http://fnce.wharton.upenn.edu/profile/1033/

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#### Education

University of Pennsylvania, The Wharton School

Ph.D., M.A., Finance, 2014 (expected)

Vanderbilt University, Owen Graduate School of Management

M.S., Finance, 2009

University of Georgia

B.S., Mathematics, A.B., Economics, magna cum laude, 2008

#### Grants and awards

Olin Business School Best Finance Ph.D. Dissertation Award in honor of Professor Stuart I. Greenbaum, 2013

Jacobs Levy Equity Center Research Grant, 2012

University of Pennsylvania Dean's Fellowship for Distinguished Merit, 2009–2013

## External presentations

PhD poster session, WFA-CFAR Annual Corporate Finance Conference (2013)

Western Finance Association Annual Meeting (2013)

European Financial Management Association Annual Meeting (2013)

Florida State SunTrust Conference (2012)

## Workshops attended by invitation

NBER Entrepreneurship Research Boot Camp (2013)

NBER Summer Institute (Corporate Finance and Entrepreneurship, 2013)

#### Referee service

Journal of Financial Intermediation

Journal of Financial Services Research

## Teaching assistance

Advanced Corporate Valuation (for Michael Roberts)

Summer 2011, Fall 2011, Spring 2013, Summer 2013

Funding Investments (for David Musto)

Summer 2010, Fall 2010, Summer 2011, Fall 2011, Spring 2012

CIMA Certification program (for Jeff Jaffe, Richard Marston, and Craig MacKinlay)

Oct. 2011, Dec. 2011, Jan. 2012, Feb. 2012, Mar. 2012, Apr 2012

#### Thesis Committee and References

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# Research papers

## Creditor Rights and Innovation: Evidence from Patent Collateral

Job market paper

I construct a novel dataset of patent collateral portfolios and use it to show that stronger creditor rights facilitate the financing of innovation. I begin by showing that (1) secured debt is an important source of financing for innovation, and (2) patents are an important form of collateral supporting this financing. Since 2000, 51% of aggregate R&D is performed by companies that have patent-secured loans. Using the random timing of court decisions that strengthened creditors' ability to seize patent collateral, I show that patents are more likely to be pledged, that the issuance of debt secured by patents increases, and that R&D and patenting output also increase. The increased patenting output receives more citations and spans more technology categories. Analysis of the debt contracts reveals that covenants and collateral act as substitutes: When creditor rights strengthen, covenants loosen, granting firms more flexibility to invest in risky projects.

### Financing through Asset Sales

with Alex Edmans

Most research on firm financing studies debt versus equity issuance. We model an alternative source – non-core asset sales – and examine the choice between selling assets and equity issuance. First, equity investors own a claim to the capital raised, mitigating the information asymmetry of equity. The firm issues equity if its financing need is high, even if non-core assets exhibit less information asymmetry, and even if the capital funds an uncertain investment. Second, firms can disguise the sale of a low-quality asset as instead motivated by operational reasons (dissynergies). Third, selling equity implies a lemons discount for the entire firm (a negative stock price reaction). In contrast, asset sales need not imply a low firm valuation, as the non-core asset is not a carbon copy of the firm.

# Research in progress

### What is the Cost of Renegotiation?

with Michael Roberts

Using a novel dataset identifying the direct costs of bank loan renegotiation, we show that banks often extract economically significant concessions from corporate borrowers in the form of amendment fees. Banks charge borrowers upwards of 100 basis points of the face value of the loan when borrowers experience declines in financial health and credit market conditions deteriorate - situations in which the outside option of borrowers declines and the bargaining power of banks increases. We then show that these ex post costs are partially anticipated by borrowers who face marginally lower interest rates on their loans.