http://daggre.org

DAGGRE

- **George Mason University (Mason)**
  - Charles Twardy (PI), Kathryn Laskey (Co-PI), Robin Hanson
- **Gold Brand Software (Website)**
  - Brandon Goldfedder
- **Australian Center of Excellence in Risk Analysis**
  - Mark Burgman
- **KaDSCi LLC (Decision Analysis)**
  - Dan Maxwell
- **Mercyhurst University**
  - Kristan Wheaton
- **James Madison University**
  - Noel Hendrickson
- **DRDC Toronto**
  - David Mandel

And a supporting cast of thousands, and counting….

The problem: how best to aggregate?

- ACE: How to improve on the unweighted average for predicting future events?

- Aggregates should outperform individuals. *They do.*
- Weighted should outperform unweighted. *They don't.*
- Past performance *Promising!*

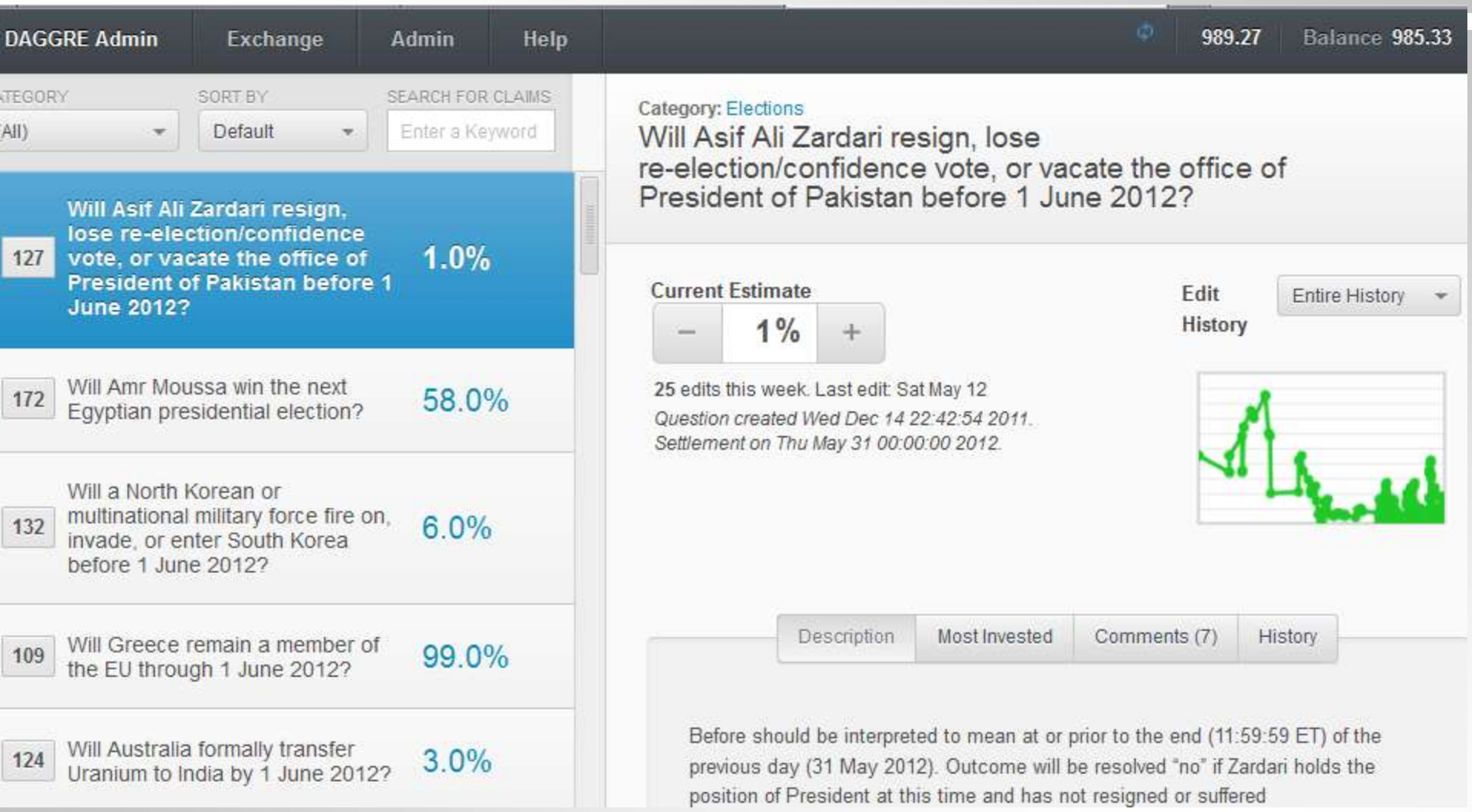
5 Teams Compete Against MITRE

• Good Judgment	Berkeley/UPenn + …
• SP♠DE	MIT/Draper + …
• INFORMED	Jacobs/SRI + …
• ACES	ARA + 7 Universities
• **DAGGRE**	**Mason + …**

Year 1 Goal: beat MITRE by **20%**

Year 3 Goal: beat MITRE by 50%

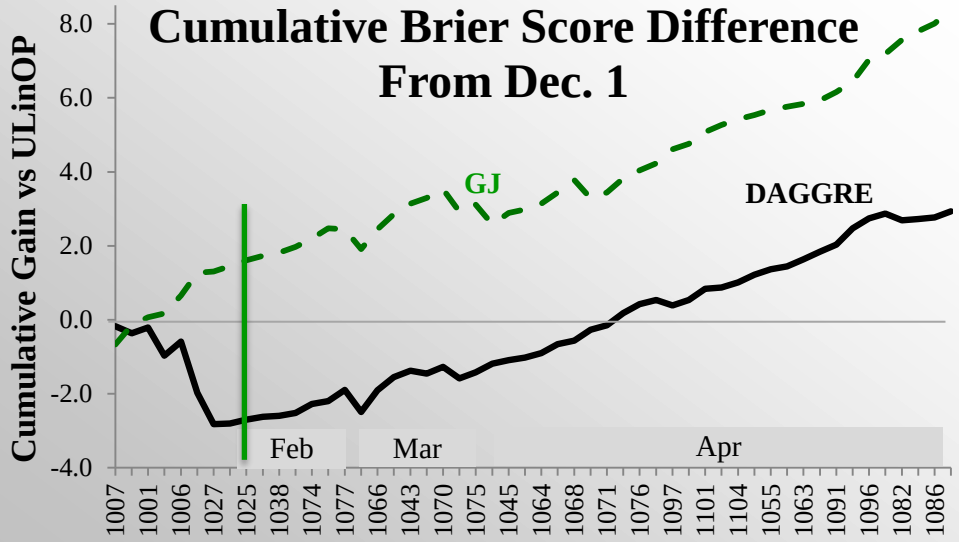
The DAGGRE Approach: Crowdsourced Forecasting

