

Research on Real Estate Economics Course at Tertiary Level - International Comparison

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Abstract—With the rapid booming of Chinese economy and RE market, real estate (RE) economics rejoined undergraduate majors in 2012, showing the importance of talent in RE-related fields. This research investigates the opening grades, course names, textbooks and course design used in RE economics relevant courses in domestic universities, including “Double First-Class” university project, the top 3 universities in related disciplines and some Project 985 universities. This research also investigates top 100 international universities according to *Times Higher Education University Rankings*, selected universities with related majors to analyze the course design, including pre- and post-courses, syllabus, textbooks, teaching plans and the contents. The relevant literature and teachers' teaching experience are also discussed, which can jointly improve the effectiveness of domestic RE economics teaching.

Keywords—*real estate economics, university education, international comparative study*

I. RESEARCH BACKGROUND

Since the reform and opening up, China's real estate (RE) market has developed rapidly and house prices have risen rapidly. While the per capita housing area of urban residents increased rapidly, it has brought about “house slaves”, “ant families”, “RE bubbles”, “school districts”, and “short-lived buildings”, “residential isolation” and other issues. These issues have brought many challenges to the residents' housing consumption, the investment development of RE enterprises, the government's macro-control, and the behavior of stakeholders. These issues also provided a rich teaching source for the RE economics course.

As a branch of industrial economics, RE economy is gradually emerging and developing to explore the operational rules of the RE industry and the RE market. As the RE management and management profession was cancelled in the professional adjustment process of the

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Ministry of Education in 1998, the construction of the course was affected. Later, with the booming and rapid development of the RE market, the RE profession was recruited as a professional outside the catalogue, and the construction of the course was re-emphasized. In 2012, when the Ministry of Education organized the undergraduate majors, the profession was re-listed as a professional in the catalogue, and the importance of the curriculum was re-emerged. RE economics is an important course in RE development and management, property management, engineering management and other RE related majors in China. Therefore, many schools have opened this course.

This paper first analyzes the curriculum design of RE economics courses in domestic universities, including pre- and post-courses, syllabus, textbooks, teaching plans and contents, etc., and compares the curriculum set-up of the top 100 foreign universities according to *Times Higher Education University Rankings*. At last the relevant literature and teachers' teaching experience are also discussed, which can jointly improve the effectiveness of domestic RE economics teaching.

II. DOMESTIC “DOUBLE FIRST-CLASS” AND PROJECT 985 COLLEGE RELATED CURRICULUM SET-UPS

This research investigates the opening grades, course names, and textbooks used in RE economics relevant courses of domestic universities, including “Double First-Class” university project, the top 3 universities in related disciplines and some project 985 universities (Table 1). The following intermediary aspects are mainly counted and compared (from 2013 to 2017): university type, college, spatial economics, regional economics, urban economics, RE economics, RE investment, urban and RE economics, training program version.

At last 15 universities were selected for further analysis, including pre- and post-courses, syllabus, textbooks, teaching plans and content (Table 2). The following intermediary aspects are mainly counted and compared: university type, course title, advanced placement, pathway, course object, main and supplementary materials.

