

# Who takes risks when and why: Determinants of changes in investor risk taking

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“The financial crisis entered a potentially dangerous new phase on Wednesday when many credit markets stopped working normally as investors around the world frantically moved their money into the safest investments, like Treasury bills.”

(New York Times, September 18, 2008)

“Many [investors] have headed for the exits: Investors pulled a record \$72 billion from stock funds overall in October alone...”

(Wall Street Journal, December 22, 2008)

“Renewed Risk Aversion Hits Financial Markets”

(Headline, Wall Street Journal, August 17, 2009)

Risk taking behavior is governed by expectations and risk attitudes  
(see e.g.: Sarin/Weber, EJOR, 1993, Jia et al., MS, 1999; Weber, E. et al., JBDM, 2002)

$$\text{Risk Taking} = f(\text{Return Expectations}; \text{Risk Attitude}; \text{Risk Expectations})$$

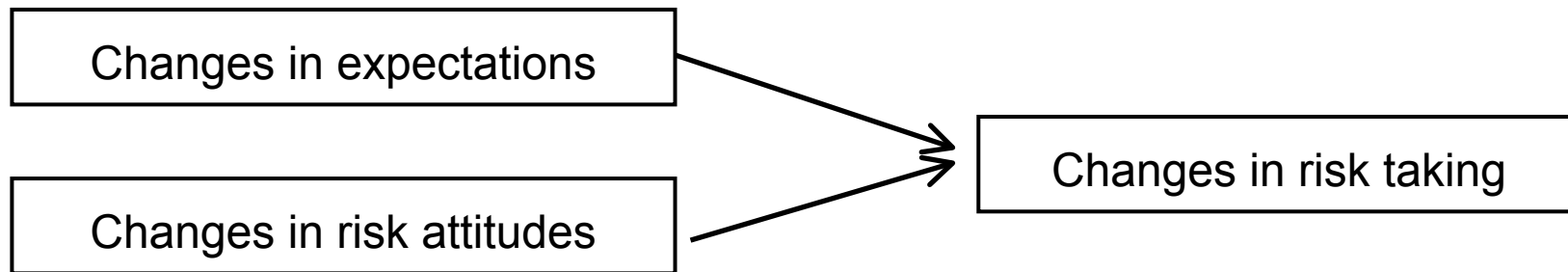
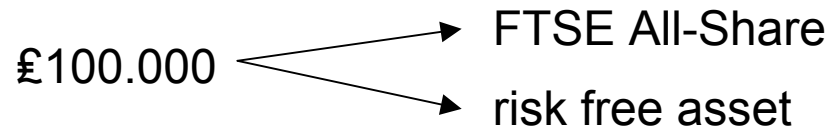


- Do risk taking and its main determinants in an investment context vary over time?
- What drives changes in risk taking behavior in an investment context?

$$\Delta \text{Risk Taking} = f(\Delta \text{Return Expectations}; \Delta \text{Risk Attitude}; \Delta \text{Risk Expectations})$$

*(Extensive literature on changes in separate variables)*

(Changes in) Risk Taking:



## 1. Financial risk taking behavior changes substantially over time

(see e.g. Staw, OBHP, 1976; Thaler/Johnson, MS, 1990; Weber/Zuchel, DA, 2005; Brunnermeier/Nagel, AER, 2008; Malmendier/Nagel, WP, 2008)

## 2. Risk attitudes are fairly stable over time

(see e.g. Harrison et al., Applied Financial Economics Letters, 2005; Baucells/Villasis, WP, 2006; Sahm, WP, 2007; Klos, WP, 2008; Andersen et al., Int. Economic Review, 2008)

## 3. Expectations vary over time

### a. Return expectations vary over time

(see e.g. DeBondt, Int. Journal of Forecasting, 1993; Shiller et al., Review of Economics and Statistics, 1996; Glaser et al., RF, 2007; ...)

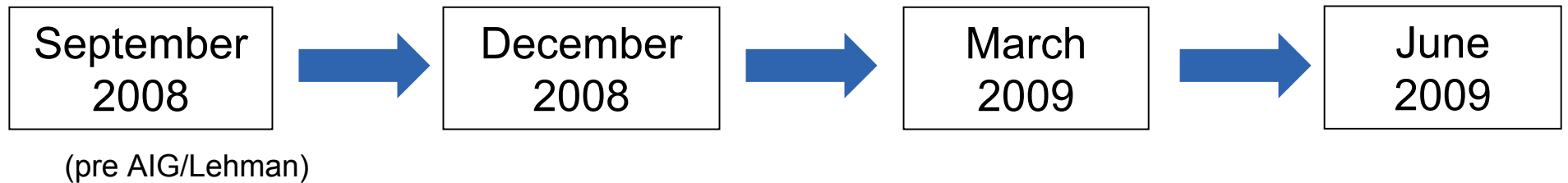
### b. Risk expectations vary over time

(see e.g. Weber/Milliman, MS, 1997; Mellers et al., Choice, Decision and Measurement, 1997; Loewenstein et al., Psych. Bulletin, 2001;...)

