CURRICULUM VITAE

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ACADEMIC POSITIONS

University of Tennessee, Department of Clinical Pharmacy and Translational Science

Postdoctoral Fellow, 2020–Present.

EDUCATION

M.S., Computer Science, Dec. 2022 (expected), Georgia Institute of Technology, Atlanta, USA

M.S., Mathematical Sciences, Dec. 2020, Clemson University, Clemson, USA.

Ph.D. Economics, May 2020, Clemson University, Clemson, USA.

Dissertation Title: "Essays on Benchmarking and Shadow Pricing".

Committee: Paul Wilson (Chair), Matthew Lewis, Babur De los Santos, Howard Bodenhorn.

M.A., Economics, Dec. 2019, Clemson University, Clemson, USA.

M.A., Economics, Oct. 2014, Tohoku University, Sendai, Japan.

B.A., Economics, July 2012, Peking University, Beijing, China.

B.A., Management Science and Engineering, July 2012, Renmin University of China, Beijing, China.

RESEARCH INTERESTS

Efficiency and Productivity, Money and Banking, Health Outcome, and Applied Econometrics

WORKING PAPERS

1. **Evidence from Shadow Price of Equity on "Too-Big-to-Fail" Banks.** *Under Review*

   Abstract: This paper estimates shadow price of equity for U.S. commercial banks over 2001–2018 using nonparametric estimators of the underlying cost frontier and tests the existence of "Too-Big-to-Fail" (TBTF) banks. Evidence on the existence of TBTF banks are found. Specifically, I find that a negative correlation exists between the shadow price of equity and the size of banks in each year,

suggesting that big banks pay less in equity than small banks. In addition, in each year there are more banks with a negative shadow price of equity in the fourth quartile based on total assets than in the other three quartiles. The data also reveal that for each year, the estimated mean shadow price of equity for the top 100 largest banks is smaller than the mean price of deposits, even though equity is commonly viewed as a riskier asset than deposits. Finally, I find that the top 10 largest banks are willing to pay much more at the start of the global financial crisis and after the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 than the other periods. These results imply that these regulations are effective in reducing the implicit subsidy, at least for the top 10 largest banks. However, it is also evident that the recapitalization has imposed significant equity funding costs for the top 10 largest banks.

2. **Performance of Chinese Banks over 2007–2014, (with Paul Wilson).** *In Preparation for Submission*

Abstract: This paper examines the performance of Chinese commercial banks before, during, and after the 2008 global financial crisis and the 2008–2010 China's 4 trillion Renminbi stimulus plan. Fully nonparametric methods are used to estimate technical efficiencies. Recently-developed statistical results are used to test for changes in efficiencies as well as productivity over time, and to test for changes in technology over time. We also test for differences in efficiency and productivity between big and small banks and domestic and foreign banks. We find evidence of the non-convexity of banks' production set. The data reveal that technical efficiency declined at the start of the global financial crisis (2007–2008) and after China's stimulus plan (2010–2012), but recovered in the years later (2012–2013), and declined again from 2013 to 2014, ending lower in 2014 than in 2007. We find that productivity declined during and after China's stimulus plan (2009–2011), but recovered in the years later (2013–2014), ending lower in 2014 than in 2007. We also find that the technology shifted downward from 2012 to 2013, and then shifted upward from 2013 to 2014. Over the period 2007–2014, technology shifted upward. We provide evidence that in general big banks were more efficient and productive than small banks. Finally, domestic banks had higher efficiency and productivity than foreign banks over this period except in 2008.

3. **Performance of Countries in the Post-Crisis Era, (with Paul Wilson).** *In Preparation for Submission*

4. **The Evolution of Cost, Revenue and Profit Efficiency for U.S. Commercial Banks in the Post-Crisis Era**, (with Guangshun Qiao)

Abstract: The global financial crisis has exposed substantial weakness of the banking system. After the crisis, banking supervision has been enhanced with more stringent regulations. This paper applies non-parametric methods to estimate the cost, revenue, and profit efficiency of U.S. commercial banks during this disruptive period. Recently-developed statistical results are employed to test differences in efficiencies across years and bank size. The data reveal that the production set was non-convex. Moreover, the results show that cost, revenue, and profit efficiency increased significantly over 2006–2008. Afterward, in general, they presented decreasing trends. From 2006 to 2016, they all declined significantly. Thus, more stringent regulations might make banks safer but with the cost of lower efficiency. U.S. commercial banks need to improve the performance even significant efforts have already been put into cutting costs, generating revenue, and increasing profit. Finally, the results demonstrate that small banks were more efficient in cost and revenue but less efficient in profit than big banks.

