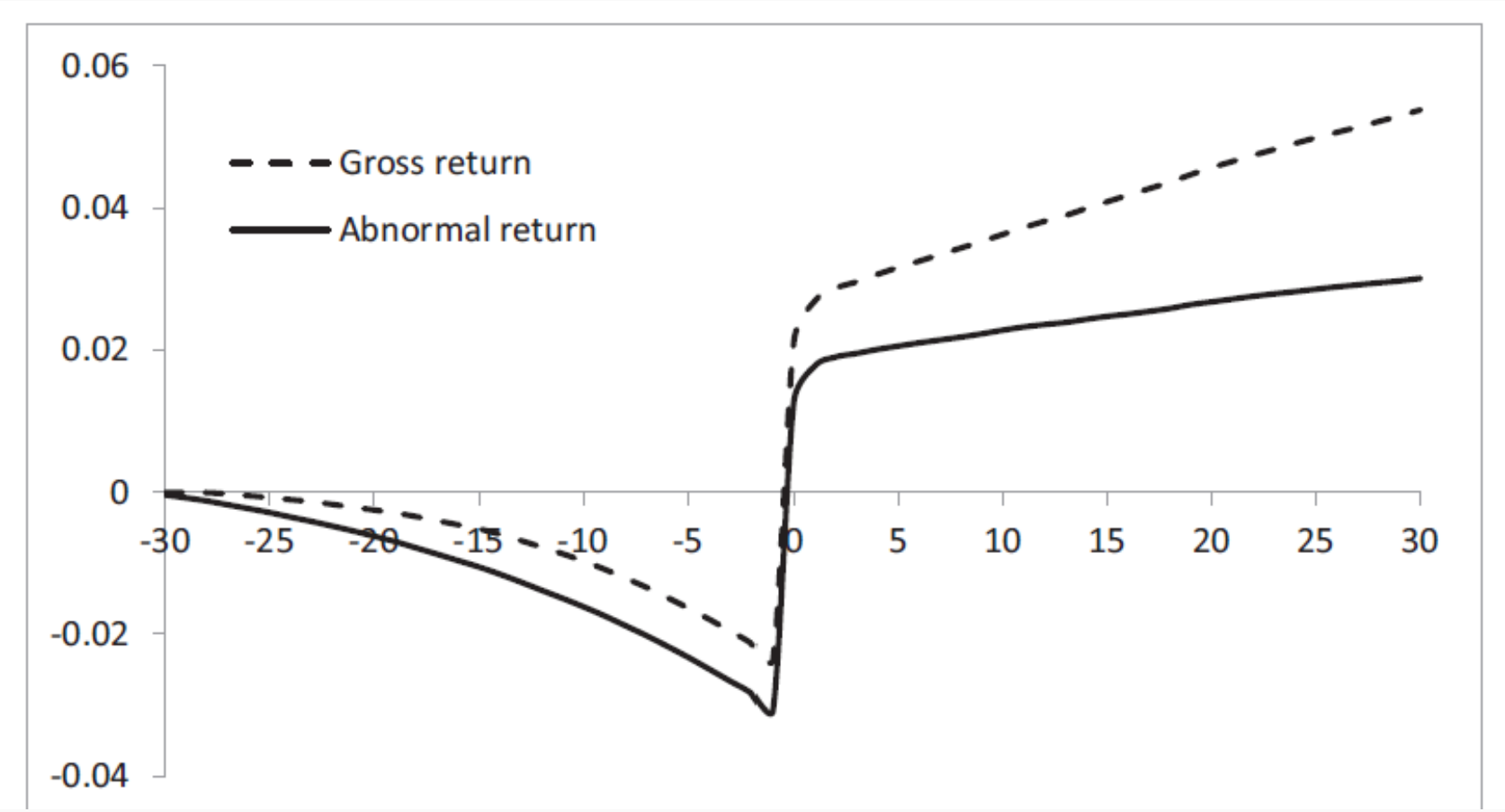
Announcement Timing and Asset Prices

Kerry Back, Rice University
Bruce Carlin, Rice University
Seyed Kazempour, L.S.U.
Chloe Xie, M.I.T.

Empirical Returns Around Outliers



Kapadia-Zekhnini (JFE, 2019) – 30 days before and after $\pm$ 3 sigma returns. Most outlier returns are on announcement days. Typical stock earns its total annual return on 4.5 of these days per year.

