

# Belief Polarization and Investment

Lorenzo Garlappi, Ron Giammarino, and Ali Lazrak

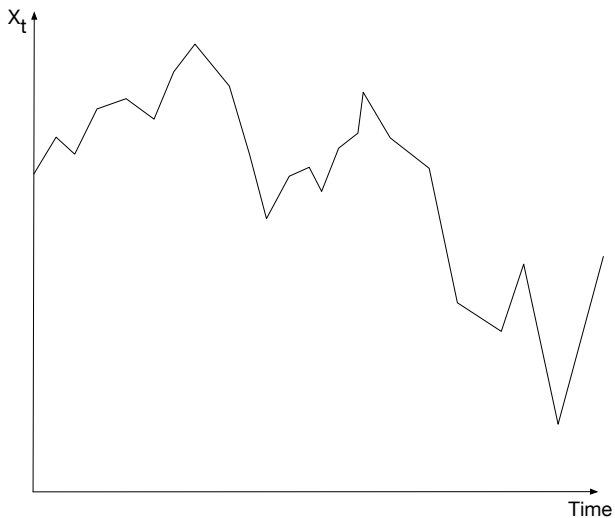
Discussion by Savitar Sundaresan  
Imperial College

June 20, 2019

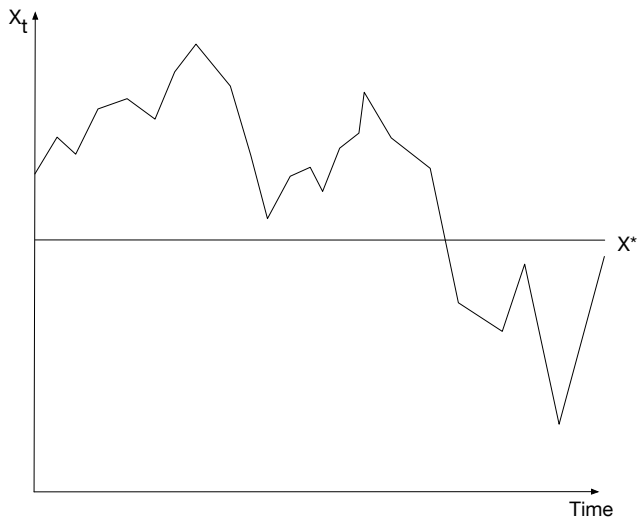
# Big Picture

- **Question:** Can entrenched beliefs lead to inefficiencies?
- **Theoretical Framework:** Standard Real Option Model.
- **Contribution:** Voting structure with agreement to disagree.
- **Findings:** Popular investments can be inefficiently rejected.

