

# YUHAO ZHU

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Erasmus School of Economics ◇ Erasmus University Rotterdam

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## ACADEMIC EXPERIENCE

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<b>Erasmus University Rotterdam, the Netherlands</b>	<i>2015 to present</i>
Philosophiæ Doctor (Ph.D.) Candidate in Finance Promoter: Prof. Dr. Ingolf Dittmann; Co-promoter: Dr. Sjoerd van Bakkum	
<b>Tinbergen Institute &amp; VU University Amsterdam, the Netherlands</b>	<i>2013 to 2015</i>
Master of Philosophy (M.Phil.) in Economics (Finance track), <i>cum laude</i> GPA: 8.0/10.0	
<b>University of Groningen, the Netherlands</b>	<i>2011 to 2013</i>
BSc (Honors) in Economics and Business Economics GPA: 8.5/10.0	
<b>Fudan University, China</b>	<i>2009 to 2013</i>
BA in Economics GPA: 3.78/4.00	

## RESEARCH INTEREST

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Asset Pricing, Behavioral Finance, Corporate Governance, Executive compensation

## TECHNICAL STRENGTHS

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<b>Skills</b>	Empirical econometrics, Large data set analysis, Data visualization, Financial modelling, Model calibration, Web crawler (spider)
<b>Languages</b>	Python ( <i>numpy</i> , <i>scipy</i> and <i>pandas</i> for scientific calculation and data analysis), Java, Matlab, STATA, Object Pascal, Visual Basic, VBA for Excel
<b>Experience</b>	Use Git for daily version control. Repositories on <a href="https://github.com/forFudan">https://github.com/forFudan</a> . Use Python and Jekyll to build personal website <a href="http://www.zhuyuhao.com">http://www.zhuyuhao.com</a> . Use Python to calibrate behavioral models with data on U.S. CEO contracts. Use Python and R to visualize data, e.g., choropleth maps. Use Python and STATA to test and modify trading strategies. Analyze remotely on the census data at the German Federal Employment Agency. Program web crawlers to download data and pictures from the Internet.
<b>Interests</b>	Photography, Poetry, Linguistics.

## NATURAL LANGUAGE SKILLS

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Chinese (native), English (proficient, TOEFL: 108), Dutch (basic, A2), Japanese (basic)

## CERTIFICATES

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CFA Level II Candidate, GRE (V:154, Q:170), Inburgeringsdiploma

## WORKING PAPERS

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### **“The real costs of CEO compensation - the effect of behindness aversion of employees”**

Joint work with Ingolf Dittmann and Christoph Schneider. SSRN link [here](#).

*To be presented at China International Conference in Finance (CICF 2018) in Tianjin.*

Presented at 12th Annual Conference on Asia-Pacific Financial Markets (CAFM 2017) in Seoul, the annual meeting of the German Finance Association (DGF 2017) in Ulm\*, the Erasmus finance brown bag seminar series.

### **“Wage gap and stock returns”**

Joint work with Ingolf Dittmann and Maurizio Montone.

*To be presented at Global Finance Conference in Paris.*

Presented at IFABS 2017 in Ningbo, the IFABS 2017 in Oxford\*, the Spanish Finance Association Meetings in Barcelona\*, the Behavioral Finance Working Group Conference in London\*, the Israel Behavioral Finance Conference in Tel Aviv\*, and the Erasmus finance brown bag seminar series\*.

### **“Probability-weighting CEOs and optimal contracts”**

Single-authored.

*To be presented at Behavioral Finance Working Group Conference in London.*

### **“Managerial optimism and investor sentiment”**

Joint work with Ingolf Dittmann and Maurizio Montone.

*To be presented at Behavioral Finance Working Group Conference in London.*

(\* stands for the paper being presented by a co-author at the conference.)

## AWARDS AND GRANTS

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<b>12th CAFM 2017 Outstanding Paper Award</b>	<i>Dec. 2017</i>
<b>AFA Student Travel Grant</b>	<i>Jan. 2017</i>
<b>M.Phil. Full Scholarship, Tinbergen Institute</b>	<i>2013 to 2015</i>
<b>Talent Scholarship, University of Groningen</b>	<i>2011 to 2013</i>
<b>First-class Scholarship, Fudan University</b>	<i>Sep. 2011</i>
<b>Second-class Scholarship, Fudan University</b>	<i>Sep. 2010</i>
<b>First-class Scholarship, Fudan University</b>	<i>Sep. 2009</i>

