



**Artificial Intelligence in Finance**  
*at*  
**Hong Kong University of Science and Technology**

# Assignment II: Monthly Article Review

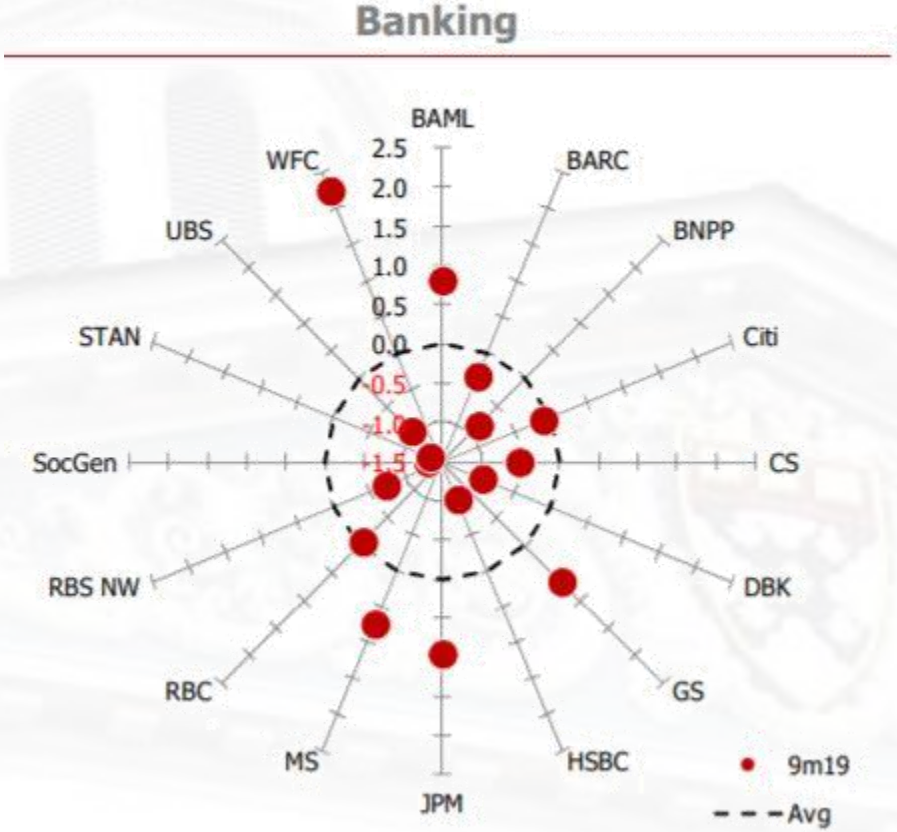
- Optional and due on March 31, April 30, and May 31
- 1-2 articles every month from top journals (e.g. NIPS, ICCV) in the past 5 years
  - Maximum of 6 articles in total for the whole semester
- 1 page review with the following components:
  - Abstract in simple language (in words that your grandmother will understand)
  - What is good about the article or research approach?
  - What may not work regarding the research?
  - What are the potential applications of the research findings?
- More details to be announced soon

# Perspectives on the Global Markets

- Healthcare (virus and  $R_0$ ) as the epicenter vs. finance (subprime and derivatives)
- Fundamentals are strong with corporate balance sheet healthier than the previous crisis
  - Underweight: Transportation, retail, hospitality, F&B
- US (and global) markets jittery, partly because of the (Trump) administration
  - Fed Funds Rate no longer effective and may yield to Quantitative Easing (QE)?
  - **Is “Unlimited QE” possible?**
- **Buy-side will likely fare better than sell-side**
- Capital preservation and self preservation
- **Insights from WSJ’s article on The Unraveling of the Bull Market**