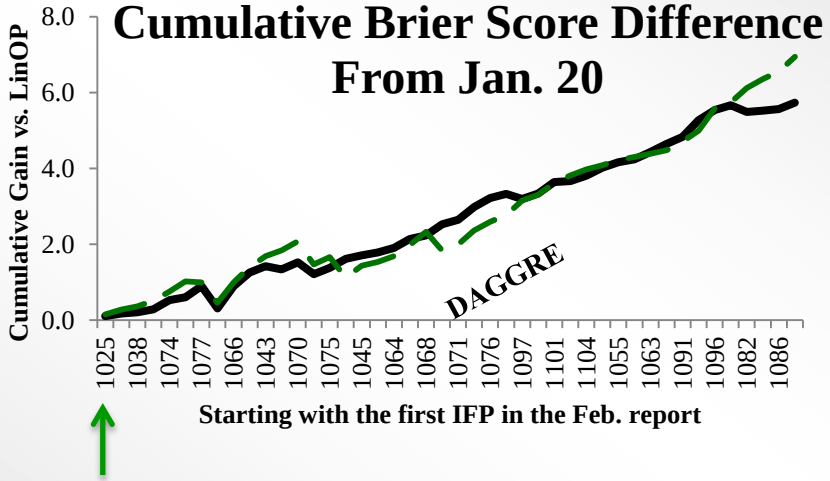


DAGGRE Forecasting Accuracy

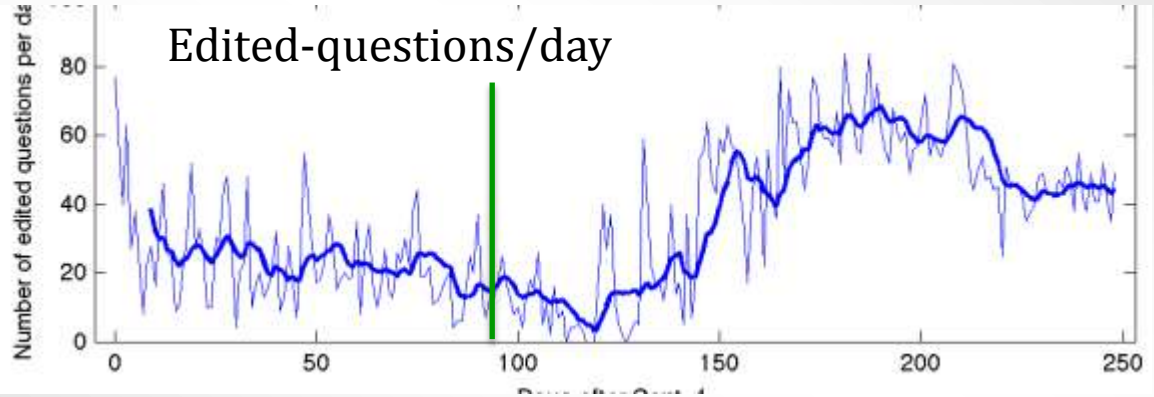
				MITRE	DAGGRE	Gain	Rank
All Data Average:				0.370	0.313	**17%**	3
Feb-Mar-Apr Average:				0.350	0.220	**46%**	2

Lower is better

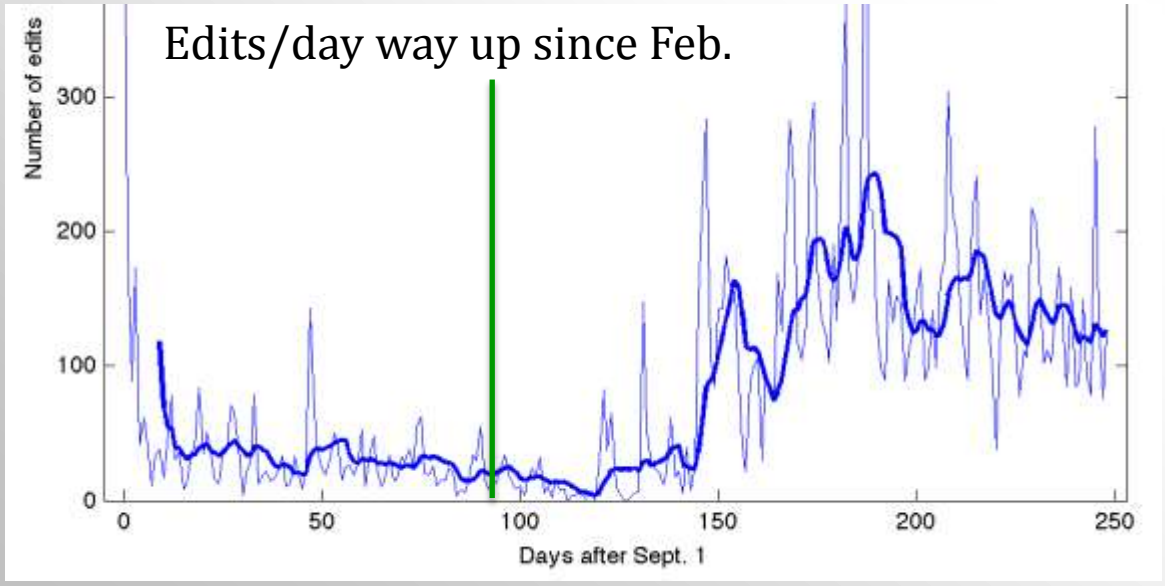




Participant recruiting and demographics



Dec. 1



Participation:

After recruiting in earnest starting in February:

- >840 edits/week
- ~40 users/day @ 2-3 edits/user
- >40-60 Qs/day edited
- >2 edits/Q/day

Demographics (*N*=1375)