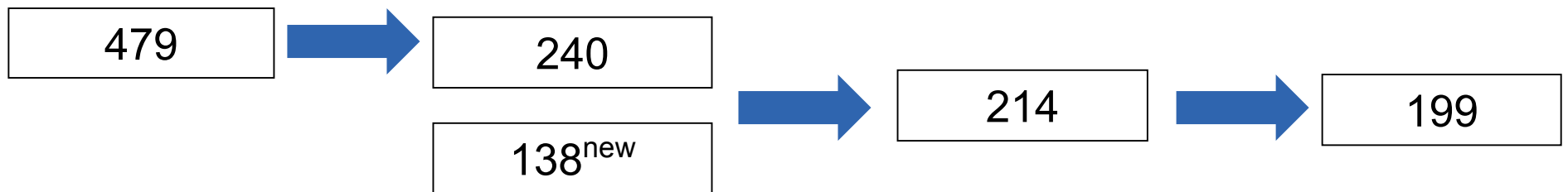
## 4. Changes in financial risk taking behavior are driven by changes in expectations

## Questionnaire Study with Barclays Wealth

Timeline:



Participants:



Subjects receive a personalized investment profile in return for participation

- **Risk taking:** £100.000
  - FTSE All-Share
  - risk free asset

- **Risk attitude**

- 3 self assessments:

1	.....	7
○	.....	○
(strongly disagree)	.....	(strongly agree)

- **Return expectations (Own vs. Market)**

- Best estimate: ...%
- Self assessment:

1	.....	7
○	.....	○
(extremely bad)	.....	(extremely good)

- **Risk expectations**

- Upper/Lower bounds:
  - ...%
  - ...%
- Self assessment:

1	.....	7
○	.....	○
(strongly disagree)	.....	(strongly agree)

- **Past Performance**

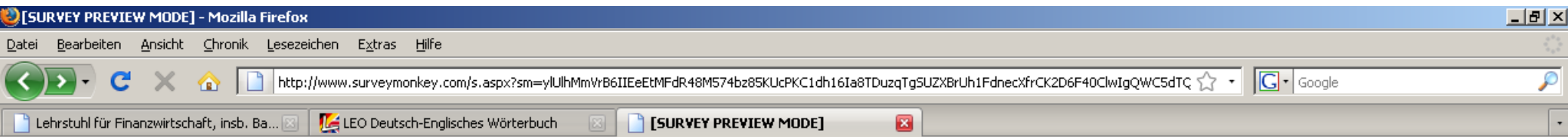
- Best estimate: ...%
- Self assessment:

1	.....	7
○	.....	○
(strongly disagree)	.....	(strongly agree)

- **Others (age, gender, income, )**



- **Risk taking:**



1. Please think carefully about the following question.

Imagine you have a total investable wealth of £100,000 and you could invest this amount either in a risk-free investment with a safe interest rate of 4% or into the UK stock market (FTSE all-share).

How much would you invest in the in the UK stock market (FTSE all-share)?

Please enter your response as a percent: for example X% as X.

Prev

Next

- **Risk attitude**

### 3 items from psychometrically validated questionnaire

(Likert scales from 1=Strongly Disagree to 7=Strongly Agree)

- I have invested a large sum in a risky investment for the excitement of seeing whether it went up or down in value.
- **It is likely I would invest a significant sum in a high risk investment.**
- Compared to other people, I am prepared to take higher financial risks.
- In order to achieve high returns I am willing to choose high risk investments.
- I am willing to risk a significant amount of my wealth in order to get a good return.
- **I am a financial risk taker.**
- **Even if I experienced a significant loss on an investment, I would still consider making risky investments.**
- I enjoy making speculative investments in specific assets with portions of my wealth.

- **Expectations:**

Risk and return expectations

- 3 months
- Numerical and subjective
- Own portfolio and benchmark (FTSE-ALL)



21. In the next questions, we would like you to make three estimates of the return on your Barclays Stockbrokers portfolio at the end of the next 3 months.

