Portfolio Choice: Stated and Revealed Preferences

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Issue

Since 2007, the European Directive MiFID imposes a code of conduct to ensure the maximum protection of the investor. Each investor who wishes to make an investment or subscribes to an insurance product with an investment component must complete a MiFID questionnaire to guide him to suitable investment solutions.

Therefore, investors are expected to give relevant and honest answers to the questionnaire, so that the Stated Preferences (SP) estimated from the questionnaire are consistent with the Revealed Preferences (RP) corresponding to actual portfolio choices.

The objective here is to evaluate the consistency between such stated and revealed preferences, to measure the magnitude of the change in revealed preferences following the questionnaire, and to evaluate the optimality of RP using SP as a benchmark.

Model and definitions

Investor and portfolio

•Investor selects *N* assets (funds) and optimizes their weights ω

- Stochastic final value (per € invested) of portfolio at horizon *T*: $W^T = \sum_{n=1}^{N} \omega_n R_n^T$

•Investor is characterized by a CRRA utility function with risk aversion θ^T and loss aversion λ given by:

$$U(W^T;\theta^T,\lambda) = \begin{cases} \dfrac{(W^T)^{1-\theta^T}-1}{1-\theta^T}(1+\lambda \mathbb{I}_{W^T<1}), & \text{for } \theta^T \geq 0,\ \theta^T \neq 1 \\ (\ln(W^T))(1+\lambda \mathbb{I}_{W^T<1}), & \text{for } \theta^T = 1 \end{cases}$$

•Each investor maximizes his/her expected utility

Estimation of the preference parameters

•The answers to the questionnaire allow to estimate risk aversion θ^T and loss aversion λ

Estimation and prediction of log returns using Hidden Markov Model « HMM »

•The log-return series modeled by HMM are characterized by:

- Fat tails and asymmetric distribution.
- Variation of expected returns, volatility and correlation over time.

•Simulation of the cumulated log-returns

- 100,000 simulations of cumulative log-returns taking into account the dynamics of the regimes.

Definition of Stated and Revealed portfolios

•2 stated portfolios and 2 revealed portfolios

- Stated *universal* portfolio using a list of funds chosen by RD, identical for all investors

  $P^*_{S,uni}\left(\theta^T,\lambda,R^T_{uni}\right) \rightarrow \omega^*_{S,uni}, W^{T*}_{S,uni}$

- Stated *customized* portfolio using the list of funds chosen by the investor

  $P^*_{S,cust}\left(\theta^T,\lambda,R^T_{cust}\right) \rightarrow \omega^*_{S,cust}, W^{T*}_{S,cust}$

- Revealed portfolio before questionnaire

  $P_{R,beforeQ}\left(R^T_{cust}\right) \rightarrow \omega_{R,beforeQ}, W^T_{R,beforeQ}$

- Revealed portfolio after questionnaire

  $P_{R,AfterQ}\left(R^T_{cust}\right) \rightarrow \omega_{R,AfterQ}, W^T_{R,AfterQ}$

Definition of Cost of non optimality

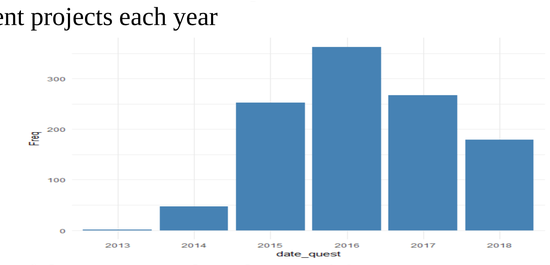
- The cost of non optimality is measured by CV (Compensating Variation)

$$\mathbb{E}U\left(W^T_R.(1+CV),\theta^T,\lambda\right) = \mathbb{E}U\left(W^T_{S,cust},\theta^T,\lambda\right)$$