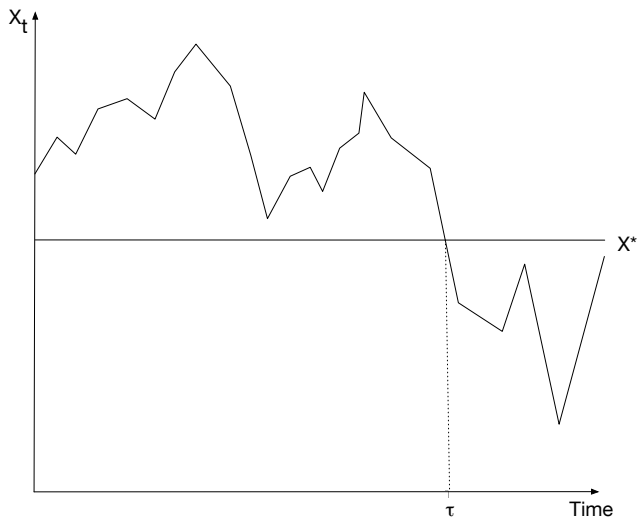
# Standard Real Option Problem



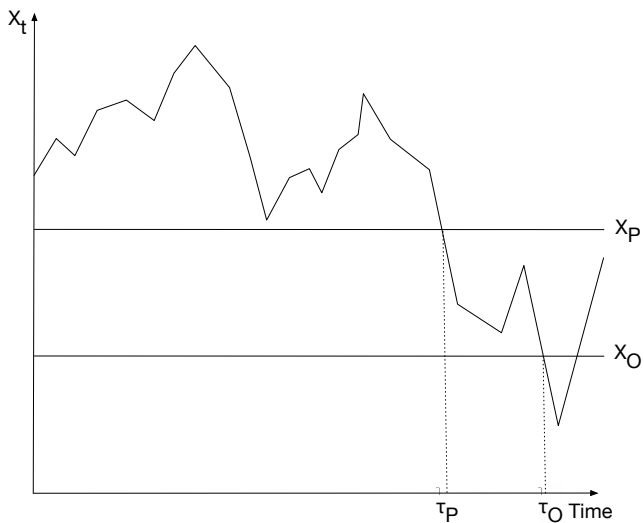
# Standard Real Option Problem



# Standard Real Option Problem



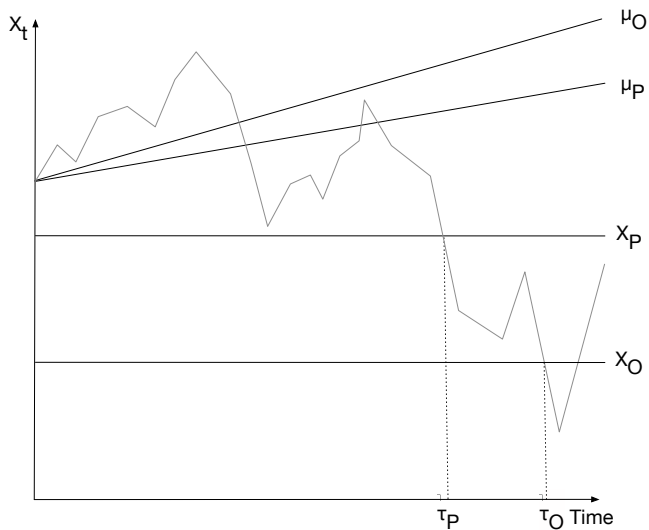
# Simple Problem With Disagreement



# Simple Disagreement Results

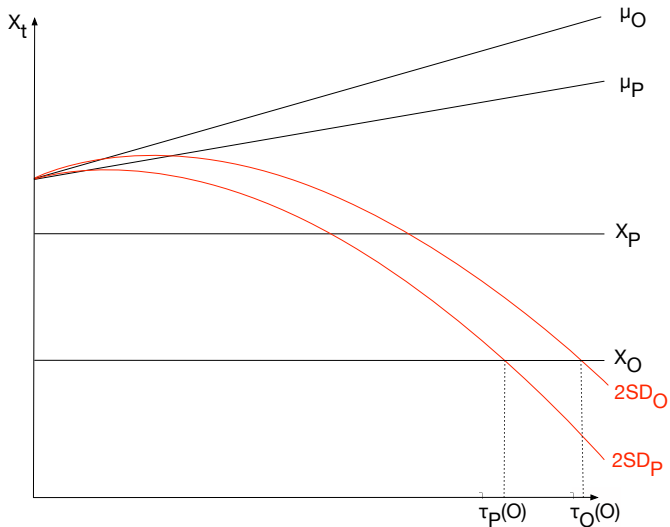
- Need both to agree to exercise.
- Optimist sets time for exercise.
- How willing is the pessimist to wait?
- Depends on opportunity cost.

# Real Option Problem With Disagreement





# Real Option Problem With Disagreement



# Informational Structure

- Degenerate beliefs about mean of data-generating process.
- No updating about true process parameters.
- $X_t$  tells you *if and when* to abandon *without* changing your beliefs.
- *Could* disagree about variance too.

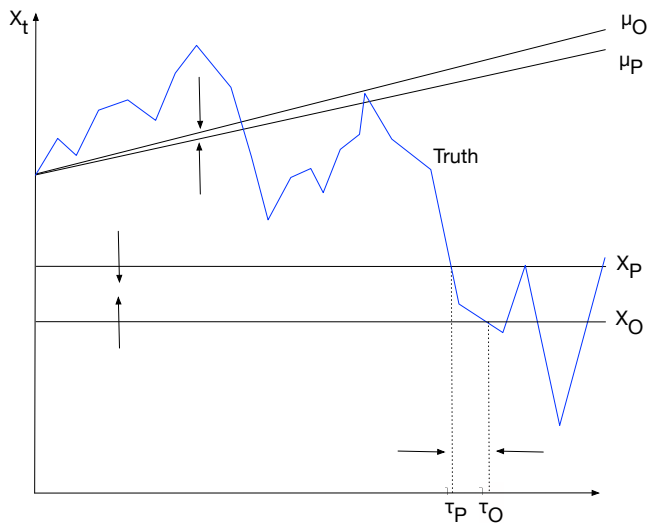
# Possible Simplification

- Three-period model.
- $t = 0$ : investment decision.
- $t = 1$ : probability  $p$  that pessimist wants to abandon.
- $t = 2$ : probability  $q$  that both want to abandon.
- Disagreement about values of  $p$  and  $q$ .