- Your **best** estimate should be your best guess
- Your **high** estimate should very rarely be lower than the actual outcome of your portfolio (about once in 20 occasions)
- Your **low** estimate should very rarely be higher than the actual outcome of your portfolio (about once in 20 occasions)

Please enter your response as a percentage change, i.e. a rise of X% as X and a fall of -X% as -X.

Best estimate:

High estimate:

Low estimate:

22. How would you rate the returns you expect from your Barclays Stockbrokers portfolio in the next 3 months?

Extremely bad    «    <    Neither bad nor good    >    »    Extremely good

Response

23. Over the next three months how **risky** do you think the investments in your Barclays Stockbrokers portfolio are?

Not risky at all    «    <    Moderately risky    >    »    Extremely risky

Response

- **Past Performance:**

- Numerical and subjective
- Own portfolio vs. benchmark (FTSE-ALL)



10. What do you think the return of your Barclays Stockbrokers portfolio over the **past three months** was?

Please provide your best guess.

Please enter your response as a percentage change, i.e. a rise of X% as X and a fall of -X% as -X.

11. How would you **rate** the returns of your Barclays Stockbrokers portfolio over the **past three months**?

Extremely bad



Neither good nor  
bad



Extremely good

Response



Prev

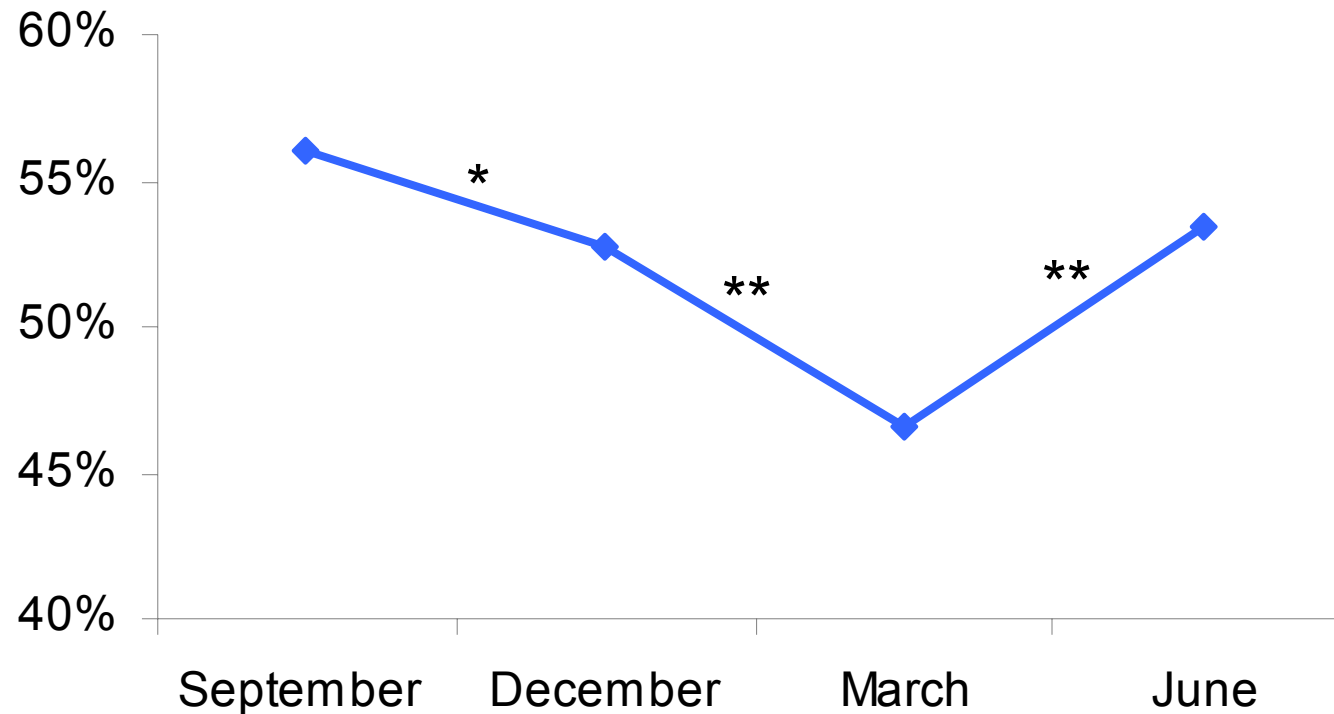
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- **Others:**

- Demographics
  - Age
  - Gender
  - Marital status
  - # of dependents
  - Gross income
  - Investable assets
- Overconfidence
  - Better Than Average
  - Illusion of Control
- Further dimensions of the banks FPA (Financial Personality Assessment) questionnaire
  - Composure
  - Delegation
  - Financial Expertise
  - Belief in Skills
  - Market Engagement