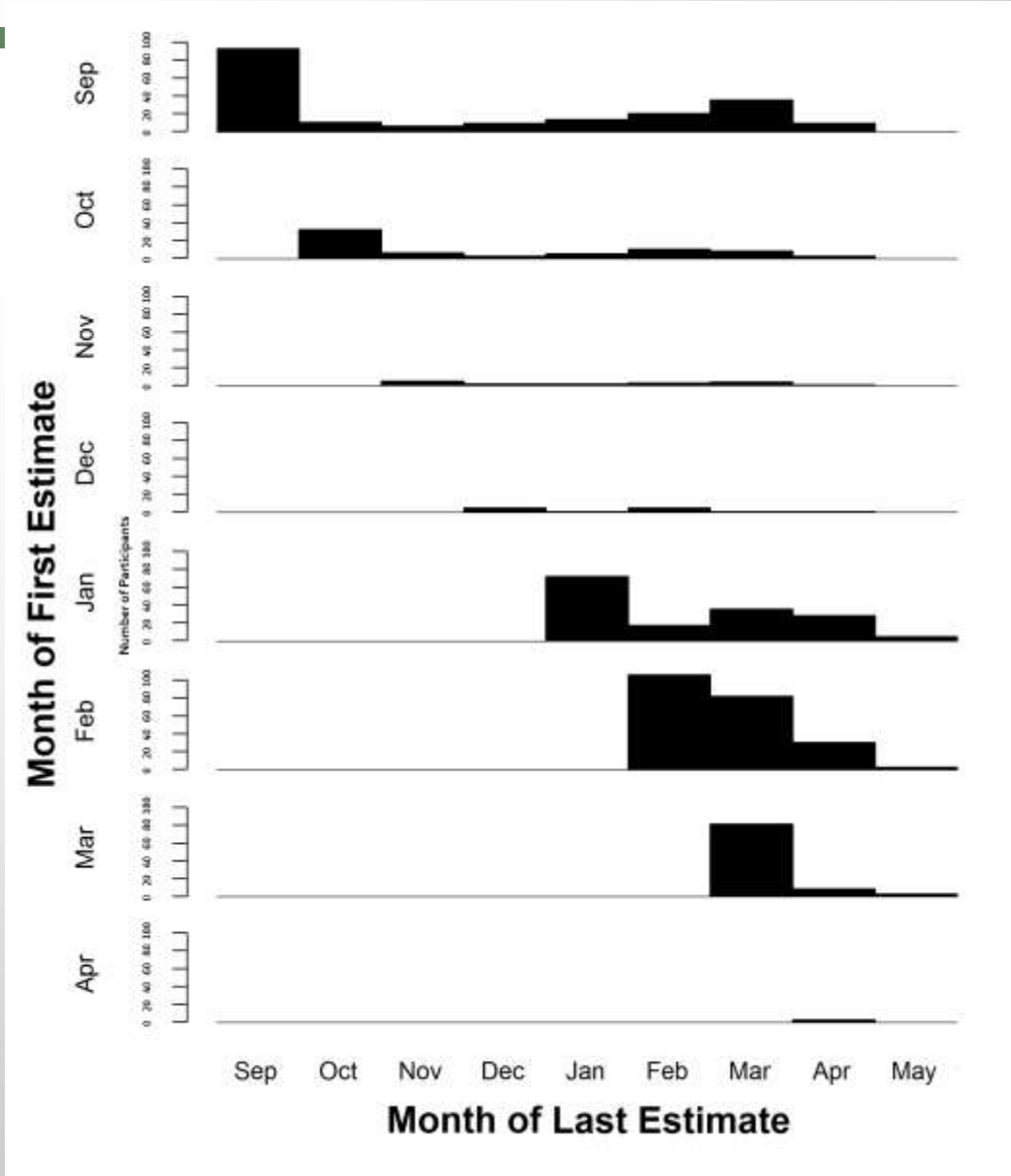
- Age
  - Mean=33; StDev=12
- Gender

Gender	Jan.	Mar.
Male	92%	68%

- Education

Education	Jan.	Mar.
Doctorate	11%	5%
Master's	20%	20%
Bachelor's	36%	36%
Other	33%	39%

Retention By Months



Delphi groups

3 Delphi groups in US

1 x Mercyhurst
2 x George Mason University
1 x University of Maryland (a very recent addition)

4 Delphi groups in Australia

4 x ACERA, University of Melbourne
These groups answered unofficial ‘matched’ questions

IARPA 3-step question format…

2. Second, think of the evidence that suggests this will NOT occur. What is the *lowest* probability you would assign to the outcome?

1. First, think of the evidence that suggests this will occur. What is the *highest* probability you would assign to the outcome?

3. Finally, consider the balance of evidence. If you had to put a single figure on your opinion of this outcome, what would it be?

