Subjective Learning of Trading Talent: Theory and Evidence from Individual Investors in the U.S.

Xindi He

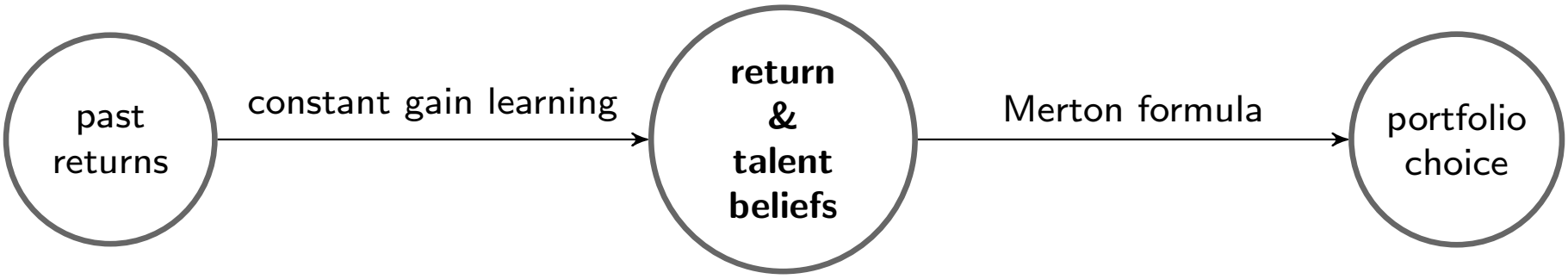
Discussion By:

Tim de Silva
MIT Sloan

May 21st, 2021

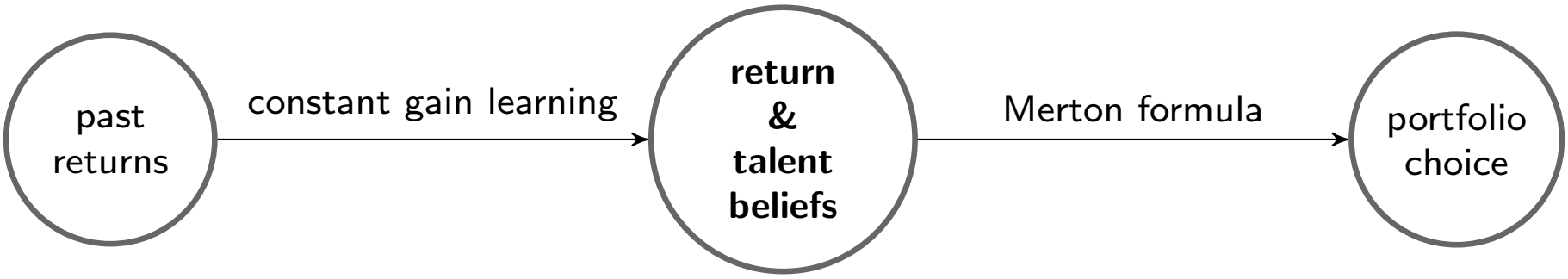
TADC Finance 2021

Summary



- Model innovation: investors have to learn about **two** objects
  1. talent distribution: determines return on a new stock
  2. stock-in-holding distribution: determines return on current stock

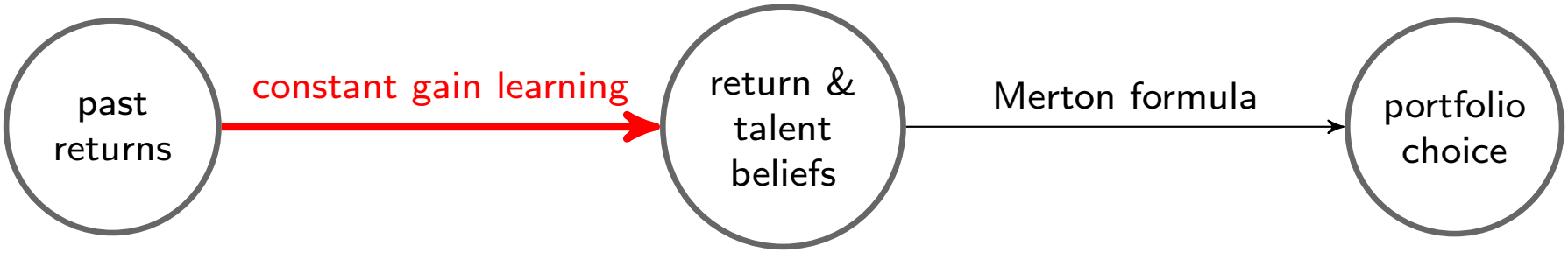
Summary



- Model innovation: investors have to learn about **two** objects
  1. talent distribution: determines return on a new stock
  2. stock-in-holding distribution: determines return on current stock

- Key results: $\nu_x = 0.14 > \nu = 0.02$ rationalizes...
  - ... stopping to trade after bad returns (& buying Dogecoin?)
  - ... selling winners faster than losers (i.e. disposition effect)
  - ... large positions when buying new stock
  - ... and more!

