An Algorithmic Framework for Systematic Literature Reviews

A Case Study for Financial Narratives

A Quantitative Finance Perspective

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Notes — Slide 1

Welcome. This talk presents a dual contribution: a reproducible algorithmic framework for systematic literature reviews and its application to financial narratives. 20 minutes.

Every crisis has a narrative.

Can we measure it?

Notes — Slide 2

Framing the problem. Narratives shape markets – Shiller's core insight. But can we measure them systematically?

Narratives Move Markets — The Evidence

> *"Economic narratives go viral, they drive booms and recessions."*
>
> — **Robert Shiller**, AER 2017

1980 Grossman & Stiglitz
Information asymmetry persists in equilibrium

2017 Shiller
Narrative economics as a research program

2023 Bybee et al.
Narrative factors rival Fama–French

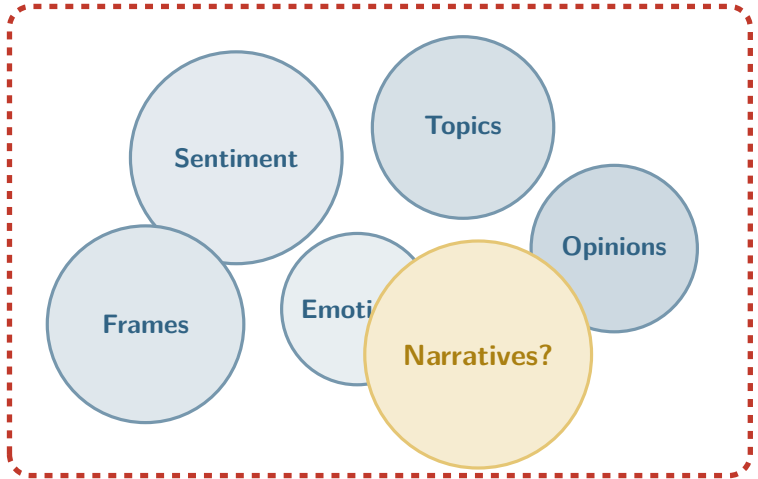
2024 Bybee et al.
News attention forecasts aggregate returns

2024 Flynn & Sastry
Belief-driven macro fluctuations from disclosures

Notes — Slide 3

Not soft science. Bybee shows narrative factors rival Fama–French. Hong shows text beats macro for inflation. The evidence is accumulating rapidly.

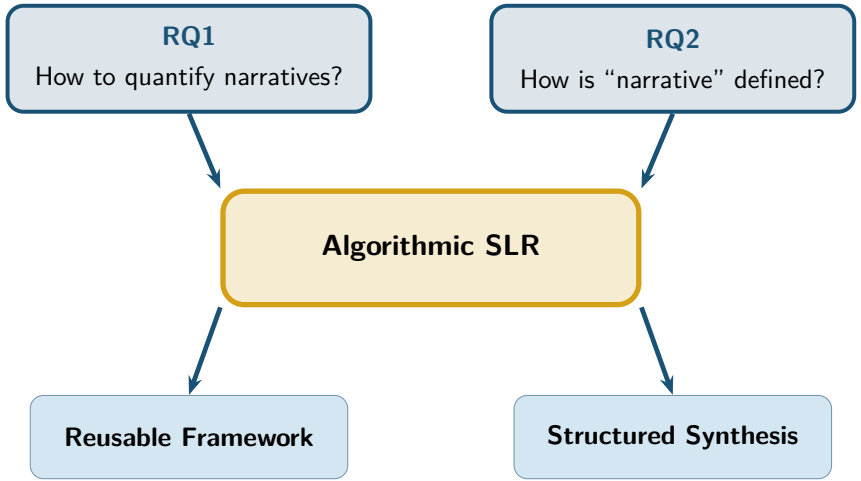
Everyone Studies Narratives. Nobody Agrees What They Are.



Notes — Slide 4

Financial narrative means different things to different researchers. Most default to sentiment – a lossy compression. No standard benchmarks, no shared definitions.

