

PHBS
Peking University HSBC Business School
University Town, Nanshan District
Shenzhen, 518055 China

PHBS

MAGAZINE

Peking University
HSBC Business School

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The PHBS UK Campus:

- Offering master's programs in management and finance
- Two-year cross-border programs
- An opportunity to develop networks between the UK and China, particularly, with Shenzhen, one of the most innovative cities in the world



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WISDOM LEADS

THE FUTURE

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北大汇丰

Sixth Issue



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PHBS MAGAZINE

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Peking University HSBC Business School

NEWS BRIEFINGS

1 PHBS Think Tank's Macroeconomics Research Team Wins Awards

On February 14, PHBS Think Tank's macroeconomics research team, led by research fellow Liang Run, was awarded second place in "The Annual Forecast of China's Economy" and third place in "The Quarterly Forecast of China's Economy" at the 21st Foresight Cup, the macroeconomic and financial market forecast competition held by *Securities Market Weekly*. This publication conducts the annual forecast survey with participating institutions, based on China's economic forecast and global economic and market

forecasts, which includes five sub-items and 34 indicators. Awards are given to the top three teams who meet the high standard of the annual forecast's comprehensiveness with the smallest deviations. This is the second time the research team has placed in the competition since 2019.



3 Professor Chu Chia-Shang Included in Elsevier's 2021 List of "Highly Cited Chinese Researchers"

Professor Chu Chia-Shang was selected in the field of applied economics to be included in Elsevier's (a global information analysis company) 2021 list of "Highly Cited Chinese Researchers." The list, released annually for the last eight years, is highly recognized by scholars, and domestic and foreign media. Professor Chu received his Ph.D. in economics from the University of California, San Diego. Before joining PHBS, he taught at the University of Southern California, National Taiwan University, and Peking University National School of Development. He has published in a number of influential Journals, including *Econometrica*, *Biometrika*, and the *Journal of Econometrics*.

2 Professor Hai Wen Awarded as One of the "Top Ten Economists" in 2021



China Economic Review magazine recently selected the "Top Ten Economists" in 2021, and Professor Hai Wen, vice chairman of Peking University Council and founding dean of PHBS, was among them. At the same time, articles by Professor Hai in the *China Economic Review* were included in the book "Discussions - Opportunities and Prospects of Double Circulation" published

by Economic Daily Press. In recent years, Professor Hai has received multiple awards, including the "Lifetime Achievement Award of the Chinese Economists Society," "NetEase's Most Influential Economist in 2017," "Central Broadcasting Network's 2021 Business Education Leader," and "China Economic Review 2021 Top Ten Economists."



NEWS BRIEFINGS

4 PHBS 2022 Graduates Stand Out in this Year's Fiercely-Competitive Job Market

Covid-19 has already had a substantial impact on the labor market. However, PHBS 2022 graduates stand out in this fiercely-competitive job market, with a majority of graduates securing positions in leading finance and consulting companies. The initial employment rate of its graduates from MA and MBA programs reached 97.6% and 96% respectively. Among a total of 294 Chinese students who graduated from master's programs this year, 278 chose



to enter the job market, and nine decided to pursue doctoral degrees overseas. From the perspective of industry, 77% of graduates began their careers in the financial sectors, while 12% chose to join internet giants. In the past three years, the employment rate of our MA graduates has bucked the trend and achieved a "triple jump" of 95.4%, 96.6%, and 97.6%, which speaks volumes for the university's reputation in terms of employability. Ranked 1st in China and 15th worldwide, Peking University was recognized by last year's Global Employability University Ranking and Survey (GEURS) for better preparing students for the job market.

5 Professor Hai Wen Invited to Attend China-UK Think Tank Forum 2022

The China-UK Think Tank Forum themed "Tackling the Challenges on Ageing Population," co-hosted by the Development Research Center of the State Council (DRC), the China Development Research Foundation (CDRF), and the British Embassy in China, was held online on May 31. Hai Wen, vice chairman of Peking University Council and founding dean of PHBS, was invited to attend the event and gave a keynote speech. He analyzed the challenges

of China's aging problem from three aspects: characteristics of the aging society, how to set retirement age, and how to cope with the challenges of aging population. From the perspective of life expectancy and industrial structure based on international comparison, he pointed out that China's current retirement age was relatively low and the positive role of the aging population had not been fully brought into play. Referring to Japan, the US, and Germany's experiences, Professor Hai suggested that China could allow the elderly to delay their retirement instead of adhering to a "one-size-fits-all" policy, adopt a flexible pension system, and roll out a detailed plan to gradually raise the retirement age. In addition, favorable policies should be put in place for the private sector and the whole society to create more employment opportunities for the elderly and tap the potential of the aging population.

Cai Fang, chief expert of the National High-End Think Tank of the Chinese Academy of Social Sciences, James Benford, director of the Department of Economics at the HM Treasury, and Adelina

Comas-Herrera, researcher at the London School of Economics and Political Science, also delivered keynote speeches responding to the challenges of aging in China. Afterwards, the four speakers had in-depth discussions on relevant issues. This forum is one of a series of events for the "China-UK Economic and Financial Dialogue" in 2022.

6 The 2022 PHBS-CJBS Global Pitch Competition Kicks Off

Facing the lasting influence of the pandemic, the capital market is experiencing ups and downs, making it harder for start-ups to find opportunities and maintain sustainable growth. Under this context, the 2022 PHBS-CJBS Global Pitch Competition kicked off on June 2. Co-organized by Peking University HSBC Business School (PHBS) and the Cambridge Judge Business School (CJBS), this year's competition consists of seven competition tracks, providing opportunities for around 200 entrepreneurial teams to showcase high-quality projects, among which 27 projects will be selected for the future incubation. During the competition, organizers will also provide teams with online courses, training camps, and other forms of comprehensive entrepreneurial counseling. Marked as one of the key events of the "2021 National Mass Innovation and Entrepreneurship Week Shenzhen Venue & the 7th Shenzhen International Maker Week", last year's competition involved nearly 150 high-quality worldwide startups in a variety of fields, such as medical and health care technology, agricultural technology, advanced manufacturing, and new consumption technology.

NEWS BRIEFINGS

7 Workshop on Current Advances of Research in Macroeconomics and Financial Markets Held at PHBS UK Campus

A two-day workshop on current advances of research in macroeconomics and financial markets was held at the PHBS UK Campus on May 30 and 31. Sponsored by the UK Economic and Social Research Council (ESRC) and Peking University HSBC Business School (PHBS), with the support of the School of Economics of University College London (UCL) and the Sargent Institute of Quantitative Economics and Finance at PHBS (SIQEF), the workshop attracted many scholars from the UK, the US, and China. Nobel Laureate Thomas J. Sargent, director of SIQEF, delivered a keynote speech on Artificial Intelligence (AI) and its impact on human life. He demonstrated AI as a computerized process of implementing algorithms to facilitate scientific discoveries in mathematics, statistics, economics, physics, and biology, and that data are essential for it to make those discoveries. Other keynote speakers included Professor John Moore of the London School of Economics and Edinburgh University, fellow of the British Academy and the Royal Society of Edinburgh; and Professor Kjetil Storesletten of the University of Minnesota and former president of the European Economic Association. In the two-day workshop, many other distinguished economists presented their research, including scholars from Washington University in St Louis, the University of Surrey, UCL, the Federal Reserve Bank of Minneapolis, and the University of California.

8 PHBS Holds 2022 Commencement

With strict epidemic prevention measures in place during these trying times, PHBS held its 2022 commencement on June 3. This year, a total of 574 students graduated to start their new journey in life. The ceremony opened with a video presentation featuring graduates' unforgettable memories and faculties' best wishes. Due to the pandemic, some international students were unable to attend the onsite ceremony and shared their best wishes via video. Three

graduate representatives Chen Xiyang, Yu Haiyong, and Ma Jian from the MA, MBA, and EMBA programs reflected on their study experience and hopes for their future endeavors.

On behalf of the faculty, Cen Wei, PHBS associate professor, shared his insights on the meaning of value from the financial perspective and encouraged graduates to "be a value creator, do what creates value." Wang Pengfei, vice chancellor of Peking University Shenzhen Graduate School and dean of PHBS, highlighted the importance of having hopes and strengthening one's "skillset." This was especially true in the face of "VUCA," the era of volatility, uncertainty, complexity, and ambiguity, and he hoped that PHBSers



"Hope in the Spring"
2022 PHBS Commencement

This year, a total of 574 students graduated to start their new journey in life.

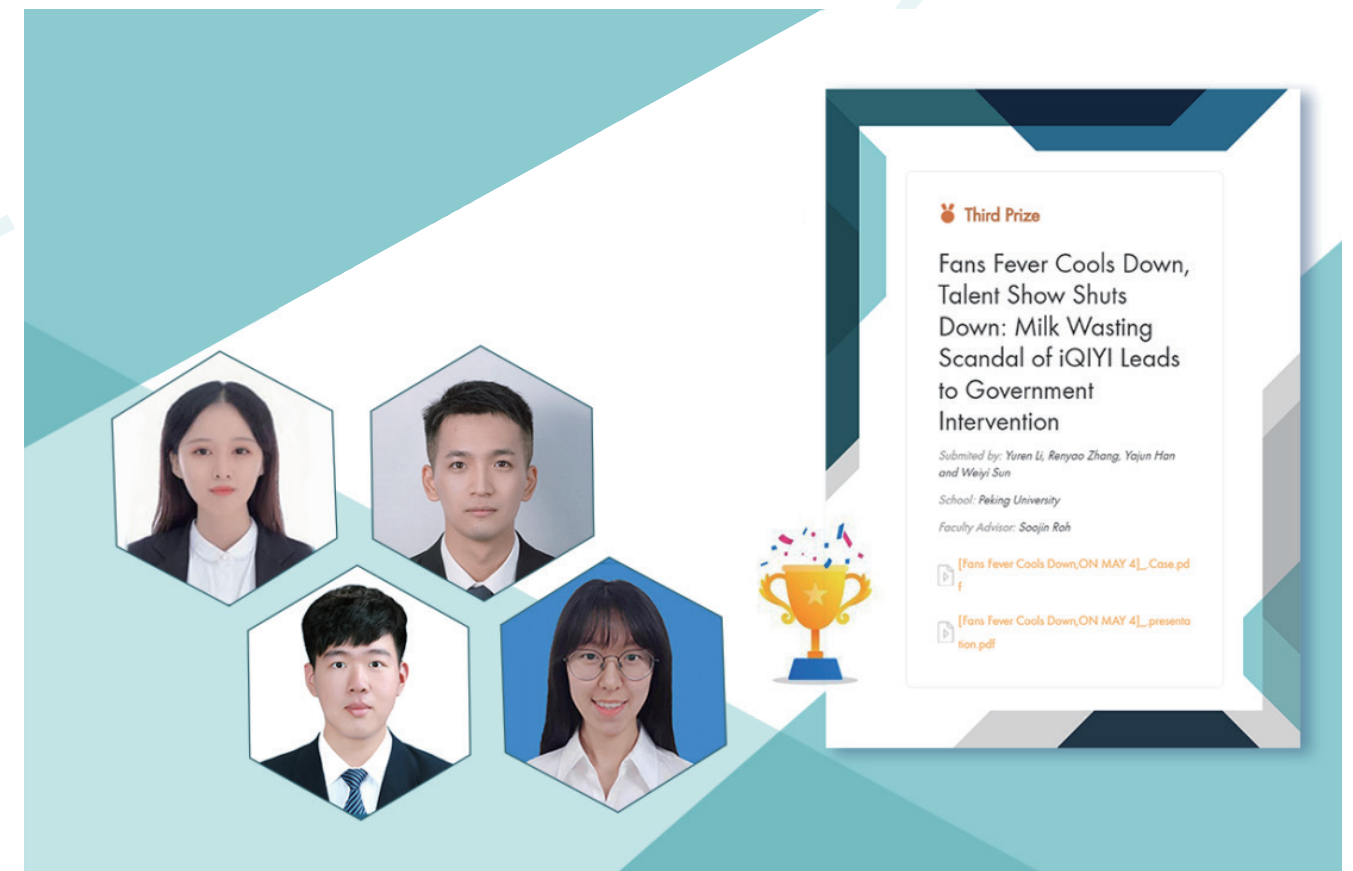


Hai Wen, vice chairman of Peking University Council, former vice president of Peking University, chairman of PHBS Council, and founding dean of PHBS, gives remarks

would always have confidence, care about others, and undertake significant responsibilities in their future careers and lives. At each year's commencement, Professor Hai gives graduates a piece of his original artwork. This year, his oil painting depicted wide and tranquil grassland with the rising sun, bearing the message "Hope in the Spring." He hoped that the pandemic could end soon, that our economy could recover quickly, and that our lives could return to normal, concluding that the spring would eventually come and hopes would come true after the prolonged winter. Closing the ceremony with Professor Hai officiating, Vice Dean Ren Ting announced the Outstanding Graduates of 2022 before Vice Chairman of PHBS Council Chu Chia-Shang and Vice Dean Ouyang Liangyi announced the names of all the graduates. PHBS 2022 graduates are on the threshold of their brand-new journey; best wishes to them!