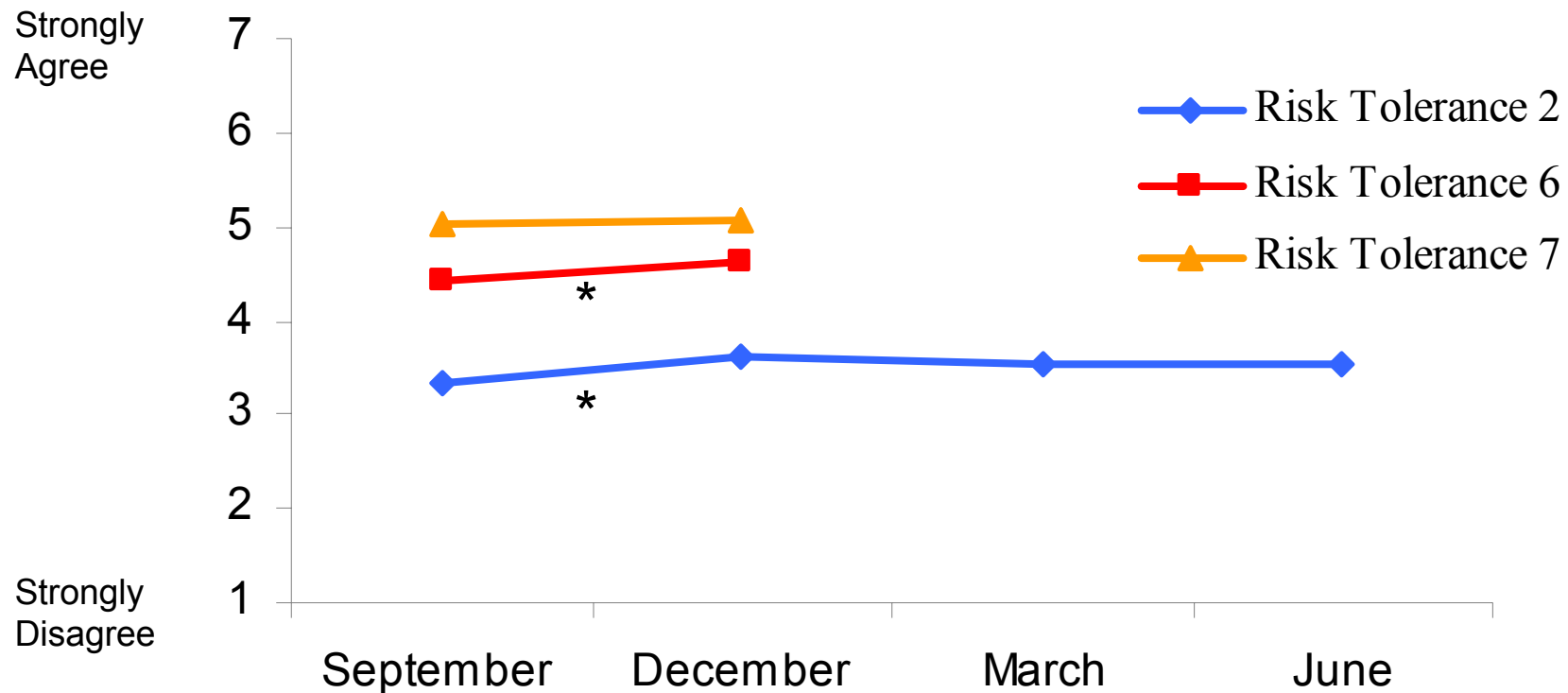
## Changes in risk taking

Percentage invested into FTSE All-Share



\* significant at the 5% level; \*\* significant at the 1% level

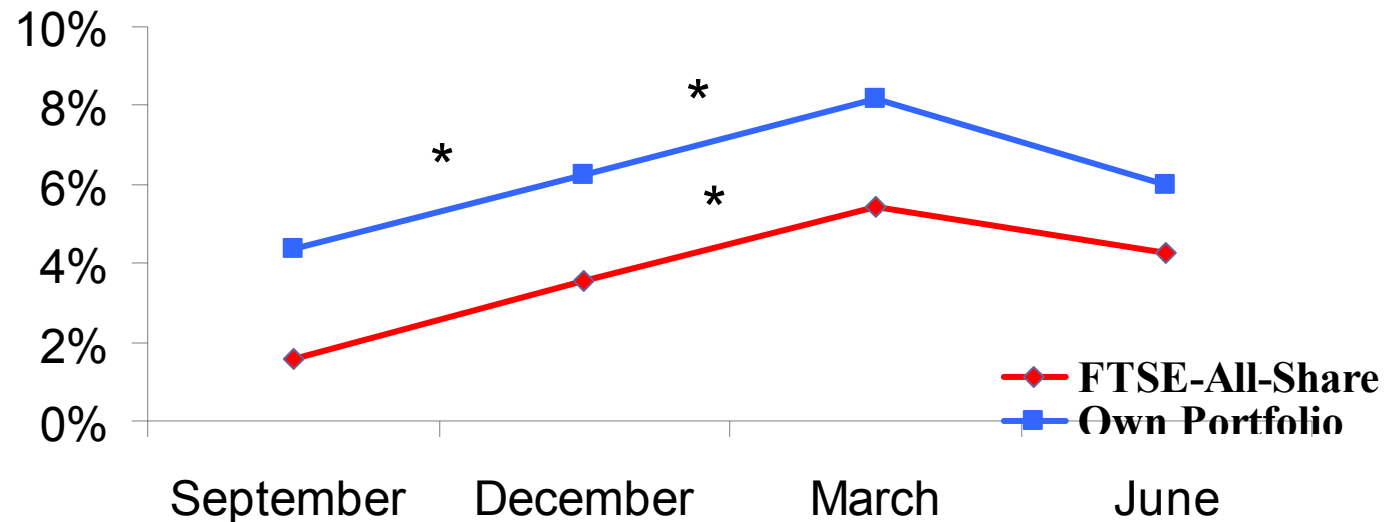
## Changes in risk attitude



\* significant