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# Nan Clement

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## EDUCATION

University of Texas at Dallas, Ph.D. Candidate in Economics 2019 - 2024 (expected)  
Thesis Title: "Essays on Digital Economics"  
**Committee:** Daniel Arce (Chair), Catherine Tucker, Anne M. Burton, Anton Sobolev  
University of Illinois at Urbana-Champaign, Master of Science in Accountancy 2018-2019  
(Focus on Data Analytics; Online)  
China Academy of Fiscal Sciences (Beijing, China), Master of Business Administration in Accountancy 2013-2016  
University of Science and Technology Beijing (Beijing, China), Bachelor of Management in Accountancy, Study Abroad: 2011-2012, Lancaster University (Lancashire, UK) 2009-2013

## RESEARCH FIELDS AND METHODOLOGY

Methodology: Causal Inference, Econometrics, Observational Data, Game Theory  
Topics: Healthcare Information Systems, Cybersecurity, Privacy, Competitive Impact of IS

## TEACHING FIELDS

Business Analytics, Cloud Platforms, AI, Platform Economics, Information Systems, and Healthcare Management

## RESEARCH

**JOB MARKET PAPER: [M&A EFFECT ON DATA BREACHES IN HOSPITALS: 2010-2022](#)**  
Presentations: [WEIS'22](#), [TEAMS'23](#), [CSI'23](#), [ASHEcon2023](#), [WEIS'23 \(Best Paper\)](#), [INFORMS'23](#)  
Abstract: Data breaches in hospitals disrupt care, potentially leading to fatal consequences, violating privacy rights, and incurring significant costs to remedy. Mergers and acquisitions serve as an essential source of financing but also induce substantial management challenges. Using proprietary hospital merger records and archived data breach reporting from the Department of Health and Human Services from 2010 to 2022, I implement a stacked difference-in-differences estimation strategy to study whether and how hospital mergers increase the probability of a data breach. On average, the probability of a data breach for pre-merger deals is approximately 3%, while the data breach rate reaches 6% for the merging deals. The effect is robust to changes of the two-year window. The effect is robust in alternative control group constructions. The effect is also robust to the changes in sample size due to the data availability of the control variables and in how standard errors are clustered. Increased attention online one year before the merger deal is signed, identified with Google Trends score, causes a large increase in pre-signing hacks, especially in recent years through ransomware attacks. Such an effect does not extend to the post-signing period. The increase in post-signing hacks is due to the incompatibility of merging information systems. Conversely, the complementary effect of organizational capital that improves internal risk control reduces the increase in data breaches. The dynamic analysis shows that the situation is getting worse because of soaring cases of hacks.

## WORKING PAPERS

[Dynamics of Shared Security in the Cloud \(with Daniel Arce, Information Systems Research, Major Revision\)](#)

Abstract: Cloud services exist under a shared security environment; both cloud services providers (CSPs) and users contribute to overall security. We investigate the nature of shared security in a dynamic game where users' security contributions and cloud usage figure into their CSP's vulnerability. Furthermore, CSPs' own security contribution takes into account both their users as well as competition with other CSPs. The Markov Perfect Equilibrium reveals the long-term time patterns of security of the cloud. In particular, we identify a novel form of time-path strategic complementary between usage and a CSP's Markov state of security. This implies that cloud security is an unusual form of impure public good whereby individual contributions bolstering a CSP's security endow a selective incentive (private benefit) on others, rather than only providing a selective incentive to the contributors themselves. Since this increases usage, CSP vulnerability increases over time. At the same time, the CSPs' competition with security may lead to a welfare improvement, but the lock-in effect of security on the platforms shapes the CSP's security investment and, eventually, the security results.