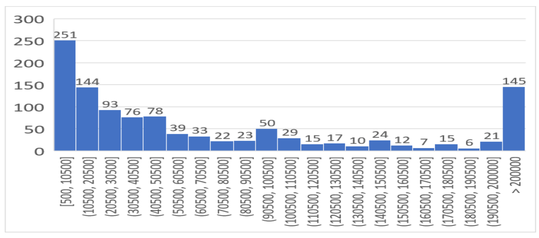
Data

Sample of 1110 investors who answered the questionnaire in 2013- 2018

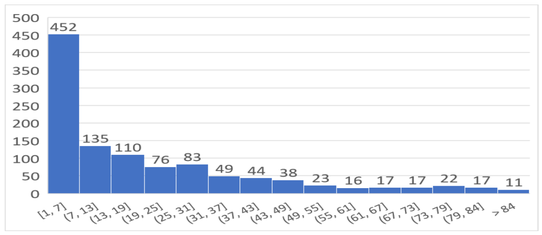
➢≈220 new investment projects each year



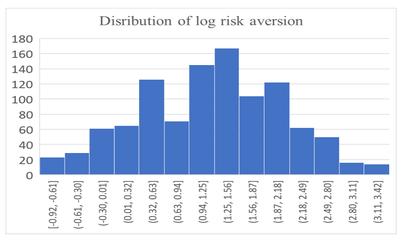
➢The amount of 72% of the projects is less than 100k€

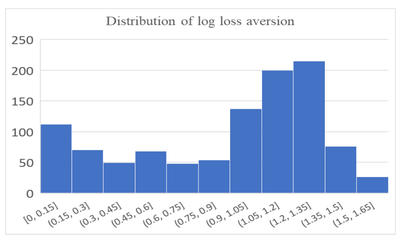


➢40 % of the investors adjust their portfolio shortly after the questionnaire [1-7 days], 75% within 1 month



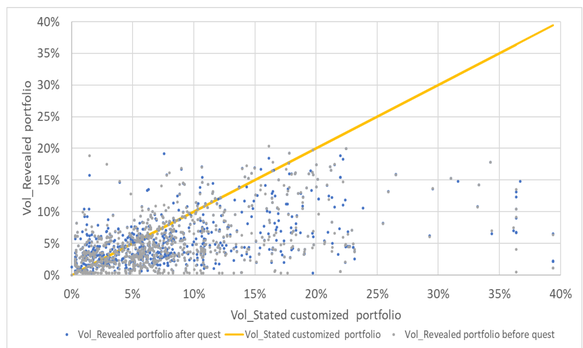
➢Risk aversion and loss aversion parameters are approximately log-normally distributed