Kapadia-Zekhnini Announcements

Announcements of earnings	47,467
Executive/Board changes – other	6425
Client announcements	6212
Product-related announcements	5645
M&A transaction announcements	4774
Earnings calls	4735
Corporate guidance – raised	4126
Conference presentation calls	3803
Corporate guidance – new/confirmed	2930
Corporate guidance – lowered	2722

Discretionary Timing of Earnings Announcements

- Firms tend to announce bad earnings on Friday afternoons (DeHaan, Shevlin & Thornock, 2015)
- Firms delay bad news and escalate good news (Johnson & So, 2018).
- Firms delay when peers announce good news and escalate when they announce bad news (small but significant effect).
- Wall Street Journal (May 4, 2022):

  > *Lyft's commentary was so bad, Uber Technologies moved up its earnings release and conference call after watching its own shares trade off sharply in sympathy.*

Implications of Discretionary Timing

- Many small negative returns from silence
- Some large positive returns from announcements

$\Rightarrow$ positive skewness and high kurtosis (Albuquerque, 2012)

- High conditional risk premia and high average announcement returns
- Over-estimation of alphas around announcements
- Greater effects when there are multiple correlated firms.

Seminal Work on Voluntary Truthful Revelation

- Static models
  - Grossman (1981), Milgrom (1981): unraveling $\Rightarrow$ everyone announces
  - Dye (1985), Jung & Kwon (1988): possibility of being uninformed limits unraveling
  - Dye & Hughes (2017): risk-averse investors $\Rightarrow$ nondisclosure increases variance
- Dynamic models: Acharya, DeMarzo & Kremer (2011)
  - Exogenous correlated public announcement
  - Optionality $\Rightarrow$ may be optimal to delay until after exogenous announcement.
  - Bad public news $\Rightarrow$ announce immediately afterwards
  - Good public news $\Rightarrow$ enjoy higher price for awhile and then announce

Model

- Time interval $[0, 1]$
- Two firms with signals $=$ values $\tilde{x}_i$ that are symmetric normal with correlation $\rho \geq 0$.
- Firms get their signals at independent uniformly distributed random times.
- Firms choose announcement dates. Announcements are discretionary but must be truthful.
- Firms are known to be informed by time $t = 1$, so unraveling – everyone announces then or before.

Asset Pricing

- Constant risk-free rate, normalized to zero
- Representative CARA investor who consumes $\tilde{w}$ at date 1, risk aversion $= \kappa$
- $(\tilde{x}_1, \tilde{x}_2, \tilde{w})$ are joint normal and symmetric in $\tilde{x}_1$ and $\tilde{x}_2$.
- SDF is

$$\tilde{m} = \frac{\mathrm{e}^{-\kappa \tilde{w}}}{\mathsf{E}\left[\mathrm{e}^{-\kappa \tilde{w}}\right]}$$

- Or use risk-neutral pricing. Risk-neutral distribution of $\tilde{x}_i$ is normal with same variance and correlation but different mean

$$\mu^* = \mu - \kappa \,\mathsf{cov}(\tilde{x}_i, \tilde{w})$$

Objectives and Equilibrium

- Assume firms care about short-run prices.
- Assume firms maximize the risk-neutral expectation of the average price between $t = 0$ and $t = 1$:

$$\mathsf{E}^* \int_0^1 P_{it} \, \mathrm{d}t \, .$$

- Option to announce is option to exchange P_{it} for $\tilde{x}_i$.
- Look for Perfect Bayes Equilibrium