TABLE I. DOMESTIC UNIVERSITY RE ECONOMICS CURRICULUM

University name	University type	College	Spatial economics	Regional Economics	Urban economics	RE economics	RE investment	Urban and RE economics	Training program version
Harbin Institute of Technology (Shenzhen)	985, double first class	SEM	Sophomore (spring)	---	---	Junior (autumn)	Junior (spring)	---	2016
Harbin Institute of Technology (Harbin)	985, double first class	SEM	---	---	Senior (autumn)	Junior (spring)	RE finance (big four autumn)	---	2013
Peking University	985, double first class	SE	---	School of Economics	School of Urban and Environmental Studies	School of Economics	---	---	2014
Tsinghua University	985, double first class	SE	---	---	---	RE finance	---	---	2017
Renmin University of China	985, double first class	SE	---	Sophomore (autumn)	Junior (spring)	Housing Economics and Policy (Junior autumn)	RE finance (spring); RE investment analysis (third spring)	RE policy discussion (big four autumn); RE agent (big four autumn)	2015
Fudan University	985, double first class	SE	---	Senior (autumn)	Senior (autumn)	---	---	---	2017
Nanjing University	985, double first class	SE	---	---	Junior (spring)	Junior (spring)	---	---	2017
Zhejiang University	985, double first class	SE	---	Junior (Spring and Summer)	---	RE finance and economy Junior (spring)	---	---	2017
Shanghai Jiao Tong University	985, double first class	SE	---	Junior (autumn)	---	---	---	---	2017
Xiamen University	985, double first class	SE	---	Junior, senior (autumn)	---	Junior, senior (spring, autumn)	Senior (autumn)	---	2013
Nankai University	985, double first class	SE	---	Have	Have	---	---	---	2017
Tongji University	985, double first class	SEM	---	Sophomore (autumn)	Resources and Environmental Economics (sophomore spring)	Junior (autumn)	RE development and management sophomore (spring); RE valuation Junior (autumn); Construction and RE regulations Junior (autumn)	RE finance Junior (spring); RE marketing Junior (spring)	2017
Beijing Normal University	985, double first class	SEB A	---	---	Resources and Environmental Economics (Autumn)	---	---	---	2017
Wuhan University	985, double first class	SEM	---	Junior (spring)	---	Junior (spring)	---	---	2015
Jilin University	985, double first class	SE	Senior (spring)	---	Senior(spring)	---	---	---	2013
Zhongshan University	985, double first class	SE	---	Have	---	Have	---	---	2017
Shan Dong University	985, double first class	SE	---	Junior (spring)	---	---	---	Junior (spring)	2014
Chongqing University	985, double first class	SCM RE	---	---	---	Junior (spring)	---	---	2014
Lanzhou University	985, double first class	SE	---	Senior (autumn)	---	---	---	---	2017
Central University of Finance and Economics	211, first-class discipline	SE	---	Junior (autumn)	---	---	---	---	2016
Shanghai University of Finance and Economics	211, first-class discipline	SPE M	---	---	Have	RE economics	RE asset management RE Investment and Financing I II	Urban planning and management	2014
Southwestern University of Finance and Economics	211, first-class discipline	SE	---	Have	---	---	---	---	2015