PHBS Students Stand out in International Public Relations Case Study Competition

By Annie Jin



PHBS team stands out in 2022 student Case Study Competition

In the 2022 Student Case Study Competition, the work of four Peking University HSBC Business School (PHBS) students, Li Yuren, Zhang Renyao, Han Yajun, and Sun Weiyei, stood out to win the third prize. The annual event was held worldwide by the Institute for Public Relations (IPR) and the Arthur W. Page Society, a world-leading professional association of nearly 800 global leaders in corporate communications and public relations.

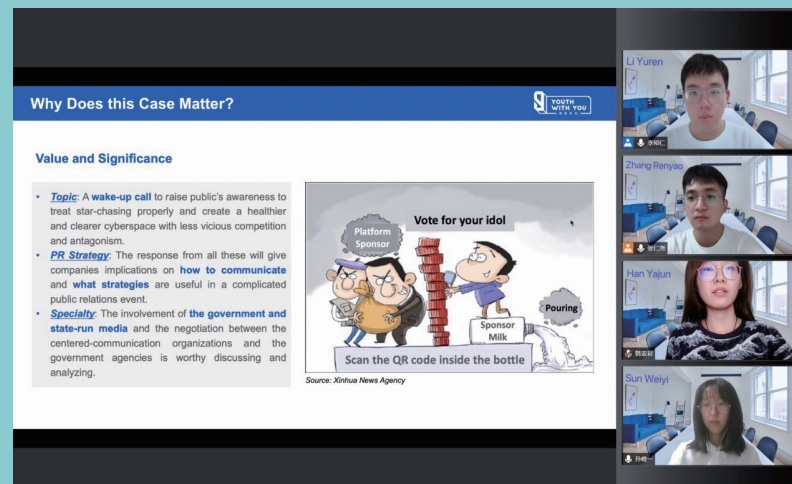
This year's competition drew 40 entries from 28 educational institutions across the United States, China, the Philippines, and Singapore, awarding students whose original case studies best contributed to the profession's body of knowledge and provided practical suggestions improving the corporate communication function.

"I am very proud of my students and excited to have the opportunity to share our story with the rest

of the world," remarked Soojin Roh, PHBS assistant professor and faculty advisor of the winning team. This is the very first time in the 20-year history of the prestigious competition that an international entry (outside of North America) has won the award.

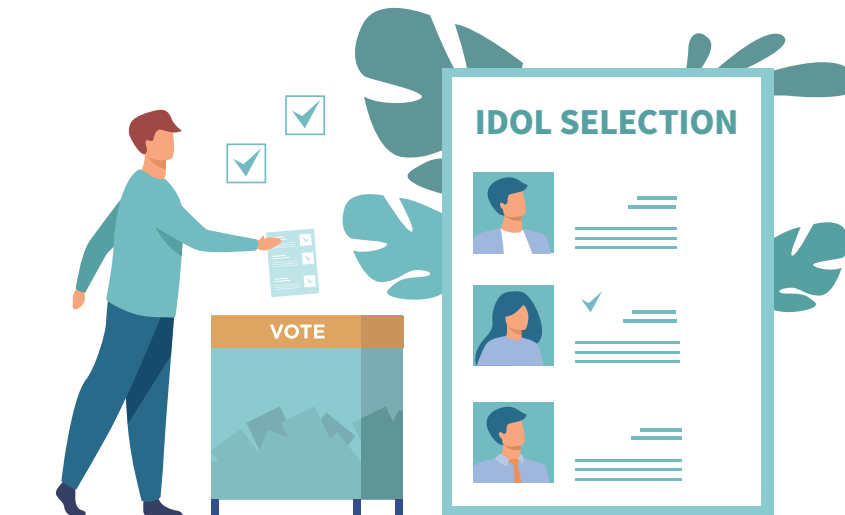
“Students analyzed a corporate crisis and its public relations strategies in the Chinese context, depicting how the corporate crisis inevitably led to government intervention after public outcry, which is unique to crisis management in China.”

Milk Pouring Scandal



Online group discussions for the case study. The team consisted of three financial media students, Li Yuren, Zhang Renyao, Han Yajun, and one quantitative finance student, Sun Weiye. All are from Professor Soojin Roh's Public Relations and Strategic Communications Class

Titled "Fans Fever Cools Down, Talent Show Shuts Down: Milk Wasting Scandal of iQIYI Leads to Government Intervention," PHBS students' work probed into the 'milk pouring' incident involving Chinese video platform iQIYI, which encouraged viewers to buy the sponsor's milk products and scan the QR code inside the caps to vote for their favorite contestants in the show. The case shows how key stakeholders including government played different roles in the development of the crisis.



"One of our primary goals of participating in this competition was to call for more attention to more nuanced perspectives on PR in a non-American context."

One of the strengths of the case study is that the authors made an effective effort to explain the sentiments, history, and culture surrounding the crisis event, as refers to the long history of participating fan culture for the making of idols, as well as the fierce competition in the entertainment/media industry, and public sentiments towards wasting food.

Based on this specific case, the students analyzed a corporate crisis and its public relations strategies in the Chinese context, depicting how the corporate crisis inevitably led to government intervention after public outcry, which is unique to crisis management in China. Compared to the actual response from both iQIYI and Mengniu Dairy, they suggested that positive voting rules and specific compensatory measures should be in place to fulfill social responsibilities.

"One of our primary goals of participating in this competition was to call for more attention to more nuanced perspectives on PR in a non-American context," Roh concluded. Despite growing calls for more "international" takes on PR, the local perspectives specific to certain culture and region are largely missing from PR practices, discussion, and literature. The critical thinking of our students demonstrated in the competition provided new international angles in this regard. Incorporating

cutting edge subjects such as data analysis and information visualization into the curriculum, our master's programs have been encouraging faculty and students to contribute to strategic communication and public relations in the business world using global perspectives.

"It is a great pleasure to finish this case study and we all feel much honored to win the award," the PHBS team said, "and many thanks to Professor Roh for her insightful advice and patient tutoring." Student authors of winning entries and their advisors will be awarded in the upcoming ceremony and recognized by the leading corporate communications executives.

This year's winners also include students from Boston University (grand prize), University of Florida (first prize), and University of Oklahoma (second prize), covering the topics of politically-motivated corporate social responsibility campaigns, the airline industry during the pandemic, and values-driven business in conflict. All of the documents of the winning submissions, including presentations and teaching notes, are available on Page Society's website.

PHBS Holds Fourth International Workshop in Macroeconomics and Finance

By Annie Jin

Sponsored by Peking University HSBC Business School (PHBS), the Sargent Institute of Quantitative Economics and Finance (SIQEF) at PHBS and the Center for Macroeconomy and Finance (CMF) of Peking University jointly organized the Fourth International Workshop in Macroeconomics and Finance on April 23-24.

<div>Wenxin Zhou (周欣, ms) </div> <div>Frances PHBS (fms) </div> <div>Benjamin Mok </div> <div>Kai Li (李海) </div> <div>Peiyang Wang (王佩) </div> <div>Shengyang Zhang (张圣) </div> <div>Wenye Cao (曹文) </div> <div>Adnan </div> <div>AKHINOVA YANIS </div> <div>April CHENG </div> <div>Baichen YIN </div> <div>Bi Huang </div> <div>Celine Durr Jan </div> <div>Chenjie Xu (徐) </div> <div>Chi-Yang Tsui </div> <div>Chun-Huang </div>	<div>David Greenwood </div> <div>Daniel Lander (PHBS) </div> <div>El Li </div> <div>Ding DONG </div> <div>Ding LUD </div> <div>Dr. Anwarul Maksud Naeem Dines </div> <div>Falling KJ </div> <div>Gang Yi </div> <div>Hong-Lin FULLEN </div> <div>Hsiao HE </div> <div>Hongshuang PHBS </div> <div>Hsu </div> <div>Huang Fenghua </div> <div>John ZHANG </div> <div>John Shi </div> <div>Jinyi Jin </div>	<div>Jihui Bai </div> <div>Jin Li </div> <div>Jin Li Li XIAO </div> <div>Jin TU </div> <div>Kaifeng Song </div> <div>Kaifeng Song PHBS </div> <div>Lixin </div> <div>Marshall Lites PHBS </div> <div>Michael Michele Douglas </div> <div>nan </div> <div>Naravator Chidambaram </div> <div>Oliver Demetri </div> <div>PHBS-Chen Zhang </div> <div>PHBS-Liangshan Shen </div> <div>PHBS-Tongxin Lin </div> <div>Shi Qiu </div>	<div>Shichang Xu </div> <div>Shiao Chen </div> <div>Shenai Xiao </div> <div>Victoria Gregory </div> <div>Wei Gu </div> <div>Wei Li </div> <div>Wenxin Diao </div> <div>Wu Yi </div> <div>Xiang Shi </div> <div>Xiao Ma, PHBS </div> <div>Xiao Zhao </div> <div>Xiao Li </div> <div>Xie Jin </div> <div>Xu, K. </div> <div>Yan Ji </div> <div>Yonghui Liu </div> <div>Yu Huang </div>	<div>Yichang Wang </div> <div>Yifu Liu </div> <div>Yongfeng Chen </div> <div>Yongxin Wang </div> <div>Yu CHENG </div> <div>Yu Shi </div> <div>Yun Yi </div> <div>Yuan </div> <div>Yuang Zhang </div> <div>Yuanze Ma </div> <div>Yuan </div> <div>Z. Liu </div> <div>Zehui Li </div> <div>Zhang Li </div> <div>Zhang Xu PHBS </div> <div>Zhangsheng YIN </div> <div>Zhenyuli Li </div>	<div>张圣 (ms) </div> <div>Frances PHBS (fms) </div> <div>Kai Li (李海) </div> <div>Peiyang Wang (王佩) </div> <div>Tu CHENG </div> <div>April CHENG </div> <div>April Chen </div> <div>Baichen Yin </div> <div>Bi Huang </div> <div>Regina Blount </div> <div>Qiyin Durr Jan </div> <div>Shen Jang </div> <div>Shengye Xu (徐) </div>
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Over 200 scholars attend the online workshop

The workshop invited renowned scholars and experts from prestigious universities and institutions worldwide, including the Massachusetts Institute of Technology, the University of Pennsylvania, Columbia University, Duke University, the University of Chicago, the University of Maryland, Arizona State University, Northwestern University, the University of Minnesota, the London School of Economics and Political Science, the London Business School, University College London, Peking University, the Federal Reserve Bank of Richmond, and the Federal Reserve Bank of St. Louis. In spite of pandemic challenges, they converged online to exchange research insights and explore cutting-edge research areas with more than 200 young researchers from home and abroad.



