# Waiting for the gain to come: How variance and skewness shape investors' selling behavior

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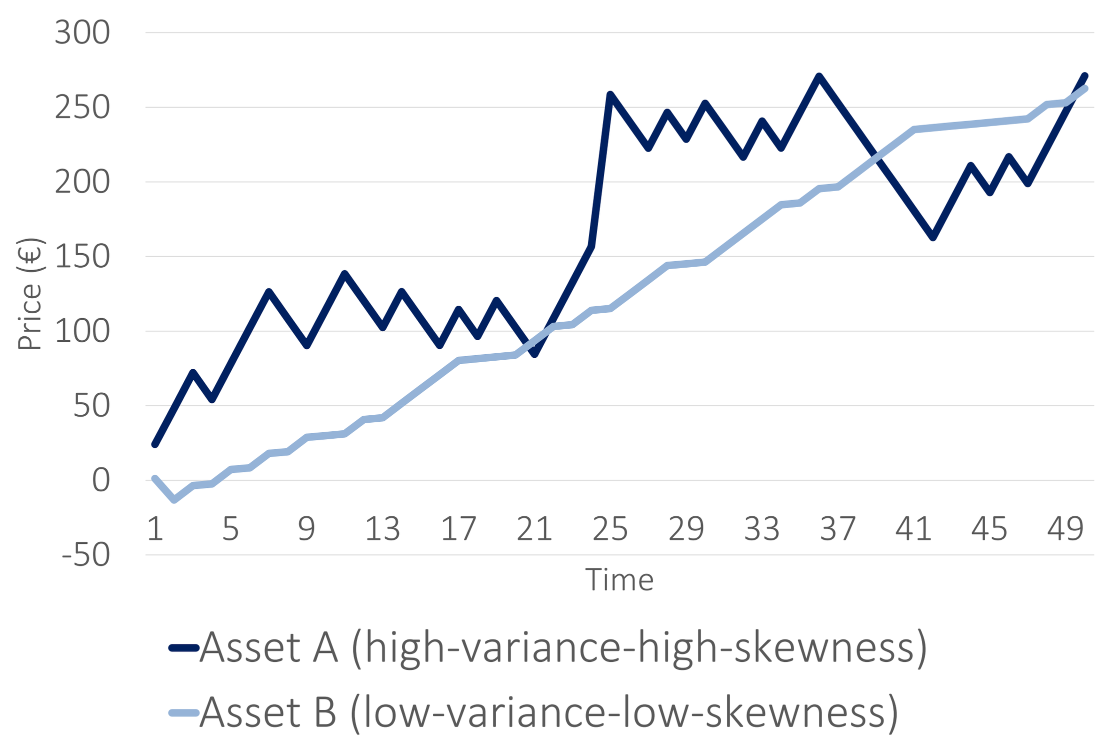
## Executive Summary


- There exists strong empirical evidence for the disposition effect, i.e. the tendency of investors to sell winners more frequently than losers
- We demonstrate that investors' selling behavior is strongly affected by higher moments of return, namely variance and skewness
- Investors show opposed selling behaviors in high-variance-high-skewness (HVHS) and low-variance-low-skewness (LVLS) assets
  - ➢ Investors are 41 (54) percent more (less) likely to sell a HVHS asset trading at a gain (loss) relative to a LVLS asset trading at a gain (loss)
  - ➢ This translates into a high disposition effect for HVHS and an almost insignificant disposition effect for LVLS assets
  - ➢ Our findings can be linked to the concept of realization utility


## 1. Motivation

- Consider the role of variance and skewness:
  - Asset A's and asset B's return distributions differ in variance and skewness but not in expected value




- If the investor bought the asset in t=1, then there should be no difference in the selling probability of asset A and asset B since both are winner assets
- However, the HVHS asset offers the investor a large but ephemeral upside potential and if she is aware of this, she should stay in the market in the moderate gain/loss region and cash-in extreme gains (exit strategy)
- This **exit strategy** *should*
  - ➢ drive a wedge between the proportion of gains (PGR) and the proportion of losses (PLR) realized
  - ➢ thereby increasing the disposition effect (DE=PGR-PLR) for HVHS assets relative to LVLS assets