TABLE II. DOMESTIC UNIVERSITY RE ECONOMICS COURSE

University name	University type	Course Title	Advanced Placement	Pathway	Course object	Main and supplementary materials
Harbin Institute of Technology	985, double first class	RE economics	Urban economics	RE finance RE investment analysis	Junior (spring)	RE economics, Lin Zengjie (Author), Wu Yongxiang (Author), Lu Ping (Author), Feng Lei (Author), Press: China Building Industry Press; 2nd edition (May 1, 2003), ISBN: 7112057183, 9787112057184
Beijing University	985, double first class	RE economics	Regional Economics	----	----	Main textbook: Self-edited Auxiliary textbooks: Zhang Hong, "RE Economics"; Mackenzie, Bates, "RE Economics"; Yin Bocheng, Bian Huacai, "RE Series Textbooks"; Liu Wei, Huang Guitian, "China Urban Economy Research Report 2007"
Renmin University of China	985, double first class	Housing Economics and Policy	RE finance, RE investment	RE policy discussion RE brokerage	Junior (autumn)	RE Economics (3 rd edition), Xiejing Rong (Author), Lu Ping (author), Qiao Zhimin (author), Press: China Renmin University Press; 3rd edition (1 January 2013), ISBN: 7300162797, 9787300162799
Fudan University	985, double first class	----	Regional economics, urban economics	----	----	RE economics, Huawei (Author), Fudan University Press; 1st edition (June 1, 2008), ISBN: 7309038908, 9787309038903
Zhejiang University	985, double first class	RE finance and economy	Regional Economics	----	Junior (spring)	C. Goodhart, B. Hoffman. Rates and the impact of macroeconomic and price stability of the banking sector. Dongbei University of Finance and Economics Press, 2010. C. H. Wurtzbach. Modern RE. Renmin University of China Press 2001. M. Keeping, D. Shellers. Sustainable Property Development: A Guide to RE and the Environment. Blackwell Publishing, 2004. T. M. Claretie, and J. R. Webb. The Theory and Practice of RE Finance. Forth Worth. Tex: Dryden Press, 1993
Nanjing University	985, double first class	RE economics	Urban economics	----	Junior (spring)	Textbook: Gao Bo, Modern RE Economics Reference Textbook: Jian Desan, "RE Economics"; Xie Jingrong, "RE Finance"; Wang Chunsheng, "RE Economics"
Xiamen University	985, double first class	RE economics	Regional Economics	----	Junior senior (spring, autumn)	Introduction to Modern RE Economics, author: Gao Bo, edited Press: Nanjing University Press, Publication Date: August2010, ISBN: 9787305074608
Tongji University	985, double first class	RE economics	Regional Economics, Resources and Environmental Economics	RE development and management, RE valuation Const. and RE regulation RE finance RE marketing	Junior (autumn)	RE Economics, edited by Qian Wei, Tongji University Press, 2008, ISBN: 9787560828060, 756082806X
Wuhan University	985, double first class	RE economics	Regional Economics	----	Junior (spring)	RE economics, Hong Kairong (Author), Wuhan University Press; 1st edition(March 1, 2006), ISBN: 7307049538
Zhongshan University	985 double first class	RE economics	Regional Economics	----	Have	RE Economics (3 rd edition), Xiejing Rong (Author), Lu Ping (Author), Qiao Zhimin (author), Press: China Renmin University Press; 3rd edition (1 January 2013), ISBN: 7300162797, 9787300162799
Shan Dong University	985, double first class	Urban and RE economics	Regional Economics	----	Junior (spring)	----
Chongqing University	985, double first class	RE economics	Engineering economics Architectural economics	Building economics	Junior (spring)	RE economics, Huawei (Author), Fudan University Press; 1st edition (June 1, 2008), ISBN: 7309038908, 9787309038903
Shanghai University of Finance and Economics	211, double first class	RE economics	----	Same as Tongji University	Sophomore (autumn)	RE Economics (3rd edition), Jane De three (Editor), zhang (editor), Shanghai Finance University Press; 3rd edition (August 1, 2012), ISBN: 9787564213589, 7564213582
Central University of Finance and Economics	211, double first class	RE economics	Urban economics	International comparison of RE valuation, RE development, RE finance, RE investment and risk management, and housing policy	----	1. Recommended materials (1) Xiejing Rong et al., "RE Economics", Renmin University of China Press, 2002 (2) (US) Dennis J. Mackenzie, (US) Richard M. Bates, RE Economics, Economic Science Press, 2003 2. Extracurricular reading bibliography (1) Lin Zengjie et al., "RE Economics", China Building Industry Press 2003 (2) Zhang Hong, "RE Economics", Tsinghua University Press 2005 (3) Cao Zhenliang, etc., general theory of RE economics, Beijing: Peking University Press, 2003

