

SOPHISTICATION, LEARNING AND THE DISPOSITION EFFECT

OBSERVATOIRE DE L'EPARGNE EUROPEENNE
PARIS
FEBRUARY 15TH 2011



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Summary

- Disposition effect: definition and characterization
- Theoretical explanations
- Data and methodology
- Sophistication and the disposition effect
- Does sophistication and learning mitigate the disposition effect?
- Conclusion

Disposition effect

- Tendency to sell winners too early and to hold on to losers too long (Shefrin et Statman, 1985)
 - « Winners / Losers » : depend on the reference point

Consequence: Suboptimal portfolio choice and poor performance (Odean, 1998)

Disposition effect

- Well documented bias
- Representative investor
 - Odean (1998) : **US**, Shapira and Venezia (2001) : **Israël**, Grinblatt and Keloharju (2001) : **Finland**, Chen *et al.* (2007) : **China**, Shu *et al.* (2005) : **Taiwan**, Brown *et al.* (2006) : **Australie**, Boolell-Gunesh. S. *et al.* (2009) : **France**.
- Individual level
 - Feng and Seasholes (2005) / Chen *et al.* (2007) : **China**, Dhar and Zhu (2006) : **US** and Weber and Welfens (2006), **Germany**.
- Conclusion: large heterogeneity among investors
 - Sophistication (income, education, initial portfolio, trading experience etc.) may explain the intensity of the effect

Explanations

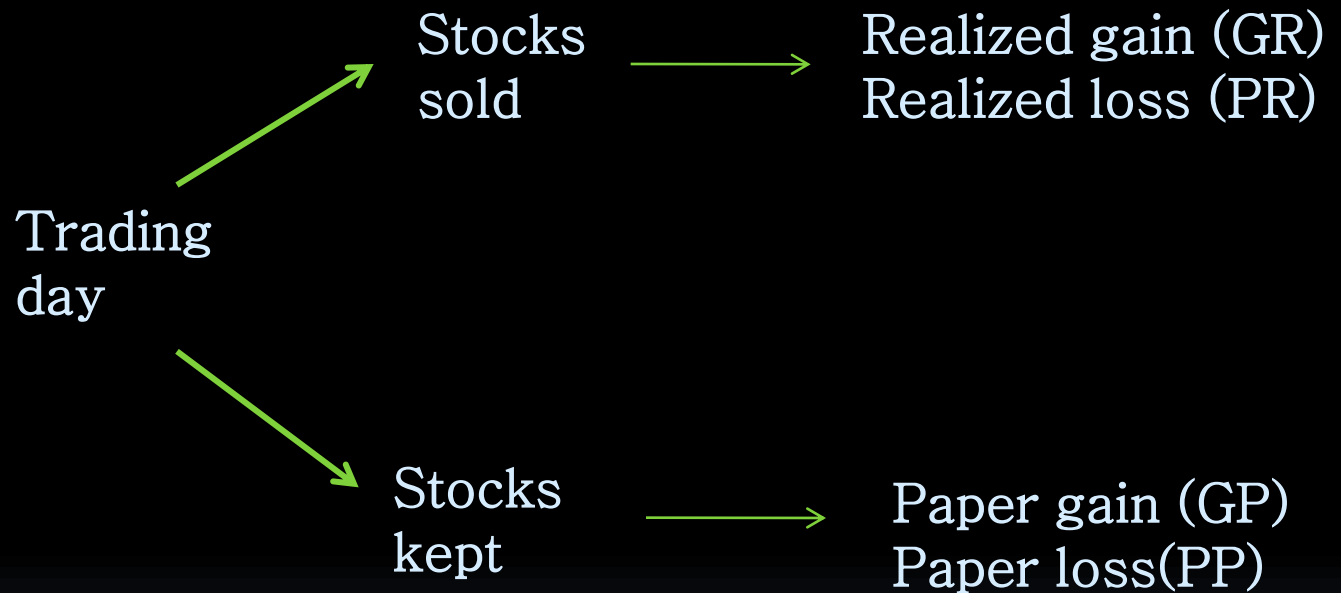
- Portfolio adjustment
- Irrational belief in mean reversion
- Seeking proudness and regret avoidance
- Pain to close a losing mental account

Data

- More than 9 millions trades over 1999-2006
- 92603 individual investors
- Stocks, bonds, warrants
- Demographics (age, location, etc.), account type (standard and/or tax-free PEA)
- Present study on sophistication and learning : 20379 investors: at least 4 years of trading per investor (representing almost 6 millions trades)

Variables	Mean	Std Dev
Age	41,73	13,45
Activity (years)	6,82	1,21
Trade amount (€)	3029	4741
Nb. of trades/investor	284,09	661,19

Méthodology (Odean, 1998)



Individual disposition effect

Proportion of realized gains

$$\text{PGR} = \text{GR} / (\text{GR} + \text{PR})$$

Proportion of realized losses

$$\text{PLR} = \text{GP} / (\text{GP} + \text{PP})$$

Disposition effect : $\text{ED} = \text{PGR} - \text{PLR}$

Variables	Mean	Std-Dev	Skewness	Kurtosis
PGR	0.197	0.116	1.46	5.98
PLR	0.098	0.075	1.81	8.68
ED	0.099	0.115	0.96	6.29

Sophistication and disposition effect

Explanatory variables:

- **Age**
- **Gender**
- **Trading intensity (volume)**
- **Trading frequency**
- **Sophistication**
 - International diversification (ISIN \neq "FR...") : 86.04% of investors
 - Bonds : 11.88%
 - Warrants : 24.68%
 - Two accounts : 61.08%

Sophistication and disposition effect

Results :

- All categories are subject to the DE
- Econometrics :
 - Disposition effect **decreases** with age, sophistication
 - Women are less prone to the DE
 - Disposition effect **increases** with the delay between trades

Warning : each investor is characterized by her own DE (individual level).

Cross-section analysis

Variables	OLS Estimates	Model 2	Model 3	Model 4	Model 5
Intercept	.126*** (9.47)	.118*** (8.95)	.986*** (7.60)	.108*** (8.28)	.107*** (8.24)
Ln Trade Size	.0020* (1.91)	.0022* (2.12)	.0021** (2.01)	.0024** (2.33)	.0020* (1.90)
Ln Delay	.0305*** (38.84)	.0312*** (40.51)	.0320*** (42.43)	.0317*** (41.36)	.0325*** (43.27)
Ln Age	-.0357*** (-14.26)	-.0366*** (-14.77)	-.0349*** (-14.02)	-.0379*** (-15.22)	-.0362*** (-14.63)
Gender	-.0094*** (-4.56)	-.011*** (-5.41)	-.0118*** (-5.76)	-.0115*** (-5.63)	-.0115*** (-5.62)
Foreign Trade	-.0145*** (-6.32)	-.0161*** (-7.02)			
Bonds	-.013*** (-5.36)		-.016*** (-6.89)		
Warrants	-.0057*** (-3.09)			-.0086*** (-4.68)	
Two Accounts	-.0099*** (-6.25)				-.0111*** (-7.08)
R ²	0.1054	0.1015	0.1015	0.1003	0.1016
Obsv.	20379	20379	20379	20379	20379

Learning and the disposition effect

Now, individual DEs change over time.



Does the bias decrease over time ?
Panel data analysis

Results :

- Learning effect
- Sophisticated individuals correct more quickly the bias
- http://www.mfa2011.com/final_program.php

Conclusion

- Study on the largest European database
- Heterogeneity among investors
- Direct measures of sophistication reveal the link between sophistication and DE level
- Sophistication is also important in the dynamics of the DE. Sophisticated investors learn more quickly.