Versions of the Model

I. Firm 2 is nonstrategic – announces when it gets information

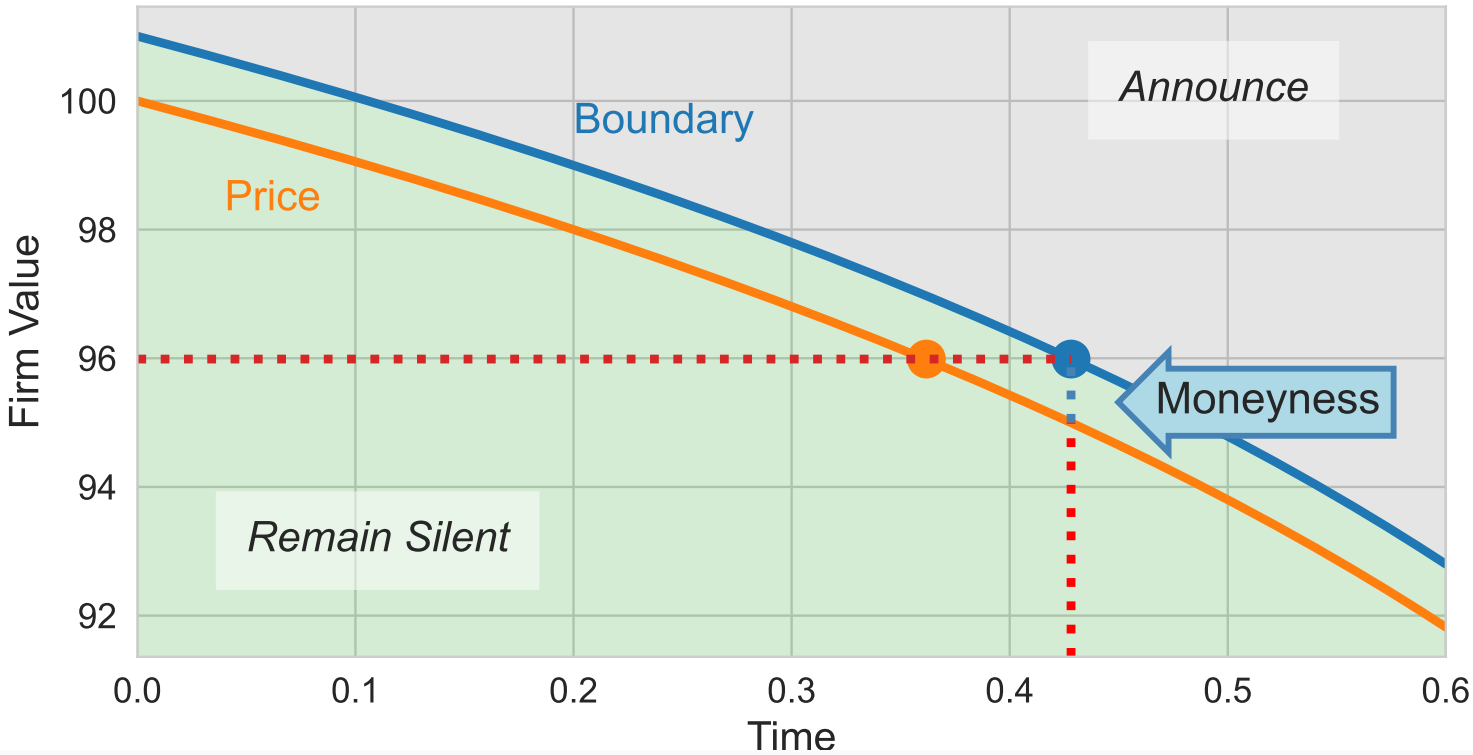
II. Both firms are strategic – choose optimal announcement timesgiven the other's announcement policy

Qualitative asset pricing implications are very similar. Magnitudes are larger in Model II. From 100,000 simulated paths for each model:

- 1st announcer returns $>$ 2nd, as in Savor-Wilson, 2016
- 1st announcer returns: Model II $>$ Model I
- 2nd announcer returns: Model II $>$ Model I
- In Model II, mean announcement return $>$ 2.5 $\times$ unconditional risk premium, but only $\approx$ 25% of firms delay announcements.