5. **The Shadow Prices of CO_2, SO_2 and NO_x for U.S. Coal Power Industry 2010–2017: A Convex Quantile Regression Method.** *Submitted*

6. **Effects of the Medicare Part D Comprehensive Medication Review on Racial and Ethnic Disparities in Medication Utilization**, (with Chi Chun Steve Tsang, Xiaobei Dong, Junling Wang). *Submitted*

Abstract: Background: Substantial literature has documented inequalities between minorities and Whites in meeting eligibility criteria for the Medicare Part D medication therapy management (MTM) program. Even though the Centers for Medicare & Medicaid Services attempted to relax the eligibility

criteria, a critical barrier to effective MTM reform is the lack of stronger evidence about the actual effects of MTM on minorities' health outcomes. Objective: To examine the effects of comprehensive medication review (CMR), an MTM core component, on racial and ethnic disparities in adherence to diabetes, hypertension, and hyperlipidemia medications among Medicare beneficiaries aged 65 years or above. Methods: The study used 2017 Medicare Parts A/B/D claims, including MTM data, linked to the Area Health Resources Files. Medication non-adherence was compared across racial/ethnic groups between propensity score matched CMR recipients and non-recipients. To determine changes in racial/ethnic disparities after receiving CMR, a difference-in-differences framework was applied by including in logistic regressions interaction terms between dummy variables for CMR receipt and each minority race/ethnicity. Results: Compared to CMR non-recipients, there were lower racial/ethnic disparities among CMR recipients in non-adherence to medications of interest. For example, among patients on hypertension medications, odds ratio for the interaction terms between CMR and minority race/ethnicity (Blacks, Hispanics, Asians and Other) were 0.92 (95% CI=0.88-0.96), 0.82 (95% CI=0.78-0.86), 0.84 (95% CI=0.77-0.91), and 0.91 (95% CI=0.85-0.98), respectively. Conclusions: CMR was found to have reduced racial/ethnic disparities in adherence to diabetes, hypertension, and hyperlipidemia medications. More racial/ethnic minorities should be enrolled in MTM to further realize this program's potential.

7. **Using Machine Learning to Classify Patients on Opioid Use**, (with Jamie Browning, Junling Wang). *Submitted*

WORK IN PROGRESS

8. **The Evolution of Scale Economies in the European Banking**, (with Paul Wilson, Ji Wu)

9. **Effects of the Medicare Part D Comprehensive Medication Review on Medication Utilization among Patients with Alzheimer's Disease**, (with Jamie Browning, Junling Wang)

TEACHING & RESEARCH EXPERIENCE

Graduate Instructor of Record

John E. Walker Department of Economics, Clemson University
Principles of Microeconomics (Undergraduate), one section, Fall 2019

Teaching Assistant

School of Mathematical and Statistical Sciences, Clemson University
Introductory Business Statistics (Undergraduate), Summer 2019
Calculus of One Variable II (Undergraduate), Summer 2019

John E. Walker Department of Economics, Clemson University
Principles of Microeconomics (Undergraduate), Fall 2019
Microeconomics II (PhD Core), Spring 2017
Econometric I (PhD Core), Fall 2017, 2018
Econometric III (PhD Core), Fall 2017, 2018

Graduate School of Economics and Management, Tohoku University
Microeconomics II (Graduate), Spring 2014
Comparative Economics (Graduate), Fall 2012

Research Assistant

Graduate School of Economics and Management, Tohoku University
Supervisor: Professor Shiro Hioki, Spring 2014–Fall 2015

Renmin Business School, Renmin University of China
Supervisor: Professor Baolin Wang, Spring 2012

HONORS & AWARDS

Dr. Maloney Fellowship, Clemson University, 2019–2020

Clemson Graduate Student Government Travel Grant, Summer 2019 & 2020

Graduate Assistantship, School of Mathematical & Statistical Sciences, Summer 2019

Hugh H. Macaulay Award for Outstanding Graduate Student, Spring 2017

Graduate Assistantship, John E. Walker Department of Economics, 2015–2020

JASSO Scholarship, Tohoku University, 2012–2013

The Third Prize Scholarship, Renmin University of China, 2011

Student Grant, National School of Development, Peking University, 2010

National Motivational Scholarship, Renmin University of China, 2010

National Motivational Scholarship, Renmin University of China, 2009

PRESENTATION & CONFERENCE

2020 The 2020 CES North America Conference (Virtual), Boston

2020 The North American Productivity Workshop XI (Virtual), Miami

2019 East China University of Science and Technology, Shanghai

2019 Hunan University, Changsha

2019 Harbin Institute of Technology, Harbin

2019 European Workshop on Efficiency and Productivity Analysis, London (Presented by Paul Wilson)

2017–2019 Industrial Organization Workshop, Clemson

2017 Macroeconomics Workshop, Clemson

2016–2017 Labor Workshop, Clemson

CERTIFICATE

2020 SAS Certified Specialist: Base Programming Using SAS 9.4

2020 SAS Certified Specialist: Advanced Programming Using SAS 9.4

2019 Passed All Three Levels of the CFA on the First Attempt

2015 Japanese Language Proficiency Test Level 1

PROFESSIONAL MEMBERSHIPS

American Economics Association, CFA Society of South Carolina

SKILLS

Familiar: R, Python, SAS, STATA, MATLAB, Fortran, Eviews, LaTeX

Basic: C++, Java, HTML, SQL

Language: English(fluent), Chinese(native), Japanese(proficient)

REFERENCES

Professor Paul Wilson (Chair)
Department of Economics   Phone: 864-656-2032
200-D Sirrine Hall, Clemson University   Email: pww@clemson.edu
Clemson, SC, 29634

Professor Matthew Lewis
Department of Economics   Phone: 864-656-3956
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Professor Babur De los Santos
Department of Economics   Phone: 864-656-3953
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Professor Howard Bodenhorn
Department of Economics   Phone: 864-656-4335
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