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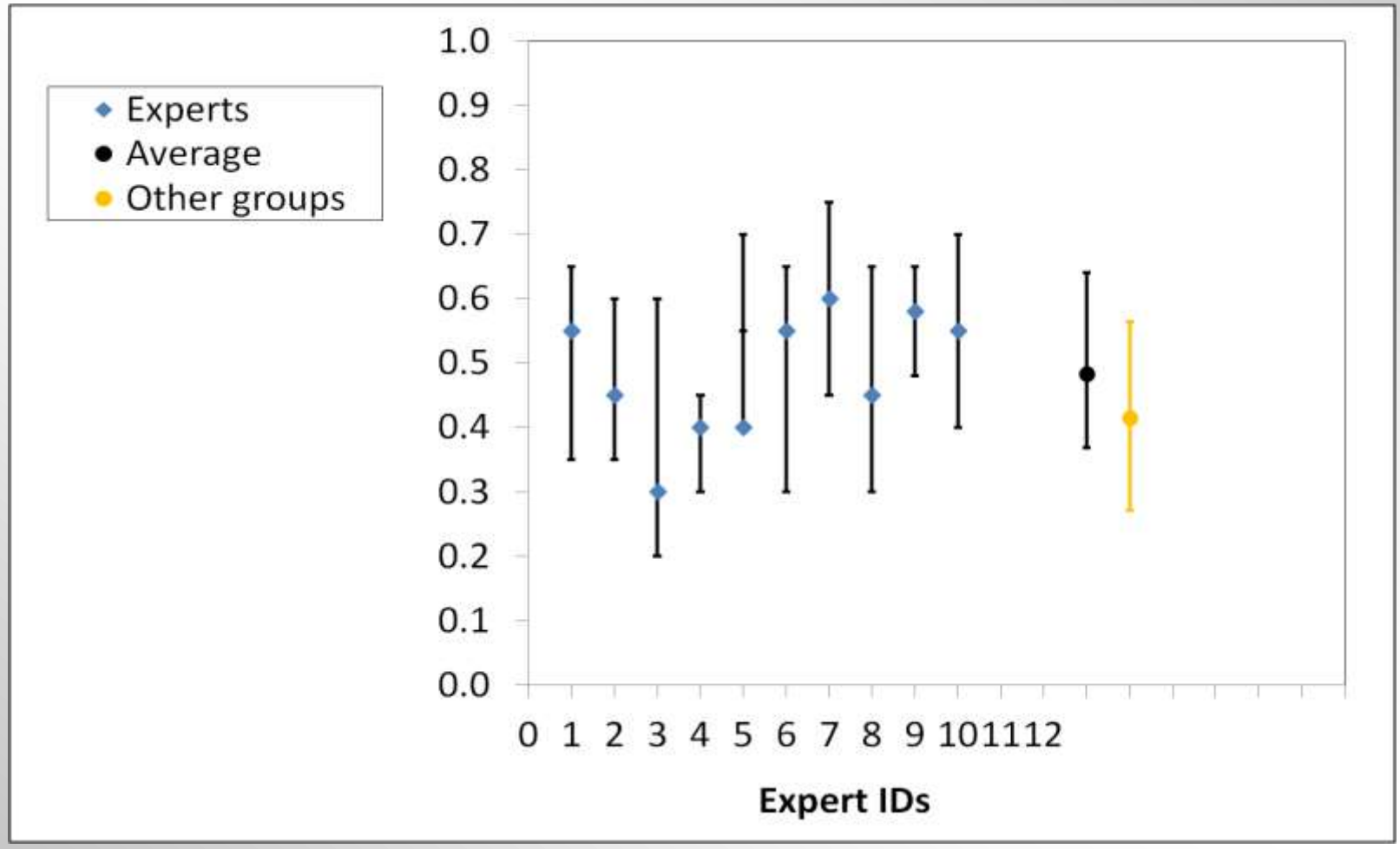
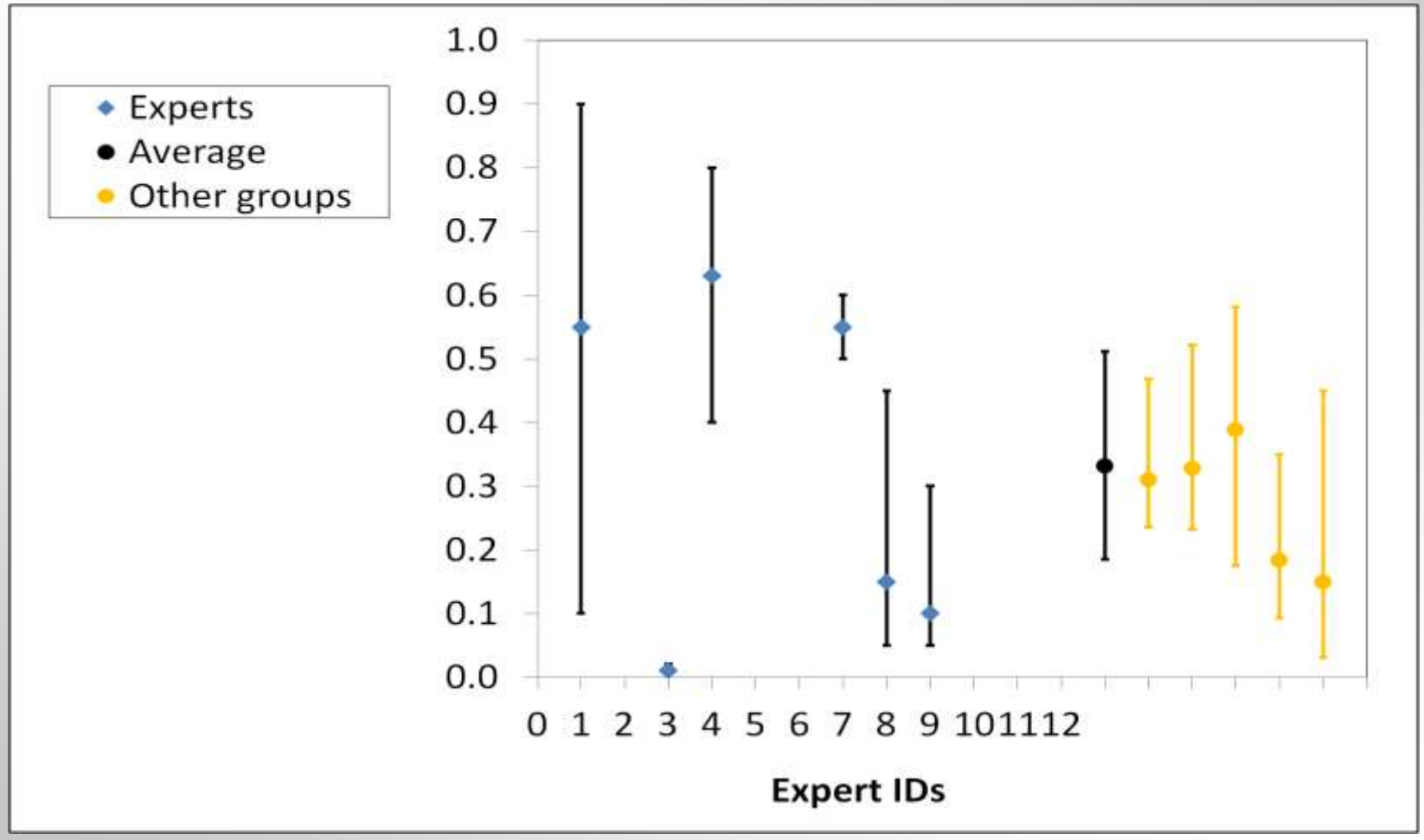
Estimate-feedback-estimate