Equilibrium, Risk Premia, and the CAPM

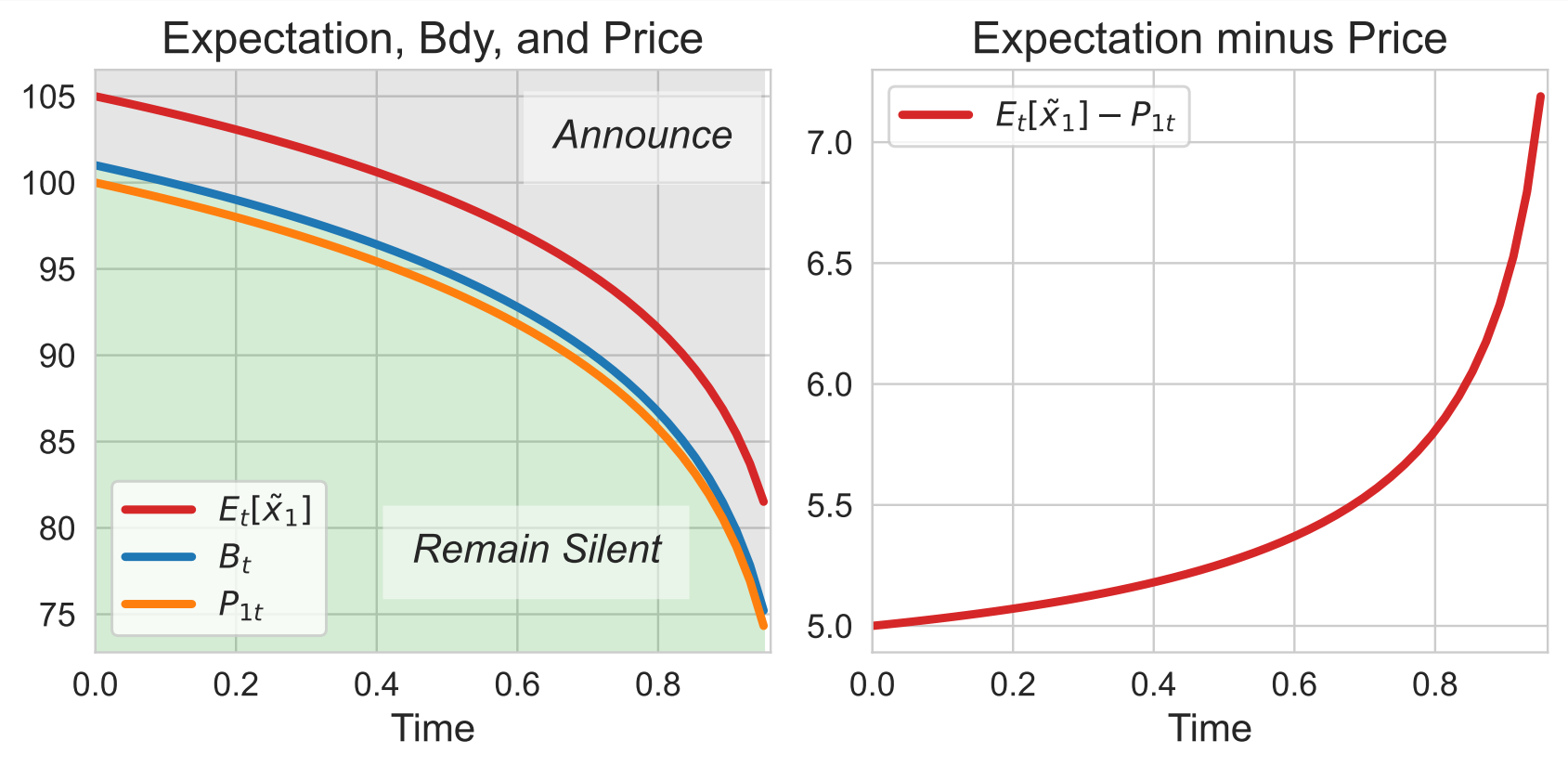
Equilibrium Prior to Announcements



If signal $= 96$, option to announce is at the money at $t \approx 0.36$ but it is not optimal to announce until $t \approx 0.43$.

