

Heed the Call?



Quarterly Earnings Calls & Stock Price Mobility

An economist and her friend are walking down the street.

The friend stops and says, "Look, there is a \$20 bill on the ground!"

The economist turns and coolly replies, "Can't be. If there was a \$20 bill on the ground, somebody would have already picked it up."

Quarterly Earnings Reports (10-Q/K)

- Includes condensed financial statements, management discussion, and analysis on the financial condition of the entity, disclosures regarding market risk, and internal controls
- Also engages legal proceedings, unregistered sales of equity securities, the use of proceeds from the sale of unregistered sales of equity, and defaults upon senior securities
- Conference Call

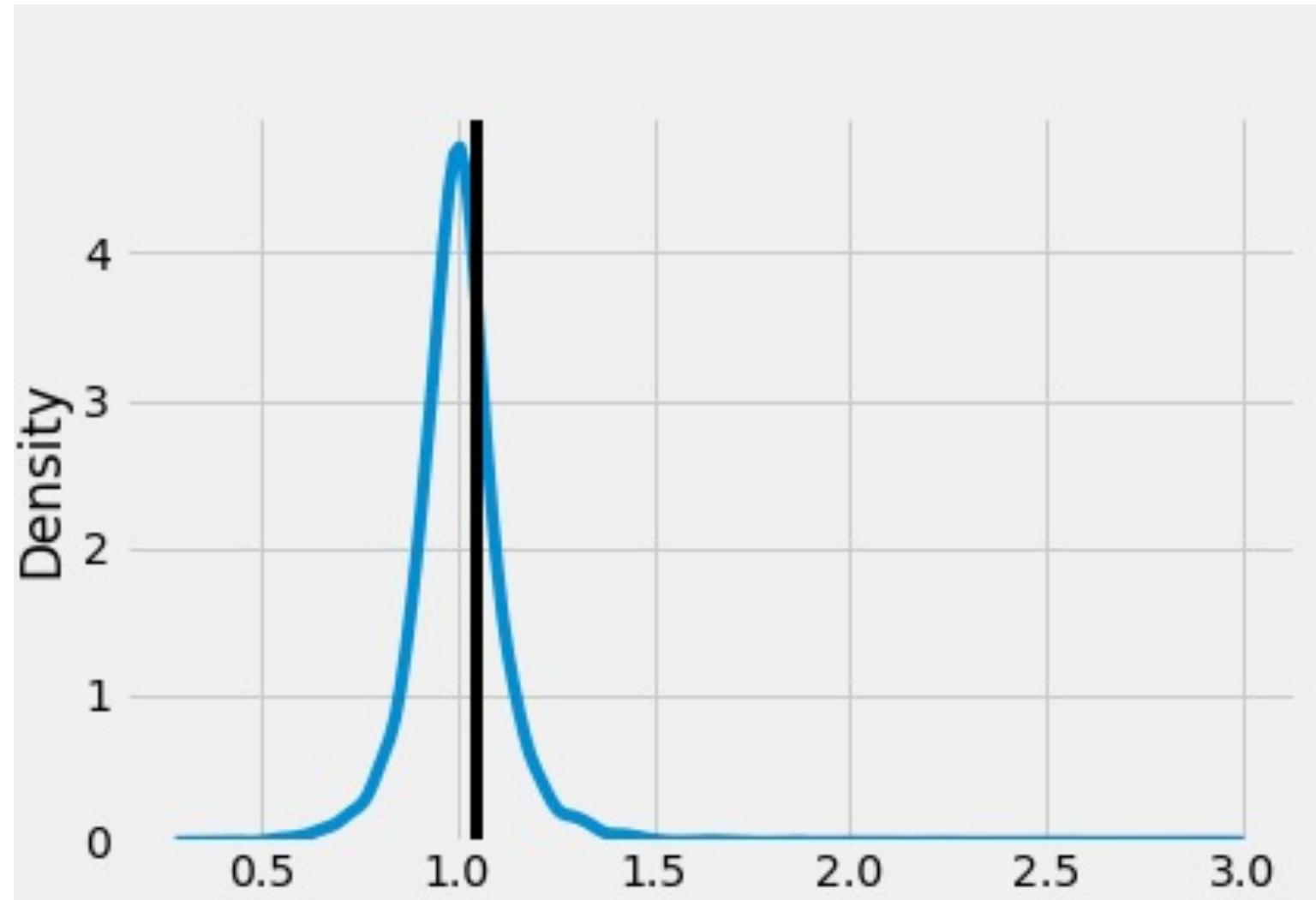
Shaping Investor Behavior?