Professor Wang Pengfei

Vice Chancellor of PKU Shenzhen Graduate School and Dean of PHBS

Professor Wang expressed his warm welcome to all the participants and his heartfelt gratitude to Winston Dou (assistant professor, University of Pennsylvania), Li Kai (associate professor, PHBS) and Zhang Shengxing (assistant professor, LSE) for their efforts in organizing the workshop. He introduced the school's academic achievements in 2021, including the induction of its applied economics field into the “first class” discipline construction sequence of Guangdong Province, multiple publications in top academic journals, and the recent development of SIQEF. PHBS faculty members published 58 papers in first-class academic journals last year, including 14 papers in top international journals such as the *Journal of Finance*, the *Journal of Financial Economics*, and *Econometrica*, with a 50% increase in high-quality publications from 2020; In addition, SIQEF has been approved as one of the “Key Laboratories of Philosophy and Social Sciences at Colleges and Universities in Guangdong Province.” After briefing on the workshop’s agenda, he also emphasized the importance of academic exchanges in macroeconomic and finance during the pandemic.



Professor Thomas J. Sargent

2011 Nobel Laureate in Economics
and Director of SIQEF

Professor Sargent shared his recent discussion with Professor Lars Peter Hansen, 2013 Nobel laureate in economics. He mentioned two primary components of Bayesian analysis: prior distribution and likelihood function, further pointing out Bayesian researchers' firm subjective beliefs about the prior distributions. Since Aldo Rustichini and his coauthors extended von Neumann and Savage's expected utility theory to variational preferences, he and Professor Hansen have been developing new frameworks in this regard. Based on this, Professor Sargent elaborated on how to deal with decision-making problems when people do not have a unique prior over statistical models (i.e., likelihood functions) and suspect that each statistical model is misspecified.

Following the remarks, the workshop featured two keynote speeches and four sessions, which included research papers in the fields of macroeconomics and finance. Each presenter had 20 minutes to introduce their research findings, followed by a ten-minute discussion.



Professor He Zhiguo
The University of Chicago

data of land parcels, Professor He and his coauthors found that the flow of tax revenues from industrial land could quantitatively explain the size of the upfront industrial land discount; in addition, the internal rate of return from the industrial-residential land tradeoff was greater than local governments' cost of capital. Their research has proved that industrial land sales in China are not subsidized relative to residential land sales; and for policy implication, the tax sharing scheme between the central and local governments can be carefully designed to achieve desired land allocation outcomes.

Professor Benjamin Moll from the London School of Economics and Political Science presented his paper "Asset-Price Redistribution." Professor Moll and his coauthors analyzed how the process of continuous asset price growth and buying-selling process could affect the individual welfare growth. Using Norwegian panel microdata from 1994-2015, they conducted the empirical analysis on welfare gains and asset-price redistribution, showing redistribution effects from the young to the old for multiple types of assets, including real estate, bonds, deposits, and warrants. Professor Moll also elaborated on their simple heterogeneous agent model to quantify the welfare effect of historical asset price fluctuations, and suggested that governments should take asset-price redistribution into consideration to optimize policy.



Professor Benjamin Moll
The London School of Economics
and Political Science

In his keynote speech, Professor He Zhiguo from the University of Chicago introduced his paper "Is There an Industrial Land Discount in China? A Public Finance Perspective." He pointed out China's land market featured a substantial industrial discount: industrial-zoned land is an order of magnitude cheaper than residential land. Based on the



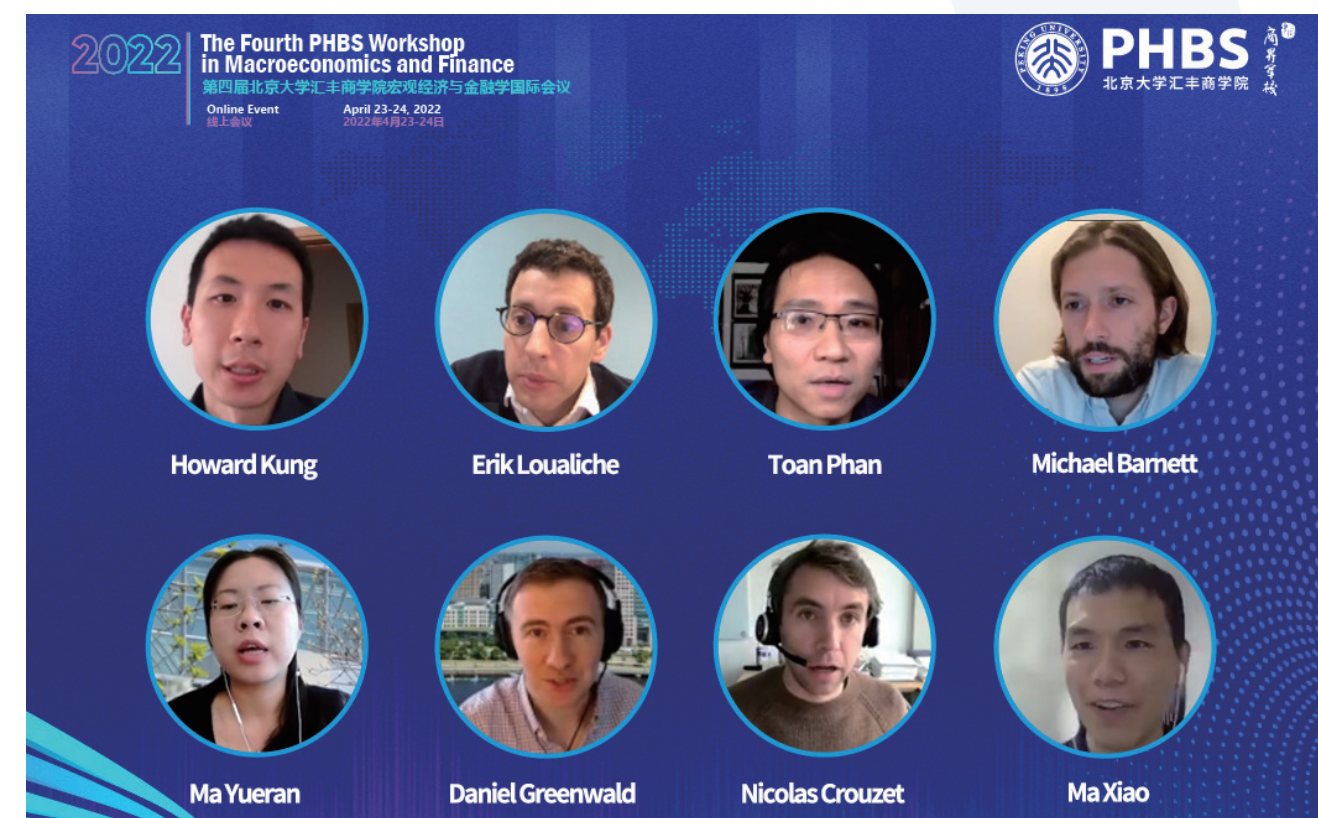
A total of eight papers were presented this year at the four sessions. In the Human Capital and Macro Development session, chaired by PHBS Assistant Professor Jia Dun, PHBS Assistant Professor Ma Xiao presented his paper "How do Workers Learn? Theory and Evidence on the Roots of Life-Cycle Human Capital Accumulation." Based on worker qualification data from Germany and the US, Ma and his coauthors found that internal learning (learning through colleagues) decreased with worker experience, while external learning (on-the-job training) had an inverted U-shape in worker experience. To shed light on these findings, they embedded this two-source learning mechanism in a quantitative search framework where firms and workers jointly fund learning investments. Their research shows that subsidizing learning can generate sizeable increases to human capital and aggregate output. Discussant Victoria Gregory from the Research Department of the Federal Re-

serve Bank of St. Louis gave suggestions on the heterogeneity of learning and training methods, endogenous training mechanisms, and data processing refinement.

The three other sessions focused on Industrial Organization and Asset Pricing, Climate Finance, and Corporate Frictions and Macro Finance, with Assistant Professor Winston Dou, Associate Professor Li Kai and Assistant Professor Zhang Shengxing as each session's chair.

Initiated in 2018, PHBS Workshop in Macroeconomics and Finance has provided an effective platform for some of the most prominent scholars and young researchers to promote academic exchanges among macroeconomic and financial research institutions, deepen the understanding of China's macroeconomic and financial issues, and facilitate the application of research findings into China's reform and development.

* He Hemin and Song Hengxu also contributed to the article




The session presenters

The Sixth PKU-NUS International Conference on Quantitative Finance and Economics Held Online


By Annie Jin

The sixth PKU-NUS International Conference on Quantitative Finance and Economics was held online from May 14 to 15. Jointly sponsored by Peking University HSBC Business School (PHBS), the Risk Management Institute (RMI) of the National University of Singapore (NUS), and the Key Laboratory of Mathematical Economics and Quantitative Finance at Peking University, this year's annual conference was organized by the School of Mathematical Sciences of Peking University, attracting more than 100 scholars to enhance their quantitative techniques, discuss new methods, and share the latest research findings.


The workshop featured six sessions, covering papers in the fields of macroeconomics, microeconomics, computational finance, algorithmic trading, financial modelling, liquidity and credit risk, mathematical economics, portfolio selection, mean-field game theory, and FinTech.




Li Chenxu
Peking University
Guanghua School
of Management




Wang Pengfei
Vice Chancellor of
PKU Shenzhen Graduate
School and Dean of PHBS




Chen Yi-Chun
Director of RMI,
National University
of Singapore



Yacine Aït-Sahalia
Princeton University



He Xuezhong
Xian Jiaotong-Liverpool
University



Liu Qingming
Columbia University

Opening remarks were delivered by Li Chenxu, professor of the Guanghua School of Management, Wang Pengfei, vice chancellor of PKU Shenzhen Graduate School and dean of PHBS, and Chen Yi-Chun, director of the RMI. Professor Li hoped that this conference could promote in-depth and extensive academic exchanges and cooperation between universities. Professor Wang expressed his heartfelt gratitude to the co-organizers and hoped that this annual event could enhance the relations among scholars and keep close track of academic breakthroughs. He also introduced our school's academic achievements in 2021 and reflected on the long-lasting cooperation with NUS. Professor Chen briefed on the history of the conference, noting that PKU and NUS should further enhance cooperation and relations.

The conference invited three keynote speakers, Professor Yacine Aït-Sahalia (Princeton University), Professor He Xuezhong (Xi'an Jiaotong-Liverpool University), and Professor Liu Qingmin (Columbia University), to share their insights. Professor He elaborated on his paper "Quantitative Investing and Price Informativeness," where he established an equilibrium model of quantitative investment (QI) in the asset management market to study the impact of QI on market efficiency and stability. The research shows that QI affects price informativeness through two channels: directly, it brings more informed capital and superior price information; indirectly, imperfect price interpretation injects systematic noise into equilibrium results due to common errors in

institutional price processing. In the equilibrium of an endogenously-determined fund market, whilst also inducing more capital flows to quantitative funds, lowering price information could further motivate the formation of quantitative funds. Professor Aït-Sahalia and Professor Liu shared the findings of their papers "How and When are High-Frequency Prices Predictable" and "Stability and Efficiency of Two-Sided Matching Markets" respectively.

“Initiated in 2016, the PKU-NUS International Conference on Quantitative Finance and Economics has been held annually to exchange the latest insights, keep close track of market moves, explore new research methods, and respond to regulatory changes in the financial sector.”

Following the keynote speeches, the workshop featured six sessions covering papers in the fields of macroeconomics, microeconomics, computational finance, algorithmic trading, financial modelling, liquidity and credit risk, mathematical economics, portfolio selection, mean-field game theory, and FinTech. 45 high-quality papers were selected from many submissions, including seven from our faculty and researchers.



Dong Ding, a Ph.D. candidate from Hong Kong University of Science and Technology, introduced his paper “Turbulent Business Cycles,” coauthored with Professor Wang Pengfei and Liu Zheng, the Federal Reserve Bank of San Francisco. They found that turbulence was countercyclical and closely associated with recession: at the micro level, turbulence could reallocate resources from high-productivity firms to those with low-productivity, and the reallocation effect could be stronger in the industry with severe financial frictions. Based on this, they proposed an RBC model with heterogeneous firms and borrowing constraints to analyze the impact of turbulence on the macro economy and resource allocation, revealing that the impact of turbulence shock is significantly magnified by financial friction. Dong also discussed the implications of borrowing subsidy and credit easing: The former could effectively stabilize the economy but exacerbate misallocation, while the latter could improve efficiency.