A harder question



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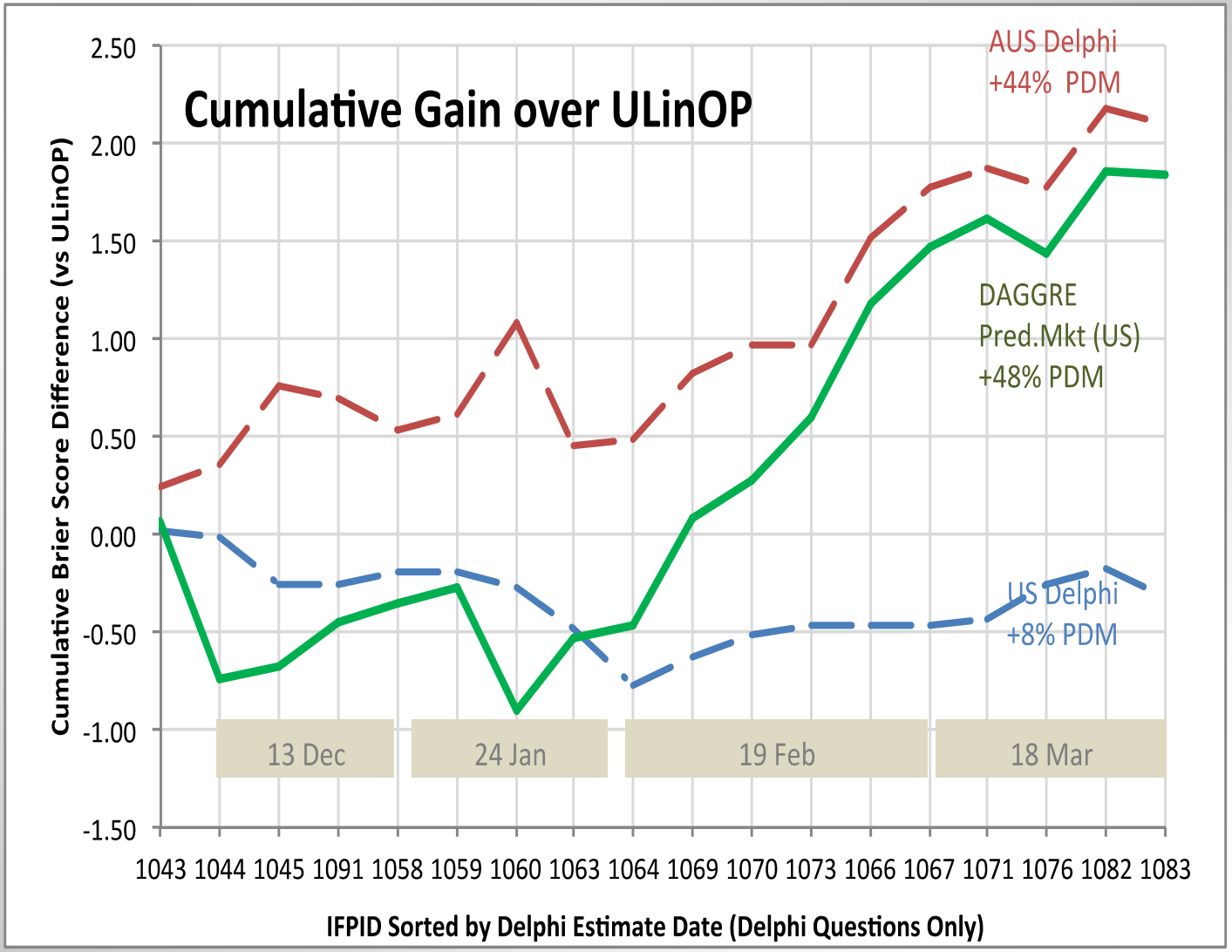
Delphi group performance



