

# Personal Research Statement

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This statement is organized as follows. Section I provides summary and discusses research impact factors. Section II provides citation statistics. Sections III–V discuss in detail my past and current research projects organized by research area. Section VI provides references.

## I. Summary and Research Impact

My research investigates the economic roles of financial institutions and intermediaries that affect the firms' access to capital as well as investors' access to information about the firms. My research goal is to shed light on (i) the distinct functions played by the intermediary institutions that do not get outmoded by public markets, and also (ii) what determines efficacy of such functions. My research projects can be divided into three related areas. The first area studies the underwriting and sell-side research functions of Wall Street banks in the post-Glass-Steagall era of universal banking. The second area studies the economics of venture capital and buyout funds. The third area studies the rising importance of institutional investors as creditors to firms and its implications for the firms and the economy. During the review period, my research has yielded seven publications (five of which are in the top-three finance journals), three working papers, and four works in progress.

My research has had a significant impact. Although many of my papers have only recently been accepted for publication, they together have obtained 404 citations according to Google Scholar and as summarized in Section II. One of my publications has been cited for more than 100 times, and four others have been cited for more than 50 times each (see Section II).

My paper “The Economics of Private Equity Funds” has been downloaded 9,505 times and is currently one of the Top-100 All-Time Most-Downloaded Papers across all disciplines from SSRN (Social Science Research Network), a leading outlet for social science and management research. My paper “Do Bank Relationships Affect the Firm’s Underwriter Choice in the Corporate-Bond Underwriting Market?” won the Best Paper Prize (first place) at the 2002 Annual Global Finance Conference and the Best Paper Prize (first place) at the National Taiwan University International Conference on Finance. My paper “The Role of Institutional Investors in Propagating the 2007-8 Financial Crisis” was nominated for a Best Paper Award at the Financial Management Association Annual Meeting in 2010.

My papers have been presented at all the major finance and economics conferences, such as those organized by the American Finance Association (AFA), Western Finance Association (whose annual meeting is a more exclusive conference than the AFA meetings), National Bureau of Economic Research (NBER), European Finance Association, and Financial Intermediation Research Society (FIRS), among others. In addition, I have been invited to give more than 50 seminars at top academic institutions, such as MIT, Princeton, Stanford, University of Pennsylvania, Dartmouth, New York University, Cornell, UT Austin, and University of Michigan.

Receiving selective research grants and awards provides another evidence of research impact. I have received competitive research awards and grants totaling in excess of \$100,000 from: the NBER-Sloan Financial Crisis Project, the Mack Center for Technological Innovation, NASDAQ Research Fellowship, Morgan Stanley Research Fellowship, the New York Stock Exchange, the Wharton/INSEAD Alliance, and the Rodney White Center at the University of Pennsylvania.

My research has also attracted substantial attention from policy makers, the financial industry, and the media. For example, my various research projects have been profiled in more than a dozen articles in national press outlets such as The Wall Street Journal, Financial Times, The New York Times, CFO, Reuters, and Bloomberg News. My research was also cited in briefs prepared for a Congressional hearing on taxation of private equity funds.<sup>1</sup> I have also been invited to present my research at various regional Federal Reserve Banks (e.g., D.C., Chicago, New York, and San Francisco), and at annual meetings of the Institutional Limited Partners Association (ILPA), the largest trade organization for institutional investors investing in private equity.

An important role of an academic is to advise and mentor Ph.D. students. I have been a member of eight Ph.D. Dissertation Committees and have worked on joint research with three Ph.D. students. It has been gratifying to see how these students have become respected academics and accepted positions at institutions such as INSEAD, University of Florida, Tilburg University (the Netherlands), and KAIST (Korea).

My goal is to continue working on the distinct roles of financial institutions / intermediaries that do not get replaced by public markets. I am particularly interested in the growing importance of so-called shadow bank institutions, which include (but are not limited to) private equity groups and institutional investors of securitized debt. The topic has gained renewed importance in the aftermath of the financial crisis, with debates on the optimal regulation of financial institutions expected to continue for years to come. Over the next couple of years, I plan to (i) investigate the linkage between the organizational structure and the investment behavior of private equity firms and (ii) examine the sources of local bias in institutional investor holdings of corporate bonds.