Assistant Professor Yin Zhenda presented his paper “Promotions, Adverse Selection, and Efficiency.” The paper studied how adverse selection could affect promotion efficiency. Based on a labor market model with positional constraints and asymmetric

employer learning, Yin and his coauthors found that, under standard promotions, adverse selection could reduce worker turnover and, in turn, cause promotion inefficiency or decrease social welfare. However, employing “up-or-out” contracts that force worker turnover could reduce the adverse selection problem and, in turn, increase social welfare, because higher-ability workers would be better sorted into higher-level job positions. Moreover, the paper explained several firm behaviors and practices related to the use of “up-or-out” contracts in real world labor markets.

Associate Professor Jaehyuk Choi discussed his paper “A New Exact Simulation of the Ornstein-Uhlenbeck Driven Stochastic Volatility Model Using the Karhunen-Loève Expansion.” Efficient and accurate Monte Carlo simulation under the Ornstein-Uhlenbeck Driven Stochastic Volatility (OUSV) model has been recently proposed, but the accurate simulation of various stochastic volatility (SV) models requires substantial computational cost. Choi used Karhunen-Loève (KL) expansion to express the volatility path as an infinite sine series. The new method is faster than the exact method and its effectiveness has been verified by numerical tests.

Assistant Professor DuckKi Cho elaborated on his paper “How Does Declining Worker Power Affect Investment Sensitivity to Minimum Wage?” Considering microeconomic implications of declining worker power in the U.S., Cho probed how weakening working power affects firm-level investment decisions. Based on historical changes in minimum wages over the period 1983 to 2017, he found that various forces that have been advanced in the literature as driving the decline in worker power could reduce firms’ investment-wage sensitivity. Those factors include globalization (the 1999 US-China bilateral agreement, and China’s accession to the WTO in 2001), technological change, and weakening union power.

Ph.D. candidate Zhang Yueqi presented the paper “An affine term structure model of China’s key interest rates,” coauthored with PHBS Associate Professor Li Kai. Focusing on DRepo, Repo, and SHIBOR interest rates, they employed a five-factor affine term structure model to study the term structure of interest rate spreads in the Chinese interbank market based on the data of different maturities observed from 2015 to 2021. The research findings show that liquidity factor contributes to the spread of the Repo rate and the DRepo rate, and the spread of the SHIBOR and the DRepo rate, while credit factor contributes to the spread of the SHIBOR and the DRepo rate: The increase of liquidity risk will increase the spread of the Repo rate and the DRepo rate, but decrease the spread of the SHIBOR and the DRepo. In addition, the effect of liquidity factor and credit factor will decrease as maturities increase.

Proper pricing has always been a central concern for art investment. Ph.D. candidate Li Jian presented his paper “Information extraction and artwork pricing,” coauthored with PHBS Associate Professors Jaehyuk Choi, Ju Lan, and Tu Zhiyong. Based on the hedonic pricing model and Shannon information theory, the paper proposed an image information quantity factor measured by singular value decomposition (SVD) entropy. The authors used the data of FindArtinfo and WikiArt to empirically verify the positive impact of information on art pricing and compare it with other content factors in previous research. Li concluded that the research could improve the explanation for content heterogeneity and show the powerful application of computer graphic techniques in the field of artwork pricing.

Associate Professor Peng Xianhua presented his paper “A Machine Learning Algorithm for Stochastic Control Problems.” Based on deep neural networks, he and his coauthor proposed a machine learning algorithm called the Monotonic Monte Carlo Control (MMCC) algorithm for solving high dimensional time-inhomogeneous stochastic control problems, and applied the algorithm to solve various problems in economics and finance, such as portfolio selection under stochastic volatility models.

Other scholars presenting and discussing papers came from world renowned universities and institutions, including Yale University, Cambridge University, the University of British Columbia, the University of North Carolina at Charlotte, the University of Wisconsin-Madison, the National University of Singapore, Hong Kong University, the Chinese University of Hong Kong, City University of Hong Kong, Hong Kong University of Science and Technology, Tsinghua University, Peking University, Nanjing University, and the Microsoft Research.

Initiated in 2016, the PKU-NUS International Conference on Quantitative Finance and Economics has been held annually to exchange the latest insights, keep close track of market moves, explore new research methods, and respond to regulatory changes in the financial sector.

* Wu Sa, Xia Yuanqiong, and Liu Qiaoqiao also contributed to the article



Care and Support for UK Campus Students During the Pandemic

By Carryn Yong, Jacqueline O'Brien, and Annie Jin

Editor's note

The Covid-19 pandemic in the UK began in March 2020. Almost two and half years later, life in the UK is now back to normal after much disruption to universities, businesses, and travel, resulting from government restrictions and lock-down policies in response to the pandemic. All students at UK universities are now back on campus and enjoying face-to-face teaching, and extracurricular and social activities. As

we reflect upon our lives and activities during this period, despite student life during lockdown and the various disruptions to teaching and learning being somewhat surreal, one of the key takeaways is the resilience of staff and students of the UK Campus, particularly how the members of staff rallied together to ensure that the students were protected and cared for during the two national lockdowns.



United in Managing Challenges

After the first national lockdown, the UK slowly opened up and university students were allowed back on campus after July 2020. With the easing of restrictions while the pandemic was still ongoing, the UK Campus staff understood the need to protect themselves and the students. As such, they all got together that summer to plan the necessary precautions and standard operating procedures for welcoming our first batch of students back onto the UK Campus for face-to-face teaching.



Antigen test kits were made available at the UK Campus reception

The UK Campus' Covid-19 response included:



Antigen test kits were made available at the UK Campus reception and staff were trained so that they could supervise or administer the Covid-19 antigen test to the students;



Housekeeping staff at the UK Campus followed a cleaning procedure and schedule to ensure that common areas were cleaned regularly;



A well-equipped space was prepared to isolate infected students in order to prevent the virus from spreading on-site;



Deep cleans of the UK Campus were implemented every week and when needed;



Staff were trained to provide welfare support – such as meals and groceries being delivered to the infected students who were self-isolating;



A dedicated member of staff was appointed to coordinate all aspects of support and response for students, which included daily welfare checks for the students who were self-isolating, the preparation of Chinese herbal teas to ease their symptoms, and the organization of personal protection equipment and face masks for staff and students.



Transport support was prepared and organised to ferry students to Covid-19 test centres or the hospital, if required;

As the UK government relaxed the Covid-19 precautions, whereby people were allowed to mingle and socialize in public places, it was inevitable that some students would become infected with Covid-19. With all the plans in place, that was the time when the staff of the UK Campus got together to execute their Covid-19 response. Everyone worked to play their part in helping students through the pandemic and ensure that student health and safety was the utmost priority. With the resilience of the staff and students, the UK Campus has confidently and effectively managed the challenges.

One of the infected students said: "Two years ago, I was suspected of being positive for SARS-CoV-2. I am eternally grateful for the unparalleled care shown by the UK Campus. The Head of Campus, Professor Guy Liu came to see me personally and administered

the antigen test twice. My thanks also go to his team. They personally delivered medicines and a testing kit to my accommodation, addressed my worries, and even drove me to the airport at the end of the course. I am very thankful for all their support. 感恩, 感谢, 和感谢你!"

Another student also expressed his thanks to the UK Campus: "I was infected in the winter of 2020 and was isolated in my room for 2 weeks. During my self-isolation, I very much appreciated Professor Guy Liu who delivered fruits and milk to me, and sent me Chinese herbal teas to help me recover. Under the good care and support, I soon recovered and tested negative after two weeks. Again, thanks to the excellent care and support from the staff of the UK Campus. I will always remember their kindness and care during this difficult time."



Consulting service for students

"Highlighting the importance of 'looking toward the sun,' Professor Hai encouraged students to stay together and support each other to win the battle and learn important life lessons on patience, perseverance, and hope."

Students, We' ve Got Your Back!

Despite the unprecedented pandemic and its impact, the UK Campus managed to not only protect students and to help those infected recover, but to also navigate the challenges of the pandemic with minimal disruption to student learning. To ensure the health and safety of all staff and students, if self-isolating or feeling unwell, students were given the option to attend lectures and seminars from home via Zoom.

The UK Campus also improved its teaching facilities and provided staff with training and assistance to ensure that the online teaching was as smooth and engaging as for the off-line students. The Zoom platform and the improvements made to the lecture hall have been very facilitative and enabled teaching and learning to continue as normal despite the challenges posed by the pandemic.

"I feel so proud of our institution that in spite of such conditions, we are still able to communicate and learn together. This kind of support and communication is amazing," said international student Kirti Krishna, adding, "Talking to professors by just a click of a button and accessing their lectures in our comfort is the best we can get in this virus outbreak."

The PHBS school leadership at the Shenzhen Campus was committed to ensuring the quality of online teaching and paid close attention to UK campus students' concerns with Founding Dean Hai Wen, Associate Dean Young Joon Park, and Interna-



Hai Wen, vice chairman of Peking University Council and founding dean of PHBS, meets online with all the home and international students at the UK Campus

tional Office Director Mao Na holding regular online town hall meetings to enable real-time communication. The attendants also included members of the UK staff including Hang Yuting, Carryn Yong, and Guy Liu.

In response to students' frequently-asked questions, Professor Hai elaborated on the school's academic policies and requirements, the access to financial lab data, as well as course arrangements. He also gave updates on policies regarding international students' return to China and advice on many aspects related to their life and study. Highlighting the importance of "looking toward the sun," he encouraged students to stay together and support each other to win the battle and learn important life lessons on patience, perseverance, and hope. On behalf of the School, Professor Hai Wen also announced the offer of financial support to our international students.

Student Life in the New Norm

Students' mental health and well-being were of utmost importance to the UK Campus during periods of national lockdown and while students were required to self-isolate as per national requirements. During the pandemic, it has become very apparent that mental health and well-being are very important

issues to students in their learning journey. Consequently, in 2021 the UK Campus appointed a dedicated member of staff to respond to and advise students on issues related to their welfare, mental health, and problems faced in their personal lives.

National lockdowns also highlighted the need and importance of socialisation and group activities. This period showed just how damaging isolation is to one's mental health and how group activities are vital to mental health and well-being. To ensure that our students were well taken care of socially, especially after the two national lockdowns and self-isolation requirements, the UK Campus also organized a wide range of after-class activities and social events in order to provide students with a greater depth to



Group exercises and personal training

their learning experience.

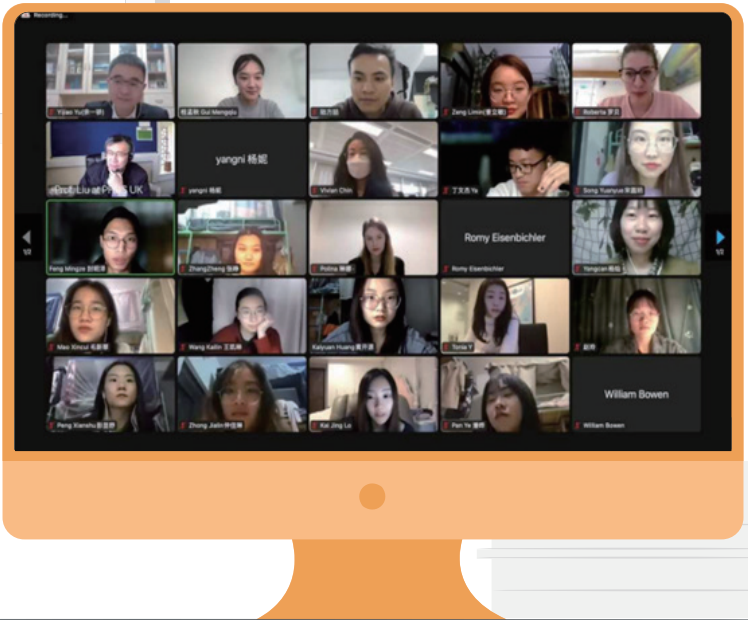
The pandemic also highlighted the importance of exercise to mental health and well-being. To ensure that our students were fit and healthy, the UK Campus arranged for a personal trainer to come to Campus twice a week to provide our students with personal training and group exercises. The personal trainer was well-trained and professional, and tailored every session to each of our students' abilities, goals, and needs. Each training class lasted for 60 minutes and incorporated various exercises to improve core stability, strength, agility, and speed, which helped students to feel fitter and stronger in their daily lives. Some students, finding out just how useful it was to have such dedicated physical training, arranged to have 1-to-1 sessions with our personal trainer.