One Week Prior



One Week After

Predict stocks that rise 5% or more



Sample

- Technology stocks
 - 4,264 observations from 350 companies
- Healthcare stocks
 - 3,613 observations from 364 companies
- Conference call transcripts & stock prices

Measures

- Conference call transcripts
 - Sentiment analysis – polarity & subjectivity
- Stock price trajectory in prior week
- Volume
- Dividends
- Quarter
- Year
- Day of week

Measures

- Polynomials – quadratic & interactions (degree 2)
- Standardized

Target metric

- Precision: correctly identifying occurrences
 - Recall: Identifying all occurrences
 - ROC-AUC: Probabilities that correspond to hard classifications
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- Primary tuning metric: F1
 - Secondary tuning metric: ROC-AUC

Models

Logistic					
Specification	CV				
Precision	0.451				
Recall	0.027				
F1	0.051				
ROC AUC	0.585				

Models

	Logistic	KNN(5)			
Specification	5xCV	5xCV			
Precision	0.451	0.354			
Recall	0.027	0.223			
F1	0.051	0.273			
ROC AUC	0.585	0.608			

Models

	Logistic	KNN(5)	Random Forest		
Specification	5xCV	5xCV	Random search, Grid search, 5xCV		
Precision	0.451	0.354	0.335		
Recall	0.027	0.223	0.181		
F1	0.051	0.273	0.235		
ROC AUC	0.585	0.608	0.545		

Models

	Logistic	KNN(5)	Random Forest	ExtraTrees	
Specification	5xCV	5xCV	Random search, Grid search, 5xCV	Grid search, 5xCV	
Precision	0.451	0.354	0.335	0.351	
Recall	0.027	0.223	0.181	0.195	
F1	0.051	0.273	0.235	0.251	
ROC AUC	0.585	0.608	0.545	0.557	

Models

	Logistic	KNN(5)	Random Forest	ExtraTrees	XGBoost
Specification	5xCV	5xCV	Random search, Grid search, 5xCV	Grid search, 5xCV	Random search, Grid search, 5xCV
Precision	0.451	0.354	0.335	0.351	0.377
Recall	0.027	0.223	0.181	0.195	0.234
F1	0.051	0.273	0.235	0.251	0.289
ROC AUC	0.585	0.608	0.545	0.557	0.575

Imbalance Adjustment: Oversampling

	Logistic	KNN(5)	Random Forest	ExtraTrees	XGBoost
Specification	5xCV	5xCV	Random search, Grid search, 5xCV	Grid search, 5xCV	Random search, Grid search, 5xCV
Precision	0.557	0.583	0.746	0.738	0.732
Recall	0.400	0.642	0.759	0.768	0.813
F1	0.465	0.611	0.752	0.753	0.770
ROC AUC	0.602	0.602	0.832	0.834	0.834

Testing

	XGBoost	XGBoost
Sample	Training	2021 Test Set
Precision	0.732	0.147
Recall	0.813	0.225
F1	0.770	0.178
ROC AUC	0.834	0.513



Testing

	XGBoost	XGBoost
Sample	Training	2021 Test Set
Precision	0.732	0.147
Recall	0.813	0.225
F1	0.770	0.178
ROC AUC	0.834	0.513