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<sup>1</sup> See "Present Law and Analysis Relating to Tax Treatment of Partnership Carried Interests And Related Issues, Part I" (JCX-62-07), prepared by U.S. Congressional Joint Committee on Taxation, p. 16, pp. 21-22.

## II. Citations

The citation counts were compiled using Google Scholar in December 2010. They include citations in books, journal articles, and working papers taking into account title changes.

Article	Citations
1 “Do Bank Relationships Affect the Firm’s Underwriter Choice in the Corporate-Bond Underwriting Market?”, 2005, <u>Journal of Finance</u> 60, 1259-1292.	106
2 “The Economics of Private Equity Funds” (with Andrew Metrick), 2010, <u>Review of Financial Studies</u> 23, 2303-2341.	83
3 VENTURE CAPITAL AND THE FINANCE OF INNOVATION (with Andrew Metrick), 2010, Wiley and Sons, New York.	64
4 “Are Stars’ Opinions Worth More? The Relation between Analyst Reputation and Recommendation Values” (with Lily Fang).	55
5 “The Effectiveness of Reputation as a Disciplinary Mechanism in Sell-Side Research” (with Lily Fang), 2009, <u>Review of Financial Studies</u> 22, 3735-3777.	50
6 “Bank Relationships and Underwriter Competition: Evidence from Japan”, 2007, <u>Journal of Financial Economics</u> 86, 369-404.	19
7 “Investment Horizon of the Bond Investor Base and the Leverage of the Firm” (with Massimo Massa and Lei Zhang), revise-and-resubmit at the <u>Journal of Financial Economics</u> .	17
8 “The Performance and Role of Japanese Development Banks”, Stanford University. (Undergraduate senior honors thesis)	7
9 “The Role of Institutional Investors in Propagating the 2007-8 Financial Crisis” (with Alberto Manconi and Massimo Massa), forthcoming in <u>Journal of Financial Economics</u> .	3*
Total	404

In cases where there are multiple entries for the same article in Google Scholar, the sum is reported.

\* 6 citations according to SSRN.

### III. Underwriting and Research Functions of Wall Street Banks

My first research area examines the underwriting and sell-side research functions of Wall Street banks. The primary emphases of this research are on the effects of bank relationships on the firm's underwriter choice, and the relationship between analyst reputation and their research quality.

#### *A. Bank Relationships and the Underwriting Market*

Before the historic wave of deregulation swept the U.S. financial industry in 1989, a small number of top-tier investment banks dominated the underwriting market for corporate securities. Once the wave hit, commercial banks successfully entered the market and quickly gained market shares.

Why did these entrant commercial banks succeed in entering the oligopolistic market? There are two potential sources of explanations. First, bank relationships may provide a source of informational advantage for commercial banks, thus making them effective providers of underwriting services to firms with which they had relationships. This could benefit the firms, e.g., through better yields arising through certification. Second, commercial banks may offer fee discounts. These observations raise the following questions, which motivated my research: Is the increased market share of bank underwriting coming from discounted underwriting fees? Or are lending relationships important in affecting the firm's choice of underwriters *over and above* any discounted fee effect?

My research in this area was the focus of my doctoral dissertation in economics at the Department of Economics, Stanford University, and yielded two solo-authored publications in the top-three finance journals (**Journal of Finance** and the **Journal of Financial Economics**), as described below.

#### **“Do Bank Relationships Affect the Firm's Underwriter Choice in the Corporate-Bond Underwriting Market?” (Publication #1)**

This paper studies the effect of bank relationships on underwriter choice in the U.S. corporate-bond underwriting market following the 1989 commercial-bank entry. I find that bank relationships have positive and significant effects on a firm's underwriter choice, over and above their effects on fees. This result is sharply stronger for junk-bond issuers and first-time issuers. I also find that there is a significant fee discount when there are relationships between firms and commercial banks. Finally, I find that serving as arranger of past loan transactions has the strongest effect on underwriter choice, whereas serving merely as participant has no effect.