Throughout the pandemic, as the national restrictions relaxed, the UK Campus arranged various extra-curricular activities for our students, such as a walking tour of Oxford, a day trip out in the Cotswolds, a Pizza and Quiz night, Chinese music seminar, a Halloween experience, a photo competition, Chinese New Year tea party, a formal dinner at some of the University of Oxford's colleges, amongst many other activities. Our students appreciated the opportunities to see and experience the City of Oxford and the UK during these challenging times.



Cotswolds Trip

“Despite the unprecedented pandemic and its impact, the UK Campus managed to not only protect students and to help those infected recover, but to also navigate the challenges of the pandemic with minimal disruption to their learning.”



Strong Academic Support

In addition to welfare and well-being support, the UK Campus also ensured that the students were well supported academically. As many second year students were unable to travel to our Shenzhen Campus due to the closure of the Chinese border, the UK Campus incorporated many academic avenues to support their dissertation research and writing.

To assist their research, the UK Campus acquired the WIND and Statista databases, and also organized research methods' workshops to help students with data analyses and to familiarise them with the acquired databases. To help in monitoring their dissertation progress, a weekly Dissertation Supervisory Meeting was also established, where students reported on their dissertation writing progress, and a Mock Dissertation Defence with members of the UK Campus faculty was organised for students to present their final research. These academic support initiatives were well-received by the students who felt that it boosted their research confidence and their ability to pass the dissertation defense successfully.

The pandemic also limited the students' ability to interact and network with people from industry. However, to help mitigate the effects, the UK Campus organised various hybrid seminars with a myriad of different speakers from various businesses and industries. These seminars were very well received

by students, because, both in-person and online, they were able to learn many new insights from industry professionals beyond their courses, and many developed their network with numerous businesses and practitioners.

Despite the pandemic being officially over in the UK, it is without doubt that the learning experience of the students at the UK Campus during this period will remain with them forever. Despite the unprecedented times and their impact, PHBS students – like students all over the world – have been able to continue their studies and learn important life lessons.



Students attend hybrid seminars

5 Reasons to Get Your Business Degree in Shenzhen, China

PHBS Alumnus Brandon Stefano tells TopUniversities about his experience studying in the city.

By Chloe Lane



Located on the south-eastern coast of mainland China's Guangdong province, Shenzhen was once just a small fishing village. Today, it is one of mainland China's wealthiest and fastest growing cities. Even known as the Silicon Valley of China, it is an ideal place to study a business degree.

Master's in management graduate Brandon Stefano visited Shenzhen twice before deciding to study at Peking University HSBC Business School (PHBS). His decision to study there was largely influenced by Shenzhen's being the home of China's tech industry and the prestige of PHBS.

"My grandfather, being born and raised in China, still had vivid memories of his time in the nation and he often told me that Peking University was considered in his time as the dream of the Chinese people."

Although he grew up in Indonesia, Brandon's family was originally from the city of Meizhou in China's Guangdong province, which is very close to Shenzhen. Brandon therefore saw studying in Shenzhen as a way to reconnect with his family heritage.

TopUniversities, the home of the QS World University Rankings, spoke to Brandon about his experience of studying in Shenzhen and asked why he believes it is a perfect city to study a business degree.



Brandon Stefano

Indonesia, Class of 2019
Master of Management,
Project Management Lead
at JD.ID

My decision to go to PHBS stems from an interest to study more about the growing Chinese economy and the fact that the program is fully English-taught provides a unique opportunity for me to dive deeper and learn about China and its businesses. PHBS' location in Shenzhen also enables me to get in touch with the Chinese Tech industry, as Shenzhen is the Tech capital of China. This allows me to deepen my understanding of China while also staying in touch with the Tech scene in Shenzhen. Classes in PHBS are shaped around the booming Chinese economy, therefore all cases and examples used are relevant towards deepening one's knowledge and its application in a real-life business context.

It's the Silicon Valley of the East

Brandon has always had a strong interest in technology and so was naturally drawn to Shenzhen, which he describes as "the Silicon Valley of the East." "Attending business school in Shenzhen would help me gain not just a business perspective, but also first-hand exposure to the tech industry in Shenzhen," he said.

Shenzhen is a leading business, innovation, and financial center in mainland China with a strong focus on producing consumer tech products. Its economic strength is reflected in its status as a Special Economic Zone. "As a student I am able to get more chances to network with a more varied group of individuals because of the continuous push for investment in the city," said Brandon.

You will make an impact on real businesses

Studying a business degree in a thriving business hub such as Shenzhen will allow you to apply your knowledge to real companies and see how your changes are making a difference.

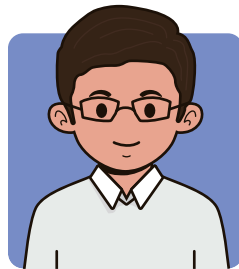
The PHBS master's in management program provides specialist training in management, covering cross-disciplinary coursework such as management theories, economics, and organizational behavior, and demonstrates how to apply that training to real-world corporate issues.

"There were countless group works where we were given case studies based on real and current cases that companies from different industries were facing," said Brandon. One part of the program that stood out for Brandon was the management scenario projects, which included product development, project management, and consultancy. As part of an operations management project, Brandon's team was tasked with improving a business's operations.

The team chose a bakery in the Nanshan district of Shenzhen, devising and presenting ideas to help improve the in-store operations, which included a proposed rearrangement of their product displays to maximize food traffic and to ensure that every product received maximum exposure.

After revisiting the bakery months later, the team noticed that the bakery had implemented the proposed change. "It felt good that we were able to make a small impact through our work," said Brandon.

"My grandfather, being born and raised in China, still had vivid memories of his time in the nation and he often told me that Peking University was considered to be the dream of the Chinese people."



“During every study group, group project, dinner party, and weekend excursion, you would always learn something new and something we all had in common, despite being different. It was an environment that allowed me to thrive in every single aspect of my life.”

Shenzhen is more international than other cities in China

“Shenzhen is a very international city, which is a rare find in China,” said Brandon, who describes it as one of the most expat-friendly cities in China. “It’s not hard to find restaurants opened by expats of different nationalities and every single amenity you could imagine in a western city – Shenzhen has got you covered.”

Brandon advises coming with an open mind and learning basic phrases in Mandarin. Doing this will allow you to completely immerse yourself in the city’s diverse and interesting culture. “Now I feel right at home with the culture in Shenzhen,” he said.

You’ll build business connections and lifelong friends

For PHBS students, a major benefit of studying in Shenzhen is the connections and friendships they make through an extensive alumni network spanning 64 locations around the world.

“Studying at PHBS gave me three very important things: business networks, new skills, and lifelong friends,” said Brandon. When asked what he enjoyed most about living and studying in Shenzhen, he said it was the diverse group of friends he had made there.

He said: “The people I met in PHBS all hailed from different countries, backgrounds, and cultures. I always love to surround myself with a diverse group of people and that was exactly what I did. During every study group, group project, dinner party, and weekend excursion, you would always learn something new and something we all had in common, despite being different. It was an environment that allowed me to thrive in every single aspect of my life.”

PHBS’s Alumni Association aims to bring together PHBS graduates from all class years. Through the association, alumni and current students can find personal contacts, professional connections, and career development opportunities.

A relaxed learning environment in a modern, fast-paced city

Shenzhen is the perfect mix of a buzzing, fast-paced metropolis and a relaxing, nature-filled city. Unlike some other Asian cities, it is incredibly modern and environmentally-focused. In fact, Brandon was surprised that most of the vehicles in the city were electric. The PHBS is located in the University Town of Shenzhen, which is more laid back than downtown Shenzhen, making it the perfect environment for studying.

Source: TopUniversities



Shenzhen is the perfect mix of a buzzing, fast-paced metropolis and a relaxing, nature-filled city.

Seungjoon Oh

Venture Capital Coordination in Syndicates, Corporate Monitoring, and Firm Performance



Seungjoon Oh
Assistant Professor
Research Interests:
Entrepreneurial Finance,
Corporate Innovation,
Governance,
and Venture Capital

The coordination of venture capital (VC) investors in their syndicate significantly influences their choice of contractual terms and portfolio firm performance. The difficulties in coordination and corporate monitoring incentivize VC investors to choose contractual mechanisms designed to protect them from the downside risks of early-stage entrepreneurial firms. Moreover, their firms experience a poorer exit outcome.

Despite the prevalence of syndication in the majority of VC investments, the coordination of VC investors in syndicates and their role in monitoring the portfolio firms are less understood. The free-rider problem and divergent incentives within VC syndicates can cause coordination friction and thus prevent VC investors from performing effective monitoring of their portfolio firms.

In the paper “Venture Capital Coordination in Syndicates, Corporate Monitoring, and Firm Performance” published in the *Journal of Financial Intermediation*, PHBS Assistant Professor Seungjoon Oh examines how the coordination of venture capital (VC) investors in their syndicate, as measured



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The study provides new evidence on the role of investor coordination in VC investors’ choice of ex ante contractual features in their investments.”

by their geographic concentration, affects their choice of ex ante contractual terms and firm performance. His coauthors are Jun-Koo Kang, Nanyang Business School, Nanyang Technological University and Li Yingxiang, the Sauder School of Business, University of British Columbia.

Specifically, they hypothesize that the geographic proximity of VC investors improves their coordination and monitoring effectiveness through better information sharing and reduced free-rider problems. This improved coordination and better monitoring incentivize geographically concentrated VC investors to rely less on costly ex ante contractual features than geographically dispersed VC investors and enhance the portfolio firms’ exit performance.

The distance between the VC investors can have a significant effect on the time and effort that VC investors need for effective networking, which is essential to the functioning of VC. In addition, VC net-

works play essential roles both in terms of value-added activities and deal sourcing, and geography and social connections are important considerations for VC investors when choosing their syndicate partners, together with the partners’ expertise, past shared successes, reputation, track records, and capital.

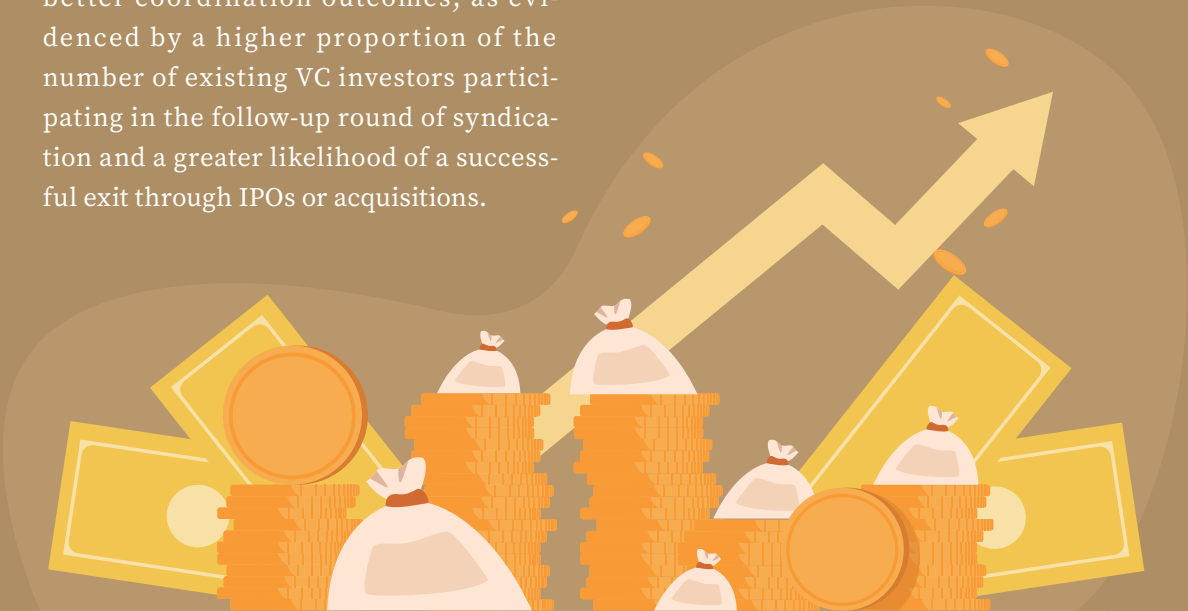
Therefore, Oh and his coauthors focus on the geographic concentration of VC investors, using 12,455 VC-backed U.S. entrepreneurial firms (45,604 VC investment rounds) covered by the Thomson Reuters’ VentureXpert database for the period 1995-2015 and measuring the geographic concentration of VC investors with VC fund-specific locations.