TABLE III. FOREIGN UNIVERSITY RE ECONOMICS COURSE

University name	Course Title	Advanced Placement	Pathway	Course object	Teaching materials
Harvard University	Principles of RE	High school algebra	RE Finance and Investment; RE Enterprise Management	Live Online Lectures (including graduate)	Peiser, Richard B. and Hamilton, David. Professional RE Development: The ULI Guide to the Business, Third Edition (Urban Land Institute, 2012). Floyd, Charles F. and Allen, Marcus T., RE Principles, 10th Edition (Dearborn RE Education, 2011).
MIT	RE Economics	RE Finance and Investment; RE Capital Markets	Advanced Topics in RE Finance	Graduate (Fall)	DiPasquale, Denise, and William Wheaton. Urban Economics and RE Markets. Upper Saddle River, NJ: Prentice Hall, 1995.
Columbia University	RE Fundamentals	RE Finance	RE Transactions; RE Equity Securities Analysis; RE Debt Markets	MBA (fall)	----
New York University	RE Finance	Foundations of Financial Markets (Prerequisite); Financial Management (Co-requisite)	RE Development and Entrepreneurship	Undergraduate (Fall)	Brueggeman and Fisher: "RE Finance and Investments", 14th edition, 2011, ISBN-139780073377339. Damodaran: "Applied Corporate Finance: A User's Manual", 3rd edition, 2011, ISBN: 978-0-470-38464-0 (pbk.). Benninga: "Financial Modeling", 3rd edition, 2008, ISBN: 978-0-262-02628-4
Northwest University	RE Finance	----	----	Fall	Brueggeman, W.B. and J.D. Fisher, RE Finance & Investments (12th Edition or more recent), McGraw-Hill International, New York (N.Y.). Linneman, P, 2004, RE Finance & Investments: Risks and Opportunities, 2nd edition (or more recent), Geltner, D. And N.G. Miller, 2001, Commercial RE Analysis and Investments (1st Edition or more recent), Mason, OH: South Western. Ball M., C. Lizieri And B. Macgregor, 1998, The Economics of Commercial Property Markets, Routledge. Brown G.R. And G.A. Matysiak, 2000, RE Investment. A Capital Market Approach, Essex, UK: FT Prentice Hall
Northwest University	RE Finance and Investments	Finance I (FINC-430-0)	---	Spring	Commercial RE Analysis & Investments, by David M. Geltner, Norman G. Miller, Jim Clayton, and Piet Eichholtz. 3rd Edition.
UCLA	RE Market Analysis	RE Principles (X475.1)	RE Securitization: Debt (278B); Entrepreneurial RE Development (279B); RE, the Economy and Capital Markets (298D)	Winter	RE Market Analysis, 2nd Edition, Adrienne Schmitz and Deborah L. Brett, Urban Land Institute, ISBN: 9780874201369. RE Principles: A Value Approach, 4th Edition, 2013, David C. Ling and Wayne R. Archer, McGraw Hill, ISBN-13: 9780073377346
Penn State University	RE Finance: Investment and Analysis	The Basics of Discounted Cash Flow and Net Present Value Analyses; IRR: what it is and what it isn't amortization fundamentals	----	Spring	RE Finance and Investments, Fourth Edition, by Linneman. Commercial RE Analysis and Investments by Geltner, Miller, Clayton and Eichholtz. Investing in REITs (Block). A Primer on Securitization (Kendall and Fishman)
University of Maryland	Introduction to RE Finance	----	----	undergraduate/graduate (Fall)	Foundations of RE Financial Modeling, 1st edition, Roger Staiger, 2015, Routledge; ISBN: 978-113802517. RE Finance, 13th Edition, W.B. Brueggeman & Jeffrey D. Fisher, 2005, McGraw-Hill Irwin ISBN: 978-0-07-352471-9. Principles of Corporate Finance, Irwin McGraw-Hill, 7th edition, 2003; ISBN: 0072467665
Cornell University	Communication in RE	----	----	Spring	Williams, Joseph M. and Joseph Bizup. Style: The Basics of Clarity and Grace. Fifth edition. Boston: Longman, 2015. Munter, Mary. Guide to Managerial Communication: Effective Business Writing and Speaking. Ninth edition. Upper Saddle River, NJ: Prentice Hall, 2012.
University of Toronto	RE Markets	Microeconomic Theory and Applications; Quantitative Methods in Economics; Capital Market Theory	----	Fall	Helsley, Robert W., Urban and RE Economics, Vancouver: UBC RE Division, 2003.
Arizona State University	RE Analysis	RE Fundamentals	RE Finance RE Investments Urban Economic and RE Development Principles RE Valuation-Finance and Capital Markets RE Market Analysis	----	----
university of Wisconsin-Madison	RE Finance	RE Process Introduction to Finance	Valuation of RE	Undergraduate (Fall)	Commercial RE: Analysis and Investments, 3rd ed., by Geltner, Miller, Clayton, and Eichholtz. Liar's Poker by Michael Lewis. Financing Residential RE by Megan Dorsey and David Rockwell, 18th Ed., published by Rockwell Publishing Company.
University of Illinois at Urbana-Champaign	RE Development Fundamentals	----	----	Spring	RE Development Principles and Process (5th Edition, 2015), by Mike E. Miles, Laurence M. Netherton, and Adrienne Schmitz. Urban Land Institute (ULI): Washington, D.C. Ling, David and Wayne R. Archer. 2013. RE Principles: A Value Approach, 4th Edition. McGraw Hill