# The Impending Slowdown

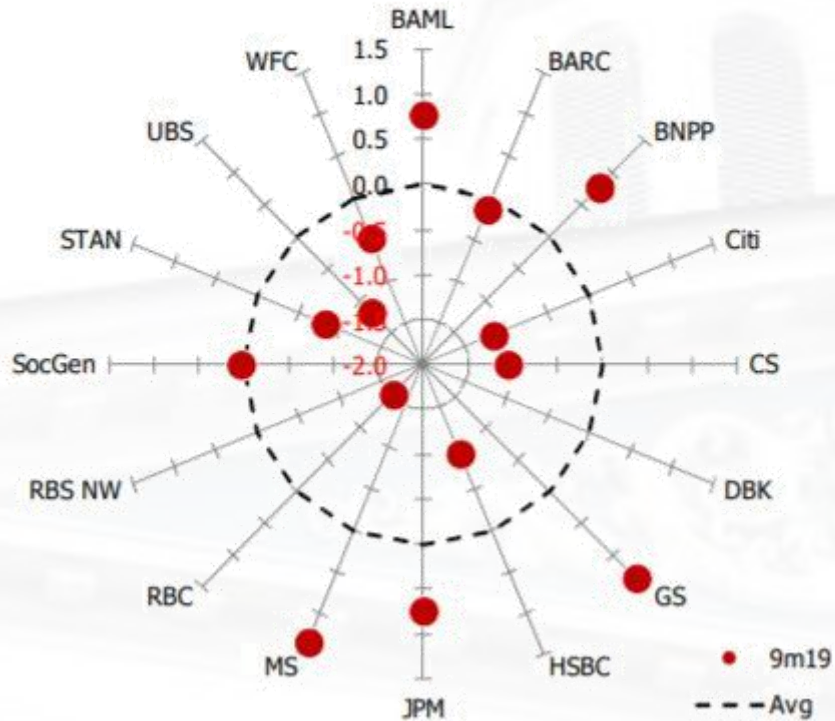
Operating revenues per unit of full time front office headcount (IBD) YTD Q3 2019



# The Impending Slowdown (Cont'd)

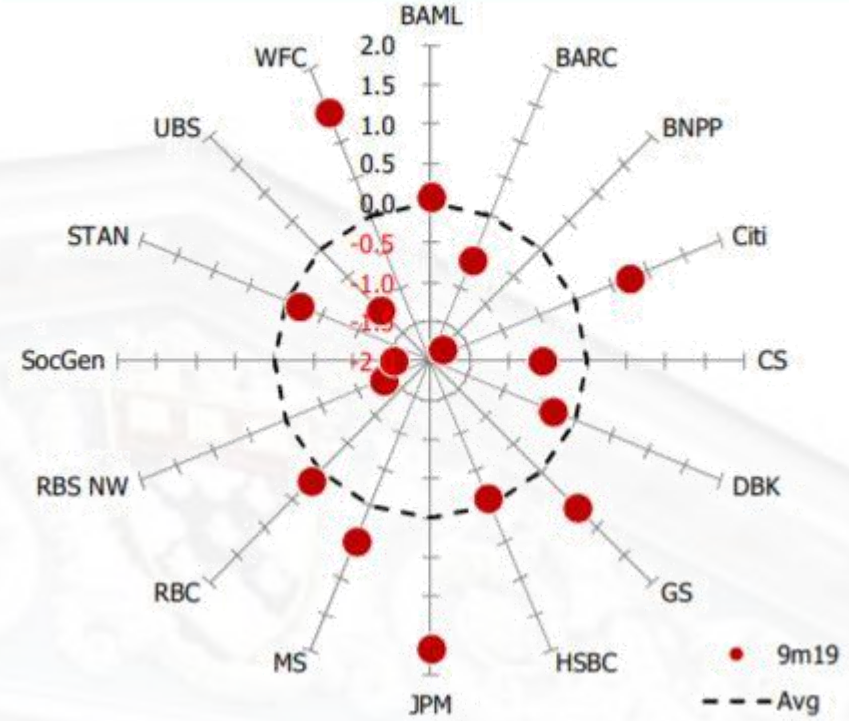
Operating revenues per unit of full time front office headcount (Equities) YTD Q3 2019

**Equities**



Operating revenues per unit of full time front office headcount (FICC) YTD Q3 2019