Parameters: $\mu = 105$, $\mu^* = 100$, $\sigma = 15$

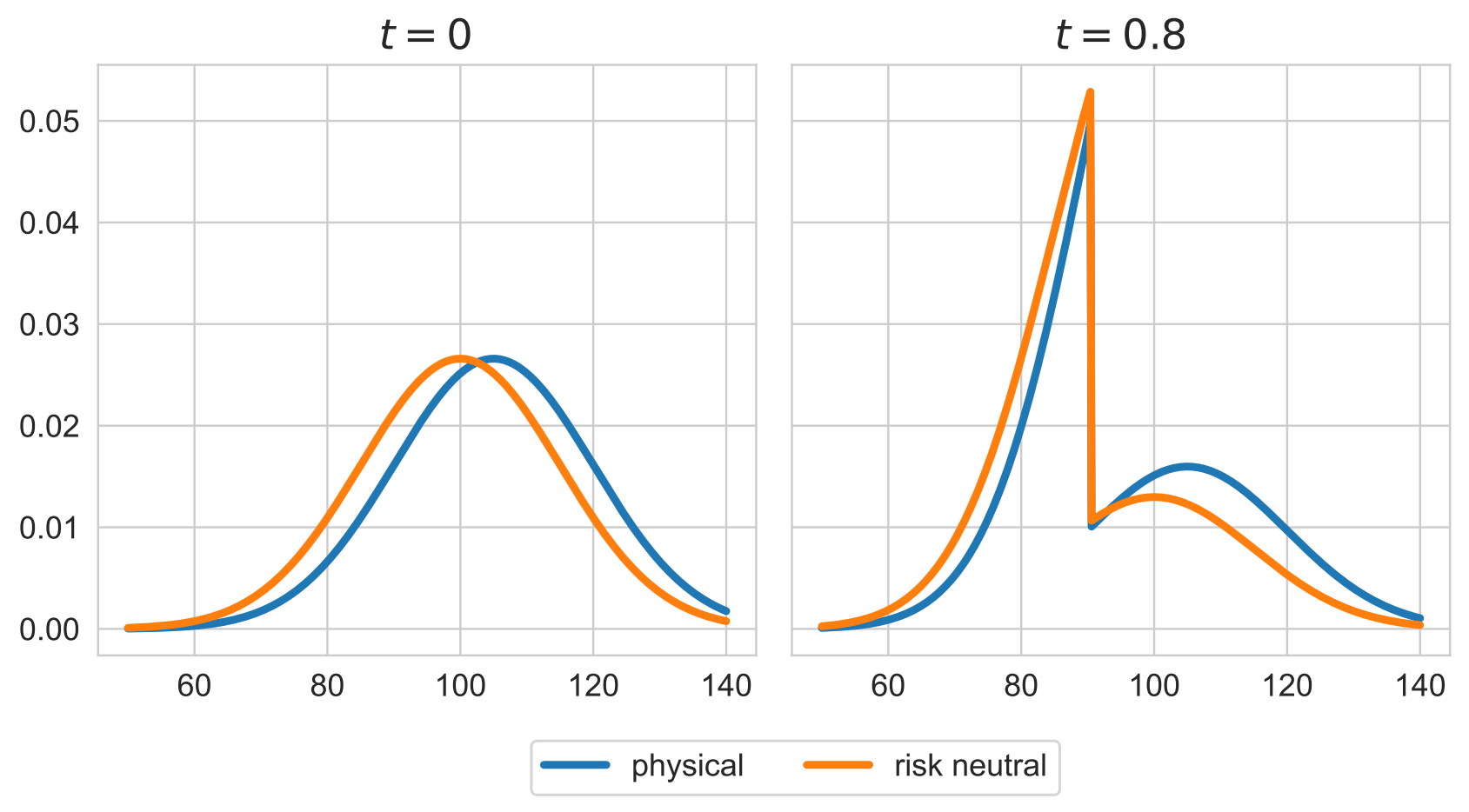
Risk Premium Prior to Announcements



Dollar risk premium $\mathrm{E}_t[\tilde{x}] - P_t$ rises before announcements.
Percent risk premium rises even faster.

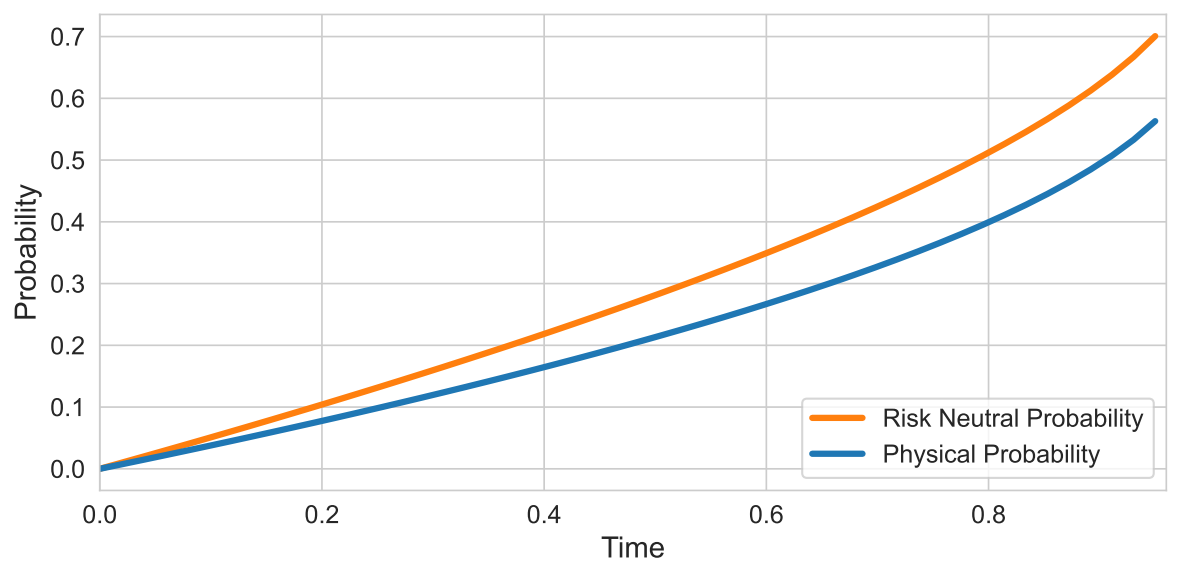
Parameters: $\mu = 105$, $\mu^* = 100$, $\sigma = 15$