III. THE WELL-KNOWN FOREIGN UNIVERSITIES RELATED COURSES INVESTIGATION

This course construction project investigates the Top 100 foreign universities according to Times Higher Education University Rankings, selects universities with RE economics major, and analyzes the curriculum set up of the course, including pre- and post-courses, syllabus, textbooks, teaching plans and contents (Table 3). According to the accessibility of the course materials of the Top 100 universities, this study analyses curriculum set up of RE economics in 14 universities. This research found that RE-related courses are offered at the School of Economics, the School of Architecture, and the School of Civil Engineering. Among them, MIT's RE Economics applies the latest economic ideas and research to analyze the fundamentals of the RE market, predict supply and demand, and select locations. Similarly, the RE Markets course at the University of Toronto in Canada uses economics to analyze RE. Determinants of topics covered include RE values, family and business location decisions, land use, urban growth and aggregation, RE cycle, microscopic structure and dynamics of the RE market, RE and economic behavior of RE development and other topics. Both MIT and the University of Toronto use economic theory to analyze RE, which is what we agree with.

IV. DISCUSSION

RE economics is a discipline that originates from practice and serves practice [1]. Therefore, in the teaching process, it should be closely related to practice, and cultivate students' ability to analyze and solve practical problems. Traditional RE economics education is too biased towards theoretical teaching [2], lack of practical application, generally expressed as theoretical indoctrination, lack of corresponding case analysis, students cannot link theory with practice, so a result is that students will think that the RE curriculum is too theoretical, and it is useless in practice. Learning is only for the exams, and it is impossible to really master the relevant knowledge. Therefore, it is necessary to reform the teaching methods of RE economics and form a diversified teaching method based on practical teaching.

In classroom practice, the interactive teaching mode between teachers and students is adopted to enable students to actively participate in the teaching process and truly integrate the theory and method of curriculum [3]. However, this flexible teaching mode of teacher-student interaction puts high requests on teachers. The teachers need not only the corresponding theoretical knowledge, but also the policies and information of the RE industry. On the other hand, traditional textbooks are often unable to meet the requirements of interactive teaching, therefore, need the teacher to pay more attention to the construction of textbooks for RE economics, and introduce the latest textbooks in time. Meanwhile communicate more actively with other universities in China.

In the course of RE economics at Harbin Institute of Technology Shenzhen Campus, the instructor first grouped the students, then encourage students to use free time to investigate the RE of interest, try to understand the basic process of housing construction, the common type of housing, the social service function of the nearby infrastructure such as transportation, medical care, education. After the investigation, students combine their own feelings and theoretical knowledge to summarize the research and write a research report. For those who did good, invite them to do reports in class, share their feelings and opinions. This kind of teaching form takes students as the leading role, which not only enhances students' ability to collect data, analyzes and analyzes problems independently, but also cultivates students' team concept and cooperation consciousness, improves learning ability, communication ability and expression ability, and comprehensively improves students' quality.