Although the rapid development of telecommunications over the past decade has improved investors’ ability to collect and communicate information, the authors maintain that VC investors rely relatively more on soft information in evaluating new and ongoing investments rather than

on hard information available from the internet and online communication. Thus, irrespective of the development of communication technologies, compared with remote VC investors, VC investors located near other VC investors tend to have greater ability to share private soft information about the firms through informal discussion and directly observe the *investor-specific* characteristics of nearby VC syndicate members, such as their risk attitude, monitoring incentives, and coordination intention.

Compared to geographically concentrated VC investors, the research has found that geographically dispersed VC investors use more intense staged financing and a larger proportion of convertible securities in their investments in entrepreneurial firms to overcome their weaknesses in coordination and monitoring. In addition, portfolio firms with geographically concentrated VC investors enjoy better coordination outcomes, as evidenced by a higher proportion of the number of existing VC investors participating in the follow-up round of syndication and a greater likelihood of a successful exit through IPOs or acquisitions.

To address the endogeneity of the geographic concentration of VC investors, Oh and his coauthors use the introduction of new direct airline routes that reduce the travel times between VC investor locations as an exogenous shock to geographic distance. This identification setting that exploits the exogenous variation in the VC investors' involvement after initial investments allows them to unambiguously examine the VC investors' post-investment monitoring role given their unchanged initial screening abilities. Overall, the study provides new evidence on the role of investor coordination in VC investors' choice of ex ante contractual features in their investments and how the geographic concentration among VC investors helps add value to portfolio firms by improving their monitoring abilities and incentives.



Jaehyuk Choi

Recent Advances on the Stochastic-Alpha-Beta-Rho (SABR) Model



Jaehyuk Choi
Associate Professor
Research Interests:
Quantitative finance,
Mathematical modelling,
Numerical methods,
Data science

The Black-Scholes (BS) model has been the standard option pricing model in the past few decades. However, the model fails to explain non-constant implied volatilities across strike prices, a phenomenon called volatility smile, which has been clearly observed in the options market since the Black Monday stock market crash in 1987. Numerous attempts have been made to replace or improve the BS framework, which has been a significant part of mathematical finance research.

One of the successful approaches to accurately model the volatility smile is to make volatility stochastic rather than constant. Among several stochastic volatility (SV) models, the stochastic-alpha-beta-rho (SABR) model proposed by a renowned quantitative analyst, Patrick Hagan, has been widely used in the financial industry. The SABR model is intuitive and parsimonious. It also provides a flexible choice of leverage effect, the correlation between the volatility and spot price.

Due to complexity, the exact option price, similar to the BS formula, is not available for the SABR model. Hagan instead provided an approximation formula for the equivalent BS



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The two new methods are more accurate with less or no arbitrage, showing a good promise to replace Hagan's formula in the finance industry.”

volatility so that traders could quickly convert to the option price. However, the approximation formula should be used with caution because the error often grows to a non-negligible size, breaking the no-arbitrage condition. As such, there have been many attempts to find a more accurate yet efficient method to improve Hagan's approximation.

To this end, PHBS Associate Professor Jaehyuk Choi and his coauthor, Professor Wu Lixin from Hong Kong University of Science and Technology (HKUST), recently published two papers: "The equivalent constant-elasticity-of-variance (CEV) volatility of the stochastic-alpha-beta-rho (SABR) model" in the *Journal of Economic Dynamics and Control* and "A note on the option price and mass at zero in the uncorrelated SABR model and implied volatility asymptotics" in *Quantitative Finance*.

Both papers focus on using the constant-elasticity-of-variance (CEV) model, which is the fixed volatility limit of the SABR model. In the first paper, the authors derive the equivalent CEV volatility of the SABR model instead of the equivalent BS

volatility. This new approach reduces error effectively as a control variate method because of the close connection between CEV and SABR models. Moreover, mapping to the CEV volatility indirectly imposes absorbing boundary conditions at zero strikes and thus provides small-time asymptotics for mass at zero, consistent with the literature.

In the second paper, the authors approximate the SABR model as a finite mixture of the CEV models with different spot and volatility values, using the idea borrowed from the method of Gulisashvili, Horvath, and Jacquier (2018). Therefore, the SABR option price is quickly obtained as the weighted sum of the CEV option prices. Although the approach is limited to the special uncorrelated case, the new finite-mixture option-pricing method is accurate and arbitrage-free across all strike prices. Numerical results demonstrate that the two new methods are more accurate with less or no arbitrage, showing a good promise to replace Hagan's formula in the finance industry.

Insight

- Echo Chambers:
The Impact of Media on Decision-making
- Digital Economy—
A New Blue Ocean for Cooperation between China and ASEAN
- Aging China Will Bring the World into Another Globalization
- The Essence of Privacy Is to Let Customers Know What to Do with It



Liu Baixiao: Echo Chambers: The Impact of Media on Decision-making

“In the market of news, the competition of information providers has at least two effects. On the supply-side, the competition among news sources generates timelier and more accurate information.”



Liu Baixiao

Associate Professor
Research Interests: Financial Media,
Short Selling, Behavioral Finance, and FinTech

position yourself locked in a chamber with all necessary supplies such as food and drink. The only thing that you are lacking is access to new information, to wit: no newspapers, no TV, no internet, no books, nothing. Believe it or not, you will soon become hysterical. Human nature is such that we are always hungry for new information. Indeed, we even dream when we are asleep. If someone gives you ONE column from a newspaper, turns on ONE TV channel, or hands you a cellphone with a Twitter app that ONLY follows Elon Musk, you feel saved, but not for long.

Because there exists another human nature. When the chamber in which you are locked is flooded with information, what piece of information would you like to consume? Specifically, which TV channel will you turn on? To which newspaper will you subscribe? Which celebrity's Twitter account would you like to follow? Before you consume any information, a decision is made, and the decision-making follows a strikingly clear pattern: you choose the information source that aligns with your prior beliefs. For example, if you are a hardcore Republican, you turn on Fox News rather than CNN. If you are extremely conservative, you pick up the Wall Street Journal rather than the Washington Post. If your brokerage account is fully loaded, you choose to follow on Twitter the sell-side

analyst that has a bullish outlook. Now you feel so alive, your little chamber is once again filled with new information; your life is back on track. With all the information floating around, you reacquired the power to know and you are the king of knowing. How pitiful! In this little chamber, you hear nothing but the echo of yourself.

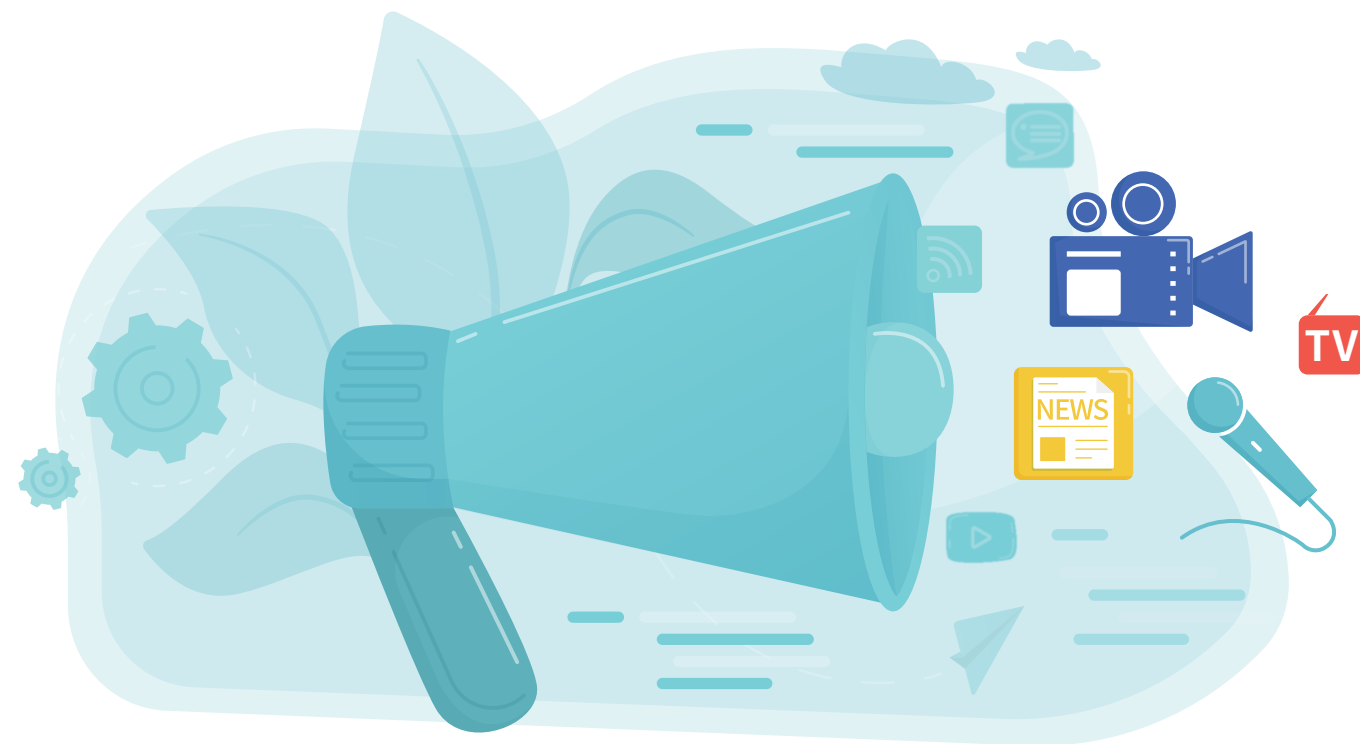
The phenomenon, that people deliberately choose to consume information that is consistent with their prior views, is known as confirmation bias. Such a bias hinders people from obtaining the full information set even if the full set is available without any cost. As such, truth may not be revealed, even assuming agents would make rational decisions when provided with full information, as demonstrated in most economic models.

of information providers has at least two effects. On the supply-side, the competition among news sources generates timelier and more accurate information. However, the objective function of information providers is not to maximize the accuracy and timeliness of news, but maximize recipients in order to further maximize the revenue of the providers. Thereby, on the demand-side, information providers are fully aware of the “echo chambers” that recipients establish in their mind, and compete in a fashion that characterizes themselves to be aligned with certain groups of beliefs and ideologies. The providers do so by the way in which information is presented and commented on. That’s why you think about Fox if you are Republican-leaning and about MSNBC if you are hardcore

Confirmation bias together with the demand-side driven competition of the news market, therefore, give rise to systematic bias in our decision-making process. In the context of financial markets, empirical studies show that bullish (bearish) retail investors are more likely to follow the bullish (bearish) information on social media that amplifies their prior beliefs in trading. Fund managers are influenced by their political leaning in news consumption that further influences their portfolio allocation decisions. Corporate managers are influenced by partisan media’s outlook on macroeconomics and distort fundamental corporate decisions as a result. And the agenda of this line of research continues. Presumably, the confirmation bias strengthened by the media could have a profound influence on the economy as a whole.