Two Questions, One Framework



Notes — Slide 5

The methodology itself is a contribution, not scaffolding. Reusable for any domain. Two inputs, two outputs, one reproducible machine.

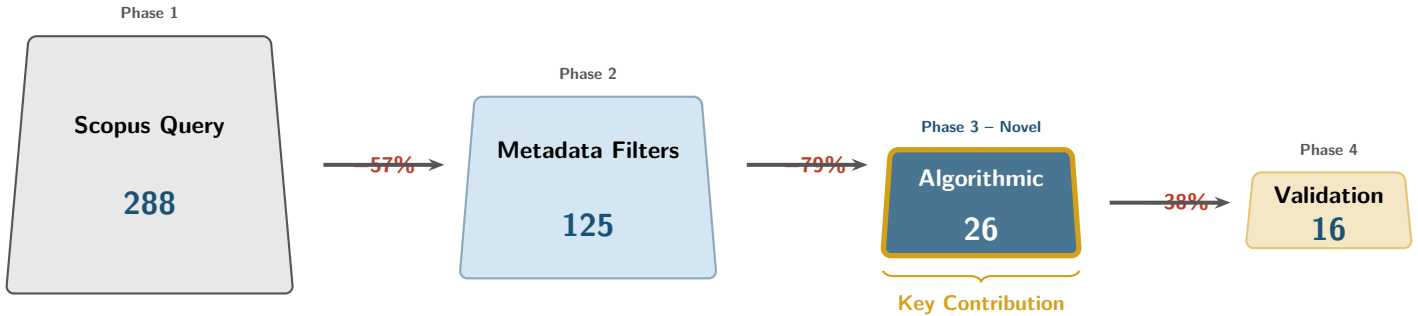
288 papers in. 16 out.

Zero subjective decisions.

Notes — Slide 6

Transition to methodology. The key claim: fully reproducible selection. Same inputs, same outputs, every time.

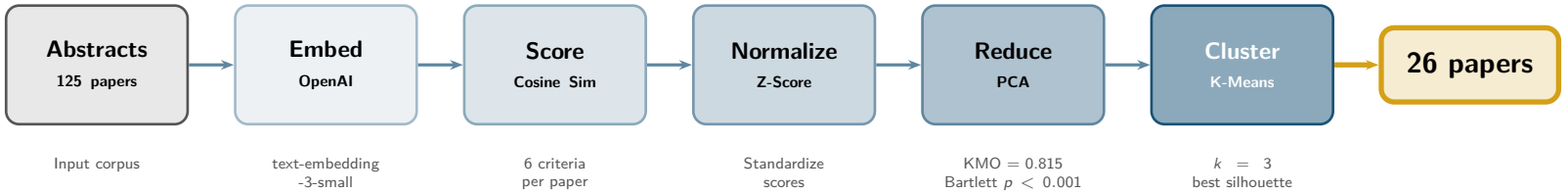
From 288 to 16: A Reproducible Pipeline



Notes — Slide 7

Phase 3 replaces subjective screening with embedding similarity + clustering. Same inputs, same outputs, every time. This is the novel methodological contribution.

