Quantifying Narratives and their Impact on Financial Markets

Based on Bhargava et al. (2022) - State Street Associates

Presentation

January 2025

Agenda

1. Introduction: Why Narratives Matter
2. Data & Methodology: 150,000+ Media Sources
3. Key Narratives Driving Markets
4. Predictive Power & Market Returns
5. Portfolio Construction Strategies
6. Case Study: COVID-19 Recovery Portfolio
7. Conclusions & Takeaways

The Power of Narratives in Economics

Robert Shiller's Vision

- "We need to incorporate the contagion of narratives into economic theory"
- Stories drive economic behavior
- Traditional indicators miss narrative impact

This Research Contribution

- Quantifies 73 predefined narratives
- Analyzes 150,000+ digital media sources daily
- Links narrative intensity to market returns

Source: Shiller (2019), Narrative Economics

Data Pipeline: From Media to Market Signals

Data Collection

- 150,000+ global digital media sources
- Articles tagged for 73 narratives
- NLP-based sentiment scoring
- Daily intensity measurements

Key Metrics

- **Intensity**: Proportion of articles per narrative
- **Negative Intensity**: Articles with negative sentiment
- **7-day rolling averages** for stability
- Weekly changes for market impact

Processing pipeline runs continuously from July 2015 to present

Top Narratives by Explanatory Power (2015-2021)

US Equity Market (SPY)

Narrative	Avg R^2
Market Crash	**34%**
Govt & Corp Debt	19%
Treasury Bonds	18%
Global Growth	15%
Liquidity	15%
Top-5 Combined	**40%**

US Dollar (DXY)

Narrative	Avg R^2
Federal Reserve	14%
Donald Trump	13%
Emerging Markets	12%
Interest Rates	12%
Labor Market	12%
Top-5 Combined	29%

R^2 from rolling 3-month univariate regressions

Market Crash Narrative: The Dominant Driver

Regression Results

- Coefficient: -**0.26**
- T-statistic: -**9.94**
- R^2: **0.30**

Predictive Power

- Contains information beyond VIX
- T-stat: -2.20 for future returns
- Enables market timing strategies

Interpretation

- Negative relationship confirmed
- Higher negative coverage $\rightarrow$ lower returns
- Captures investor fear sentiment

Practical Application

- Rotate to bonds when z-score ¿ 3
- 2-week holding period
- Outperforms 50/50 benchmark

SPY weekly returns regressed on 7-day change in negative intensity

Topical Narratives: COVID-19 Case Study

Timeline of Impact

- Dec 2019: First cases, minimal coverage
- Feb 2020: Intensity spikes to 55%
- Mar-Apr: Peak fear period
- Nov 2020: Vaccine announcement pivot

Market Response

- Initial R^2: 60-80%
- Coefficient: -0.4 to -0.9
- Dominated other narratives
- Recession fears amplified impact

COVID-19 narrative tracked from January 2020

Narrative-Based Asset Allocation Performance

Strategy Rules

- Monitor Market Crash z-score
- Threshold: z-score ¿ 3
- Action: Rotate SPY $\rightarrow$ Bonds
- Duration: 2 weeks
- Implementation lag: 2 days

Performance (2015-2021)

Metric	Return
Narrative Strategy	**18.13%**
SPY Only	13.38%
Bonds Only	2.51%
50/50 Benchmark	7.94%
Information Ratio	**1.26**
Max Drawdown	-11.57%

Annualized returns with HAC-adjusted standard errors

COVID-19 Recovery Portfolio Construction

Methodology

- Estimate stock-level narrative betas
- Select 25 lowest beta stocks (long)
- Select 25 highest beta stocks (short)
- Monthly rebalancing

Low Beta Examples

- Wynn Resorts (-2.98)
- Disney (-2.92)
- Las Vegas Sands (-2.43)
- Halliburton (-3.10)

Performance Results

- Pre-vaccine: **-32.25%**
- Post-vaccine: **+120.74%**
- Total period: +88.49%
- Information Ratio: 2.01

vs. Case-Count Strategy

- Case-based: +16.55% only
- Narrative captures sentiment better
- Media influence ¿ raw statistics

Portfolio pivoted November 9, 2020 (Pfizer vaccine announcement)

Stock-Level Narrative Exposure: Amazon Example

Positive Exposures

- COVID-19: +2.5 t-stat
- Health: +1.8 t-stat
- Benefited from lockdowns
- E-commerce acceleration

Negative Exposures

- Trade War: -2.0 t-stat
- Global Trade: -2.2 t-stat
- Supply chain vulnerabilities
- International revenue risk

Rolling 1-year regressions on narrative intensity changes

Key Empirical Findings

Explanatory Power

- Market Crash $R^2 = 34\%$
- Top 5 narratives $R^2 = 40\%$
- COVID peak $R^2 = 80\%$
- Narratives vary by asset class

Predictive Ability

- Information beyond VIX
- Statistically significant at 5%
- Enables market timing
- Self-fulfilling prophecy effects

Portfolio Performance

- Asset allocation: +18.13% annual
- COVID recovery: +120.74%
- Outperforms benchmarks
- Lower drawdowns

Practical Applications

- Risk management tool
- Thematic investing
- Narrative hedging strategies
- Enhanced factor models

Conclusions and Implications

Academic Contributions

- Quantifies narrative economics
- Links media to market returns
- Validates Shiller's hypothesis
- New predictive variables

Investment Applications

- Enhanced risk models
- Systematic allocation strategies
- Thematic portfolio construction
- Market timing signals

Methodology Innovations

- 73 narrative framework
- Real-time processing pipeline
- Sentiment-adjusted intensity
- Stock-level narrative betas

Future Research

- Cross-asset applications
- International markets
- High-frequency trading
- Alternative data integration

Research partnership: State Street Associates & MKT MediaStats

Thank You

Questions?

Based on: "Quantifying Narratives and their Impact on Financial Markets"
Bhargava, Lou, Ozik, Sadka, Whitmore (2022)