristics.

- First, the market should be highly liquid and essentially free from short-sale constraints.

- Second, the key drivers of an asset's value should be easily defined and common knowledge.

- Finally, disagreement about these key drivers among the institutions that actually trade the assets should be directly observable.

2. Data

MBS market

prepayment speed (PSA) forecasts

- PSA benchmark curve → the 100% curve.

- At 100%, the prepayment rate starts at 0% for new mortgages, rises by 0.2% per month until month 30, after which the prepayment speed remains constant at 6%.

- For example, a GNMA MBS with a PSA of **200%** would experience prepayments at a rate twice that of the usual benchmark rate and a GNMA MBS with a PSA of **50%** would experience prepayments at a rate that is half the usual benchmark rate.
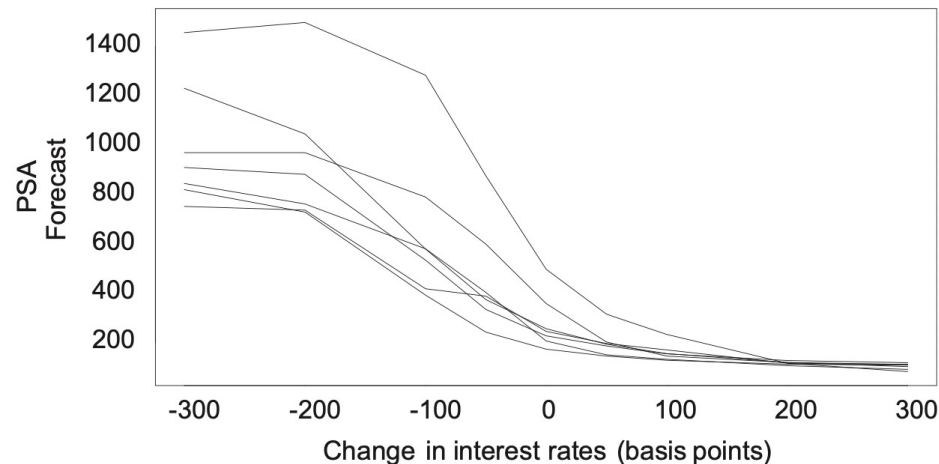
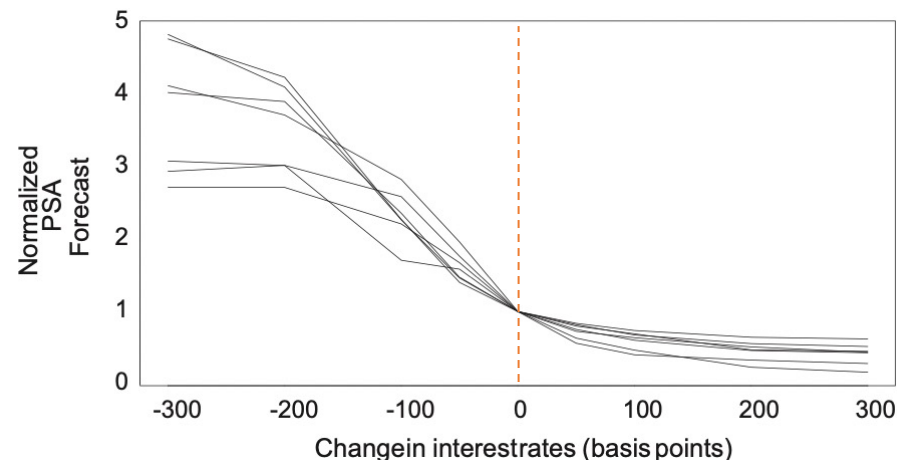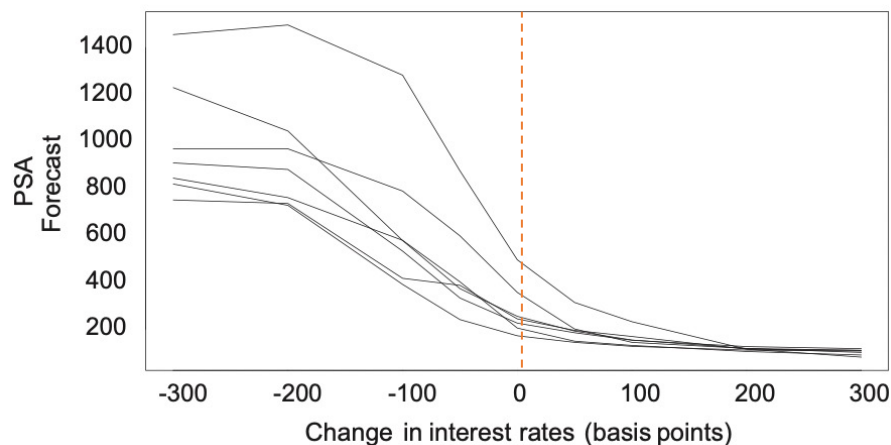# 2. Data

MBS market

prepayment speed (PSA) forecasts

• First, the PSA forecasts are given for various interest rate scenarios and the mortgage-backed securities are guaranteed by the US government.