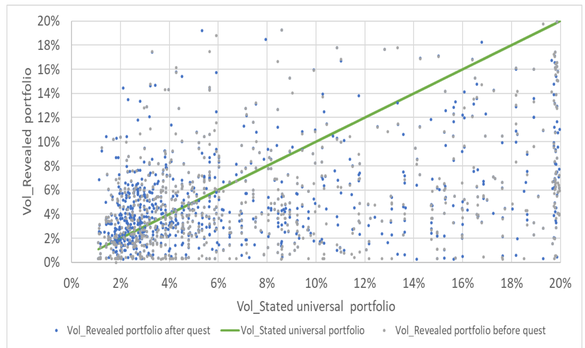


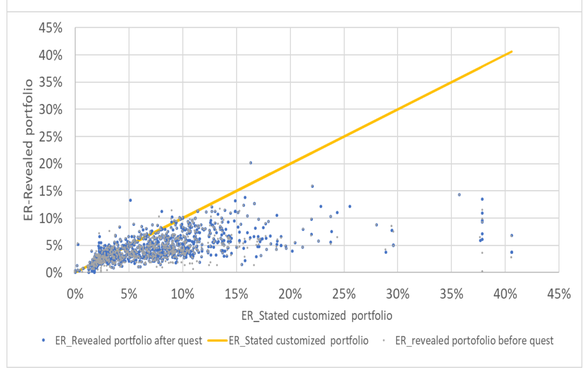


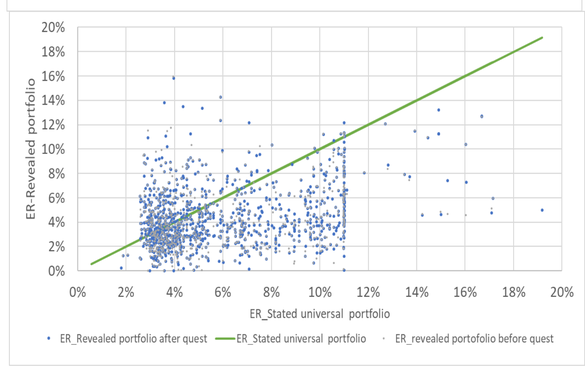
Results

1. RP portfolios less risky than SP; expected returns lower; difference larger with customized than universal.

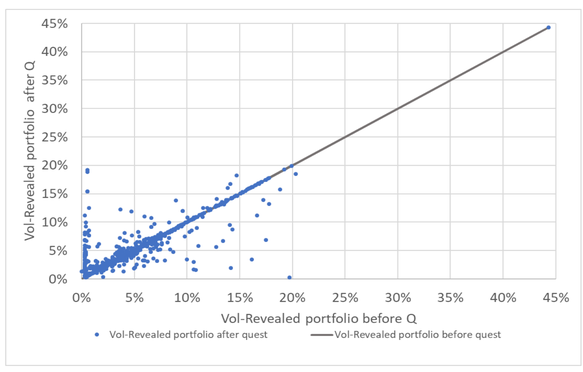


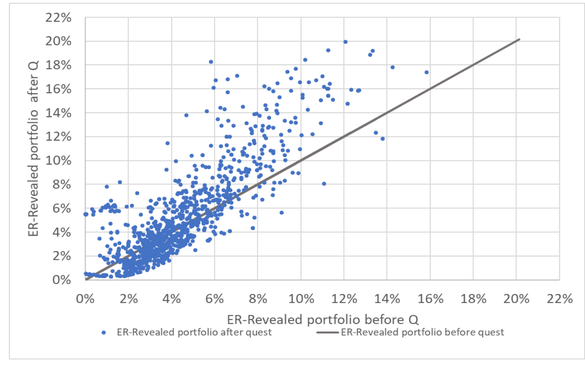




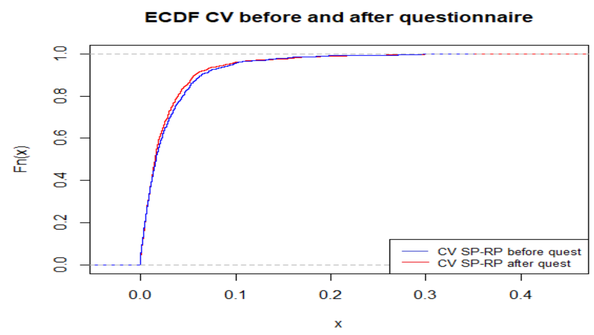


2. The questionnaire has little influence on the risk level of investors' portfolios (RP)

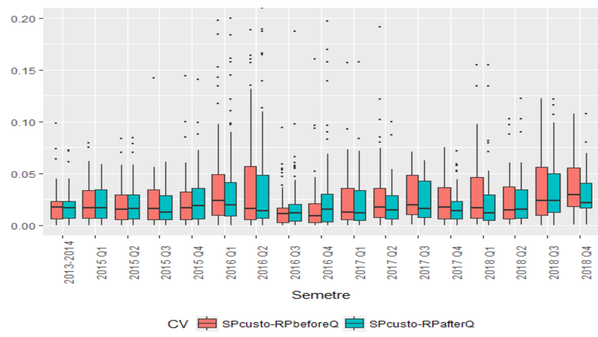




3. The questionnaire reduces slightly the cost of non-optimality (order 1 stochastic dominance)



4. Loss of optimality of RP compared to SP is not stable over time



Conclusions

The MiFID questionnaires are supposed to help financial advisors to measure investors' Stated Preferences and use them to provide their financial advice, implying that Revealed Preferences should adjust to the output of the questionnaire. Our different measures (vol, expected return, CV) show that the adjustment is very limited, and the next steps will be to understand the reasons for this under adjustment.

Main references

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Acknowledgements

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