"At the end of the day, in your little chamber, the echo of yourself is amplified louder and clearer with the help of the media."

So what then? Is there any way out? Can we do something to run away from the fate of being haunted by our echo chambers? Perhaps, the answer is no, since it is just about who we are. Furthermore, it is almost unavoidable that people form even more acute differences in their ideology when we look at the world we are living in right now, given so many negative shocks in terms of the pandemic, global warming, and geopolitical conflicts. Moreover, the media, by the nature of competition, maximize such differences through our echo chambers. Perhaps, the answer can be yes, if we are fully aware of such an impact of media on our decision-making through our confirmation bias. We could open up and try to listen, deliberately embrace voices that violate our priors, and walk out of our pitiful little chambers; then, we might be free at last.



Now, let’s introduce another factor into the discussion, namely the media. With all the astonishing achievements in information technology in the past few decades, the media play the fundamental role in disseminating information and, perhaps more importantly, shaping the perceptions of recipients of such information. In the market of news, the competition

liberal. To make it even worse, with the presence of social media, you are “pushed” with the content you “like” thanks to the development in machine-learning and artificial intelligence. At the end of the day, in your little chamber, the echo of yourself is amplified louder and clearer with the help of the media.



Cai Rong:

Digital Economy— A New Blue Ocean for Cooperation between China and ASEAN

“Foreign investors generally face the challenge of localized operation and management. Chinese enterprises should actively explore the digital solution of 'Chinese experience and technology+local demand' in terms of business model.

As China and the 10-member Association of South-east Asian Nations (ASEAN) are geographically close and their economies have flourished in recent years, the two sides have forged a long-term bilateral relationship in many fields. According to a report released by Peking University HSBC Business School Think Tank, there are rich opportunities for China-ASEAN cooperation in the digital economy.

China, as the second largest country in the digital economy, has gradually become a global leader in 5G development, Smart City, Digital Government and Digital Manufacturing, while ASEAN has been enjoying rapid development of the digital economy. According to the ASEAN Secretariat, the proportion of ASEAN's

digital economy in GDP will have increased from 1.3% in 2015 to 8.5% by 2025, making it one of the top five digital economies in the world.

As the main author of the report, Cai Rong, assistant researcher and deputy secretary of PHBS Think Tank, probed the development trends of the ASEAN digital economy, covering its rapid expansion of digital infrastructure, booming demand of digital life, and growing investment in Fintech. Noting that transnational cooperation in the digital economy would generate diverse opportunities, as well as multiple thorny issues, Cai further analyzed the potential challenges and shared some policy implications.

Rapid Development of ASEAN Digital Infrastructure

The demand for communication networks and facilities continues to rise rapidly in ASEAN. According to the United Nations Conference on Trade and Development, ASEAN's annual investment in the 5G network is expected to be about US \$14 billion for the period 2020-2025, and is largely appropriated for upgrading communication facilities, networks, and equipment to meet the fast-growing demand for 5G.

In the areas related to cloud computing, artificial intelligence, and the Internet of things, there is still a large gap between ASEAN and developed countries in related technologies, which is the focus of investment cooperation. Singapore is the leader of ASEAN; Malaysia, Thailand and Vietnam are in the second echelon; and the Philippines and Indonesia are catching up with the second echelon.

ASEAN countries have issued national plans for the digital economy and manufacturing 4.0, and the demand for data centers and cloud services has increased on a large scale. At the same time, the demand of small and medium-sized enterprises for cloud services has accelerated after the outbreak of the Covid-19 pandemic. New data centers have gradually expanded from Singapore to countries such as Indonesia, Malaysia, Thailand, and Vietnam in recent years.

The scale of cooperation between China and ASEAN in the construction of infrastructure and platforms for the digital economy has expanded year-on-year. Chinese companies such as Huawei and ZTE have undertaken the testing and network construction of 5G projects in several ASEAN countries. In June 2019, Global Telecom, the largest mobile operator in the Philippines, officially launched 5G commercial network services using Huawei's technology and core equipment, becoming the first 5G operator in Southeast Asia. Now Global Telecom's 5G coverage in the Philippines has exceeded 94%. In 2015, China and ASEAN began to jointly build a China-ASEAN information port, and have achieved some phased construction results.



Cai Rong

Assistant Researcher and
Deputy Secretary of PHBS
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The Booming Demand of Digital Life in ASEAN

The areas of e-commerce, life services (including travel, takeout, etc.), games, entertainment, and social networking in the ASEAN region have all seen a high growth rate in the past five years, and the pandemic has objectively further contributed to the acceleration of digital life in ASEAN. Digital transactions in the six ASEAN countries (Indonesia, Malaysia, Philippines, Singapore, Thailand, and Vietnam) reached \$11.5 billion in the first half of 2021 alone, the same as for the whole of 2020. It is expected that the demand for digital life in ASEAN will continue to maintain a considerable growth rate in the next 10 years.

Several major digital life platforms in the ASEAN region, Sea, Grab, and GoTo, have developed into unicorns of the digital economy in the areas of e-commerce, electronic payment, life services, and games and entertainment.

E-commerce is the main engine of ASEAN digital economic growth; While at the same time, the e-commerce market is relatively scattered, and is the most competitive field of various digital platforms. Lazada and Shopee are the two major e-commerce platforms in ASEAN. The size of the ASEAN e-commerce market reached US \$120 billion in 2021, an increase of 62% over 2020, and is expected to maintain an average annual growth rate of 18% in the period 2022-2025, with the e-commerce market reaching US \$234 billion by 2025.

Life services are high-frequency scenes of digital life. Commute sharing and travel were one of the areas of demand hardest hit by the pandemic in 2020-2021.

The recovery of travel and travel demand depends mainly on progress in vaccination, pandemic control measures, and the relaxation of cross-border travel restrictions. In 2020, the transaction volume (GMV) of the takeout industry in the six ASEAN countries reached US \$11.9 billion; an increase of 183%. The top three takeout markets were Indonesia, Thailand, and Singapore.

Mobile games in the ASEAN region have shown explosive growth, so the new game enterprises and mobile games have a good opportunity to enter the market. The concentration of the local game market is not high, and the revenue of the top 10 games only accounts for about 18-36%.

The rapid expansion of digital life represented by e-commerce has laid a solid foundation for the development of digital payment and digital financial services in ASEAN. The traditional financial coverage is not high, but the penetration rate of smartphones and networks is high. Digital payment has quickly become the local mainstream payment method. The downloads of ASEAN electronic money transfer APPs in 2020 was 1.3 times that of 2019.

ASEAN's fresh groceries, takeout industry, warehousing and logistics industry, and digital financial services (payment, lending, insurance and investment) are in a relatively early stage of development; the market potential is huge and there are no giant enterprises to emerge, and as such, it is a good entrepreneurial track. In addition, digital health services and digital education services are in their infancy.

Alibaba began to lay out ASEAN e-commerce in 2013 and acquired a majority shareholding of 83% in Lazada, while also taking a stake in Tokopedia. Tencent participates in the market indirectly in the ASEAN region mainly through investment. For example, it has invested in Sea since 2010 and has become the largest shareholder.

In 2020, Chinese enterprises set a new record for the number and capital scale of projects invested in ASEAN, focusing on Fintech, retail, and business automation. China brings not only capital but also technical experience to Southeast Asia. The combination of this technical experience and local operation team has

become an important supporting factor for the development of science and technology start-ups in ASEAN.

Explosive Investment in Fintech

Fintech financing in the six ASEAN countries reached \$3.5 billion in 2021 (three times that of 2020), and the average transaction size increased from \$9 million in 2020 to \$21 million in 2021. Out of the \$3.5 billion, \$2 billion came from 13 mega-rounds (unlisted companies raised more than \$100 million in one round). This shows that investment institutions are more interested in late-stage venture capital (VC) of mature Fintech companies in ASEAN, which itself demonstrates that the continuation of the pandemic has made investors more cautious and risk-averse.

“Currently, there are a large number of ASEAN Fintech enterprises, and they are still in the stage of the "horse racing enclosure". It is impossible to predict which model or which enterprise will eventually win, except for a few cross-regional internet unicorns.”



Singapore and Indonesia are regional centers of the Fintech industry in ASEAN, followed by Vietnam and the Philippines. According to the latest ranking of global Fintech centers in 2021 released by Fintech data company Findexable, Singapore ranks second among the top 15 cities in the Asia-Pacific region, while Jakarta (Indonesia), Manila (Philippines), and Kuala Lumpur (Malaysia) rank 12th, 14th, and 15th respectively.

The financing direction of ASEAN Fintech in 2021 was divided by investment areas, and the payment sector has been firmly in first place for many years, with financing of US \$1.9 billion (55%). Investment in technology and cryptocurrency ranked second and third with US \$457 million (13%) and US \$356 million (10%), respectively. Currently, there are a large number of ASEAN Fintech enterprises, and they are still in the stage of the "horse racing enclosure". It is impossible to predict which model or which enterprise will eventually win, except for a few cross-regional internet unicorns.

Under this context, Chinese venture capital institutions have a high enthusiasm for investment in ASEAN

Fintech, and Alibaba as well as Tencent are the "front-runners" of China's Fintech investment in this region. According to statistics, 40% of the financing received by ASEAN Fintech-related companies from 2016 to 2019 came from Chinese venture capital institutions.

Challenges and Policy Implications

Transnational cooperation in digital infrastructure construction involves not only technical and economic factors, but also foreshadows multiple challenges such as financial, political, and cyber security. Government regulators need to establish a normal and effective communication mechanism to ensure infrastructure interconnection and network security, while jointly reducing the political risks of investors and suppliers.

The pandemic has had a negative impact on the ASEAN economy. However it has stimulated the growth of the scale of Internet users and accelerated the pace of digital life. This has allowed the ASEAN market to adapt to the new model of online consumption in only one year, when ordinarily it might have taken three to five years, further opening up the market sinking space from metropolitan areas to non-metropolitan areas.

Foreign investors generally face the challenge of localized operation and management. Chinese enterprises should actively explore the digital solution of "Chinese experience and technology + local demand" in terms of business model.

As a large number of institutional investors flock to ASEA, new technologies, and new models endlessly emerge, the financial supervision policies and methodology of ASEAN countries keep evolving, and the sandbox mechanism of financial science and technology supervision has been increasingly adopted and introduced by ASEAN countries. When seeking investment and cooperation, Chinese enterprises must pay special attention to understanding the corresponding regulatory policies and license restrictions, actively extend technical cooperation with new tools such as cloud services and big data, and attach great importance to the cultivation of local and international talent teams.

Charles Goodhart & Manoj Pradhan:

Aging China Will Bring the World into Another Globalization

“Rising living standards and improved medicine has led increasingly to longer expectations of life, not matched by higher retirement ages.”



As one of the largest countries, China is facing the rapid graying of its population. Regarding population aging, PKU Financial Review interviewed Charles Goodhart, the developer of “Goodhart’s Law,” fellow of the British Academy and emeritus professor at the London School of Economics, and Manoj Pradhan, founder of Talking Heads Macro and former managing director of Morgan Stanley. They point out that in the future, global overall economic growth may decline significantly, but per capita GDP will outperform overall GDP growth; and there are at least two sources of capital flows that could make China’s pension system larger: one is to redistribute the massive savings of state-owned enterprises, and the other is to allow more young labor force to be employed in formal sectors, to create a more regulated pension system.

logical innovation and macro-economic policies. The effect of demography on inflation is hard to isolate, but any ‘true’ model will need to be global, and will need to include (i) the decline of labour unions and the bargaining power of labour, (ii) a multi-decade disinflation that led to falling inflation expectations, and (iii) the massive relocation of production to China. The traditional way of capturing the ‘China effect’ is to look at the share of China in a country’s imports, and to look at import prices. This creates a serious understatement of the effect of global demographic forces on domestic inflation.