# Possible Informational Stories

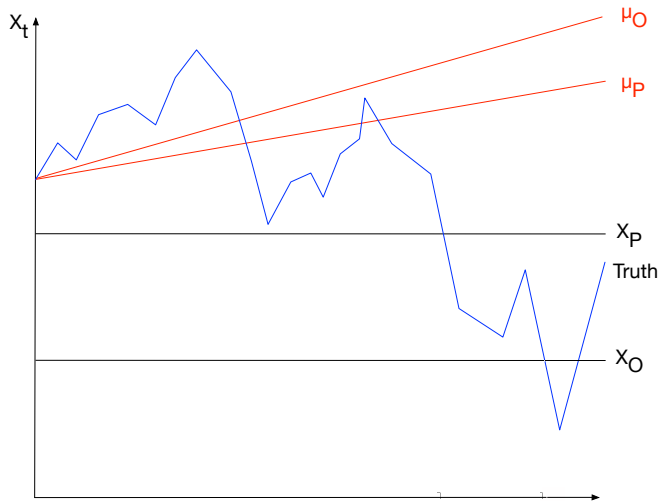
- This Paper:  $X_t$  perfectly observable, no learning.
- Alternate (a):  $X_t$  perfectly observable, with learning.
- Alternate (b):  $X_t$  costly to observe, no learning.
- Alternate (c):  $X_t$  noisily observable, with learning.
- Alternate (d): Other disagreements.

## Case 1: Learning with Observable $X$

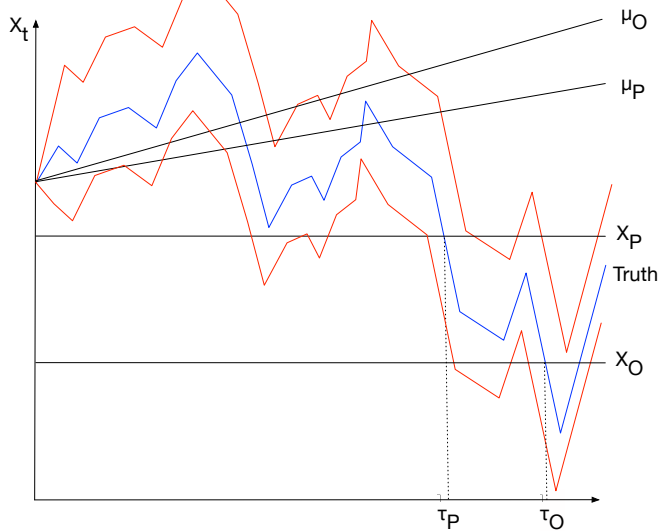


Effect mitigated, but not reversed.

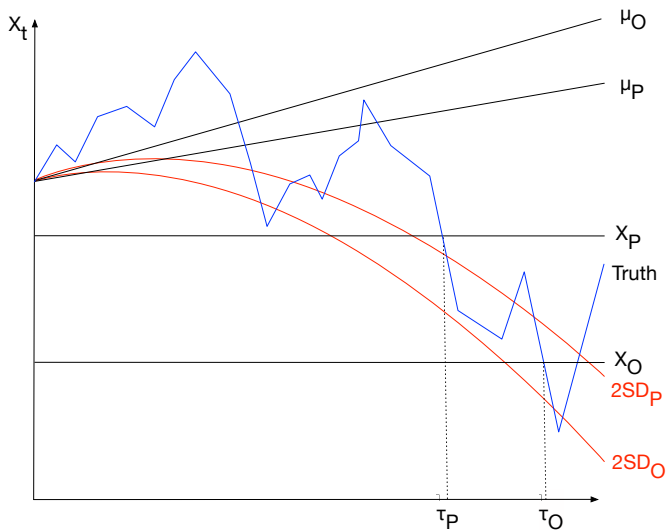
## Case 2: No Learning with Unobservable $X$



## Case 2: Biased Learning with Costly $X$



## 2nd-Moment Disagreement





## Disagreement could flip!

- Unconditionally, neither agent expects to abandon.
- Conditionally, optimist might want to abandon sooner!

## Other Extensions

- Coordination and Persuasion (Manager)?
- Compensation from Optimists to Pessimists?
- Competition effects?

# Conclusion

- Unambiguous welfare losses with heterogeneous beliefs!
- Currently model has (almost) no information story.
- Could be interesting to extend along these lines.