at the 5% level; \*\* significant at the 1% level

## Changes in numerical return expectations

Average 3-month Return

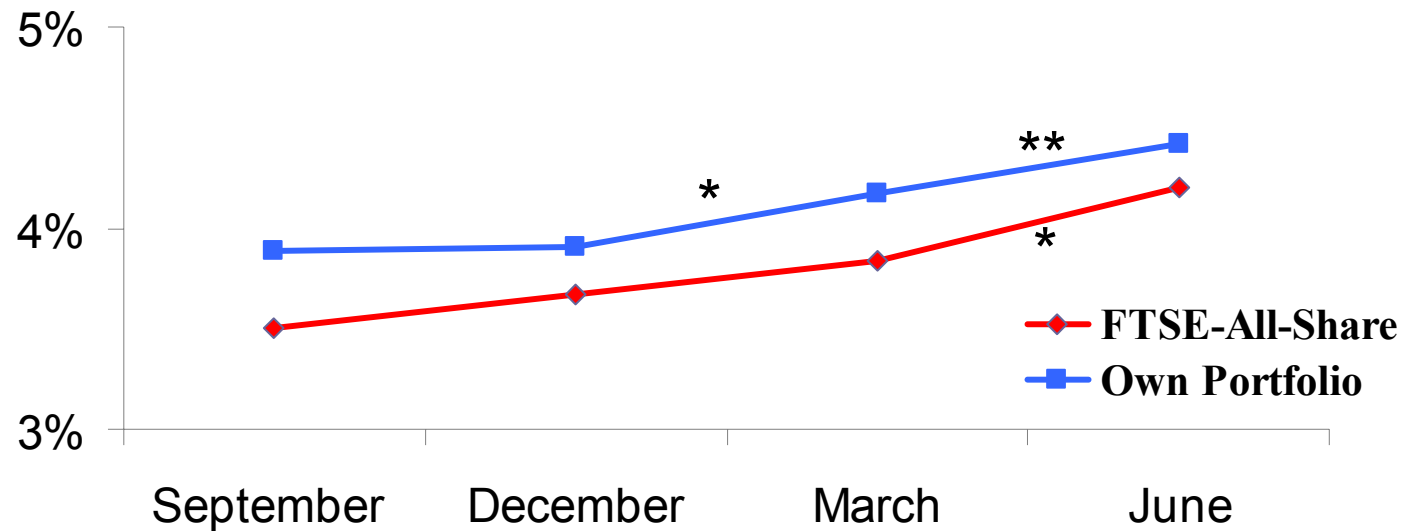


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## Changes in subjective return expectations