## 2. Methodology

- We use trading and portfolio data of 22.000 retail investors in Germany from 2010 to 2015
- Each month, assets are sorted into variance and skewness deciles based on their past year variance and skewness (Kumar, 2009)

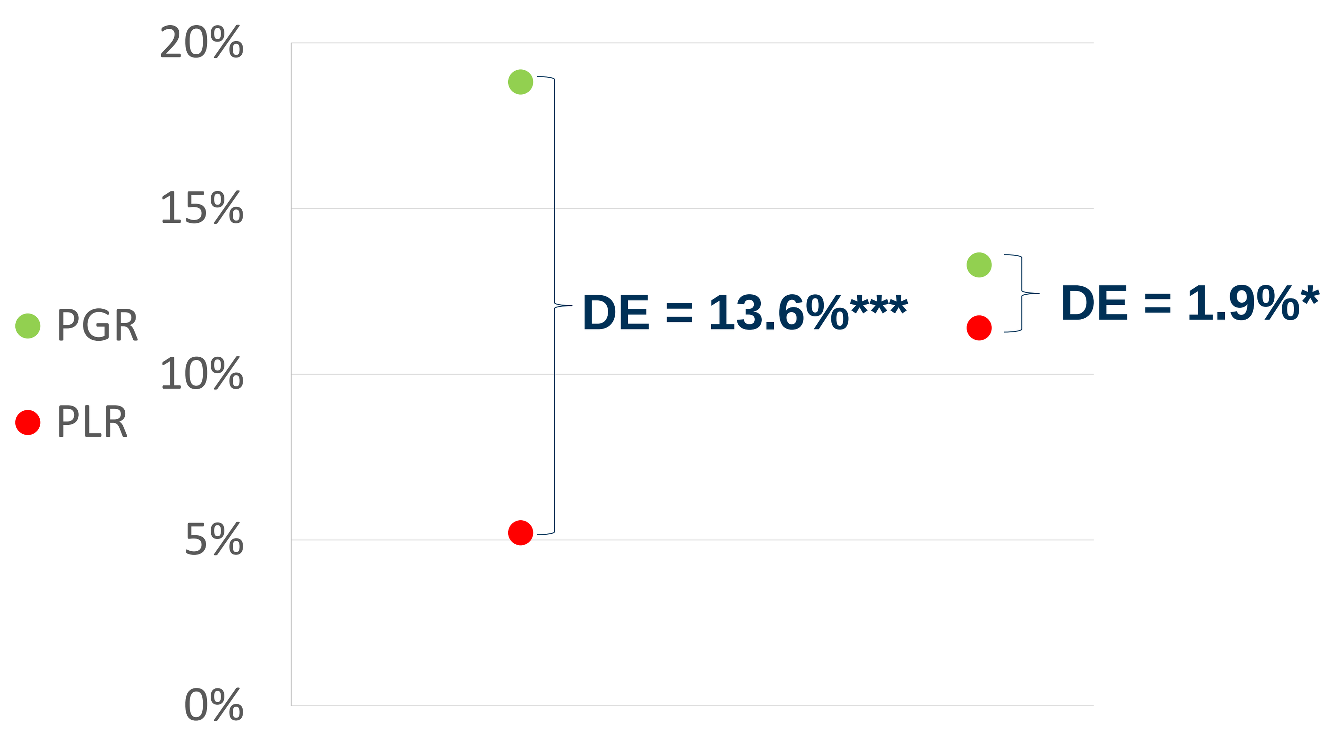
## 2. Methodology (cont.)

| HVHS | LVLS |
|---|---|
| High Volatility (decile 10) | Low Volatility (decile 1) |
| High Skewness (decile 10) | Low Skewness (decile 1) |