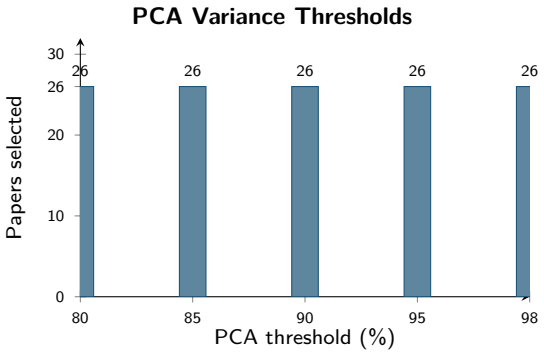
Embedding-Based Selection in 6 Steps

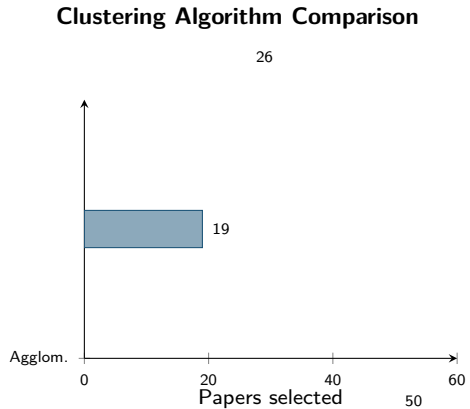


Notes — Slide 8

Semantic matching, not keyword matching. Embeddings capture meaning – paraphrases, related concepts, semantic proximity. Six criteria scored per paper, then reduced and clustered.

Same 26 Papers. Every Time.





Result is insensitive to every hyperparameter we tested.

Notes — Slide 9

Addresses the quant concern: is this fragile? No. We tested 5 PCA thresholds and 3 clustering algorithms. K-Means wins on balance every time. The 26-paper set is rock-solid.

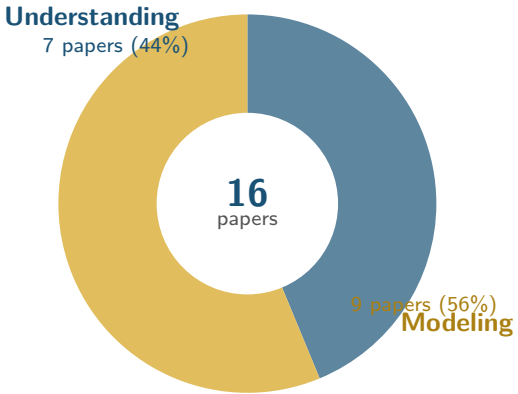
16 papers. Two streams.

Four gaps.

Notes — Slide 10

Transition to findings. Now we know which 16 papers matter. What do they tell us?

Understanding vs. Modeling: A Field Divided



Understanding

What is a narrative?

Annotation, Corpora, Definitions

Modeling

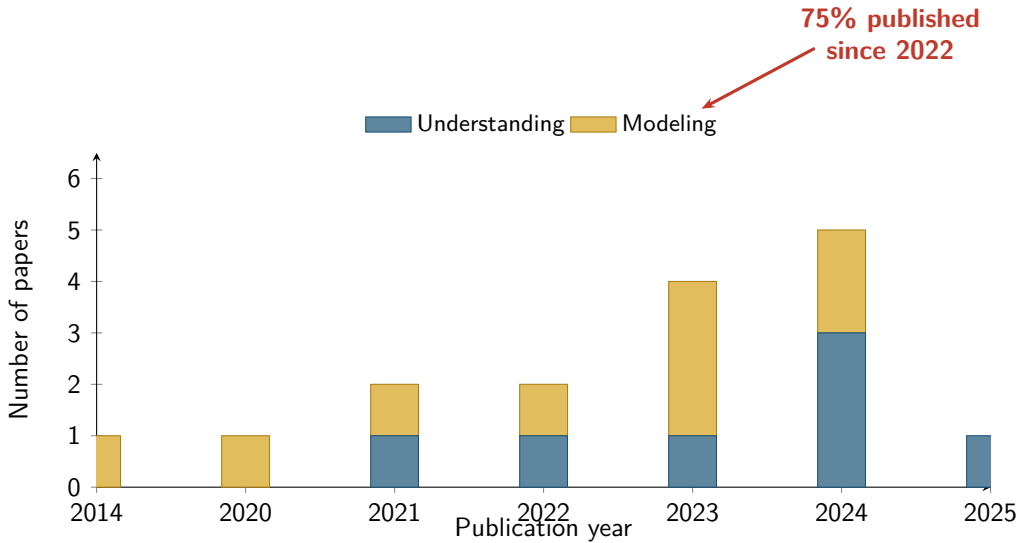
What can narratives predict?

Returns, Volatility, Risk

Notes — Slide 11

Understanding builds the infrastructure. Modeling builds the applications. The concept matrix reveals they rarely talk to each other – a key finding.