• Second, the PSA forecasts are made by members of the trading desks at the same institutions that intermediate the trade of mortgage-backed securities.

2. Data

MBS market

prepayment speed (PSA) forecasts based on normalized values

- We collect monthly survey data from *Bloomberg* during July 1993 to January 2012.
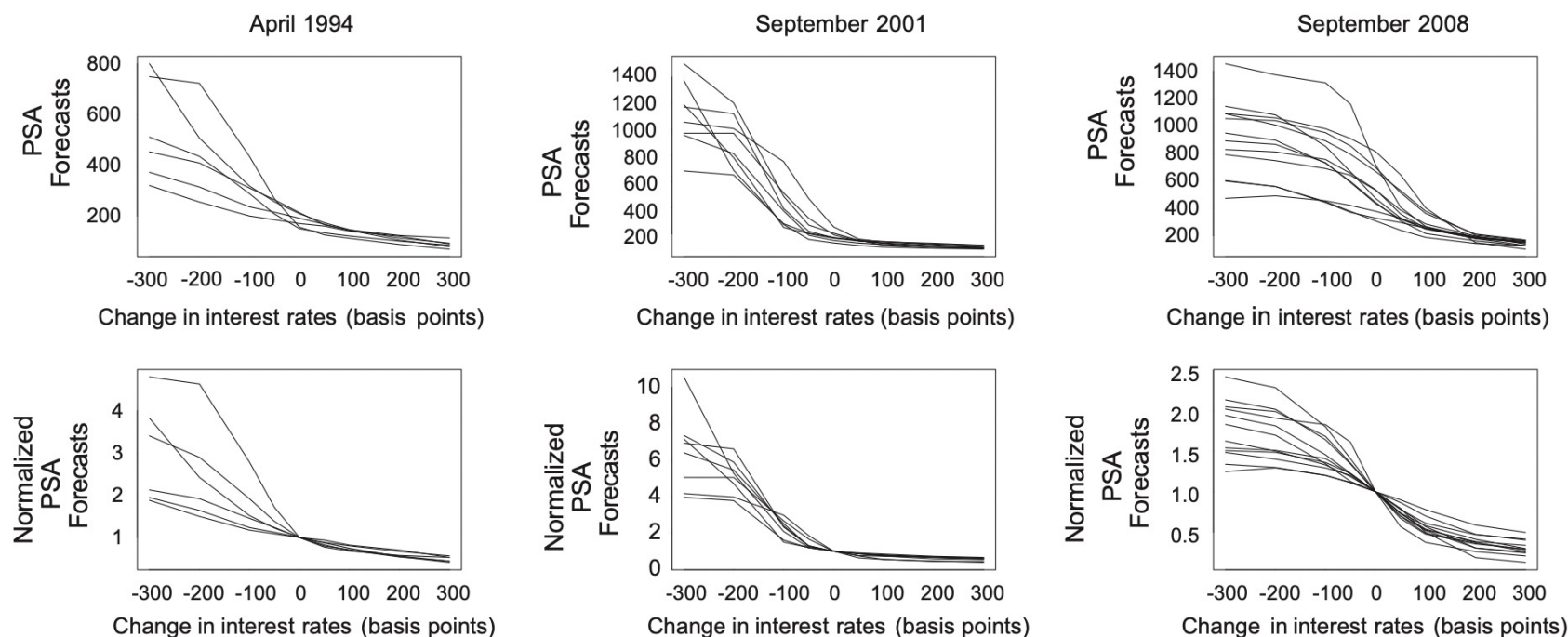
2. Data

MBS market

prepayment speed (PSA) forecasts based on normalized values

Fig. 3. Prepayment speed forecasts. This figure plots Public Securities Association (PSA) prepayment forecasts and normalized forecasts for three distinct periods: the failure of Askin Capital Management in 1994, the attacks of September 11, 2001, and the failure of Lehman Brothers in 2008. As in Fig. 1, the top three plots show the cross section of dealer prepayment forecasts to nine interest rate scenarios ranging from 300 basis points above the current rate to 300 basis points below. As in Fig. 2, the bottom row shows normalized prepayment forecasts for the same nine interest rate scenarios.