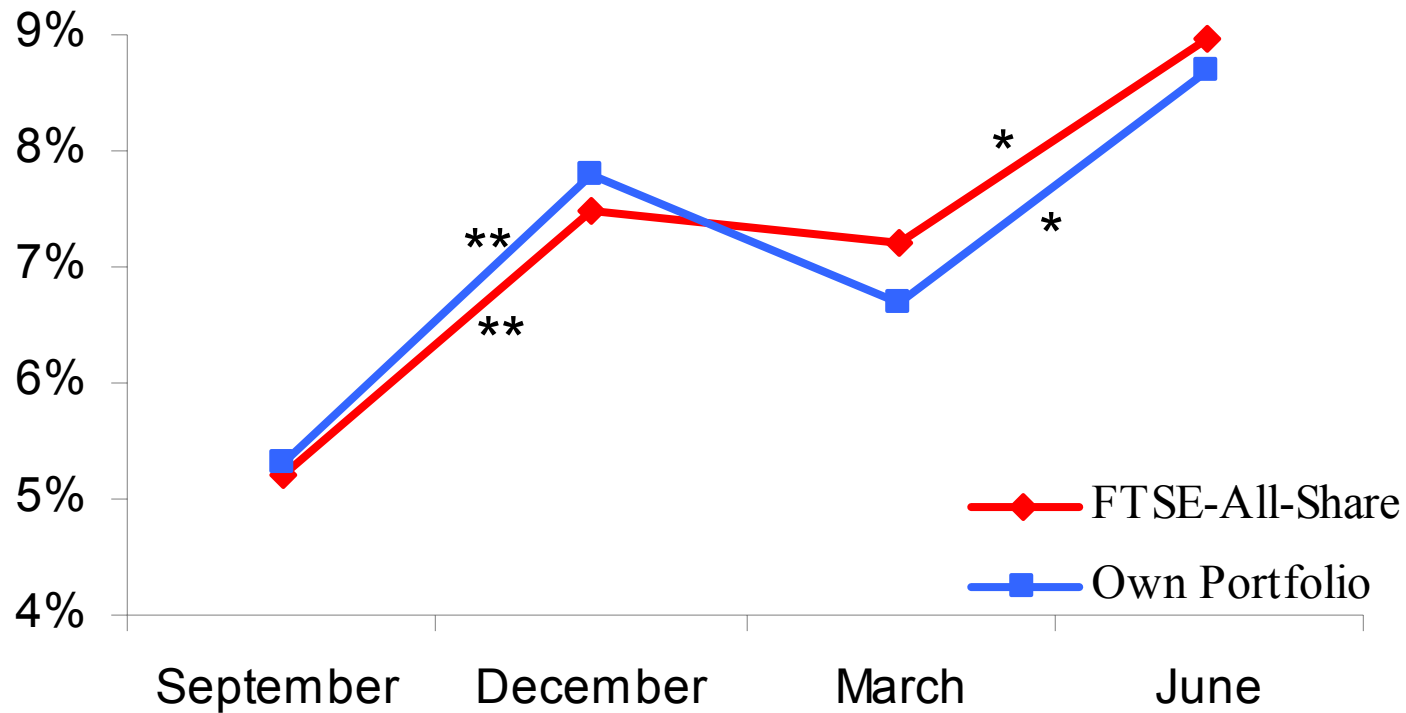
Average 3-month Return



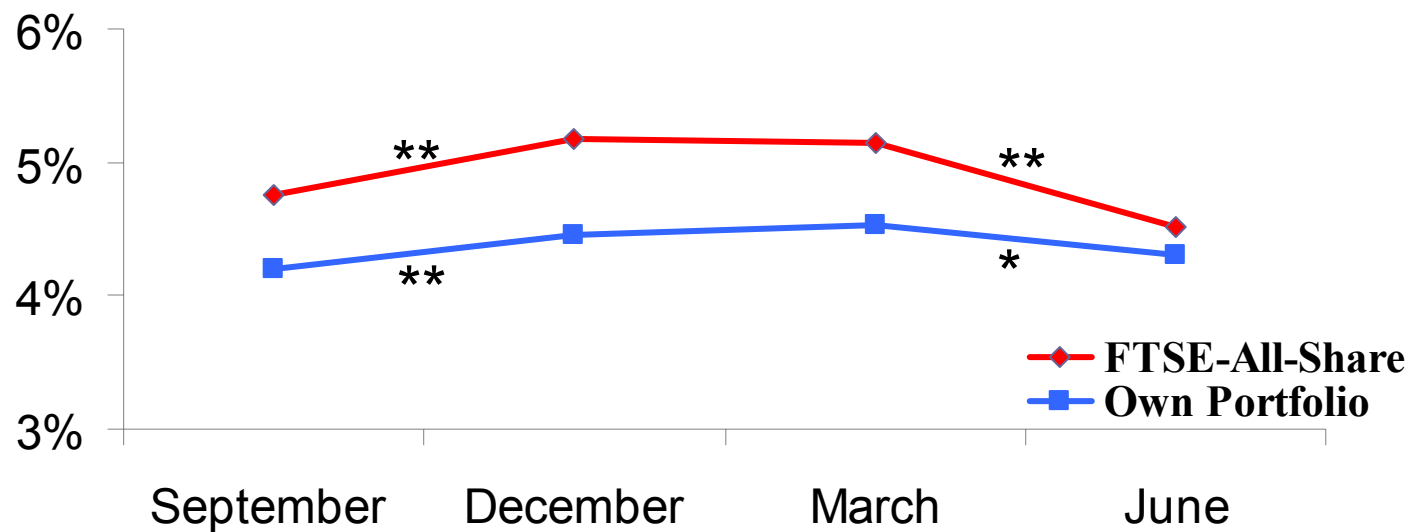
\* significant at the 5% level; \*\* significant at the 1% level