30%

16%

Testing

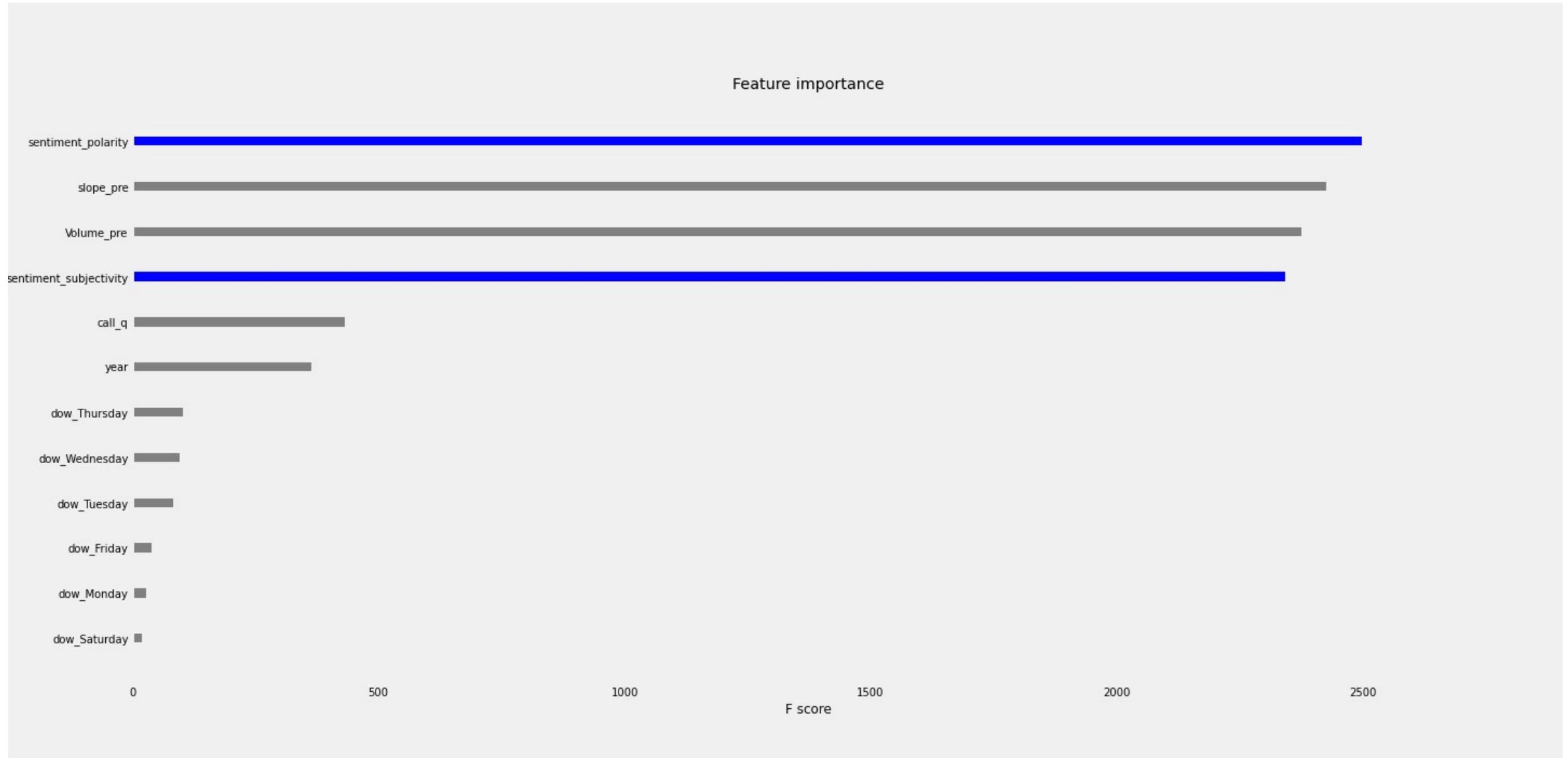
	XGBoost	XGBoost	XGBoost
Sample	Training	2021 Test Set (n=1,278; 30)	Energy Sector (n=2,455; 202)
Precision	0.732	0.147	0.395
Recall	0.813	0.225	0.331
F1	0.770	0.178	0.360
ROC AUC	0.834	0.513	0.576

30%

16%

31%

What about the call itself?



What about the call itself?

	XGBoost	XGBoost	XGBoost	Random Sentiment
Sample	Training	2021 Test Set (n=1,278; 30)	Energy Sector (n=2,455; 202)	2021 Test Set (n=1,278; 30)
Precision	0.732	0.147	0.395	0.194
Recall	0.813	0.225	0.331	0.064
F1	0.770	0.178	0.360	0.096
ROC AUC	0.834	0.513	0.576	0.535

What about the call itself?

	XGBoost	XGBoost	XGBoost	Random Sentiment	Random Sentiment
Sample	Training	2021 Test Set (n=1,278; 30)	Energy Sector (n=2,455; 202)	2021 Test Set (n=1,278; 30)	Energy Sector (n=2,455; 202)
Precision	0.732	0.147	0.395	0.194	0.425
Recall	0.813	0.225	0.331	0.064	0.209
F1	0.770	0.178	0.360	0.096	0.280
ROC AUC	0.834	0.513	0.576	0.535	0.582

Conclusion

- There may indeed be a \$20 laying on the street.
- Cross-sector predictions appear viable.
- Future predictions require more data