2. Data

MBS market

Summary statistics for PSA forecasts based on normalized values

Dealer	Number of months	Total observations	Average number of observations	Average ratio	Standard deviation of ratio
Barclays	66	679	10.29	0.967	0.262
Bank of America	129	1,157	8.97	1.091	0.269
Bear Stearns	181	1,228	6.78	0.993	0.161
Credit Suisse	223	2,145	9.62	0.985	0.227
Deutsche Bank	95	801	8.43	0.903	0.271
Donaldson, Lufkin, and Jenrette	56	504	9.00	1.011	0.212
Goldman Sachs	116	1,009	8.70	1.025	0.295
Greenwich Capital	84	762	9.07	1.059	0.271
HSBC	14	70	5.00	1.072	0.119
JP Morgan Chase	107	1,022	9.55	1.069	0.258
Lehman Brothers	144	826	5.74	0.919	0.167
Merrill Lynch	188	2,009	10.69	0.999	0.174
Morgan Stanley	133	1,212	9.11	1.089	0.322
Nations Bank	20	140	7.00	0.901	0.223
Prudential	92	671	7.29	0.948	0.130
Salomon Brothers	182	1,524	8.37	0.978	0.245
Smith Barney	44	286	6.50	1.026	0.186
UBS Warburg	223	1,617	7.25	0.977	0.232
Number/Total	223	17,662	8.42	1.002	0.242

2. Data

MBS market

Disagreement about prepayment speeds is not likely due to asymmetric access to public or private information.

- First, it's unlikely that differences in access to **public information** drives variation in PSA estimates.

- Second, variation in estimates is unlikely to rest on access to **private information**.

2. Data

MBS market

Whether the dealers have an incentive to disclose their best estimate of prepayment speed truthfully.

- First, as Table 2 suggests, none of the dealers systematically provides different forecasts from their contemporaries.

- Second, times of larger variation in estimates correspond to large economic events in which uncertainty is present in the market.

- Last, the dealers in our study generate substantial revenue from intermediating MBS trade, but they hold little inventory for proprietary trading.

2. Data

MBS market

Returns on TBA (To-Be-Announced) securities

- The TBA market is an attractive setting to study returns on MBS, as it is such a highly liquid market.

- In a TBA trade, the buyer and seller agree on a future sale price, but they do not specify which particular securities will be delivered. Instead, only five additional parameters are promised: *the settlement date, issuer, maturity, coupon, and par amount.*

- Because the TBA market is so liquid, we can be confident that the asset pricing results we find are not merely due to time varying transaction costs or other trading frictions.
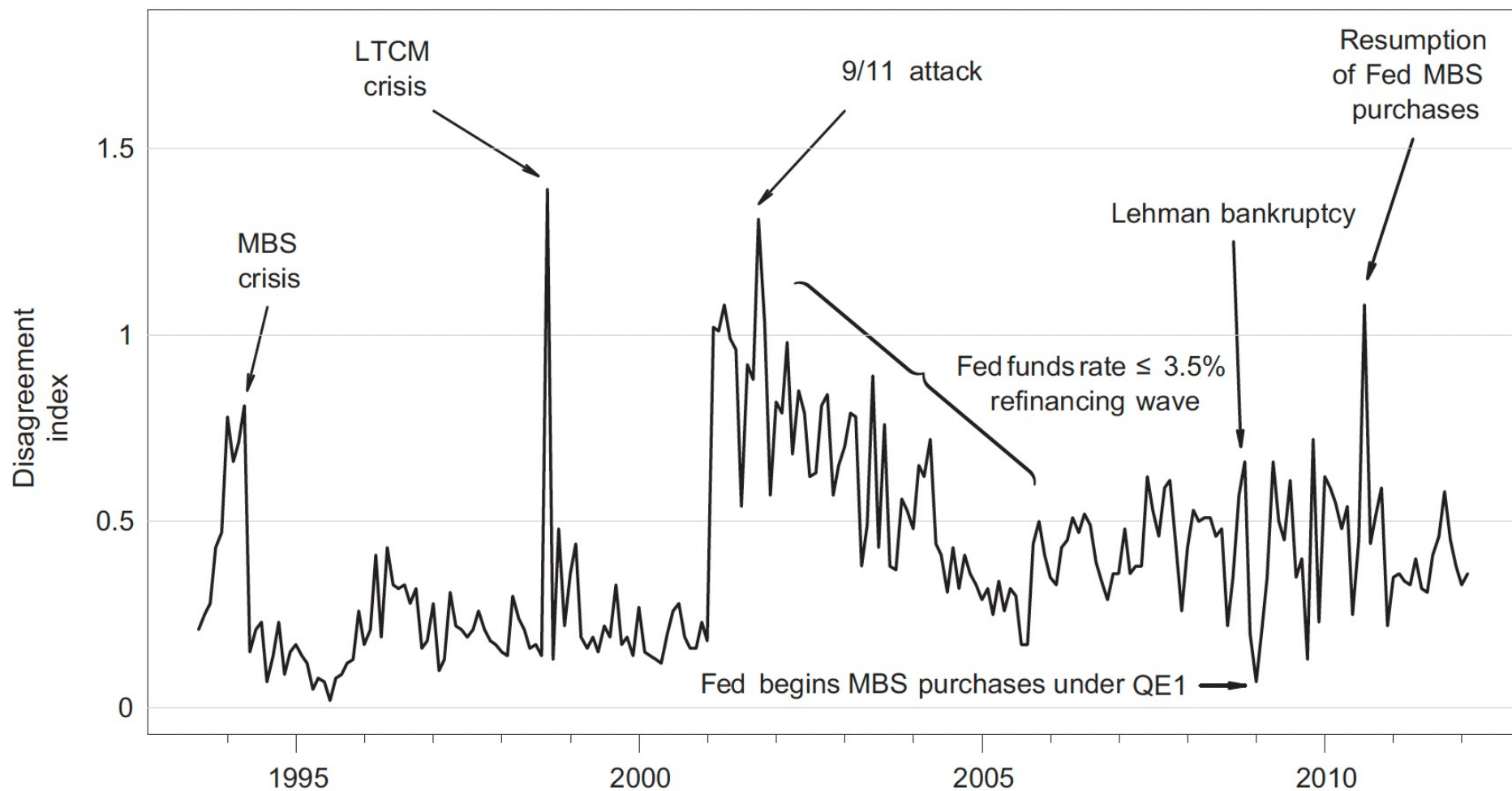
2. Data