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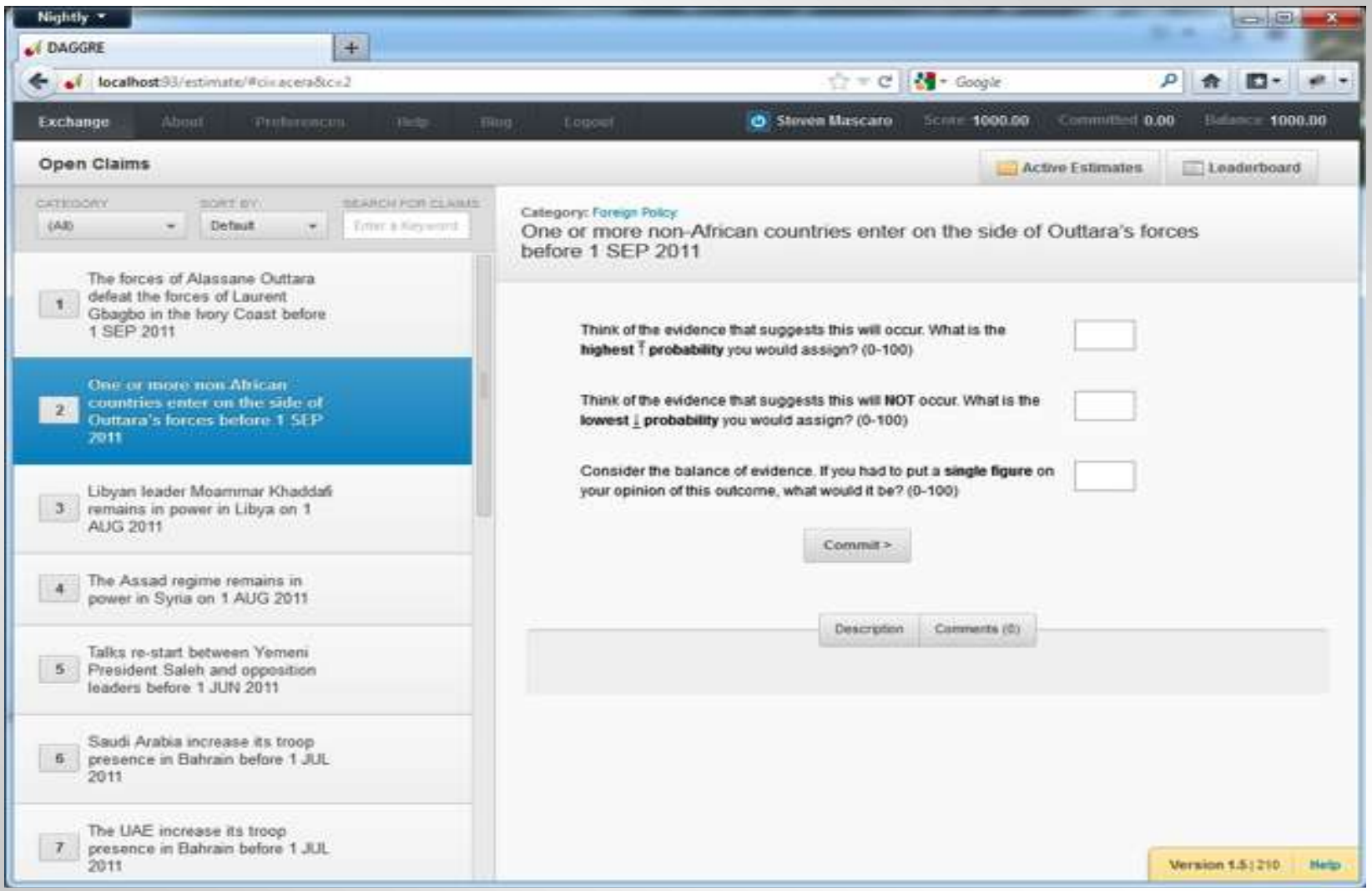
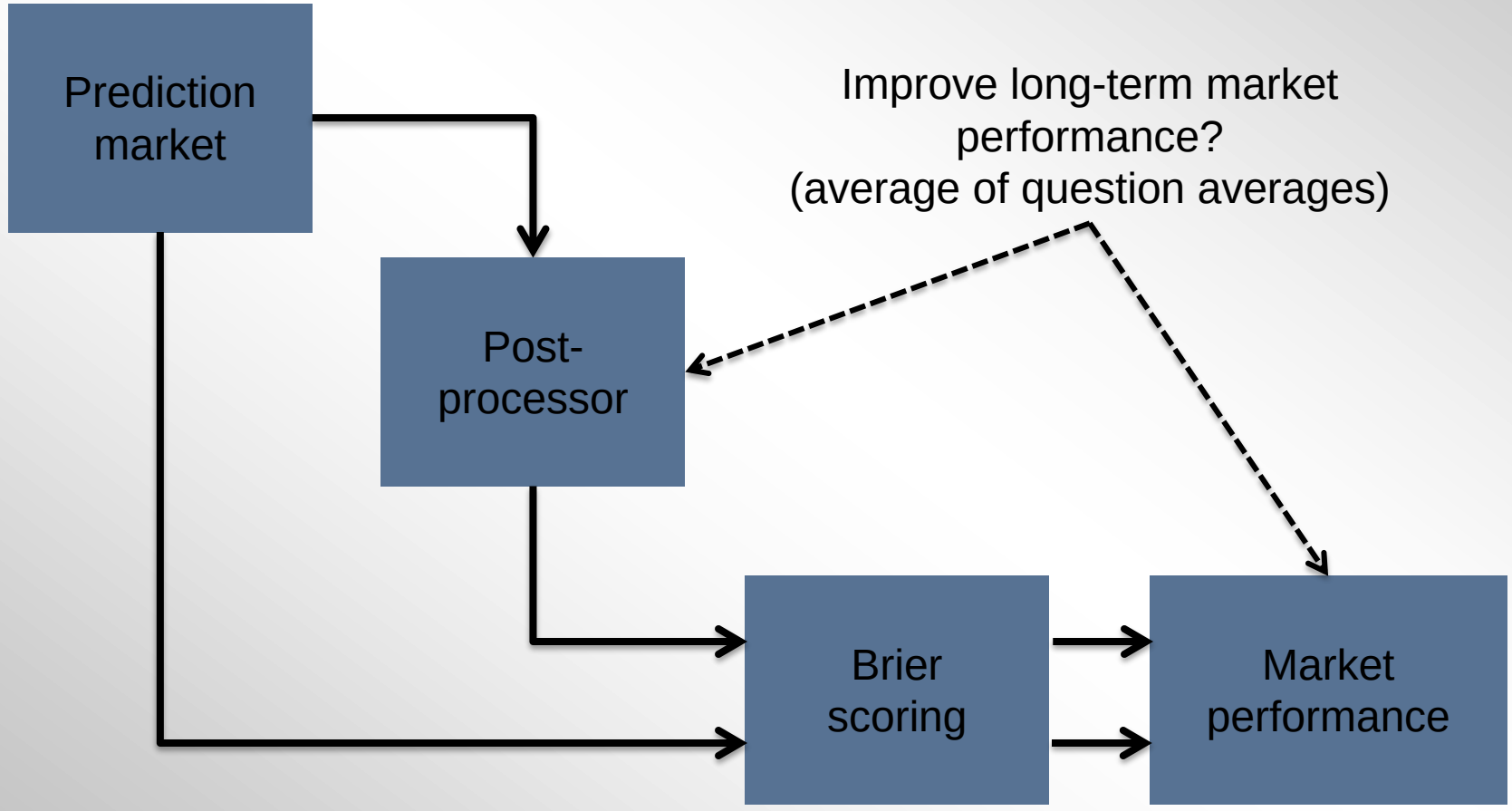
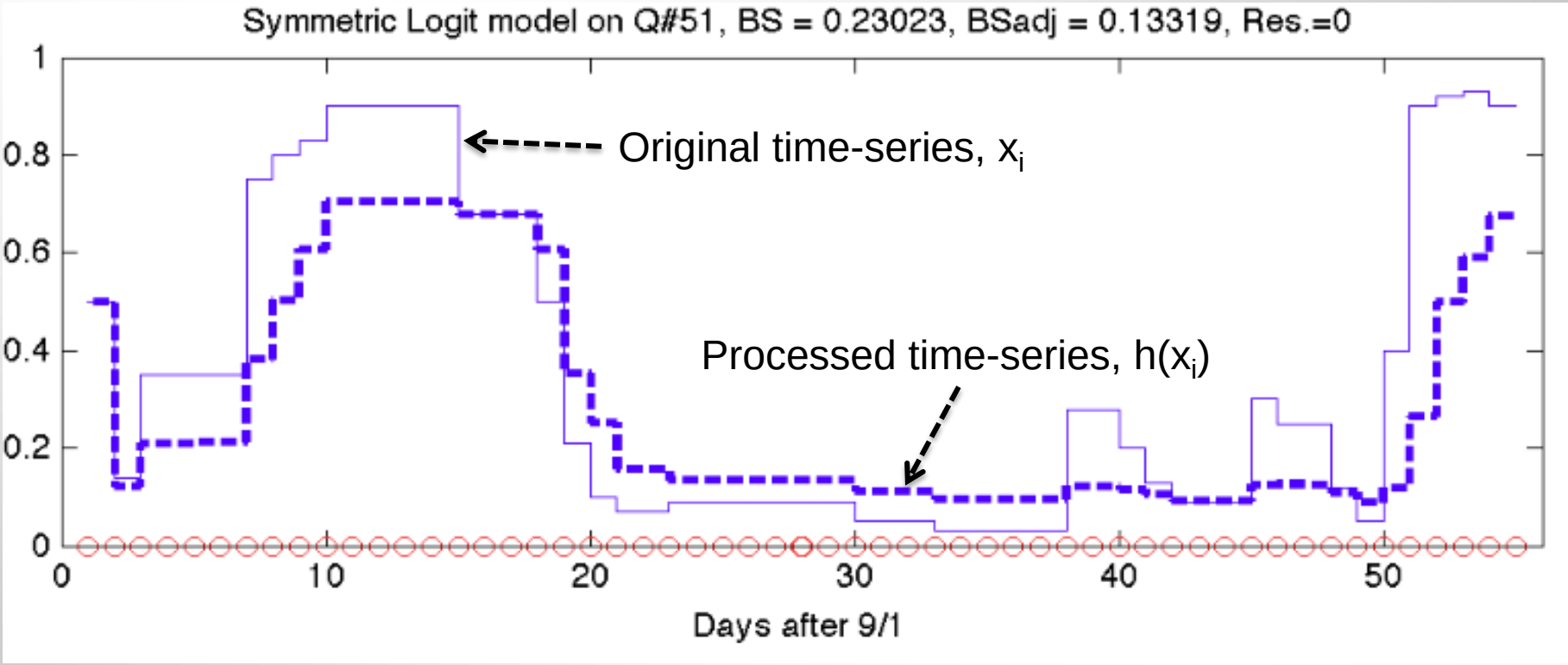
What's next?
Uncertainty information in markets