Model 1 Density Prior to Announcements



Parameters: $\mu = 105$, $\mu^* = 100$, $\sigma = 15$

Probability Negative News Has Been Withheld



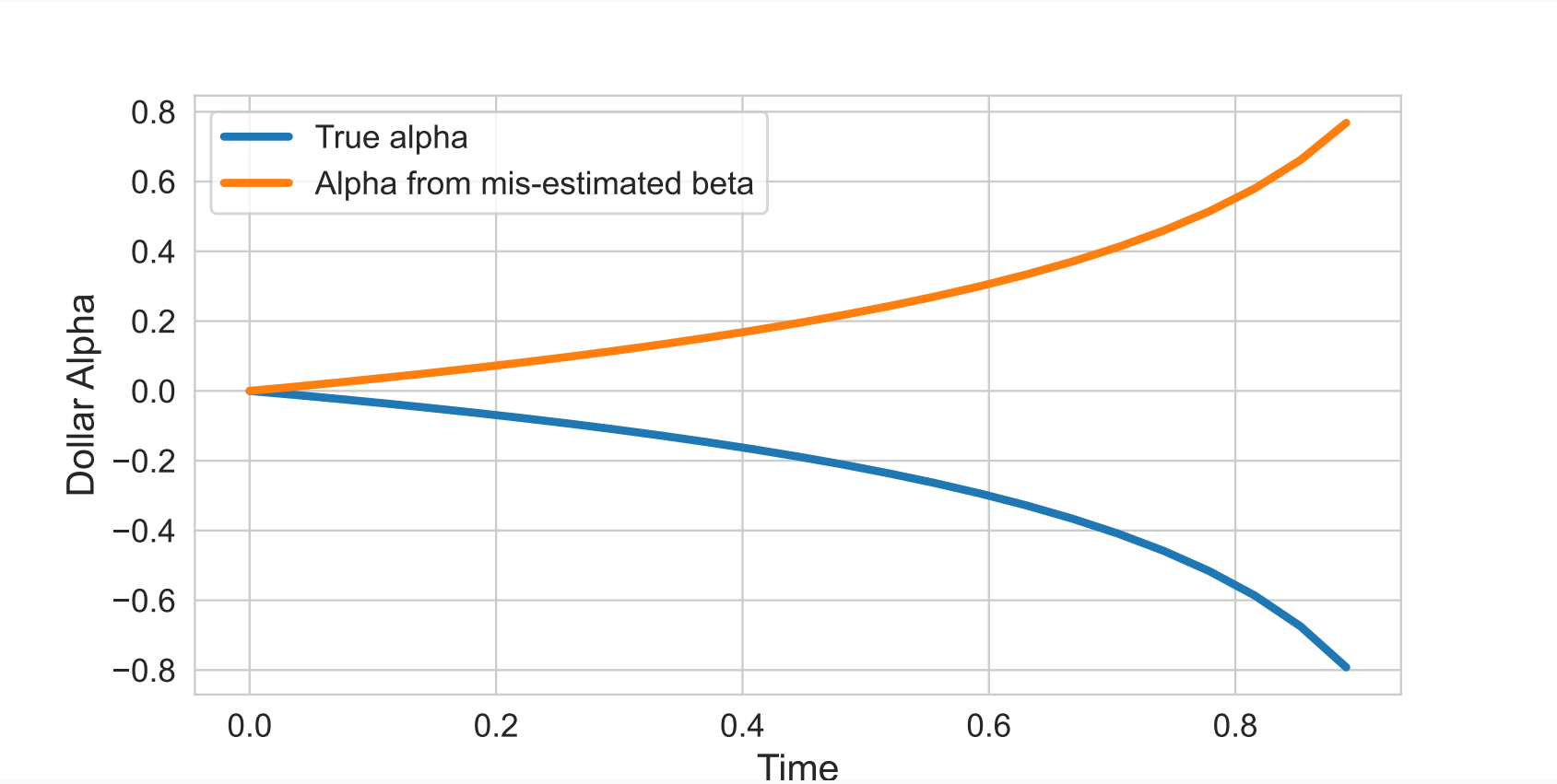
Physical Probability:

$$\frac{t \cdot \text{prob}(\tilde{x} < P_t)}{t \cdot \text{prob}(\tilde{x} < P_t) + 1 - t}$$

Risk-Neutral Probability:

$$\frac{t \cdot \text{prob}^*(\tilde{x} < P_t)}{t \cdot \text{prob}^*(\tilde{x} < P_t) + 1 - t}$$

