

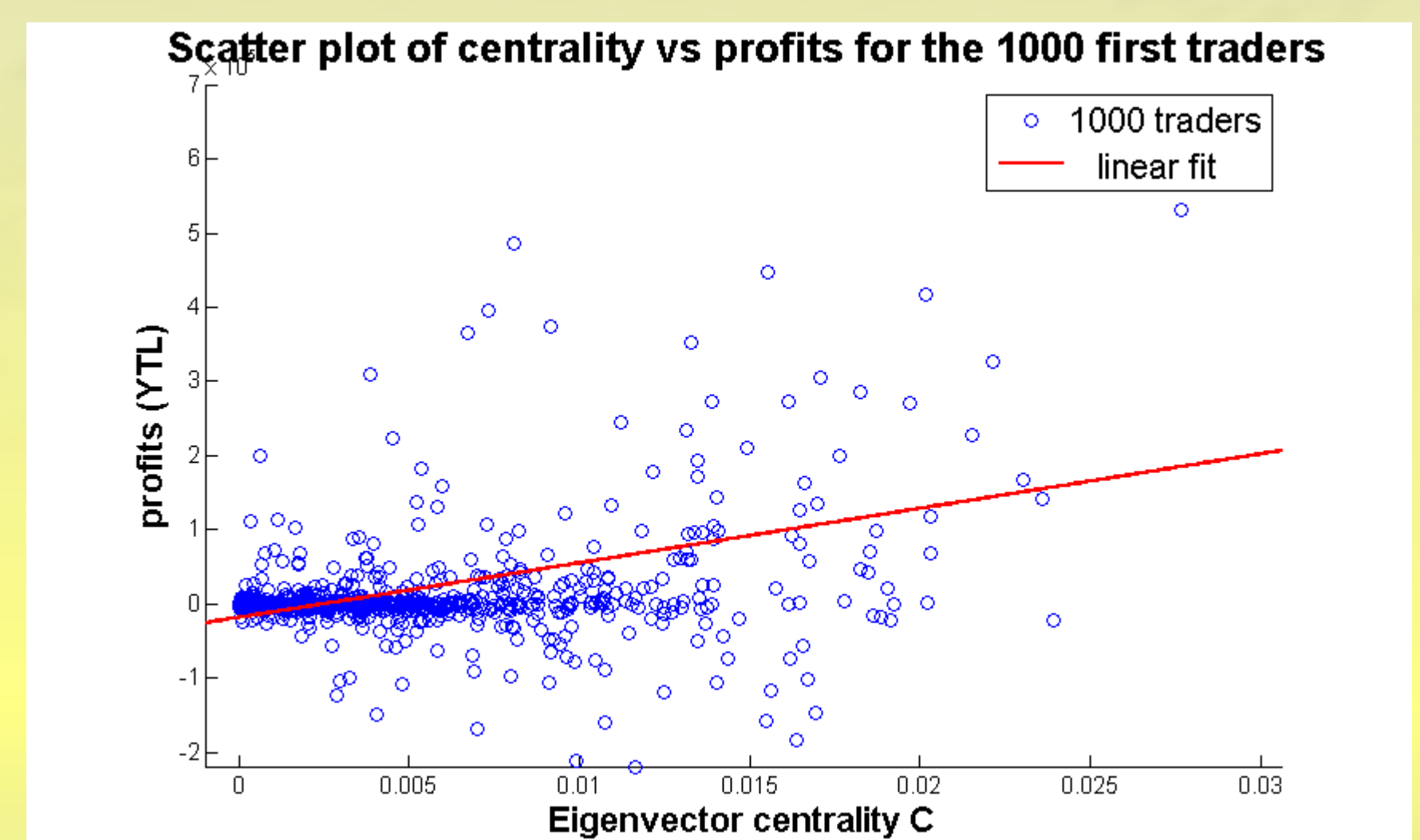


## Introducing the EIN

Information plays an important role in stock markets. The traders can be considered as connected to each other, forming a large network where information flows. By finding similar trading patterns in real transaction data, we approximate this network with an Empirical Investor Network (EIN). Using the EIN, we then investigate the hypothesis that traders who are **central** in the network **trade earlier** and **make bigger profits** than non-central traders. In particular, we investigate the performance of traders in relation to large stock movements (events) throughout the year.