Goal


Prediction market
Post-processor
Improve long-term market performance?
(average of question averages)
Brier scoring
Market performance

“Restricted” Logistic



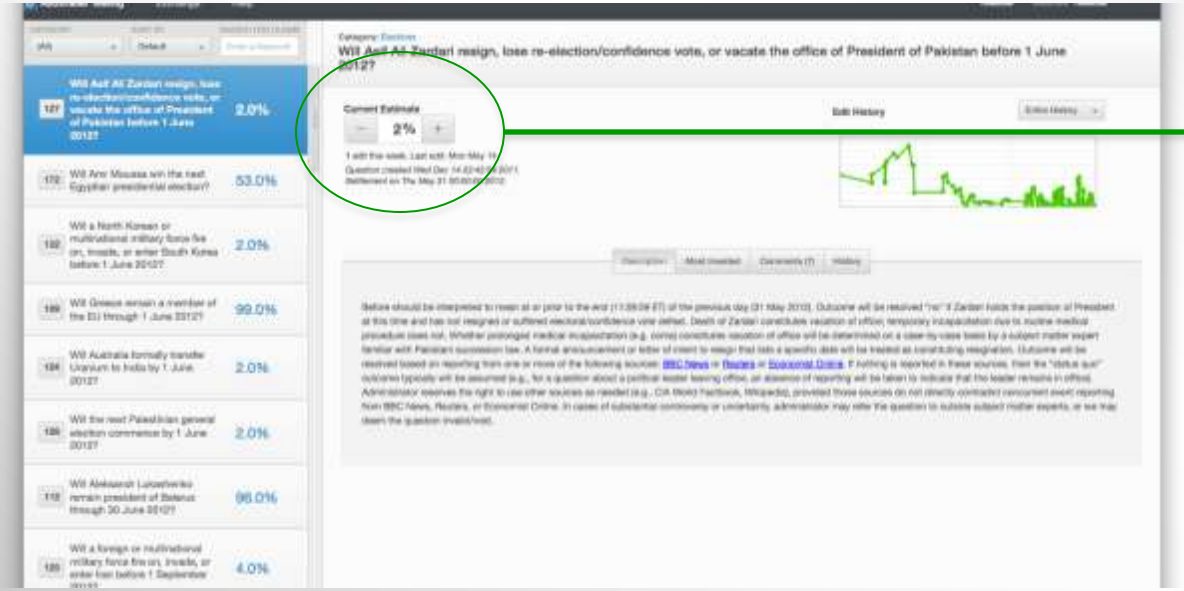
Results: Out-of-sample

36 binary questions (all but three resolved as zero), with 6236 total forecasts

	Raw forecasts	"Best-fit" Logistic	"Restricted-fit" Logistic	Bayesian forecasting
Individual forecasts (avg(BS**))	0.0984 --	0.1110(-12.8%)	0.0820 (16.7%)	0.1045 (-6.2%)
MITRE 8:30 scoring system (average of time-series averages)	0.0949 --	0.1094 (-15.3%)	0.0800 (15.8%)	0.1002 (-5.6%)

**Brier score is $(\text{resolution-forecast})^2$

Autotrader Operation



Extracts Probability Data

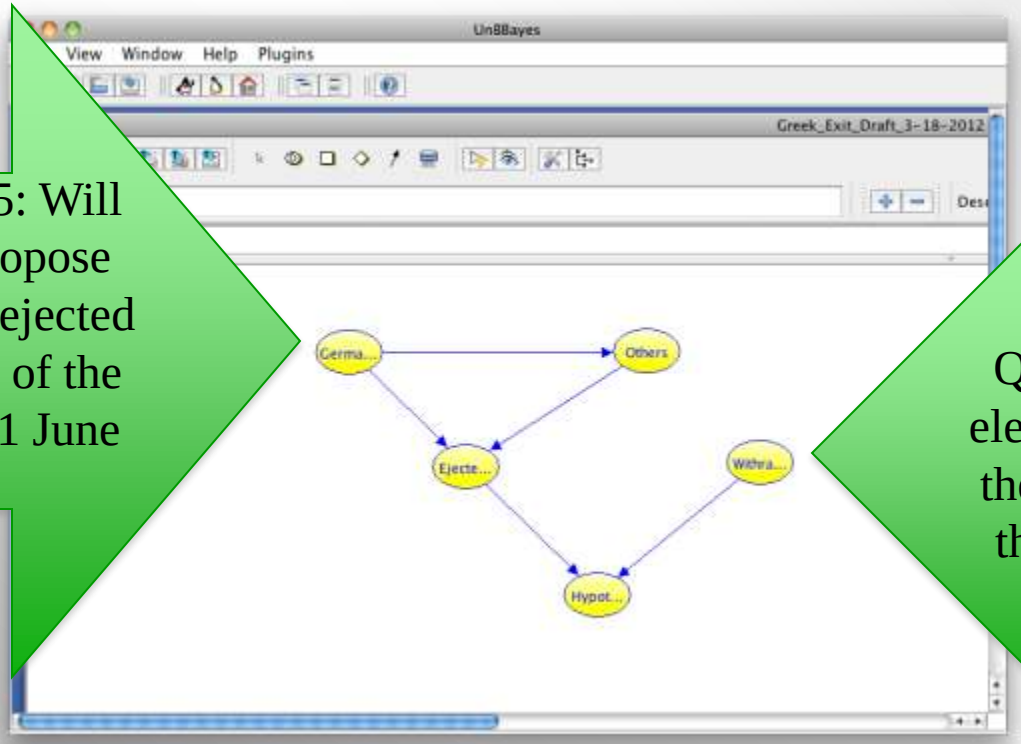
Informs an algorithm

Trade in Market
Do Nothing

Forecast Directly

Initial Model – Greece Exit from EU

Question 195: Will Germany propose Greece to be ejected as a member of the EU through 1 June 2012?