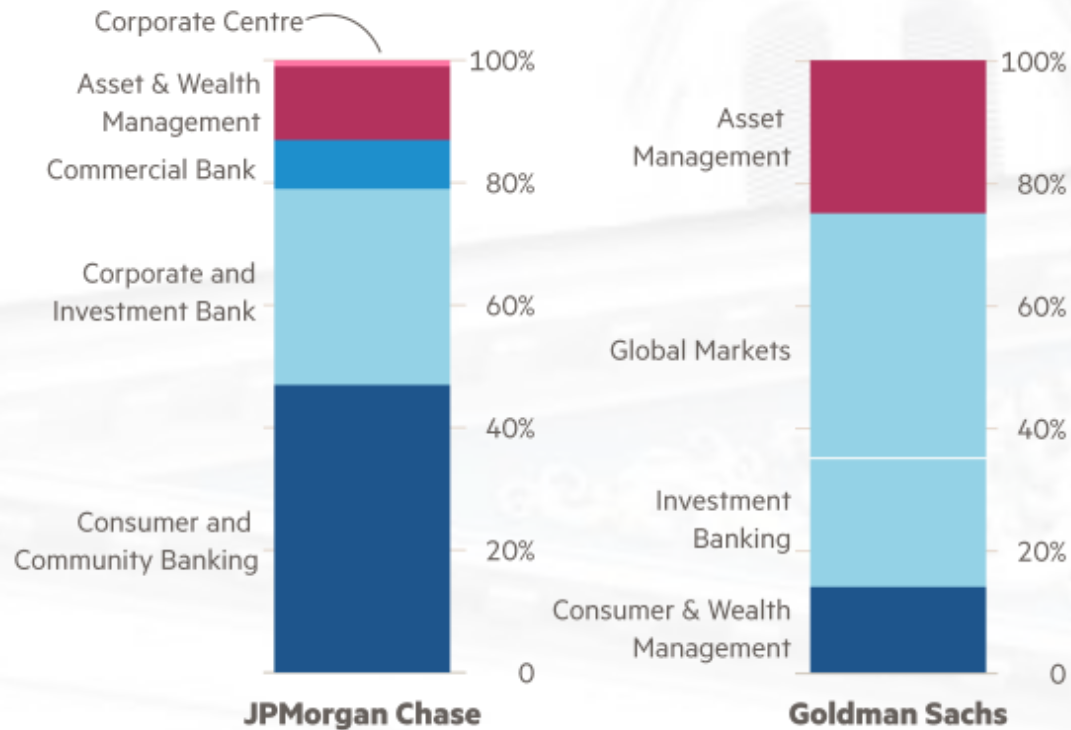
**FICC**



# Goldman Sachs vs. J.P. Morgan

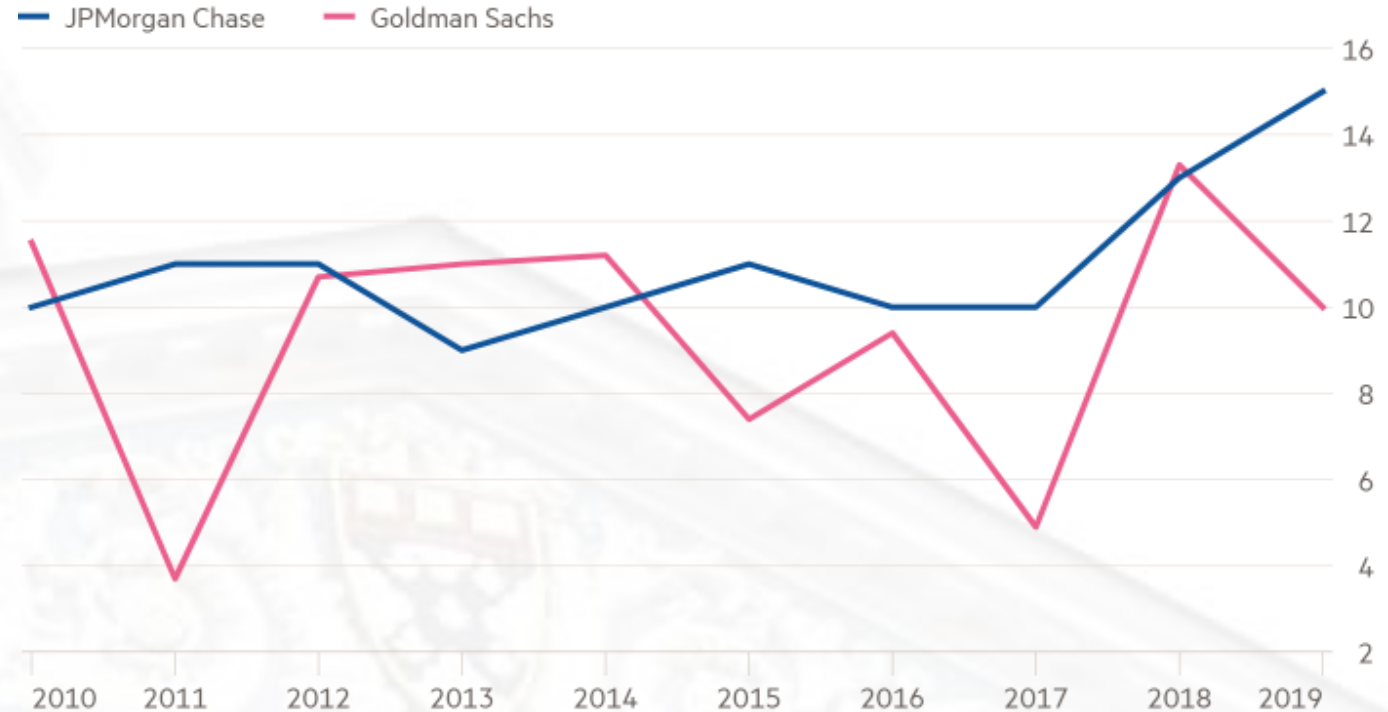
Goldman Sachs' business is heavily reliant on trading and investment banking