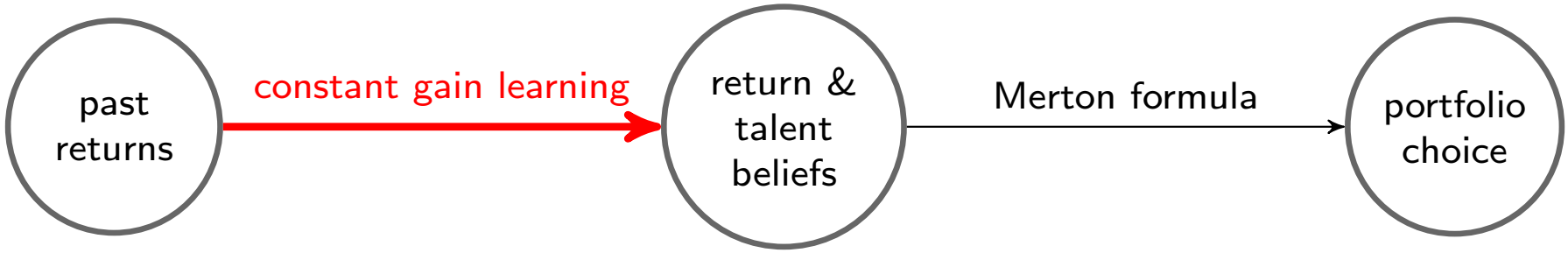
Comment #1: why constant gain learning?



- Updating with constant gain learning (for returns & talent):

$$\tilde{E}_t x_{t+1} = \tilde{E}_{t-1} x_t + \nu \left(x_t - \tilde{E}_{t-1} x_t \right)$$

Comment #1: why constant gain learning?



- Updating with constant gain learning (for returns & talent):

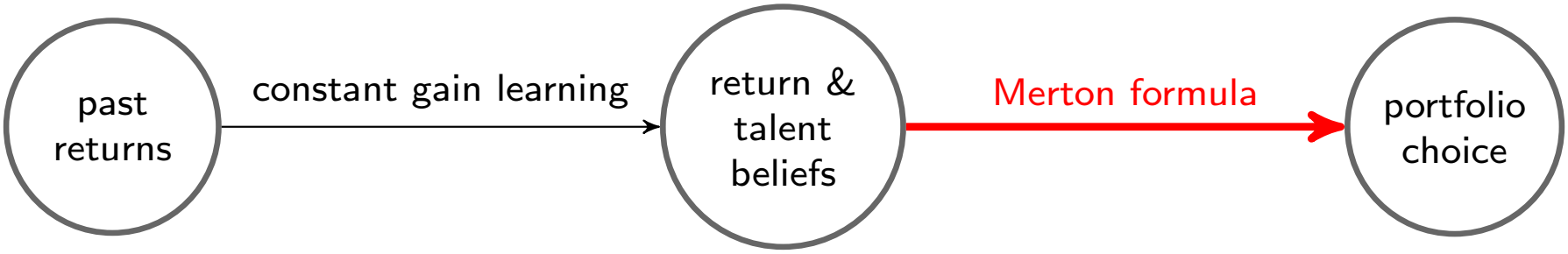
$$\tilde{E}_t x_{t+1} = \tilde{E}_{t-1} x_t + \nu \left(x_t - \tilde{E}_{t-1} x_t \right)$$

- Alternative models of $\tilde{E}_t x_{t+1}$:

$$\begin{aligned}
\text{bayesian} &= \tilde{E}_{t-1} x_t + G_t \left(x_t - \tilde{E}_{t-1} x_t \right) \\
\text{diagnostic} &= \tilde{E}_{t-1} x_t + (1+\theta) G_t \left(x_t - \tilde{E}_{t-1} x_t \right) \\
\text{Gabaix (2014)} &= (1-m) \tilde{E}_{t-1} x_t + m \mu_x, \quad m < 1 \text{ endogenous} \\
\text{Afrouzi et al. (2021)} &= \alpha x_t, \quad \alpha > 1 \text{ endogenous} \\
\text{sticky information} &\overset{w.p.\ \lambda}{=} \tilde{E}_{t-1} x_t, \quad \overset{w.p.\ 1-\lambda}{=} \mu_x
\end{aligned}$$