What can be done to reduce the influence of ageing? The ‘silver bullet’ would be a cure for neuro-degenerative diseases, but that is more hope than reality. Perhaps the developing shortages of labour in China/Europe/North America can be allayed by switching production to regions with much faster growing working populations, such as Africa, but there are many (political) obstacles to this. This implies another era of globalization, which seems to be quite distant under current domestic political conditions in the advanced economies.

Q: In your book *The Great Demographic Reversal*, you pointed out that in the long run, demographic changes will have a significant impact on global inflation. But we know that there are many factors that affect inflation. As such, how can we study the impact of demographic factors on global inflation on the basis of controlling other variables? What effective measures are there to reduce its influence or slow down this trend?

Charles Goodhart & Manoj Pradhan: In the last few decades there have been some remarkable demographic developments, especially in China. A baby boom (1945-65) was followed by a collapse in fertility with women shifting from housework to employment. Rising living standards and improved medicine has led increasingly to longer expectations of life, not matched by higher retirement ages.

These trends have been so strong that they have been swamping other influences on inflation, such as techno-

Q: China’s demographic dividend is disappearing, which will not only affect China’s future economy, but will also have a negative impact on the global economy. Regarding the effect of emerging technologies on economic growth, your attitude is not very optimistic. So, at a time when population aging has become a global trend, how do you see the future global economic growth? Do you hold a pessimistic view?

Charles Goodhart & Manoj Pradhan: Aggregate economic growth will decline, perhaps strongly. But productivity output per worker hour will rise faster than before. As a result, per capita GDP will perform better than overall GDP growth.

The increased power of labour and the rise in interest rates will together help to lower inequality within countries. That’s a silver lining, but it will happen against a backdrop of weak growth. The

main problem will be the rise in the ratio of retired to old workers. The workers will have to save, or be taxed, much more to release resources for looking after the elderly. That will be difficult.

Q: You pointed out that in the process of population aging, inequality will be magnified. In China, there is a huge gap between the pensions of urban and rural populations, and superior pension services can only be enjoyed by the wealthy. It is also the same in some developed countries. However, the tax system in developed countries is relatively complete. Does this mean that taxation will play a very limited role in reducing future inequality? In your opinion, what should the government and society do to promote "equity among the elderly"? How do you judge China's current "common prosperity" policy?



Charles Goodhart

The developer of "Goodhart's Law," Fellow of the British Academy, and Emeritus Professor at the London School of Economics

"The increased power of labour and the rise in interest rates will together help to lower inequality within countries. That's a silver lining, but it will happen against a backdrop of weak growth."

Charles Goodhart & Manoj Pradhan: The fall in the birth rate has been so large that care of the elderly can no longer be done within the family group.

Also, the needs of the aged vary greatly and randomly. Those with the neuro-degenerative diseases of the old, and who live longer, will have needs that go beyond all reasonable personal savings. Whereas those who die suddenly at an earlier date can quite easily survive on sensible personal savings. An ageing society needs a form of age/sickness insurance system.

"Common prosperity" is a goal consistent with the social contract between the administration and the country's residents. Having seen the struggles within the advanced economies because of inequality, it is natural that the administration should try and avoid that negative spillover from embracing market-based incentives for corporate China. However, to the outside world, the message surrounding "common prosperity" is muddled because it comes at the same time as China's campaign against property speculation and the socially disruptive parts of the technology sector. Even though the common prosperity drive is sure to encourage philanthropy and greater social responsibility, it is unclear to outsiders whether this will happen at the expense of entrepreneurial incentives that the market system is designed to create, and whether limiting speculation and excesses in the property sector will also damage an important driver of China's growth.

Q: As of the end of 2018, China's corporate contributions and private pensions were equivalent to 7.3% of its GDP, compared with 136% in the United States. Moreover, the Chinese Academy of Social Sciences' earlier estimate in 2019 predicted that China's national pension fund will be used up by 2035. With the rapid increase of China's aging population, how should China's pension model develop in the future? Where should the money come from?

Charles Goodhart & Manoj Pradhan: Your retirement age is too low. You need to relate the retirement age to the expectation of life. You also need an insurance scheme, to which all must contribute, to pay out

for those needing more care and living longer. Care homes need to be widely developed.

One question also often asked is whether it would be possible, or desirable, to raise the present low birth rate by policy measures. So far, attempts to do so in various European countries have been largely unsuccessful, and the more efficacious have involved financial subsidies for having more children, and are hence fiscally expensive.

There are at least two sources of financial flows that will allow China's pension system to become bigger. First, the substantial savings that reside in China's State Owned Enterprises could be 'reassigned' to help add to the pension pool, perhaps by financing debt obligations issued by the administration and used for elderly care. Second, China's population pyramid has become a 'barrel-shaped' structure, but the smaller number of young workers have substantially higher levels of human capital than the larger number of older workers who are retiring. As such, that should mean their employment is far more likely to be in the formal sector. Formal sector employment has a much greater ability to adopt and sustain pension systems. Effectively, the younger worker would end up creating



Manoj Pradhan

Founder of Talking Heads Macro and Former Managing Director of Morgan Stanley

"China's administration has to bring its considerable abilities to focus on creating facilities and networks that will take care of the elderly. And it has to start doing so today, not a decade from now."

a pension system for their own futures, while SOE savings could help finance at least part of the required increase in the pension pool for the elderly.

Q: You have pointed out that political conflicts are likely to occur between the main working-age population and the elderly: the key point of the future ageing struggle may be that the elderly defend their social welfare while the young defend their after-tax income. To a certain extent, the improvement of pension benefits means more "exploitation" of young people. In your opinion, will this further reduce the fertility rate, thus forming a vicious circle in the society?

Charles Goodhart & Manoj Pradhan: Demographers have not historically been successful in predicting future birth rates. But there are no signs yet of any recovery, rather the reverse, with rates falling further during the Covid pandemic. Anyhow, it would take 20 years for any up-tick in birth rates to affect the working age population. So, hoping to raise the fertility rate is not going to address our current problems.

Instead, we need a full discussion of how long retirement should last, and an insurance scheme for those most in need of care. As mentioned in previous comments, labour is likely to gain far more power, and China's labour force in particular is likely to have a stronger bargaining position because of its higher stock of human capital per capita. The ability of workers to protect their own interests (i.e., demand higher after-tax wages) is one of the reasons that we expect inflation. On its part, the government cannot rely on (income) tax revenues to finance elderly care. That's why so many ageing economies are projecting a huge increase in government debt. In order to avoid the same outcome, China's administration has to bring its considerable abilities to focus on creating facilities and networks that will take care of the elderly. And it has to start doing so today, not a decade from now.

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Ginger Jin:

The Essence of Privacy Is to Let Customers Know What to Do with It

"A user has more privacy protection if he has more control and more knowledge on the flow and use of his personal information."



Since the EU's "General Data Protection Regulation (GDPR)" came into effect, a set of complex mechanisms on privacy management, personal information security protection, and data flow have been established in Europe. At the same time, the EU opposes the "data sovereignty theory" within its member countries or trade agreement partners, such as by restricting the "data localization laws" passed by its member countries. In an interview with *PKU Financial Review*, Ginger Jin, professor of economics at the University of Maryland, College

Park, states that excessive restrictions on data collection, sharing, and usage may hinder data-driven innovation, which may decrease development of the economy. However, it may not be the case that restrictions are always bad. Professor Jin believes that we should think about the following questions: Which restrictions target market failures? Why will the formulated restrictions effectively solve the targeted market failures? What unexpected consequences might these restrictions have?



Ginger Jin

Professor of Economics at the University of Maryland, College Park.

Q: Nowadays, we still debate on the issue of personal data ownership. Although individuals generate data, personal data has less value to them, while it's invaluable to enterprises. So, how should we define the ownership of personal data and the corresponding protection responsibilities?

Ginger Jin: While clear property rights are the key to resolving disputes in physical property or intellectual property, it is not necessarily the best framework to think about personal data. For example, property right implies that the owner of the property has full discretion to use the property in whatever way he wants, but, in the context of personal data, even if he is willing to give his bank card number to a retailer for the purchase of a good, it does not mean he allows the retailer to sell his name, address, and bank card number to someone who may later use this information to steal money from the card. Hence, consumer consent to sharing personal data with a firm is tied to a specific use of the data by the firm. This feature is not captured in the typical definition of property right.

Q: There is an opinion that in order to better protect privacy, the most effective way is to treat privacy as an exchangeable commodity, so that participants can choose to obtain benefits by transferring part of their rights and interests. Do you agree with this opinion? How can personal privacy protection be more efficient and lower cost?

Ginger Jin: I do not think privacy is an exchangeable commodity, because consent to data sharing is often tied to a specific use of the data by a particular party. More precisely, privacy refers to some restriction in the flow and use of (initially) private information, that is, what information, to whom, and how it is used. A user has more privacy protection if he has more control and more knowledge on the flow and use of his personal information.

Q: While more and more companies or institutions need to collect and share user data, and they also need to ensure the security of their own commercial data, a third-party organization and product that can provide DPaaS (Data-Privacy-as-a-Service) may become a "necessity". Advocates believe that DPaaS can effectively avoid the risk and dispute of data privacy disclosure caused by data sharing, maintain the trust of users, and reduce the cost. What do you think of the development prospects of DPaaS?

Ginger Jin: I am not familiar with the concept of DPaaS. If it just means third-party provision of data security, it is unclear why a third party is always more reliable or more efficient than the entity that collects the user data in the first place. In the business world, the make-or-buy decision often depends on many factors; I imagine the make-or-buy decision on the service of data security is no exception.



“To ensure ‘good’ restrictions, one should ask what restrictions target which market failures, why the proposed restrictions will effectively address the targeted market failures, and what unintended consequences may arise from the restrictions.”

Q: Christine Lagarde, former Managing Director of the IMF, said that the private sector cannot provide payment privacy.

In fact, in the digital age, the digital technology payment options provided by the private sector will also promote price discrimination and reduce social welfare. Will the digital currency provided by the government be the best successor to cash (cash allows for anonymous payments) in terms of consumer protection? How will the digital technology payment options provided by the private sector be affected?

Ginger Jin: First of all, it is well known in economics that price discrimination has ambiguous effects on social welfare. I do not see any reason why this common wisdom would not apply to the digital age. If lack of anonymity is the main concern of digital currency (as compared to anonymous cash), that concern exists regardless of whether the digital currency is issued by the private sector or the government. There is no guarantee that the government will always provide 100% privacy, or provide better privacy than private sectors. For example, government officials may be slow in adopting the newest technology for data security, may lack market-driven incentives to respond to heightened user demand for more privacy, and may be more vulnerable to political pressure for shady data sharing. These concerns can be severe in countries that do not have a good system to monitor, discipline, and correct government behavior.



"overreaching restrictions on data collection, data sharing and data use may discourage data-driven innovations, which may in turn slow down economic development."

Q: Since the EU General Data Protection Regulation came into effect, an increasing number of countries are focusing on their own privacy and security issues. This year, China has successively introduced a series of privacy protection policies. What is your comment on that? What is the biggest impact these policies will have on China's future development?

Ginger Jin: I am glad more countries are paying attention to privacy and security issues. I have not followed China's privacy protection policies, so I do not know what market failures they have tried to fix and how successful they are in fixing them. Based on my own research about GDPR, I am concerned that

overreaching restrictions on data collection, data sharing, and data use may discourage data-driven innovations, which may in turn slow down economic development. That does not mean restrictions are always bad. To ensure "good" restrictions, one should ask what restrictions target which market failures, why the proposed restrictions will effectively address the targeted market failures, and what unintended consequences may arise from the restrictions.

Q: What do you think of the "privacy paradox"—while we enjoy the infinite convenience brought by technology, we ran-

domly register new websites and mobile applications on the Internet, leaving personal information, often with or without little financial compensation?

Ginger Jin: I am not sure we can categorize people's online registration as "random." Many users may have some tradeoffs in mind when they decide to register on a new website or a new mobile app with personal information, but the tradeoffs they made in this action may be inconsistent with what they say they care about when they are asked about privacy. Privacy paradox refers to such inconsistency.

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