Alpha Prior to Announcements



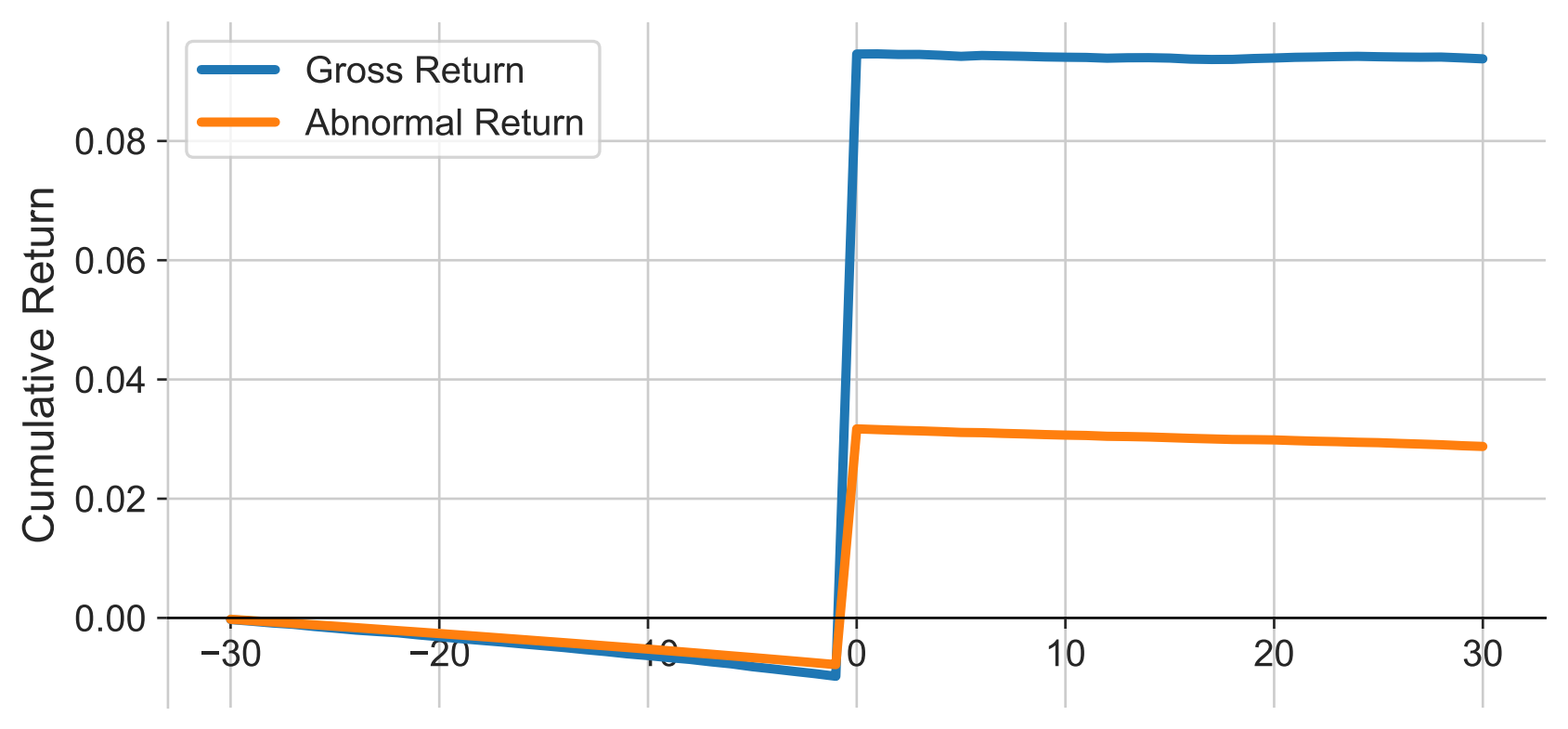
Returns from buying at t and holding until time 1

Mis-estimated beta is date–0 beta.

Ignoring time variation in market risk $\Rightarrow$ over-estimate alpha.

Parameters: $\mu = 105$, $\mu^* = 100$, $\sigma = 15$

Theoretical Kapadia-Zekhnini Figure



Average over $\pm$ 3 sigma returns
on days $30 < t < 120$ in a 150-day calibration.