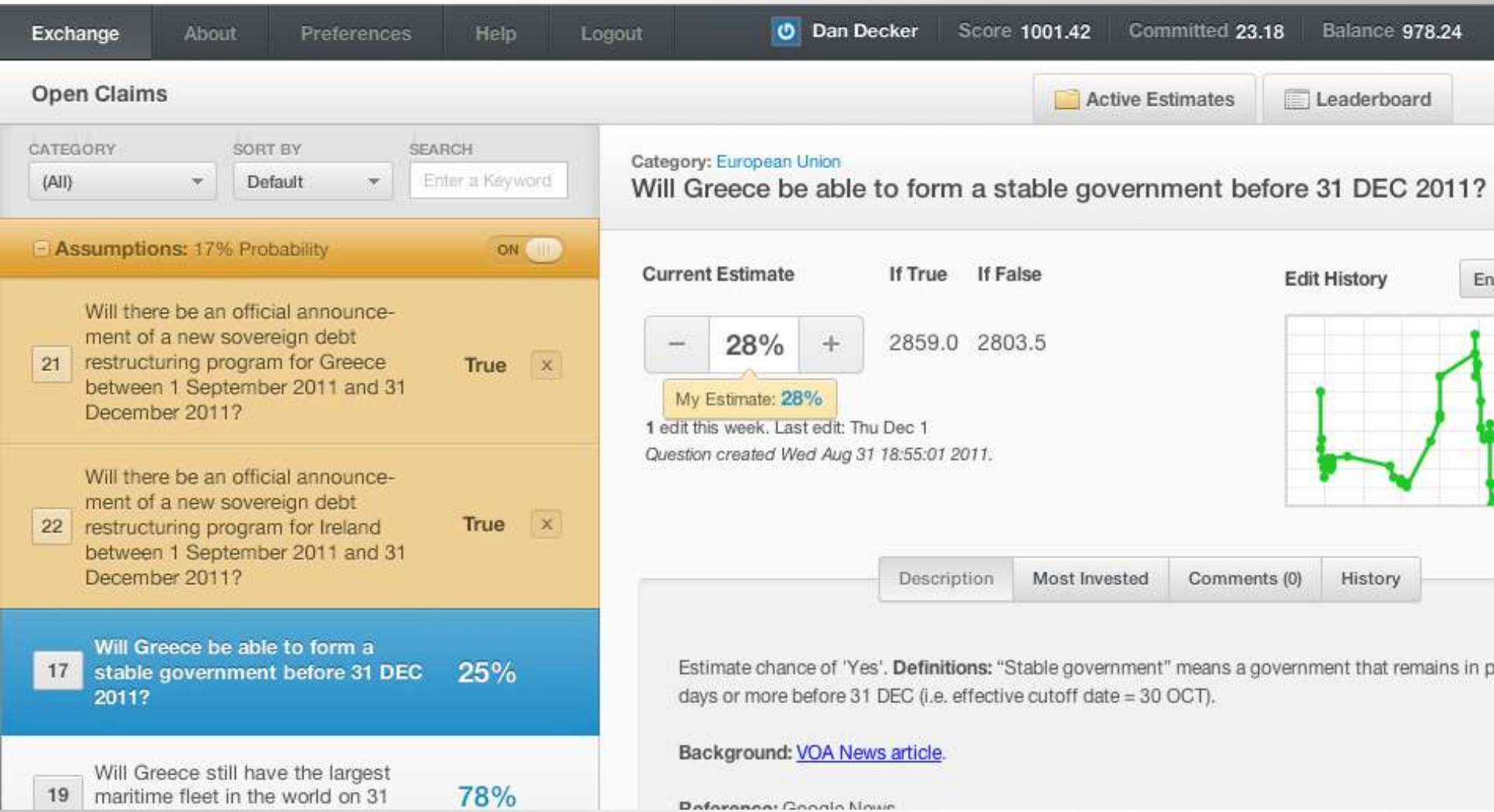


Question 196: Will the Greek elections winning party propose the withdrawal of Greece from the EU through 1 June 2012?

Core Question 109: Will Greece remain a member of the EU through 1 June 2012?

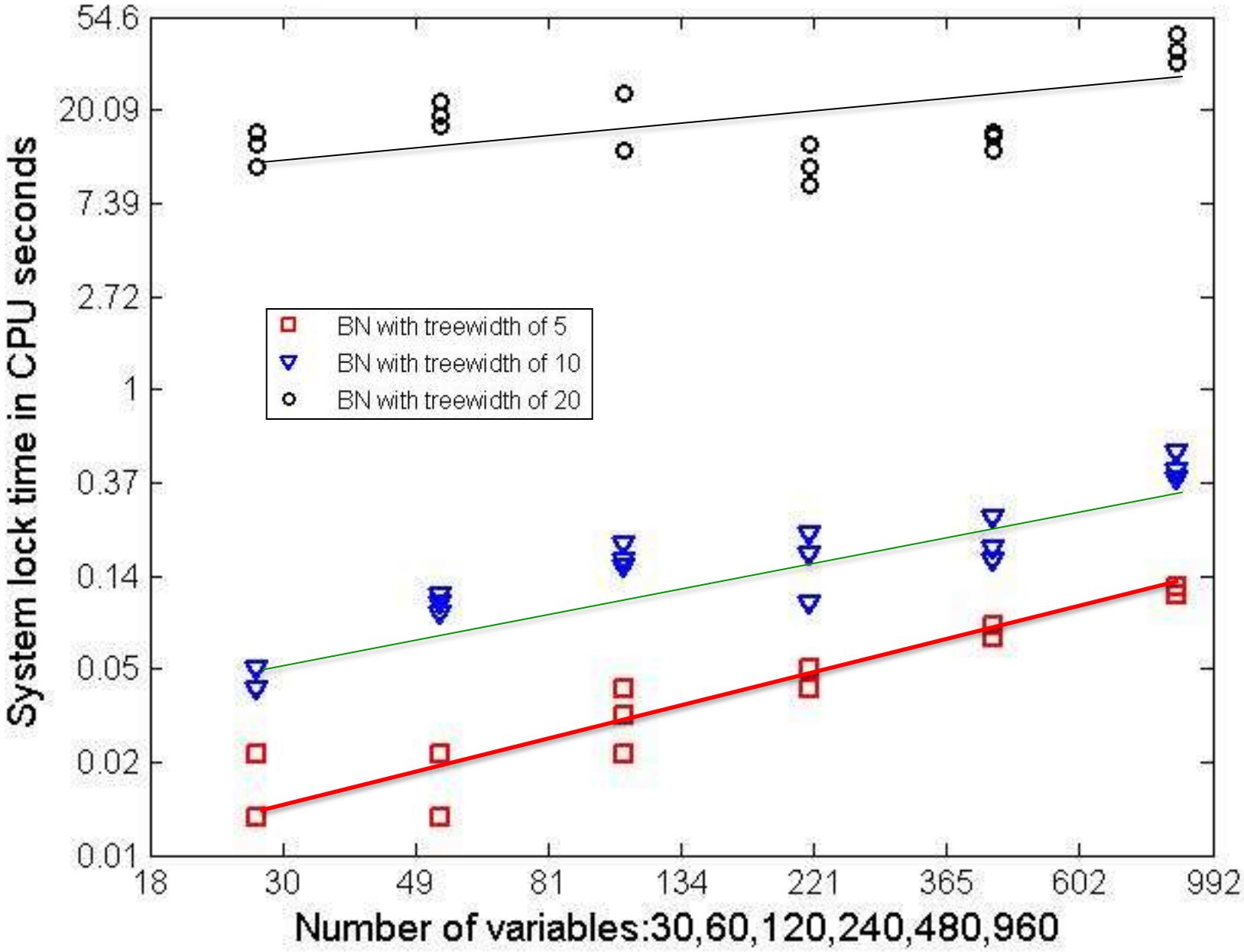
Implemented in UnBBayes

Next Year: Conditional Forecasts & Assumptions



Problem: Combinatorial Explosion for >~20 variables

Markov Engine Scalability Test



Summary

- DAGGRE Prediction Market (plus Delphi) is now >40% above baseline unweighted average, matching the leader.
- Recalibration could gain 15% more.
- *Conditional* forecasts allow richer knowledge, but suffer combinatorial explosion.
- Markov network can efficiently store/update 1000s of interdependent variables: probabilities *and* assets.

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23 Thursday Feb 2012

Venezuelan Presidential Primary Results Are Here!

Posted by andreahooker in ACE, DAGGRE, Forecasting ≈ 2 Comments

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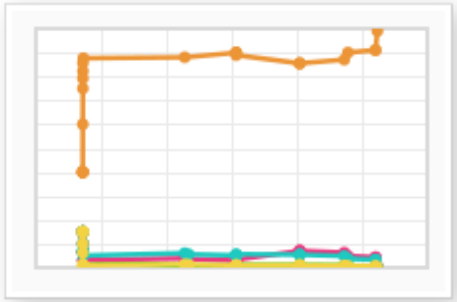
The Venezuelan primary resolved Feb. 13, in favor of Henrique Capriles Radonski. We did well.

[Edit]

Tags

Forecasting, brier, score, Venezuela, Brier score



— Market forecasts from the

zotero