Measuring disagreement

Returns on TBA (To-Be-Announced) securities

- Taking the ratio of the PSA forecast for the -100 basis point scenario to the PSA for the +100 basis point scenario and compute the simple standard deviation.
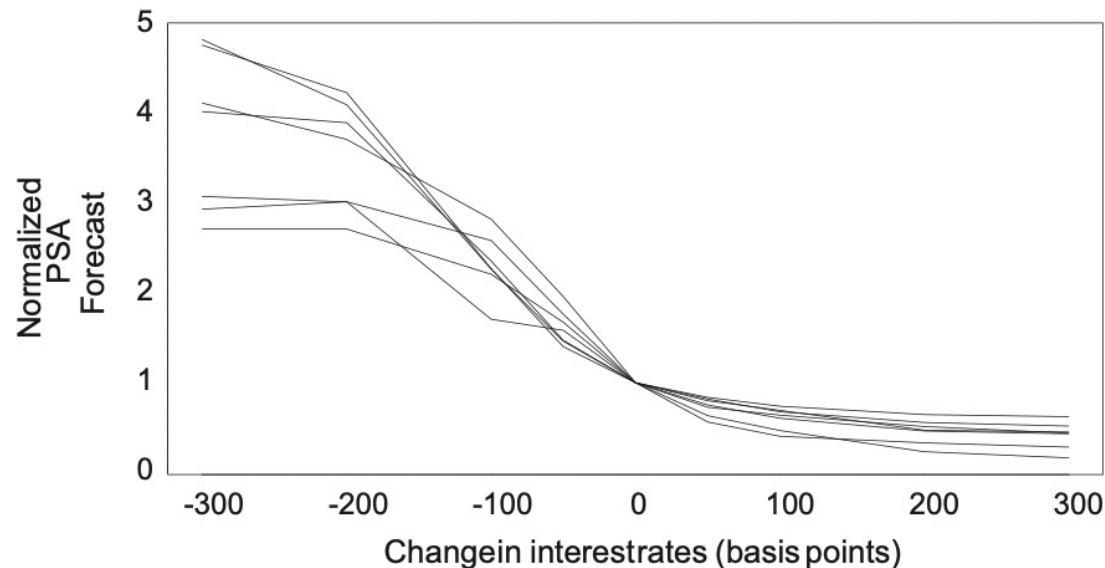
2. Data

2. Data

Variable	Coefficient	t-Statistic
Intercept	0.26806	1.94*
$Index_{t-1}$	0.28294	2.71**
$Index_{t-2}$	0.29352	4.27**
Refinancing	0.02140	2.13**
Mortgage rate	0.01088	0.88
VIX	0.00446	2.01**
Treasury volatility	−0.00210	−2.81**
Slope	0.08068	3.04**
Stock return	−0.00979	−2.03**
Inflation	2.93231	1.51
Unemployment	−0.02856	−2.25**
Adjusted R^2		0.5188
N		223