Revenue by division (%)



Goldman's profitability has been volatile and lagged JPMorgan

Return on common equity, %



Source: Company filings © FT



**Robotic Process Automation  
机器人与工序自动化**

Full-stack AI-enabled Robotic Process Automation (RPA) solution suite for business-critical tasks spanning multiple applications and data silos



**Quantum Computing  
量子计算**

Solution provider and platform developer for quantum and classical computing for predictive analytics, forecasting, and optimization



**Computer Vision  
计算机视觉**

Developer of deep learning technology-based computer vision solutions aimed at a broad range of consumer and enterprise applications



**Knowledge Graph  
知识图表**

Dynamically evolving knowledge graphs that provides inference strength across concepts, events and themes derived from a wide variety of information services



**Real-Time Robotics Automation  
实时机器人自动化**

Deep reinforcement learning-based AI software platform that enables enhanced perception, reaction and control in real-time robotics environments



**AI Chips  
人工智能芯片**

Deep reinforcement learning-based AI software platform that enables enhanced perception, reaction and control in real-time robotics environments



**Cybersecurity  
网络安全**

Advanced deep learning technology-based cybersecurity products and solutions for threat detection and prevention



**Music Augmentation  
音乐强化**

Developer of a music augmentation technology that transforms linear music to dynamically personalized music for consumers, ad-agencies, music labels, and producers

# QxBranch builds software and applications for quantum computers

We help organizations prepare for the future of data analytics with insightful and quality-engineered quantum computing applications.

## Quantum computing and data analytics

Quantum Computing is an emerging technology that leverages the unique behavior of quantum physics to perform computations. This new approach enables efficient solutions to complex, large-scale problems in data analytics, including some practically impossible on classical computers.

QxBranch is building machine learning and optimization applications that create the highest value for enterprises when used on near-term quantum computers.



# The right tools for decision-making in a complex, dynamic and uncertain world

[find out more](#)



## A Random Walk Approach to First-Order Stochastic Convex Optimization

July 7 - 12 2019 ISIT, Paris, France

**Authors:** Sattar Vakili and Qing Zhao (Cornell University)

**Abstract:** An active search strategy based on devising a biased random walk on an infinite-depth tree constructed through successive partitioning of the search domain is developed. By localizing data processing to small subsets of the input domain based on the tree structure, it enjoys very low computation and memory complexity and allows dynamic allocation of limited data storage.

Multi-agent Systems



## Partial Verification as a Substitute for Money

January 27 - February 1 2019 AAAI, Honolulu, Hawaii, USA

**Authors:** Sofia Ceppi, Ian Kash (University of Illinois at Chicago) and Rafael Frongillo (University of Colorado Boulder)

**Abstract:** Recent work shows that we can use partial verification instead of money to implement truthful mechanisms. In this paper we develop tools to answer the following question. Given an allocation rule that can be made truthful with payments, what is the minimal verification needed to make it truthful without them? Our techniques leverage the geometric relationship between the type space and the set of possible allocations.