The specific mode of practical teaching in the classroom is mainly based on participatory teaching [4]. The mainstream is the teaching film, domestic and foreign RE case teaching, group discussion, debate and so on. Taking case teaching as an example [5], the RE economics teachers at Harbin Institute of Technology in Shenzhen have asked students to be divided into pros and cons to debate by selecting representative cases or controversial topics in RE economics. Students gather knowledge and understand the case during the preparation process before the debate, and they will have a great understanding of the theory of RE economics. At the same time, they can discover the problems that may be encountered in practice through the debate with each other. And the ability to practice is of great benefit.

At the same time as the reform of the teaching method, the examination method should also be reformed accordingly [6]. In addition to the traditional final exams and key assignments, case studies, classroom group discussions, debates, field research and lecture presentations will be recorded as a part of the grade. In the specific examination, you can change the traditional closed-book exam to a semi-open-book or open-book exam, and transform the results of student training from heavy knowledge, heavy memory, light thinking, and light analysis to rethinking, reanalyzing, light knowledge, and light memory. Develop students' ability to analyze and solve practical problems.

In addition, the micro-media represented by Weibo and WeChat is developing rapidly, and teaching tools of teachers should also keep pace with the times. Using these communication tools in the era of mobile Internet, on the one hand, teachers and students can quickly acquire rich learning resources from the Internet. On the other hand, it is also convenient for communication between teachers and students, so that everyone can learn from each other, and make progress together. According to Wu Jinyi [8], most students are willing to use micro-media to assist in learning, but only about 20% of students actually use it in

professional learning. The main reason is the lack of target learning content. Therefore, as long as we can establish a suitable extracurricular learning method system on micro-media, it can effectively promote the professional learning under the class, thus improving the students' willingness and ability to learn, which is an important auxiliary for teachers' teaching.

Finally, while reforming the teaching and examination methods, we should start to establish a RE economics laboratory supporting the curriculum [7], and improve the students' practical ability through specific practical courses. Due to the limitations of experimental conditions, domestic RE economics research mainly combines geographic information systems, econometric methods and system simulation methods, and experimental methods are rarely used. However, experimental methods have many advantages that are not available in measurement methods. It's an effective way to learn problems. The laboratory should have complete supporting facilities and sufficient space to meet the class size of the students to come to the experimental class, related software and hardware conditions, operating system programming, development environment, metrology statistical software, experimental economics software, engineering management software and other installations need to be prepared, and correspondingly, the laboratory management system and management staff should be established, which can improve the quality and effectiveness of domestic RE economics.

V. CONCLUSION

To sum up, there are four scenarios for the main practice reform. First, it should combine theoretical knowledge and real practice in the classroom. The specific application form is an interactive teaching mode for teachers and students, such as mainly case teaching, group discussion, and hot topic debate. In various forms, students are encouraged to actively collect information and news information to understand the characteristics and trends of the RE industry, and enhance students' speculative thinking through discussion and exchange among students. This puts more emphasis on the classroom organization ability and knowledge of the instructors. The second is the practice of field investigations on typical RE properties

outside the classroom. Students can observe the RE situation through personal visits, understand the real needs of buyers, and have personal experience in RE marketing. The actual ability is the most critical. The third is the reform of homework and examination methods. The debate performance and investigation report that is connected with classroom debates and field trips can make students' thoughts and thoughts truly turn into knowledge accumulation. At the same time, examination methods can encourage open-book examinations and focus on investigations. The broad knowledge and critical thinking of students' knowledge. The fourth is to establish a RE economics laboratory, which is not only a supplement to the field investigation, but also can improve students' ability to operate and use economics and measure related software, which is of great benefit to improving students' research ability.

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