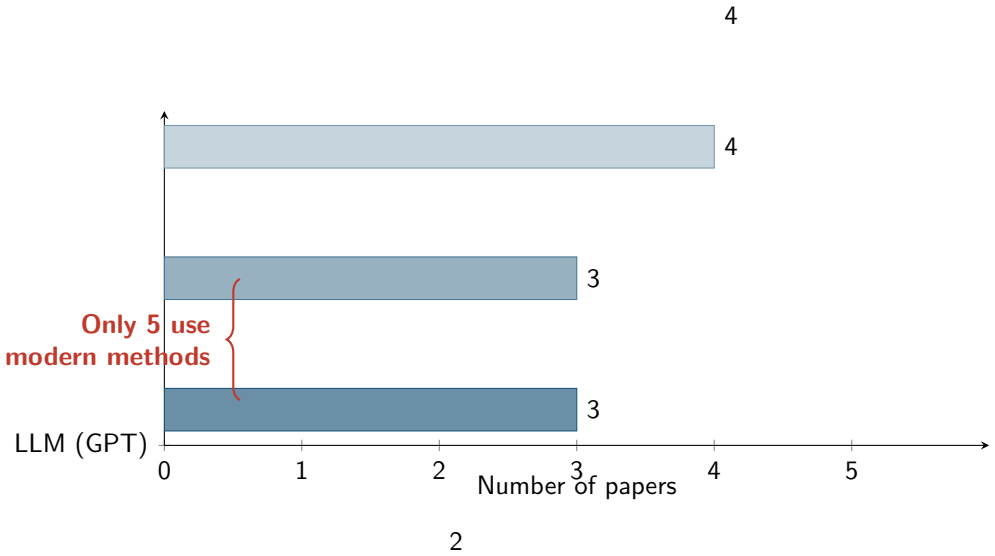
A Field Exploding Since 2022



Notes — Slide 12

The field is young and accelerating. Three-quarters of the final corpus was published since 2022. This is a pre-paradigmatic field – definitions still forming.

From Dictionaries to GPT: Methods Evolving Fast



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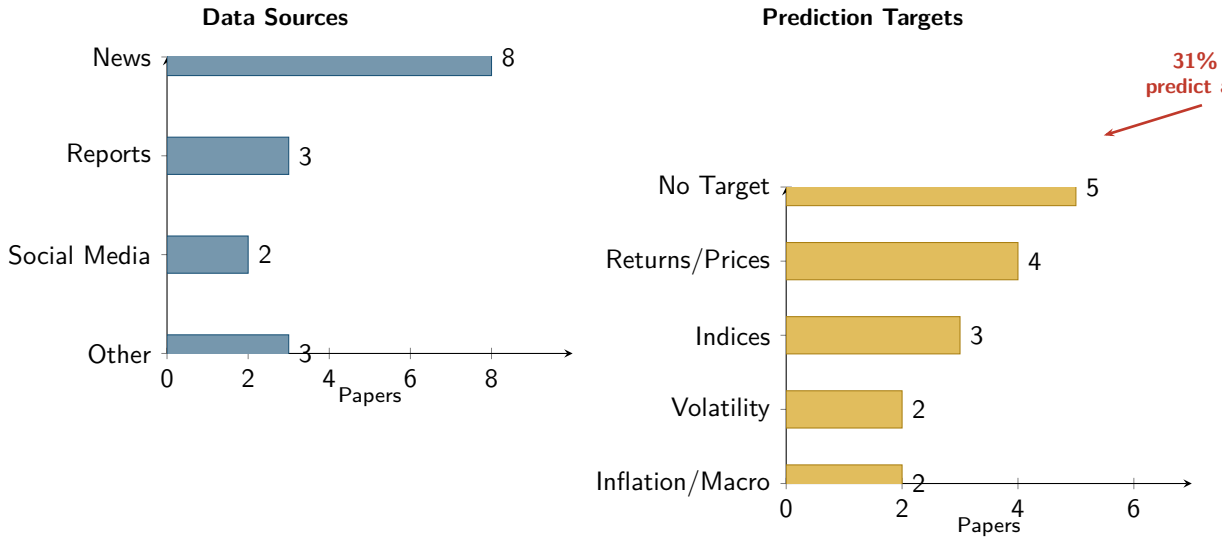
Most papers still use pre-transformer methods. Only 5 of 16 use BERT or GPT. Huge room for modern NLP to enter this space.

