

SFS Cavalcade North America, May 22, 2025

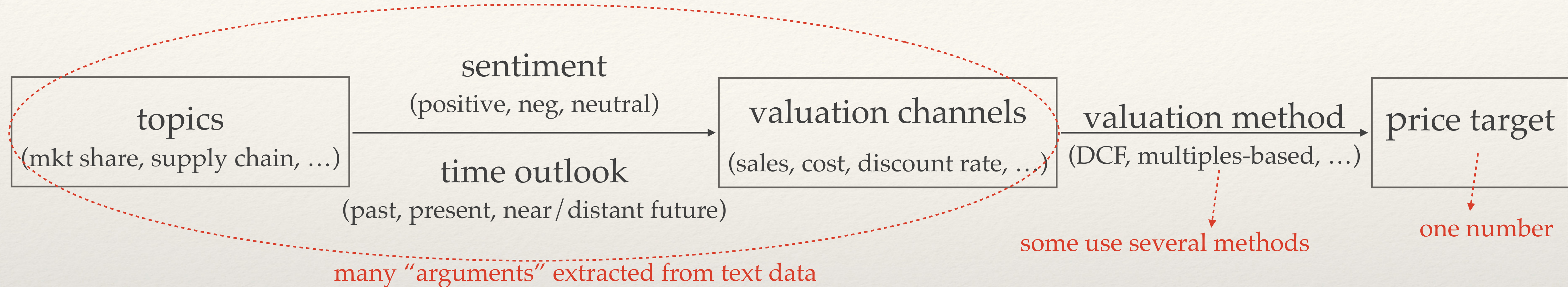
Discussion of
“Mental Models and Financial Forecasts”
By Bastianello, Décaire, and Guenzel

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Mental models in macro-finance

- ❖ Q: Do people have the right “model” of the world (rational expectations)?
 - ❖ By (mental) model, I mean (perceived) structure / relationship of reality
- ❖ How and what do we know?
 - ❖ **Survey method:** Stantcheva ('21, 23), Andre et al. ('22, 24, 25), Chopra-Haaland ('24), Bauer et al. ('24)
 - ❖ flexibility in design, document belief heterogeneity / errors, but call for theory interpretation + short time series so far
 - ❖ **Theory + existing forecast data/survey:** Wu ('23), Mei-Wu ('24)
 - ❖ empirics guided by theory with RE as null, inform theory parameter (pro and con)
 - ❖ **Machine learning on existing text data:** this paper
 - ❖ rich but unstructured data of large panel (ML part)
 - ❖ how to even better inform theory (my discussion)

This paper



- ❖ Theory: choice of attention (to topics / valuation channels) and valuation method (bias vs. var)
- ❖ Findings:
 - ❖ Sparse mental models (18 out of 139 topics)
 - ❖ DCF method for small, young, growth firms and associated with long-run topics (like discount rate, innovation)
 - ❖ Difference in attention contributes more to disagreement on price target than difference in valuation method

Finding 0: striking contrast of analysts' focus

$$P_t = \sum_{s=1}^{\infty} \frac{D_{t+s}}{R_{t,t+s}}, \quad E_t[P_{t+1}] = \sum_{s=1}^{\infty} E_t \left[\frac{D_{t+1+s}}{R_{t+1,t+1+s}} \right]$$

	What we know about price	Analysts' attention (this paper)
Valuation channel	var(R) at least same order of magnitude (Campbell, '91; Vuolteenaho, '02)	mostly about D, 5~10% on R
Time outlook	mostly distant future	>50% on near future (1~3 years), <5% on distant future

- ❖ Analysts discuss what they know (almost tautology), not necessarily what is most important driver
 - ❖ Also broadly consistent with large belief mistakes about D (De La O-Myers, '21, 24; Bordalo et al, '24; ...)
 - ❖ However, different $E_t[D_{t+s}]$ leads to small difference in price target; different discount rate leads to huge difference