Multi-agent Systems

Mechanism Design

Partial Verification



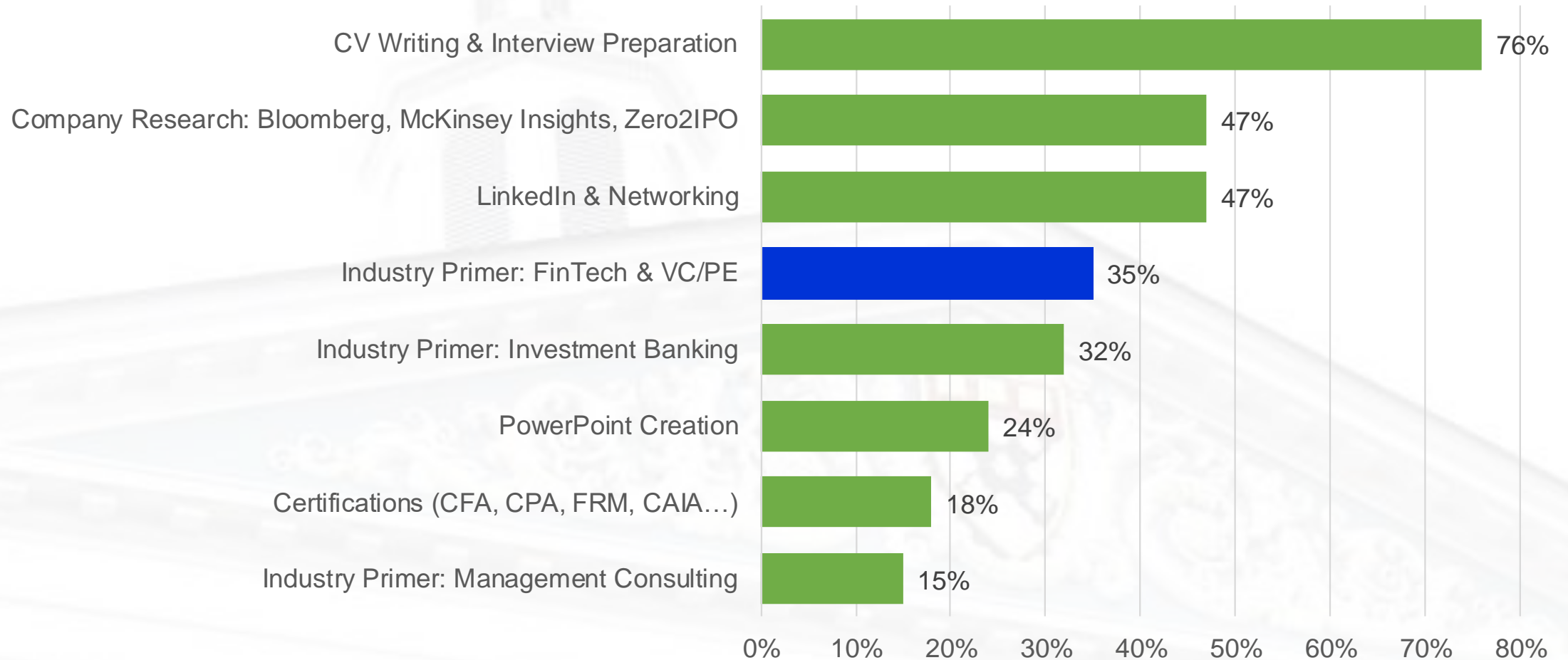
Search

### Quick links

AAAI  
Abstraction  
ATARI Domain  
Autonomous Formal Verification Methods  
Bayesian Optimisation  
Bounded-Rationality  
Data Efficiency  
Deep Learning  
Differential Evolution  
Distributed Optimisation  
Game Theory  
Gaussian Processes  
Graph Theory  
High-Dimensional Representation  
Information Theory  
Learning to Learn  
Lifelong Learning  
Model Learning  
Multitask Learning  
Network Flow  
NeurIPS  
Non-Stationary Environments  
Non-Convexity  
Online Learning  
Optimisation  
Repeated Games  
Software Engineering

# Beyond the Classroom

Topics of Interest  
(n = 34)



# Universities

## Bloomberg for Education

[BMC LOGIN](#)

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[The academic advantage](#)

[Bloomberg Finance Lab](#)

[Faculty & Admin](#)

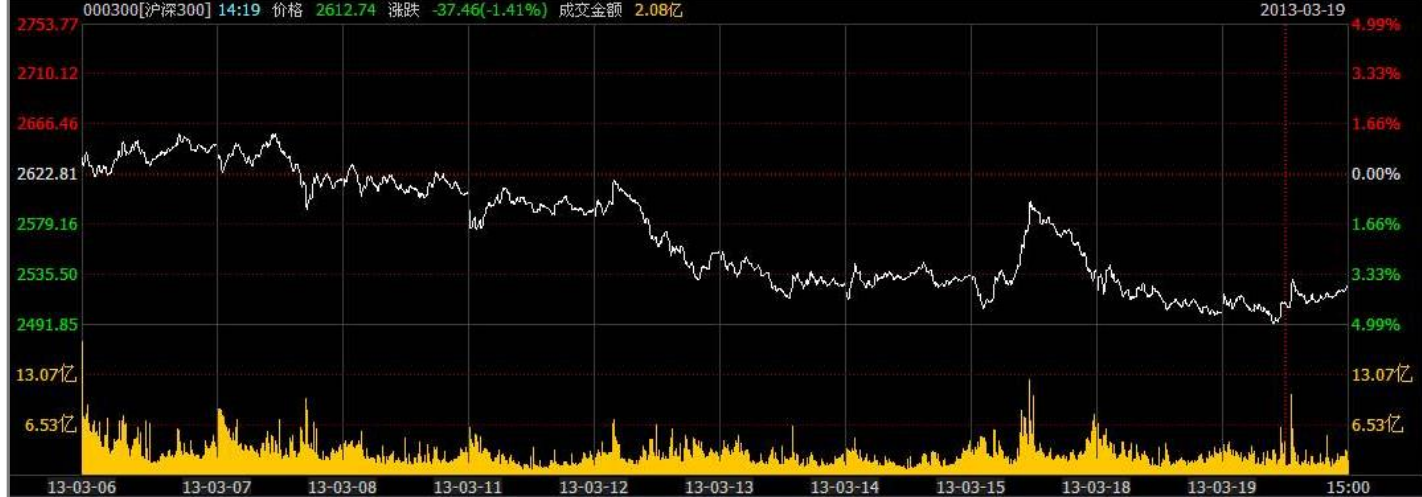
[Students](#)