## Conclusions

There is indeed a connection between centrality and profits, as the plot below shows.



*The linear trend line shows a clear positive correlation between centrality and profits*

Furthermore, analysis of events showed that central traders act earlier and benefit from this.

## Data

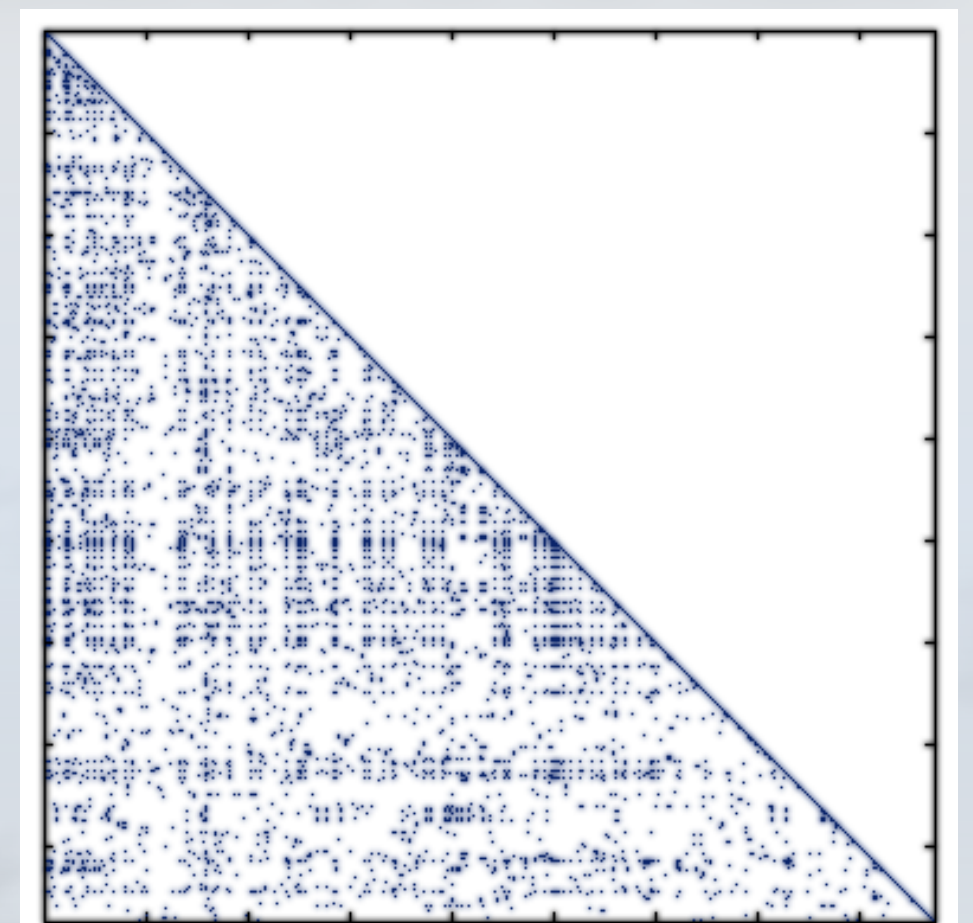
Record of all stock trades at the Istanbul Stock Exchange (ISE) during 2005.

- 43 million transactions
- 303 stocks
- 580 000 unique traders



## The Matrix

The connections are stored in a 30 Gb matrix



## Events

Rumors often circulate prior to (and are often the cause of) large stock movements - **events**.



Central traders will gain an advantage since they are likely to receive the information earlier

## Central investors trade early

The results of our studies show a negative correlation between centrality and trade times; i.e. **central investors trade earlier**, on average.

$c - d$	$T$	$n$	$v$
$\beta_{OLS}$	-0.000007	0.00006	-0.00001
$t_{OLS}$	< -20	< -20	-14
$t_{t-error}$	-11	< -20	< -7.6
$t_{Ramsey}$	< -20	< -20	< -14.0

Rescaled centrality ( $c-d$ ) is regressed (using Ordinary Least Squares) on average trading time  $T$ , number of trades ( $n$ ) and trading volumes ( $v$ ). The fitted parameter  $\beta$  is negative, indicating that higher centrality leads to earlier trades in relation to the news events we investigated.