2. Data

Summary statistics

- This table reports the indicated summary statistics for the disagreement index and for monthly Federal National Mortgage Association (Fannie Mae: FNMA) mortgage-backed security **returns**, monthly mortgage **return volatility** (calculated as the standard deviation of daily mortgage returns for each month in the study period), and total monthly mortgage **trading volume** (in billions of dollars) by US primary government bond dealers as reported by the New York Federal Reserve Bank. Mortgage returns and volatility are expressed as percentages.

Variable	Mean	Standard deviation	Minimum	Maximum	Serial correlation	N
Disagreement index	0.4029	0.2480	0.0196	1.3860	0.6198	223
Mortgage returns	0.2069	0.8715	−4.2850	1.9926	0.1077	165
Mortgage return volatility	0.1781	0.0922	0.0441	0.5331	0.6715	165
Mortgage trading volume	938.65	444.94	212.56	1917.80	0.8959	165

3. Results

3.1 Disagreement and expected returns

Variable	Without Disagreement		With Disagreement	
	Coefficient	t-statistic	Coefficient	t-statistic
Intercept	0.00404	2.75**	0.00392	2.73**
Lagged mortgage return	0.73874	3.38**	0.81355	4.09**
Change in riskless rate	−0.00173	−0.63	−0.00085	−0.31
Change in mortgage rate	0.00741	1.07	0.00961	1.41
Change in mortgage duration	0.00928	4.17**	0.00934	4.48**
Refinancing	−0.00113	−1.80*	−0.00110	−1.83*
Change in slope	−0.00334	−0.96	−0.00318	−0.95
Change in corporate credit spread	0.00113	0.32	0.00292	0.7200
Change in ten-year swap spread	−0.00007	−0.01	0.00311	0.3500
Stock return	−0.00058	−3.44**	−0.00055	−3.00**
Change in the VIX index	−0.00036	−1.48	−0.00047	−1.96*
Change in the Treasury volatility	0.00002	0.51	0.00003	0.72
Inflation	−0.21927	−2.53**	−0.24833	−2.82**
Change in Unemployment	−0.00432	−1.08	−0.00465	−1.25
Change in disagreement index			0.00932	2.86**
Adjusted R^2		0.1246		0.1834
N		165		165

* denotes significance at the 10% level.
** denotes significance at the 5% level.

3. Results

3.2 Disagreement, volatility, and trading volume

Variable	Change in disagreement		Change in volatility		Change in trading volume	
	Coefficient	t-Statistic	Coefficient	t-Statistic	Coefficient	t-Statistic
Intercept	− 0.00161	− 0.12	− 0.00009	− 0.14	0.00971	0.77
Change in disagreement, t-1	− 0.59158	− 4.58**	0.00052	0.16	0.13705	2.49**
Change in disagreement, t-2	− 0.27546	− 2.24**	0.01746	3.38**	0.12737	2.58**
Change in disagreement, t-3	− 0.19971	− 2.46**	0.00317	0.77	0.04341	0.69
Change in volatility, t-1	1.21180	1.08	− 0.29826	− 4.27**	− 0.04704	− 0.03
Change in volatility, t-2	− 0.57288	− 0.53	− 0.27740	− 3.71**	− 1.74449	− 1.65
Change in volatility, t-3	− 0.02100	− 0.02	− 0.19749	− 2.82**	− 1.01908	− 0.95
Change in trading volume, t-1	− 0.04493	− 0.54	0.00837	1.67*	− 0.63393	− 5.79**
Change in trading volume, t-2	− 0.21791	− 2.03**	0.01619	2.17**	− 0.22545	− 2.20**
Change in trading volume, t-3	− 0.17262	− 1.86*	0.01690	2.49**	0.14746	1.65
Adjusted R^2		0.3174		0.2380		0.3169
N		165		165		165

4. Conclusion

1. This paper help to show whether and how heterogeneous beliefs and differences in opinions are priced in the market.

2. Disagreement is also associated with higher volatility and trading volume.

3. Disagreement is the primary channel through which uncertainty leads to higher trading volume. Volatility in and of itself does not lead to higher trading volume. Instead, it is only when there exists more disagreement that trading volume increases with uncertainty.

4. Higher trading volume is associated with lower subsequent disagreement, rational investors are more likely to learn from prices and opinions in the market.

Thanks !