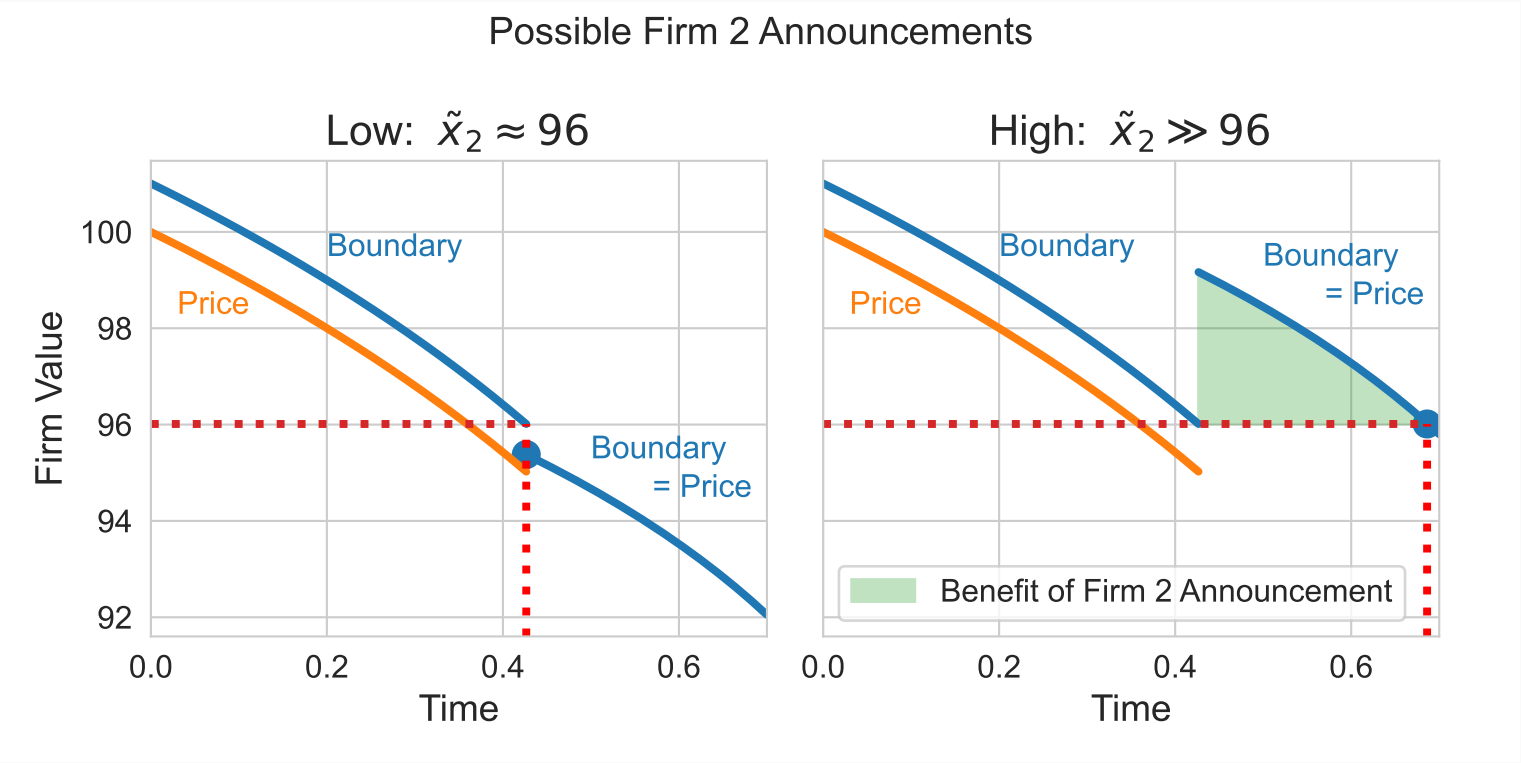
Optionality and the Decision to Announce

- Suppose firm 1 has its signal $\tilde{x}_1$ at time t and $P_t < \tilde{x}_1$. It incurs a flow opportunity cost $(\tilde{x}_1 - P_t)\,\mathrm{d}t$ if it does not announce.
- Firm 1 thinks: What if firm 2 announces in the next instant?
- Firm 1 should delay if and only if the expected benefit from firm 2's announcement is greater than the flow cost $(\tilde{x}_1 - P_t)\,\mathrm{d}t$.

- Suppose firm 1 has its signal $\tilde{x}_1$ at time t and $P_t < \tilde{x}_1$. It incurs a flow opportunity cost $(\tilde{x}_1 - P_t)\,\mathrm{d}t$ if it does not announce.
- Firm 1 thinks: What if firm 2 announces in the next instant?
- Firm 1 should delay if and only if the expected benefit from firm 2's announcement is greater than the flow cost $(\tilde{x}_1 - P_t)\,\mathrm{d}t$.

- Take $t = 0.43$ and $\tilde{x}_1 = 96$ and conjecture that $B_t = 96$ is the equilibrium boundary.
- Then, for firm 1, the expected benefit of delay must equal the flow cost (ADK).
- In Model II, there are two reasons firm 2 might announce: its value is 96, or it just learned its value, which is above 96.
- It turns out that only the second reason is relevant for the expected benefit of delay.

Firm 1's Thought Experiment



- Optimal for firm 1 to announce immediately if firm 2 makes a low announcement (at B_t or slightly above).
- Optimal to delay and enjoy the higher price for awhile if firm 2 makes a high announcement ("triangular" shaded area).
- Only announcements by firm 2 when it just gets its signal contribute to firm 1's expected benefit of delay.

Conclusion

- If firms are eager to announce good news but are less quick to announce bad news, then stock returns will reflect it.
  - Positive skewness
  - High kurtosis
  - Negative drifts before positive jumps
  - High risk premia and announcement returns
  - Failure of CAPM
  - Empirical over-estimation of alphas around announcements
- Effects are magnified with multiple strategic firms.
- Would be useful to study risk premia and announcement returns in a "more dynamic" model, with information evolving continuously and multiple announcements (as in Kremer, Schreiber, & Skrzypacz, 2024, Disclosing a Random Walk).

Thank You!