## Changes in numerical risk expectations

Average Volatility



## Changes in subjective risk expectations



\* significant at the 5% level; \*\* significant at the 1% level

# Results – What drives changes in risk taking

Diff. Risk Taking is the dependent variable in all models

Clustered tobit regressions (cluster over subjects)

	1	2	3	4	5
<i>Diff. Risk Attitude 2</i>	0.928 (0.153)		0.98 (0.116)	1.114 (0.1)	1.047 (0.121)
<i>Diff. Market-Return-Num</i>				0.099 (0.409)	0.035 (0.737)
<i>Diff. Market-Risk-Num</i>				6.467 (0.77)	9.884 (0.645)
<i>Diff. Market-Return-Subj</i>		2.648 (0.003)*	2.6174 (0.003)**	2.333 (0.009)***	2.320 (0.011)***
<i>Diff. Market-Risk-Subj</i>		-1.423 (0.08)*	-1.451 (0.073)*	-1.52 (0.071)*	-1.57 (0.064)**
<i>Diff. Past Perf. Market Num</i>				-0.095 (0.144)	
<i>Diff. Past Perf. Market Subj</i>					0.247 (0.734)
<i>Demographics</i>	<i>no</i>	<i>no</i>	<i>no</i>	<i>yes</i>	<i>yes</i>
<i>Constant</i>	7.992 (0.000)**	6,17 (0.005)*	6.086 (0.006)*	10.15 (0.138)	-2.214 (0.723)
<i>Observations</i>	572	569	569	527	527

\* significant at the 10% level;

\*\* significant at the 5% level;

\*\*\* significant at the 1% level

# Results – What drives changes in risk taking

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<i>Diff. Past Perf. Market Num</i>				-0.095 (0.144)	
<i>Diff. Past Perf. Market Subj</i>					0.247 (0.734)
<i>Demographics</i>					
<i>Dummy-Period 1</i>	-12.356 (0.153)	-10.139 (0.001)	-10.26 (0.001)	-13.661 (0.00)	-3.489 (0.283)
<i>Dummy-Period 2</i>	-14.483 (0.000)	-13.081 (0.000)	-12.89 (0.00)	-14.861 (0.00)	-3.094 (0.347)
<i>Constant</i>	7.992 (0.000)**	6.17 (0.005)*	6.086 (0.006)*	10.15 (0.138)	-2.214 (0.723)
<i>Observations</i>	572	569	569	527	527

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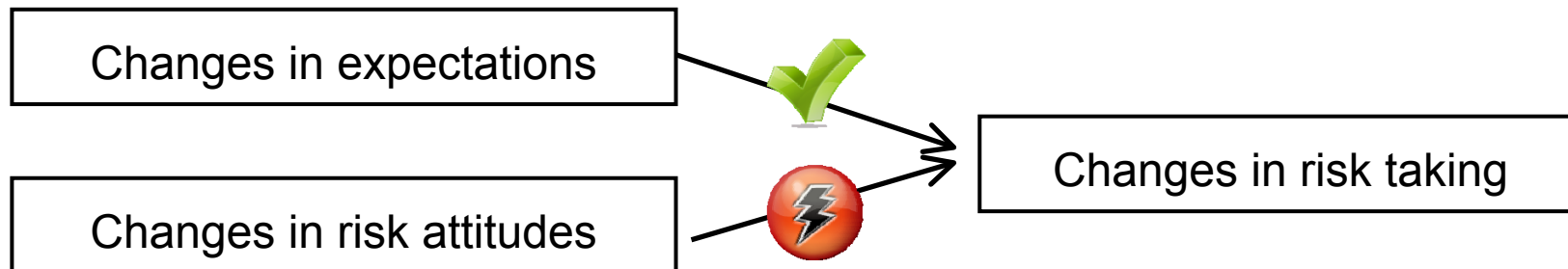
\*\*\* significant at the 1% level