## PRESENTATIONS AT SEMINARS & CONFERENCES

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<b><i>expected</i> Global Finance Conference, Paris, France</b>	<i>Jul. 2018</i>
Global Finance Association	
<b><i>expected</i> Behavioral Finance Working Group Conference, London, the UK</b>	<i>Jun. 2018</i>
Queen Mary University	
<b><i>expected</i> Tinbergen Institute Ph.D. Lunch Seminar, Rotterdam</b>	<i>May. 2018</i>
Tinbergen Institute	
<b>12th Conference on Asia-Pacific Financial Markets (CAFM) Seoul, Korea</b>	<i>Dec. 2017</i>
Korean Securities Association	
<b>IFABS 2017 Conference Ningbo, China</b>	<i>Sep. 2017</i>
International Finance and Banking Society	
<b>Tinbergen Institute Ph.D. Lunch Seminar, Rotterdam</b>	<i>Aug. 2016</i>
Tinbergen Institute	
<b>Erasmus Finance Brown Bag Seminar, Rotterdam</b>	<i>Nov. 2016</i>

## TEACHING EXPERIENCE

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<b>Thesis Supervisor for 9 Master Students</b>	<i>2017 to 2018</i>
Erasmus School of Economics, Erasmus University Rotterdam	
<b>Instructor for Seminar "Advanced Corporate Finance: Corporate Governance"</b>	<i>2017 to 2018</i>
Erasmus School of Economics, Erasmus University Rotterdam	
<b>Guest Lecturer on Data Analysis with STATA</b>	<i>2017</i>
Erasmus School of Economics, Erasmus University Rotterdam	
<b>Thesis Supervisor for 1 Bachelor and 5 Master Students</b>	<i>2016 to 2017</i>
Erasmus School of Economics, Erasmus University Rotterdam	
<b>Instructor for Seminar "Advanced Corporate Finance: Corporate Governance"</b>	<i>2016 to 2017</i>
Erasmus School of Economics, Erasmus University Rotterdam	
<b>Thesis Supervisor for 14 Master Students</b>	<i>2015 to 2016</i>
Erasmus School of Economics, Erasmus University Rotterdam	
<b>Teaching Assistant for Course "Corporate Finance Theory"</b>	<i>2015</i>
Tinbergen Institute	
<b>Teaching Assistant for Course "Statistics"</b>	<i>2014</i>
Tinbergen Institute	

## PAPER ABSTRACTS

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**"The real costs of CEO compensation - the effect of behindness aversion of employees"**  
(Ingolf Dittmann, Christoph Schneider, Yuhao Zhu)  
Do employees who compare themselves to the CEO matter for executive compensation? Using German establishment-level wage data, we show that employee wages are increasing in CEO compensation. When CEO compensation increases 1%, the median employees wage increases by about 0.04%. Higher CEO compensation also increases the probability for the existence of employee stock ownership plans. We use a difference-in-difference setting to provide causal evidence for the relationship. Our findings suggest that behindness aversion of employees is an important driver of wages and increases the costs of executive compensation significantly. We structurally estimate a principal-agent model with two agents (CEO, representative employee) to identify the behindness aversion parameters.

**"Wage gap and stock returns"**  
(Ingolf Dittmann, Maurizio Montone, Yuhao Zhu)  
We propose an asset pricing model in which the optimal wage gap between managers and workers increases with managerial skills. In a world with noise traders and short-sales constraints, we show that firms with lower wage gaps should trade at a premium, and the mispricing becomes even stronger if some investors exhibit inequality aversion. Using a unique data set of German firms, we provide strong support for the model's predictions. The results suggest that pay inequality within firms has important implications for asset prices.

**"Probability-weighting CEOs and optimal contracts"**

(Yuhao Zhu)

Because of the option grants and other long-term incentives, CEO contracts feature increasing pay-performance sensitivity (PPS). Previous literature use different theories to explain the convexity in CEO pay structure, but the optimal non-linear contract exhibits convexity only around the central region. In this paper, I make two contributions: First, I show that when CEOs assign higher probability to extreme cases, the optimal non-linear contract features convexity even if performance goes to the far end. This explains the existence of incentive pay and increasing PPS in CEO contracts. Second, I find that when stock returns follow a normal distribution, probability weighting generates an asymptotically normal distribution with different parameters. I use this sigma-mu transformation to approximate the probability weighting process, which helps give the close- form solution for the optimal non-linear CEO contract. Finally, I calibrate the model with observed contracts of US CEOs. To summarize, shareholders exploit probability-weighting to provide cheap incentives that encourage CEOs to exert more effort.

### **“Managerial optimism and investor sentiment”**

(Ingolf Dittmann, Maurizio Montone, Yuhao Zhu)

We analyze firms investment decisions in a world where both managers and investors are affected by sentiment. In equilibrium, we show that higher managerial optimism leads to an increase in employment growth, especially in times of low investor sentiment. If managers are initially overcautious, however, this mechanism is value-enhancing for the firm. Using data on U.S. publicly traded companies, we find evidence consistent with the models predictions. We also show that the stocks of companies with optimistic managers yield positive and robust risk-adjusted returns, which lends support to the view that the stock market does not price managerial skills correctly.

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