[Bloomberg Market Concepts](#)

[How universities are using the T](#) >

## The academic advantage

In today's open-source, fast-changing digital marketplace, it's real-world experience that will best prepare students of business and finance for the world that waits. Cloistered and theoretical learning won't confer an advantage when they compete in the job market – early immersion into the markets through the Bloomberg Terminal will.



**沪深300**  
**2525.**  
 涨 219家  
 金额  
 成交量  
 开盘  
 最高  
 最低  
 市盈率<sup>TM</sup>  
 5日  
 60日  
 52周高

序号	名称	现价	涨跌幅	成交量(手)	换手率	市盈率	成交金额(万)	60日涨跌幅	年初至今
1	贝因美	36.40	0.52%	51025	1.95%	32.9	18615.35	96.86%	64.86%
2	方正证券	7.24	1.54%	1615646	4.86%	115	115675.80	89.53%	64.17%
3	双鹭药业	58.66	0.62%	29024	0.93%	51.6	16835.61	71.17%	48.28%
4	浙江龙盛	9.00	-2.70%	184842	1.26%	23.2	16720.88	62.45%	48.27%
5	杰瑞股份	68.15	-0.38%	17719	0.39%	58.6	12206.12	50.47%	43.05%
6	莱宝高科	21.71	-2.30%	79823	1.38%	70.2	17283.33	56.19%	41.00%
7	伊利股份	30.80	-0.55%	98679	0.62%	32.8	30556.13	51.72%	40.13%
8	平安银行	21.50	0.70%	529771	1.71%	8.2	113542.12	52.92%	34.21%
9	大华股份	62.00	-2.16%	36773	1.20%	49.4	23095.16	50.81%	33.76%

14:57:53  
 14:58:13  
 14:58:18  
 14:58:33  
 14:58:43  
 14:58:48  
 14:59:08  
 14:59:13  
 14:59:33  
 14:59:53  
 14:59:58  
 15:00:03  
 15:00:23  
 15:00:48  
 15:01:18



**15.47** -0.64% (-0.10)

卖五	15.51	334	总净流入	-5885	主力净流入
卖四	15.50	1288	超大单	大单	中单
卖三	15.49	297	小单		
卖二	15.48	7			
卖一	15.47	282			
买一	15.46	952			
买二	15.45	6746			
买三	15.44	2388			
买四	15.43	1590			
买五	15.42	2380			

总量 11.65万 换手 0.06%  
 现手 1 量比 0.61  
 外盘 4.04万 内盘 7.61万  
 总额 1.90亿 涨幅 0.77%  
 均价 15.48 开盘 15.55  
 最高 15.56 最低 15.44  
 涨停 17.13 跌停 14.01