Comment 1: quantitative forecasts & consistency

- ❖ This paper: text data on topics $\rightarrow E[P]$
- ❖ Literture: $E[D, R] \rightarrow E[P]$ (De La O-Myers, '21, 24; Bordalo et al, '24; Décaire-Graham, '24...)
- ❖ If topics $\rightarrow E[D, R] \rightarrow E[P]$, a synergy is interesting for mental models (next paper?):
 - ❖ How do topics inform $E[D, R]$? D and/or R ? What horizon? Which topic leads to over-/underreaction? Towards more structure than existing statistical models of D
 - ❖ Are analysts consistent, in that topics predict $E[P]$ *only via* $E[D, R]$? E.g., CEO change means higher price, only via higher D and/or lower R

Comment 2: disagreement in level & change

Table VI: disagreement, $|E_t^A[P_{t+1}^j] - E_t^B[P_{t+1}^j]|$, on topic alignment

	(1)	(2)	(3)
(β_1) Jaccard $_{A,B,j,t}$	-0.06*** (0.01)	-0.05*** (0.01)	-0.03*** (0.01)
(β_2) Same Argument $_{A,B,j,t}$	-0.09*** (0.01)	-0.05*** (0.01)	-0.04*** (0.01)
Firm*Contributor $_A$ *Contributor $_B$ FE	No	No	Yes
Firm*Year FE	No	Yes	Yes
Observations	56,660	47,720	19,103
F Statistics	83.15	43.49	15.27
R^2	0.01	0.51	0.81

❖ High statistical significance, large marginal R^2 from fixed effects $\delta_{A,B,j}$ (also for other tables)

$$E_t^A[P_{t+1}^j] = \sum_{s=1}^{\infty} E_t^A\left[\frac{D_{t+1+s}^j}{R_{t+1,t+1+s}^j}\right] = \underbrace{\sum_{s=1}^T E_t^A\left[\frac{D_{t+1+s}^j}{R_{t+1,t+1+s}^j}\right]}_{\text{near future (small component, discussed topics)}} + \underbrace{\epsilon_t^{A,j,T}}_{\text{distant future (large component, rarely discussed)}}$$

❖ Is there persistent disagreement in $\epsilon_t^{A,j,T}$ (e.g., $E^A[r^j] = 2\%$, $E^B[r^j] = 6\%$)? What explains it?

❖ Check R^2 after controlling for avg disagreement $\overline{|E_t^A[P_{t+1}^j] - E_t^B[P_{t+1}^j]|}$, or of forecast change $|\Delta E_t^A[P_{t+1}^j] - \Delta E_t^B[P_{t+1}^j]|$ on the LHS

Comment 3: variation in topics

- ❖ What do topics map into? Level $E_t^A \left[\frac{D_{t+1+s}^j}{R_{t+1,t+1+s}^j} \right]$ or change $\Delta E_t^A \left[\frac{D_{t+1+s}^j}{R_{t+1,t+1+s}^j} \right]$?
 - ❖ Level: I discuss mkt share / inflation *bcz* I think it's the most important driver for D^j
 - ❖ Change: I discuss mkt share / inflation *bcz* it has changed / I think it may change the most
 - ❖ Likely the latter (since they rarely discuss R or distant future), but challenging to quantify
 - ❖ The latter would offer a further reason to study forecast changes
 - ❖ It relates to how sticky topics are over time, and to what extent topics are forecaster-specific or firm-specific (drivers of level are likely time-invariant / forecaster-specific / firm-specific)

Summary

- ❖ Ambitious and challenging to extract mental models from unstructured text data
- ❖ Could further explore to even better inform theory:
 - ❖ Quantitative forecasts of earnings / discount rates, and consistency of mental models
 - ❖ Potential disagreement in level and its driver
 - ❖ Variation in topics
- ❖ Excited to see how this paper and agenda develop