## Main Conclusion:

- Changes of variables

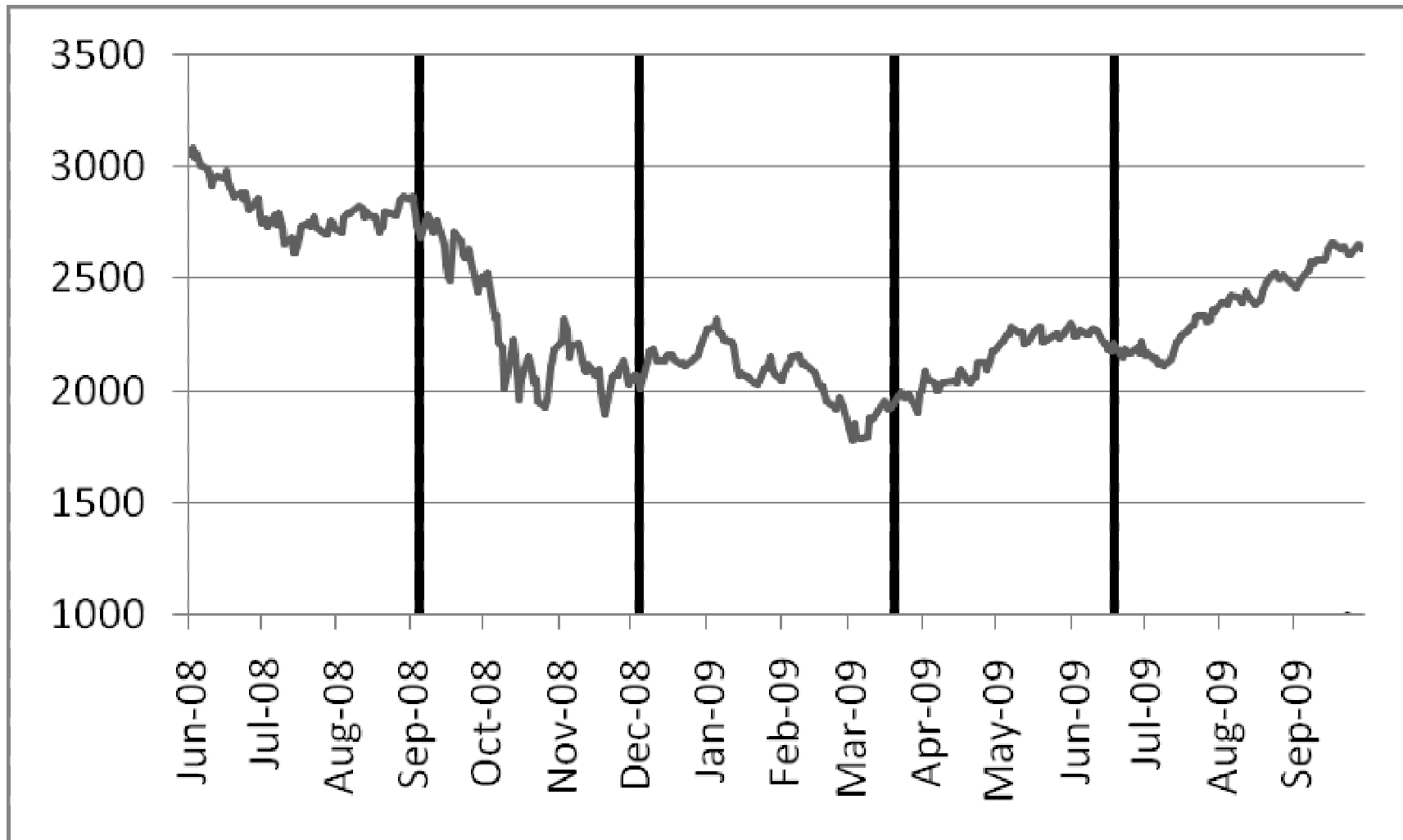
- Risk taking 
- Expectations 
- Risk attitudes 

- What explains changes in variables



# Back-Up

## FTSE all share index and survey rounds





## Nosic and Weber (2010)

How Risky Do I Invest: The Role of Risk Attitudes, Risk Perceptions, and Overconfidence, Decision Analysis, 7, 282-301.

- Risk taking is domain specific
- Risk taking is a function risk attitude and expectations
- Risk taking is better explained by subjective variables
- Overconfident (optimistic) people invest more risky