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Research Interests

Corporate Finance. Financial Intermediation. Applied Econometrics. Contract Theory.
Capital Structure & Investment Policy. Small Business & Entrepreneurship. Corporate Governance.

Education

Ph.D. in Finance, The Wharton School, University of Pennsylvania, 2010 (Expected)
Dissertation Title: Agency Problems in Corporate Finance
Dissertation Committee: Franklin Allen (Co-Chair), João F. Gomes, A. Craig MacKinlay, David K. Musto (Chair) and David S. Scharfstein

M.A. in Finance, The Wharton School, University of Pennsylvania, 2007

M.S. in Electrical Engineering and Computer Science, Massachusetts Institute of Technology, 2003

B.Tech. (President of India Gold Medalist - for the highest GPA among all graduating students) in
Computer Science and Engineering, Indian Institute of Technology, Guwahati, 2001.

Job Market Paper

[Investment and Financing under Reverse Asset Substitution](#)

To be presented at AFA Annual Meetings 2010 and FMA Annual Meetings 2009
Morgan Stanley Research Award by Rodney L. White Center for Financial Research.

Teaching Experience

Corporate Finance (MBA/Undergraduate), Spring 2007, Summer 2007, Fall 2007, Fall 2008.

Financial Derivatives (MBA/Undergraduate), Spring 2006, 2008, 2009.

Macroeconomics (MBA/Undergraduate), Spring 2008, Fall 2008, Spring 2009.

Other Experience

Citigroup Global Markets Inc., New York, NY Feb 05–Aug 05
Treasury and Relative Value Groups.

Citadel Investment Group, Chicago, IL June 03–Feb 05
Financial Instruments and Credit Groups.

IBM India Research Lab., New Delhi, India Summer 2000
Networking Research Group.

Patents

Inventor of US Patent US6807159, European Patent EP1202495, Japanese Patent JP3721115, German Patent DE60110184, Chinese patent CN1319298 and Austrian Patent AT293859. Patent Assignee is International Business Machines (IBM) Corporation, Armonk, NY. Patents on methodology for managing power consumption in a master driven time division duplex wireless network.

Honors and Awards

Kauffman Foundation sponsored seat on University of Chicago NORC Data Enclave 2009-2010.
Morgan Stanley Research Fellow 2008-2009.
Weiss Center for International Financial Research Grant 2007-2008, 2008-2009.
American Finance Association Student Travel Award 2009.
Rodney L. White Center for Financial Research Grant 2007-2008.
University of Pennsylvania Dean's Fellowship for Distinguished Merit, 2005-2010.
EECS Dept. General Research Assistantship at Massachusetts Institute of Technology, 2001-2002.
President of India Gold Medal (for the highest GPA among all graduating students) in Indian Institute of Technology, Guwahati 2001.
Indian Institute of Technology Merit Scholarship, 1998-2001.
3rd Place at MIT IDEAS Competition, 2001.
Ranked in top 0.1% in National Physics Olympiad, India, 1996.
National Talent Scholar, India, 1995.

Dissertation Committee

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Research Description of Working Papers

[Investment and Financing under Reverse Asset Substitution](#) (To be presented at AFA Annual Meetings 2010 and presented at FMA Annual Meetings 2009): I show that banks place borrowing and investment restrictions on firms in an attempt to enjoy exclusive lending relationships. This agency problem is more pronounced for firms that have larger information asymmetries with the credit market. I use the term Reverse Asset Substitution (RAS) to express this partial transfer of control that benefits debt holders at the expense of equity holders when firm is not in danger of bankruptcy. While making the trade-off against tax shielding benefits, equity holders take this agency problem into account. I find that firms in perfect competition can invest 2% more in their PP&E annually than firms facing a monopoly in credit supply by banks. When compared to the case where bankruptcy cost is the only concern, presence of RAS reduces firm growth (11% lower), leverage (24% lower) and firm value (23% lower).

[The Hand of ARMs \(and Others\) in the Subprime Crisis](#) (Draft available upon request, With Haluk Unal): We investigate the role of financial innovation, specifically, the introduction of new types of mortgages, such as hybrid ARMS in the present crisis. We explore policy measures regarding specific mortgage types that can help avoid such a situation in the future. We find that the real values of new houses purchased are actually lower when Adjustable Rate Mortgages or Interest Only loans were used to finance the purchase. As the housing boom progressed, consumers and lenders exercised caution and contracted to buy houses that had lesser value in real terms, for all types of mortgage contracts. Using a house worth \$200,000 in year 2000 as benchmark, we estimate that houses purchased in 2007 were in expectation 38% lesser in value by year 2000 prices. If all mortgage contracts were Fixed Rate mortgages, we estimate that the cumulative percentage of defaults would stand at 29% compared to 33% as observed in our sample.