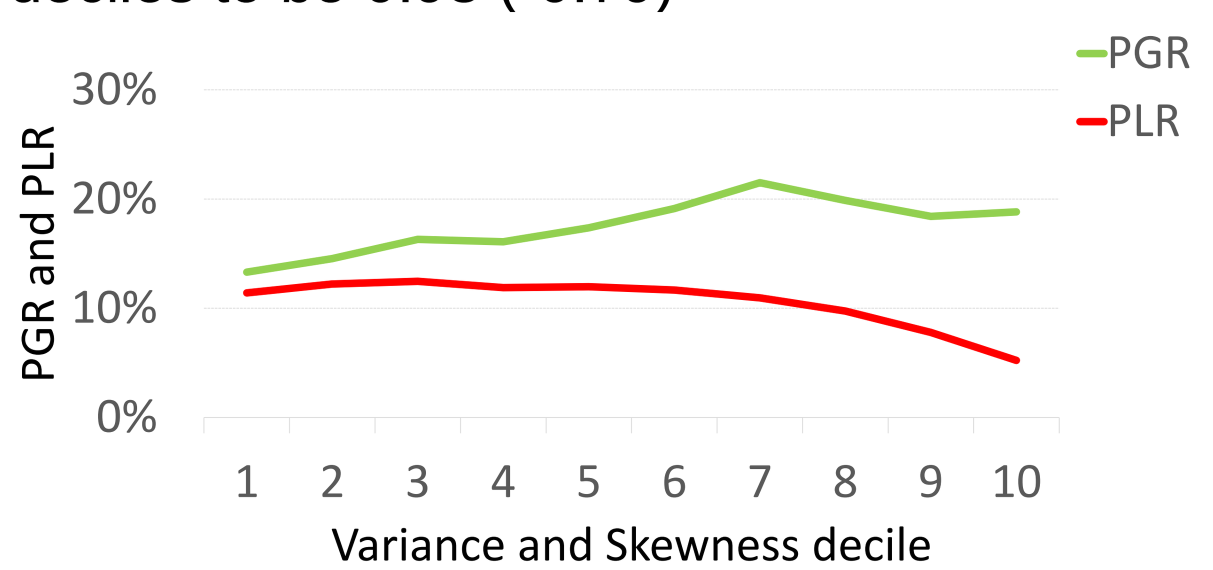
- We then analyze investors' trading behavior:

$$Sale_{ijt} = \beta_0 + \beta_1 Gain_{ijt} + \beta_2 HVHS_{jt-1} + \beta_3 Gain_{ijt} HVHS_{jt-1} + e_{ijt}$$

## 3. Main Result




- ➢ Investors are **41 percent more likely to sell a gain** in a HVHS than in a LVLS asset
- ➢ Investors are **54 percent less likely to sell a loss** in a HVHS than in a LVLS asset
- ➢ Disposition effect in HVHS assets is more than **seven times larger** than the DE in LVLS assets
- ➢ Moreover, we find the correlation between PGR (PLR) and variance and skewness along deciles to be 0.93 (-0.79)




## 4. Channel: Realization Utility

- Investors experience a burst of realization utility at the moment of sale (Barberis and Xiong, 2012)
- If an investor reinvests the proceeds of the sale, she will not experience realization utility (Frydman, Hartzmark, and Solomon, 2018)
- If investors employ the exit strategy because they crave for realization utility, then they should be less willing to reinvest after realizing a HVHS gain than after realizing a LVLS gain
- ➢ **Investors are 5% to 11% less likely to reinvest after realizing a HVHS gain compared to a LVLS gain**
- Other channels e.g. rank (Hartzmark, 2015), attention (e.g. Barber and Odean, 2008), or delegation (Chang, Westerfield, and Solomon, 2016) are not sufficient to explain our results

## 5. Robustness

- The effect of variance and skewness on investors' selling behavior holds
  - ➢ across asset classes (stocks, equity mutual and passive equity funds)
  - ➢ for different investor clienteles

## Questions? Reach out!


- sbernard@mail.uni-mannheim.de
- https://us04web.zoom.us/j/8016290718?pwd=RktRRUVZdjMrQ2lDenRWUTNhTUFEZz09 (Zoom)
- Password: SDX985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