### WORKS IN PROGRESS

Medicare Payment Reforms, Hospital Information Systems, and Merger Outcomes (with Amalia Miller and Catherine Tucker)  
 Merger Selection and Cyber Risk: Evidence from Panel Data Analysis  
 Can Google Trends Predict Hospital Data Breaches During Mergers?  
 Public Company Information Revelation and Data Breaches: 2010-2022 (with Adi Rao and Sanghyun Han)

### TEACHING EXPERIENCE

<b>Instructor of Record</b> , ECON3310 Intermediate Microeconomic Theory Average Evaluation: 4.81/5.0; GPA: 3.30/4.0	Fall 2022, Spring 2022 and Fall 2021
Teaching Assistant ECON2302 Principles of Microeconomics	Fall 2023, Fall 2022, Fall 2021
Comets to the Core Assessment Reviewer	Spring 2023, Spring 2022
Teaching Assistant ECON3315 Sports Economics	Spring 2023
Teaching Assistant ECON2303 Principle of Microeconomics	Fall 2022, Fall 2021
Teaching Assistant ECON 6302 Macroeconomic Theory (PhD Core)	Fall 2020
Teaching Assistant ECON4385/ECON5397 Business and Economic Forecasting (R)	Spring 2021 and Spring 2020
Teaching Assistant ECON2301 Principles of Macroeconomics, ECON3312 Money and Banking	Fall 2019

### FELLOWSHIPS, GRANTS, HONORS, AND AWARDS

Algorithms, Approximation, and Learning in Market and Mechanism Design Workshop, invited attendee	2023
WEIS'23 Best Paper Award, \$1,000 CHF	2023
Georgia Tech School of Cybersecurity and Privacy Travel Grant	2023
The University of Texas at Dallas President's Teaching Excellence Award, \$1,500	2023

Charles C. McKinney Scholarship	2023
DFW Research Data Center Grant, \$10, 000	2023
NBER 2023 Workshop of Digital Economics, invited attendee	2023
NBER 2023 Digital Economics Tutorial, invited attendee	2023
Irving J. Hoch Scholarship	2022
Office of Graduate Education Research funding, \$500	2022
NSF graduate student travel grant, \$1,000, CMU	2022
Alfred P Sloan Foundation student travel grant, \$700	2022
Betty Gifford Johnson Travel Award, \$2,000	2022
NBER 2022 Fall Economics of Privacy Tutorial, invited attendee	2022

### PRESENTATIONS AND SEMINARS

- October 2022: The 2<sup>nd</sup> University of North Texas Cybersecurity Symposium, speaker, Denton, TX
- October 2023: Informs Annual Meeting, Community-Committee's Choice Session, Speaker, Pheonix, AZ
- July 2023: The 22<sup>nd</sup> Workshop on the Economics of Information Security (WEIS), Speaker, Geneva, Switzerland
- June 2023: The 12<sup>th</sup> American Society of Health Economists (ASHEcon) Annual Conference, Emerging Scholar in Health Care Competition, Presenter, St. Louis, MO
- April 2023: The 1<sup>st</sup> Texas Applied Microeconomics Student Workshop at UT Austin, Speaker, Austin, TX
- November 2022: SEA 92<sup>nd</sup> Annual Meeting, Games and Dynamics Session, Presenter, Fort Lauderdale, FL
- October 2022: The 1<sup>st</sup> University of North Texas Cybersecurity Symposium, speaker, Denton, TX
- June 2022: The 21<sup>st</sup> Annual Workshop on the Economics of Information Security (WEIS), Rump Session, Presenter, Tulsa, OK
- April 2022: Economic Brownbag Presentation, School of Economics, Political and Policy Sciences at UT Dallas, Presenter, Richardson, TX

### SERVICE AND PROFESSIONAL ACTIVITIES

MIS Quarterly 2023 Reviewer Development Workshop, invited mentee	November 2023
Referee, Journal of Cybersecurity	2023
Early Career Teachers' Network (ECTN) for OR/MS/Analytics Teachers at INFORMS 2023, invited mentee, Pheonix, AZ	October 2023
University of Texas at Dallas, Student Diversity Advisory Council	Fall 2022 - present
ASHEcon Newsletter Author	June 2023
School of Economic, Political & Policy Sciences TA Orientation, invited talk	Fall 2023, Fall 2022
School of Economic, Political & Policy Sciences Student Advisory Council	Fall 2020 - Spring 2022
AEA-CSWEP PhD workshop for 3 <sup>rd</sup> and 4 <sup>th</sup> year women and non-binary PhD students in Economics and related fields, invited mentee, Fort Lauderdale, FL	November 2022
AEA-CSWEP Successfully Navigating Your PhD mentoring workshop for 3rd Year+ Women & Non-Binary PhD Students in Economics & Economics-Adjacent Fields, invited mentee, Zoom	September 2022
Undergraduate Mentoring: Hannah Smith, Tucker Strow	