天数 净流入 净流入额

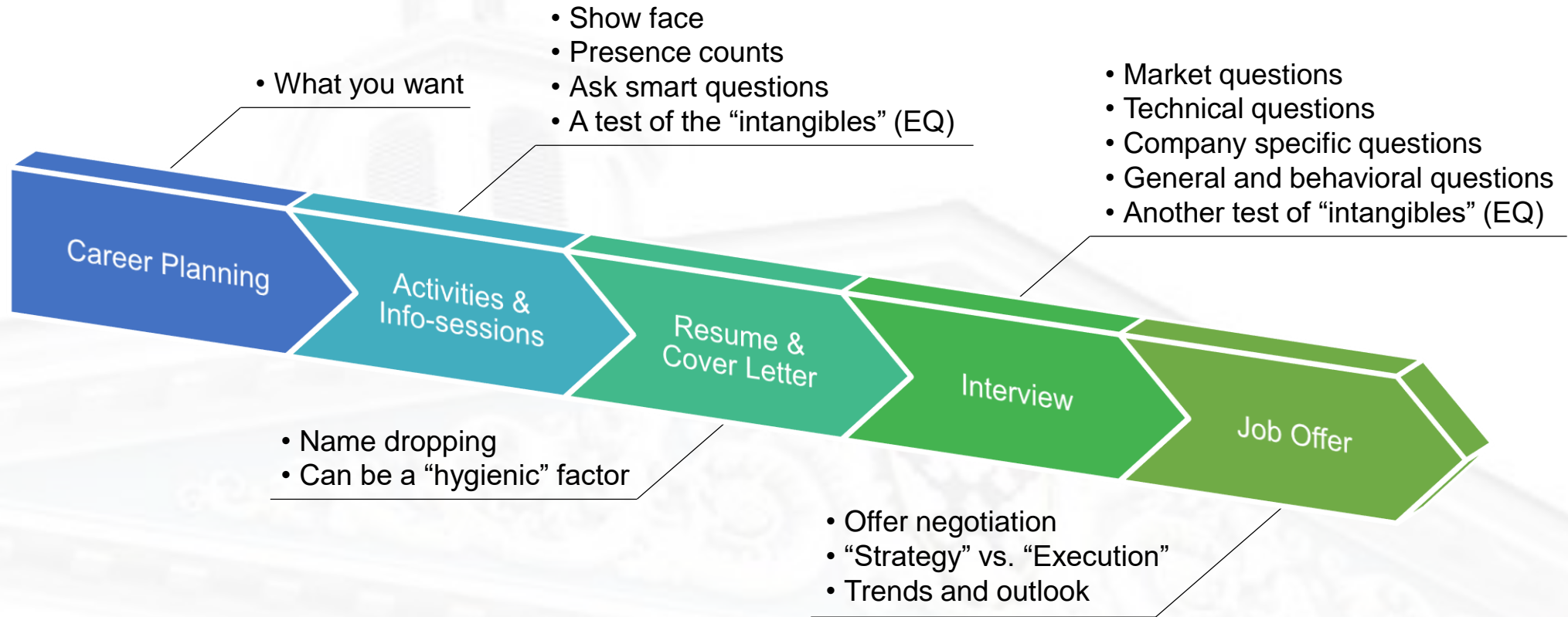
5	0	-10082.59
10	3	-1909.30
20	6	-22527.49
60	29	85910.52

年初至今  
 5日涨跌幅  
 10日涨跌幅  
 20日涨跌幅  
 60日涨跌幅  
 120日涨跌幅  
 250日涨跌幅  
 52周最高  
 52周最低

财务指标 201603  
 每股收益  
 每股净资产

日期	来源	标题	内容摘要
06-16	Wind资讯	早评:今日有望上冲收复2900 外资狂买这些股票	
06-25	Wind数据	浦发银行: 7月7日融资余额为23.69亿元, 连续4日上升	
02-11	和讯	慧球科技复牌跌停 实控人持股触及平仓线	
07-07	微信	【平安今日重点】行业月报“银行”防御首选银行, 向上弹性等待经济预期拐点“强于大市	
07-07	Wind数据	浦发银行: 7月6日融资余额为23.51亿元, 连续3日上升	
07-06	证券日报	哪些银行与万科最亲密?	
07-06	Wind数据	浦发银行: 7月5日融资余额为23.25亿元, 连续2日上升	
07-06	大众证券报	今年首家增发股即将复牌 慧球科技大股东仍存平仓风险	

# Career Roadmap & CV Clinic



# Industry Resources

<b>Publisher</b>	<b>Report</b>	<b>Language</b>
Boston Consulting Group	Impact of Coronavirus on the Economy (新冠病毒對經濟的影響)	Chinese
Industrial Bank of China, Mentor X	White Paper on Career Development of Chinese Students in the United States 2019 (2019中國留學生就業白皮書)	Chinese
Deloitte	2020 Global Banking and Capital Markets Outlook (2020年全球銀行業和資本市場展望)	Chinese
WeBank	WeCross Technical Whitepaper (WeCross技術白皮書)	Chinese
White Star Capital	SEA Venture Capital Landscape 2020	English
PitchBook	2019 Annual Global League Tables	English
BlackRock	2020 Global Investment Outlook	Chinese
Hurun Report	2019 China AI Industry IP Development Whitepaper (2019中國人工智慧產業知識產權發展白皮書)	Chinese
Clifford Chance	FinTech in 2020: Five Trends to Watch	English
J.P. Morgan	Ten Questions about China in 2020	English
CMB International	Global Economic Outlook (全球經濟展望)	Chinese
United Nations	World Economic Situation Prospects 2020	English