[Heterogeneity in Corporate Governance: Theory and Evidence](#) (Presented at FMA Annual Meetings 2009): I propose that the amount of management autonomy in a firm is chosen as a best response to exogenous firm characteristics, such as output variance. Shareholders in firms with higher exogenous variance attempt to reduce the information disadvantage between them and managers by reducing autonomy of management. In addition, I find that over time, this information gap has decreased in US capital markets and in recent times cannot be statistically identified to be present. This may be encouraging evidence for proponents of laws that seek to increase corporate transparency, such as Sarbanes-Oxley.

[Effort, Risk and Walkaway under High Water Mark Style Contracts](#) (With Sugata Ray): We study a hedge fund style contract in which management fees, incentive fees and a high water mark provision drive a fund manager's effort and risk choices as well as walkaway decisions by both the fund manager and the investor. We model this relationship and calibrate the model to observed data. Using the calibrated model, we consider welfare implications of changes to the standard 2/20 contract. Welfare results highlight the critical role higher management fees play in such contracts in terms of improving the manager's risk taking and effort expenditure decisions. In particular, a higher management fee and lower incentive fee (e.g. a 2.5/10 contract) leads to Pareto improvement in the calibrated model.

[Quis Custodiet Ipsos Custodes? \(Who Will Guard the Guards?\)](#) (With Marcel Tyrell): Trading firms, whom we entrust the job of providing liquidity, may exacerbate liquidity shocks and reduce efficacy of liquidity injections. Trading firms, fearful of bank runs, cannot reveal losses. Hence, even if central banks stand ready to guarantee liquidity, due to the pooling behavior of trading firms, liquidity allocation will be inefficient. This prolongs liquidity crises, as firms in red use injected liquidity to stave off bank runs, while other firms may use new liquidity to take predatory positions. To avoid the pooling outcome, we suggest that all the liquidity be provided to firms with stronger balance sheets, allowing them to absorb the assets of the firms facing losses.

Publications in Computer Science

“Clock Synchronization for Wireless Networks”, Lecture Notes in Computer Science: Principles of Distributed Systems: 8th International Conference on Principles Of Distributed Systems (OPODIS), 2004, France. (with Rui Fan and Nancy Lynch.)

The Personal Router, ACM SIGMOBILE Mobile Computing and Communications Review, Volume 7, Issue 1, January 2003. (with Advance Network Architecture Group)

“Adaptive Routing for Ad hoc Wireless Networks Providing QoS Guarantees”, in Proc. IEEE Intl. Conf. on Personal Wireless Comm., 2002, India. (with Gautam Barua)

“Methodology for Optimizing Power Consumption and End to End Packet Delay over the Bluetooth Ad-hoc Network” in Proc. IEEE International Conf. On Communications., 2001, Finland. (with Abhishek Kashyap, Apurva Kumar, Anupam Rastogi, Huzur Saran and Rajeev Shorey)

“A Scheduling Scheme to Increase Throughput in Indoor Pico-Cellular Wireless System”, in Proc IEEE Intl. Conf. on Personal Wireless Comm., 2000, India. (with Abhishek Kashyap, Apurva Kumar, Anupam Rastogi, Huzur Saran and Rajeev Shorey.)

“An Authenticated Key Exchange Scheme”, in McGraw Hill Proc. Intl. Conf. on IT, 2000, India. (with Sukumar Nandi)

“Rolling Element Bearing Design through Genetic Algorithms”, International Journal of Engineering Optimization. 2003, 35(6), 649-659. (with Vinay Kumar, Shivashankar Nair and Rajiv Tiwari)

“Quality of Service Assurance with Co-located Wireless Access Points”. Master’s thesis, Massachusetts Institute of Technology, May 2003.

Thesis advisor: John T. Wroclawski.

“ACRPN: A New Routing Protocol for Wireless Ad Hoc Networks”. Bachelor’s thesis, Indian Institute of Technology, Guwahati, May 2001. Thesis advisor: Gautam Barua.

Service

Graduate Student Housing Community Services, Penn., 2007-2010.

Vice President of Indian Student Association, MIT, 2001-2002.

Cultural Secretary of Undergraduate Student Association, Guwahati, India, 1999-2000.

Chair of Living Group Government, Guwahati, India, 2000-2001.

Certifications

Passed CFA Level II (2004).

Presentations in Finance

American Finance Association Annual Meetings, 2010.

Financial Management Association Annual Meetings, 2009

Wharton Finance Macroeconomics Reading Group 2008, 2009.

Wharton Finance Corporate Finance Reading Group, 2009.

Eastern Finance Association Meetings, 2008, 2009.

Midwest Finance Association Meetings, 2008.