## OTHER EDUCATIONAL ACTIVITIES

The Third Way Structural Models Meet RCTs, Methods Speaker Series by Sebastian Galiani, UTD	October 2023
Recent Advances in Difference-in-Differences by Jonathan Roth, PDHP Workshop Series University of Michigan, Zoom	July 2023
The 2 <sup>nd</sup> Annual Cybersecurity Summer Institute Georgia Tech's School of Cybersecurity and Privacy, Atlanta, GA	May 15-24 2023
Causal Solutions: Modern Difference-in-Differences Methods, by Pedro Sant'Anna Emory University, Zoom	March 2023
PhD Class of Management and Economics of Innovation Copenhagen Business School PhD school, Zoom	September 2022
AEA Continuing Education Modern Sampling Methods: Design and Inference by Keisuke Hirano and Jack Porter, Zoom	January 2022
Difference-in-Differences and Synthetic Control Workshop by Scott Cunningham, UTD	October 2021
ECON9104C Topics in Econometrics: Machine Learning in Economics, doctoral course University of Oslo, Zoom	May 2021
ECON9912C Topics in Environmental and Resource Economics, doctoral course University of Oslo, Zoom	May 2021
AEA Continuing Education, Industrial Organization by Steven Berry and Philip Haile, Zoom	January 2021
AEA Continuing Education, Markets for Innovation: Market Failures and Public Policies by Kevin Bryan and Heidi Williams, Zoom	January 2021

## PROFESSIONAL EMPLOYMENT

Business Data Platform Test Engineer, China Construction Bank Supply Chain Finance Co. LTD, Beijing Mar 2019 - Aug 2019 Collaborated with banks, sales teams, and clients to understand their data needs and requirements for building a comprehensive Data Warehouse Designed and executed test cases to validate big data models, data integrity, ETL processes, and data transformations	
Assistant Researcher, Investment Research Institute, Beijing Evaluated potential investment projects in collaboration with government agencies and national venture capital (VC) leaders. Conducted in-depth research on various industries about investment and finance to generate publications and communication letters Publication in Chinese, Review of the Diversified Investment of China. (Book Chapter) Investment: The Powerful Engine for Chinese Rapid Development, published in 2019, with Qi, Yuqing Finance Support Agriculture: The Long-term Mechanism of Rural Construction. China Economic Herald, 2018-08-08(2), with Lin, Yongming	Jul 2016 - Mar 2019

After-crisis Bond Market Development Effect on Debt Financing of Chinese Listed Manufacturing Companies: An Empirical Study. *Macroeconomics*, 2018 (2)  
Let Bond Connect Serve Real Economy. *China-Investment*, 2017(13), with Lin, Yongming  
An Enlightenment of British Information Disclosure System for Charities. *The Journal of the Chinese Institute of Certified Public Accountants*, 185:2012/5 pp. 80-85, with Liu, Yali

## AFFILIATIONS

Association for Information Systems  
Institute for Operations Research and the Management Sciences  
American Economic Association

## OTHER

**Data Access:** Texas School Project, Texas Higher Education Coordinating Board, researcher, and PI, approved; Healthcare Information and Management Systems Society, approved

### Certificates:

Graduate Teaching Certificate (GTC)	2021 Spring
UTD Center for Teaching and Learning	
Advanced GTC	2021 Fall
UTD Center for Teaching and Learning	
Grant Writing Certificate	undergoing
UTD Office of Research and Innovation	

**Visa Status:** US Permanent Resident

## REFERENCES

### **Prof. Dann Arce (Committee Chair)**

UT System Regents' Outstanding Teacher  
Ashbel Smith Professor of Economics  
Program Head of Economics  
The School of Economic, Political and Policy Sciences  
University of Texas at Dallas  
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### **Prof. Anne M. Burton**

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### **Prof. Catherine Tucker**

Sloan Distinguished Professor of Management Science and Marketing  
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### **Prof. Anton Sobolev**

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