# Industry Resources (Cont'd)

Publisher	Report	Language
Blackchain Consulting	Blockchain in Real Estate	English
ifenxi	Implementation & Outlook: How AI Create Value for the Financial Industry (中國智慧金融報告: AI如何為金融業創造價值)	Chinese
Credit Suisse	Global Equity Strategy: 2020 Research Outlook: Themes, Sectors and Styles	English
McKinsey	McKinsey Global Banking Annual Review 2019: The last pit stop? Time for bold late-cycle moves	English
Roland Berger	Foresight 2020: China Industry Trends Report (預見2020: 羅蘭貝格中國行業趨勢報告)	Chinese
Chinese Academy of Sciences	2019 AI Development Whitepaper (2019年人工智慧發展白皮書)	Chinese
PitchBook, NVCA	Venture Monitor Q4 2019	English
Chinese Academy of Social Sciences	Blue Book of China's Economy: Economy of China Analysis and Forecast (2020)	Chinese
Alibaba Damo Academy	2020 Top 10 Technology Trends	Chinese
Tsinghua University	2019 Report of Artificial Intelligence Development	Chinese
UBS	Global Economics & Markets Outlook 2020-2021	English



# Investment Banking Essentials

## Academics



GPA

Classes

Exchange

## Internships

Goldman Sachs

Morgan Stanley

J.P.Morgan



## Technicals

- Financial Statement Analysis
- Macroeconomics
- Valuation
- Corporate Finance
- Financial Mathematics

Aug 2011 – May 2013	<b>MORGAN STANLEY ASIA</b> <b>Associate, Investment Banking Division – Hong Kong Corporate Finance Coverage Team</b>	<b>HONG KONG, CHINA</b>
	<ul style="list-style-type: none"> <li>• Shangri-La Asia inaugural issuance of US\$600MM under US\$3Bn Medium Term Note Program</li> <li>• Multiple senior unsecured bond offerings for Hong Kong corporates, such as Kerry Properties (US\$600MM), Hang Lung Properties (US\$500MM), Nan Fung (US\$300MM), and PCCW (US\$500MM)</li> </ul>	
Summer 2010	<b>Summer Associate, Investment Banking Division – Technology, Media &amp; Telecommunications Group</b>	
	<ul style="list-style-type: none"> <li>• US\$272MM IPO of Dangdang Inc., China’s largest B2C e-commerce company (equivalent of Amazon)</li> </ul>	
2006 – 2009	<b>J.P. MORGAN CHASE &amp; CO.</b>	
2008 – 2009	<b>Investment Strategy Analyst, J.P. Morgan Private Wealth Management</b>	<b>NEW YORK, NY</b>
	<ul style="list-style-type: none"> <li>• Sole analyst directly supporting the global Chief Investment Officer (CIO) and Chief Economist of PWM</li> </ul>	
2006 – 2008	<b>Financial Analyst, J.P. Morgan Private Bank</b>	<b>SAN FRANCISCO, CA</b>
Summer 2007	<b>Financial Analyst, J.P. Morgan Private Bank, EMEA Equity Derivatives Group</b>	<b>LONDON, UK</b>
<b>Education</b>		
2015 – 2016	<b>UNIVERSITY OF HONG KONG</b> Master of Science in Information Technology in Education (Specialist Strand: e-Leadership), <i>Distinction</i> .	<b>HONG KONG, CHINA</b>
2009 – 2011	<b>HARVARD BUSINESS SCHOOL</b> MBA. Co-producer, Asian Cultural Show. Advisor, Harvard Innovation Lab (iLab)	<b>BOSTON, MA</b>
2002 – 2006	<b>UNIVERSITY OF CALIFORNIA, BERKELEY – HAAS SCHOOL OF BUSINESS BERKELEY, CA</b> Bachelor of Science in Business Administration, <i>summa cum laude</i> (cumulative GPA: 3.9, top 3% of class). Dean’s Honor List (02-06). President, California Investment Association (Haas-sponsored investment fund)	
<b>Technology- related Certifications</b>	<p>Certificate on Machine Learning for Big Data &amp; Text Processing at MIT Computer Science and Artificial Intelligence Laboratory (CSAIL). Certificate on Deep Learning and Machine Learning with TensorFlow. Certified Bitcoin Professional (CBP). Conducted research into Probabilistic Topic Modeling using R</p>	

# Info-session & Activities

- Types: coffee chats, presentations, campus visits, company visits, speaker events, dinners, drinks
- Face-time important
- “Paper-time” (i.e. signing in) equally important
- Learn the jargon**
- Key is to show up, show face, and **not screw up**
- Problem of competing with peers