- Whether others fit says if it's about learning **dimension** or **type**

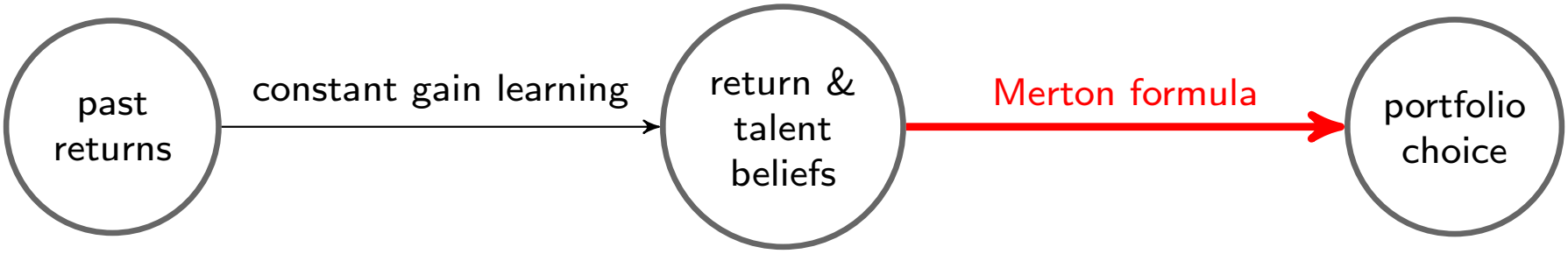
Comment #2: frictionless portfolio choice?



- Myopic portfolio choice a la Merton implies:

$$\frac{\partial \text{portfolio share}_t}{\partial \tilde{E}_t r_{t+1}} \approx \frac{1}{(1+\nu)\gamma\sigma^2} \approx \frac{1}{(1+\nu_x)\gamma\sigma^2}$$

Comment #2: frictionless portfolio choice?



- Myopic portfolio choice a la Merton implies:

$$\frac{\partial \text{portfolio share}_t}{\partial \tilde{E}_t r_{t+1}} \approx \frac{1}{(1+\nu)\gamma\sigma^2} \approx \frac{1}{(1+\nu_x)\gamma\sigma^2}$$

- Giglio et al. (2021) puzzle:

$$\frac{\partial \text{portfolio share}_t}{\partial \tilde{E}_t r_{t+1}} = \psi \frac{1}{\gamma\sigma^2}, \quad \psi = \text{belief-action elasticity} \approx \frac{1}{10}$$

- See if model can match a **low belief-action elasticity**
  - maybe the return & talent learning can generate $\psi << 1$!
  - if not, how does $\psi << 1$ affect *quantitative* fit of other moments?

Conclusion

- This paper is worth a read!
  - timely, interesting, & fundamental topic
  - well-executed with nice connection b/t theory & empirics
- Two things to sort out:
  - whether we do (or don't) need constant gain learning
  - determine if model fits with a lower belief-action elasticity
    - both require taking the model to the data *quantitatively*
- Broader takeaways:
  1. non-FIRE beliefs are crucial for asset pricing facts
     - (e.g. Giglio and Kelly 2018; Augenblick and Lazarus 2018; Nagel and Xu 2019; Bordalo et al. 2019; Lochstoer and Muir 2020; D'Arienzo 2020; De la O and Myers 2021, ...)
  2. recognizing complexity of investors' learning is important
     - (e.g. Timmermann 1993; Martin and Nagel 2021)

Augenblick, Ned and Eben Lazarus (2018), "Restrictions on Asset-Price Movements Under Rational Expectations: Theory and Evidence."

Bordalo, Pedro, Nicola Gennaioli, Rafael La Porta, and Andrei Shleifer (2019), "Diagnostic Expectations and Stock Returns." *Journal of Finance*, 74, 2839–2874.

D'Arienzo, Daniele (2020), "Maturity Increasing Over-reaction and Bond Market Puzzles." *Working Paper*.

De la O, Ricardo and Sean Myers (2021), "Subjective Cash Flow and Discount Rate Expectations." *Journal of Finance*, Forthcomin.

Giglio, Stefano and Bryan T. Kelly (2018), "Excess volatility: Beyond discount rates." *The Quarterly Journal of Economics*, 133, 71–127.

Giglio, Stefano, Matteo Maggiori, Johannes Stroebel, and Stephen P. Utkus (2021), "Five Facts About Beliefs and Portfolios." *American Economic Review*, 115, 1481–1522.

Lochstoer, Lars A. and Tyler Muir (2020), "Volatility Expectations and Returns." *Working Paper*.

Martin, Ian and Stefan Nagel (2021), "Market Efficiency in the Age of Big Data." *Working Paper*.

Nagel, Stefan and Zhengyang Xu (2019), "Asset Pricing with Fading Memory." *Working Paper*.

Timmermann, Allan (1993), "How Learning in Financial Markets Generates Excess Volatility and Predictability." *The Quarterly Journal of Economics*, 108, 1135–1145.