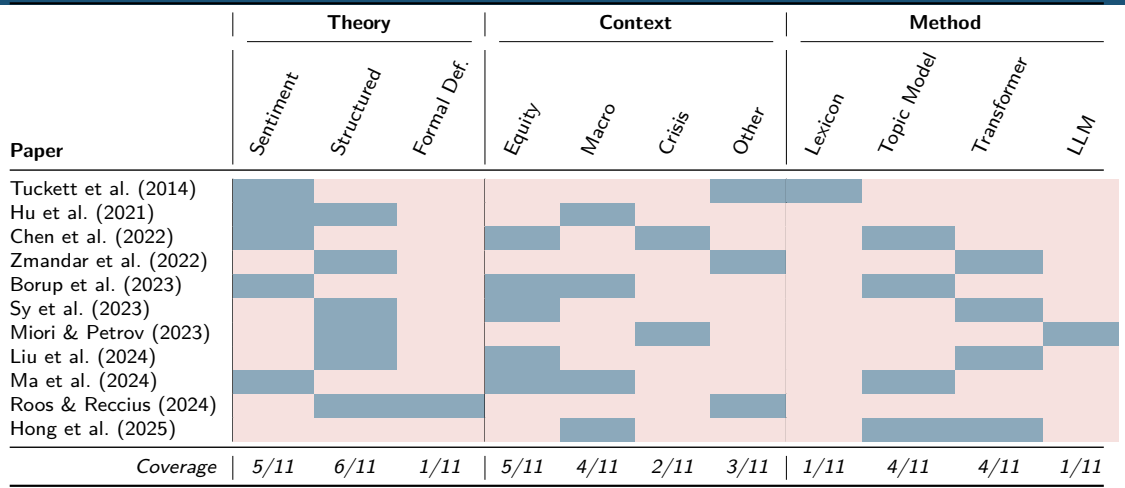
News Dominates Input. Returns Dominate Output.



Notes — Slide 14

News articles dominate. Social media is underrepresented. A third of papers are conceptual with no prediction target – the field is still building definitions.

White Space = Opportunity



Columns with coverage $< 2/11$ signal research gaps.

Notes — Slide 15

The power is in the white space. Only 1 paper defines narratives formally. Only 1 uses LLMs. The formal-definition + transformer + equity intersection is completely empty.

Four Gaps the Field Must Close

G1 No Integration

Structure + semantics + finance never combined

G2 No Modern NLP

Transformers absent from modeling papers

G3 Narrow Scope

Mostly equities + news articles

G4 Always Exogenous

Narratives as input, never as market component

Notes — Slide 16

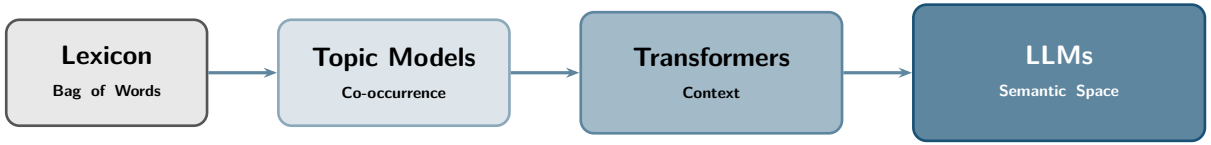
Each gap is a research program. G1 is biggest: nobody combined all three. G4 is most ambitious: requires agent-based or GE modeling. Each gap maps directly to the concept matrix white space.

Narratives are trajectories in semantic space.

