**Research question**

- Why do not most of typical households and some rich participate in risky investments?

**Extensions on Merton (1969) budget constraint**

- We follow CRRA utility, but extend the budget constraints.
  - Consumption is for luxury goods consumption,
  - Households choose luxury consumption before investment.

**Budget constraint in our study**

- Households allocate resources to satisfy daily life cash outflows in three categories: basic, psychological, and self-actualization needs.
  - Basic needs are food, shelter, and security.
  - Psychological needs are to signal its superior social status.
  - Luxury goods consumption satisfy psychological needs.
  - Investments could fit in household’s self-actualization needs.
- Three needs are in a hierarchy of order, as in Maslow (1970).
  - Labor incomes cover cash outflows for basic needs.
  - Households borrow to maintain luxury goods consumption and expose debt payment dues (DPD).
  - Household investment returns to service DPD.
- Households may or may not earmark a cash reserve from wealth.
  - A cash reserve is to keep existing lifestyle cash outflows when households expose cash flow shocks.

**Two households: Self-disciplined vs. self-indulgence**

- **Self-disciplined** Household prioritizes financial safety.
  - Set Reserve > 0, so Wealth = Reserve = iWealth;
  - take temperate lifestyle (DPD1) s.t.
    \[(iWealth - Treasury1) \times Ret_{i,n} < DPD1 + Growth1, \] with Growth1 > 0.
- **Self-indulgence** Household prioritizes psychological needs.
  - Set luxury lifestyle (DPD2) as \( (Wealth) \times Ret_{i,n} = DPD2, \)
  - Reserve = 0, Treasury0 = 0, and Growth0 = 0.
  - Household will drop out of investment on any additional cash outflow \( (Wealth2) \times Ret_{i,n} < DPD2 + \epsilon. \)

**Proposition**

- Cash reserve is necessary to engage long-term risky investments. Or dropout happens on below-average returns.
  - Proof at page 14-15.

**Typical households and some rich don’t participate in risky investments because**

- They naturally allocate resources to satisfy luxury goods consumption before considering investments.
- Lack of cash reserves, households have to withdraw investments when investment returns are lower than their tolerance level.

**Self-disciplined households invest in risky assets in equilibrium as in Merton (1969)**

- **Self-disciplined** Household, with Reserve > 0
  - A low return \((Ret_{i,n} < \overline{Ret})\) causes cash outflow shortages
    \((iWealth1 - Treasury1) \times Ret_{i,n} < DPD1.\)
  - However, a cash reserve replenishes cash outflow gap.
    \((iWealth1 - Treasury1) \times Ret_{i,n} + Reserve1 > DPD1.\)
  - Household can practice mean-variance optimization in equilibrium and holds risky assets \(\alpha(P, t)\) as in (Merton 1969).
    \[\alpha(P, t) = \frac{\mu - \sigma^2}{\sigma^2}.\]

**Testable insight**

- Two investors share the same wealth \((Wealth1 = Wealth2)\).
- Investor1 sets a higher reserve \((Reserve1H > Reserve1\ell),\)
  - so investor1 lives a lifestyle of lower DPD \((DPD1 < DPD2).\)
- When the investment returns are above the mean level, both investors keep their engagements.
  - On the arrival of a certain low return, there must be
    \(iWealth1 \times Ret_{i,n} + Reserve1H > DPD2;\)
    \(iWealth1 \times Ret_{i,n} + Reserve1\ell < DPD2.\)
- Investor2 can keep its investment but investor2 has to withdraw.

**Two-player game design**

**Player 1:** Fixed income mutual funds choose high or low-risk assets.
**Player 2:** Investors with high or low tolerance on low returns.
Player 2 make decision after player 1’s decisions are public information.

**Empirical results**

- Why did fund flow disappear in 1992-2002?
  - We split funds to institutional class and retail investor class.
- **T7-1:** When SIUSTGF took more credit risk than suggested by the benchmark in 1992-2002, cross-category flow differences were insignificant for institutional or retail investors.
- **T7-2:** When SIUSTGF follow benchmark in 2003-2015, cross-category flow differences were insignificant for institutional investors because of higher reserve. The flow differences were significant for retail investors because some of them have low reserves.
- **T7-3:** retail investors rather than their advisors make decisions.
- **T8:** Cross-category flow difference is significant when funds delivered left tail returns, captured by interaction term.
- **T9:** Cross-category flow difference is significant when funds return performance contribution analysis.
- **T10:** Fund return performance contribution analysis.