Notes — Slide 17

The conceptual punchline. Not just sentiment scores – trajectories in high-dimensional space. Position, velocity, clustering, divergence.

The Evolution: Bag-of-Words to Semantic Trajectories

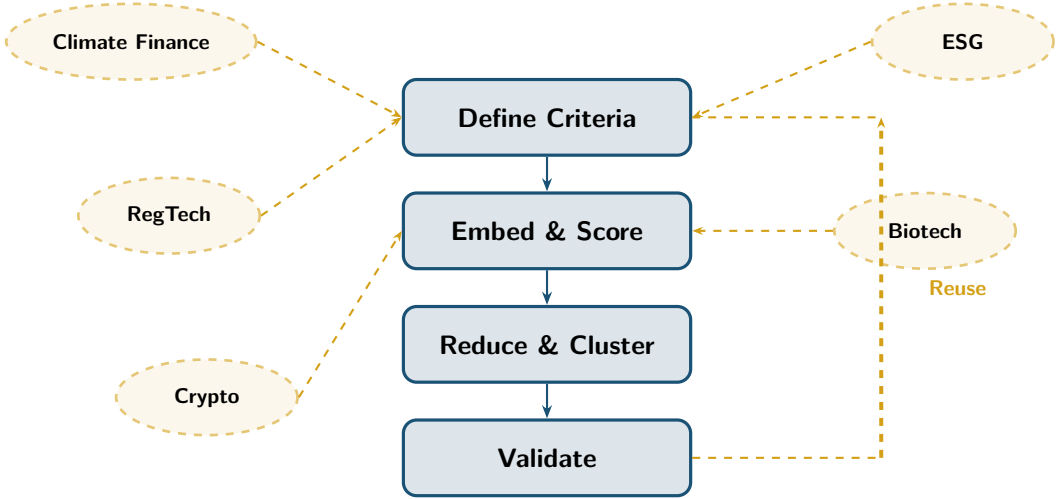


Narratives = trajectories: Position · Velocity · Clustering · Divergence

Notes — Slide 18

Familiar math, new signal. Position = what is discussed. Velocity = how fast attention shifts. Clustering = consensus. Quants know these objects already.

Plug In Any Domain. Get a Systematic Review.



Notes — Slide 19

Swap screening criteria, keep everything else. Works for any fast-moving field. Reproducible: same inputs, same outputs.

Three Things to Remember

1. **Algorithmic SLR:** reproducible, scalable, domain-agnostic

2. **Financial narratives:** a pre-paradigmatic field with four open gaps

3. **Narratives are central** to markets, not peripheral

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Paper available upon request

Notes — Slide 20

Crisp summary. Invite questions. Paper available, collaboration welcome on any of the four gaps.

Backup: Key References

Foundational

- Shiller, R. (2017). Narrative Economics. *AER*.
- Shiller, R. (2019). *Narrative Economics*. Princeton UP.
- Grossman, S. & Stiglitz, J. (1980). On the Impossibility of Informationally Efficient Markets. *AER*.

Narrative Factors

- Bybee, L. et al. (2023). Business News and Business Cycles. *JF*.
- Bybee, L. et al. (2024). Narrative Asset Pricing. *JFE*.
- Borup, D. et al. (2023). The Anatomy of Sentiment-Driven Fluctuations. *JFQA*.

Modeling & Applications

- Hong, T. et al. (2025). News and Inflation Expectations. *WP*.
- Miori, L. & Petrov, S. (2023). GPT-Based Narrative Risk. *WP*.
- Ma, Y. et al. (2024). Narrative Energy Index. *IRFA*.
- Flynn, J. & Sastry, K. (2024). Belief-Driven Fluctuations. *WP*.

Definitions & Methodology

- Roos, M. & Reccius, M. (2024). Narratives in Economics. *JEL*.
- Paul, J. & Criado, A. (2020). Art of Writing Literature Reviews. *APJM*.

Notes — Slide 21

Backup references for Q&A. These are the most-cited papers in the review and the methodological anchors for the algorithmic framework.