The approach taken in this paper differs from the previous studies in that I directly model the firm's underwriter-choice problem and measure the effect of relationships on the choice of underwriter. To isolate the relationship effect, I use a multinomial-choice setup in which a firm chooses one bank out of multiple choices. Further, I use a framework that permits imputation of unobserved fees conditional on the choice of the underwriter. This econometric approach allows for full variation across banks in terms of the relationships they have with individual firms, both when

they are chosen (and we observe the underwriting fees) and when they are not (and we do not observe the underwriting fees). To the best of my knowledge, this method of analyzing imperfect market competition, while more standard in other fields of economics, had not been used before in the finance literature.

This solo-authored paper was published in the **Journal of Finance**, one of the top-three finance journals, and has been cited more than 100 times, according to Google Scholar. The paper also won the best paper award (first place) at the 2002 annual Global Finance Conference (Beijing) and the best paper award (first place) at the National Taiwan University International Conference on Finance in 2002.

In my second paper in this area, “**Bank Relationships and Underwriter Competition: Evidence from Japan**” (**Publication #2**), I study Japan, which instituted a Glass-Steagall-like separation of commercial banking and investment banking after the Second World War, and dismantled the regulation in 1993, a few years after the U.S. deregulation wave. In their case, commercial banks’ re-entry into the underwriting business was even more dramatically successful: in just several years, commercial banks accounted for more than half of corporate bond underwriting business in Japan. Like in the U.S., bank relationships and fee discounts are potential sources of explanations for their successful entry. In addition, Japanese banks, unlike the U.S. counterparts can own equity in their client firms. Thus this additional right may account for the greater success of Japanese banks in gaining market share in the corporate bond underwriting market. In my analysis I disentangle these competing explanations and also examine whether the degree of bank competition affects the fees offered.

I find that bank relationships have significant positive effects on a firm's underwriter choice. Relationship firms receive a small but significant fee discount and, consistent with the mitigating effect of competition on holdup costs, multiple-relationship firms receive a significantly deeper discount than solo-relationship firms. Bank shareholding *alone* negatively affects underwriter choice, whereas shareholding *together* with loans have significantly more positive effects than loans alone. Finally, existing relationships reduce a Japanese firm's switching probability by 32%, in contrast to only 6% for U.S. firms.

While the existing studies studying the U.S. market generally had supported the view that firms benefit from the joint activities of commercial bank lending and underwriting (including my **Publication #1**), empirical evidence on the effects of commercial bank underwriting in countries outside of the U.S. was more mixed. One factor limiting the results of non-U.S. studies was that lending and equity relationships were not explicitly controlled for at the firm-bank level due to data limitations. By studying the Japanese market, for which comprehensive data at the firm-bank level were available, my study was able to shed light on the question of whether the joint activities of lending and underwriting are beneficial to firms in a financial system outside of the U.S. Further, using the framework developed in my **Publication #1**, I disentangle the effects of relationships on the underwriter choice from the effect of relationships on fees, which leads to clearer inferences.

This solo-authored paper was published in the **Journal of Financial Economics**, one of the top-three finance journals. Reflecting its subject, the paper

was invited for presentations at many international venues, such as the Asia Development Bank Institute/Wharton Conference, Tokyo University, London Business School, INSEAD (France), and the FIRS Annual Conference (Shanghai), as well as in the U.S.

### *B. Analyst Reputation and Sell-side Research*

In the second line of research in this area, Lily Fang (a former Ph.D. advisee) and I examine the effects of reputation on the research quality of sell-side analysts. Around the turn of the century, equity markets were red hot, as equity underwriting volumes soared. By 2003, these hot markets were associated with conflict-of-interest scandals involving sell-side research on Wall Street, and some of the “best and the brightest” people and firms were charged with violating the public trust by publishing biased research. Individuals, like once-star analyst Jack Grubman, faced multi-million-dollar fines and lifetime bans from the securities industry, and ten of the largest investment banks agreed to pay \$1.4 billion in fines through the Global Research Analyst Settlement.

While the presence of conflicts of interest in sell-side research is not news, the fact that analysts and firms of high repute were involved in these scandals got our attention because it was sharply at odds with the theory on the role of reputation: reputation *should* discipline people against short-term profits. This motivated us to examine the following questions in our first paper, “**The Effectiveness of Reputation as a Disciplinary Mechanism in Sell-Side Research**” (**Publication #3**): (1) Does the trade-off (between a loss in long-term reputation and a gain in short-term benefits) change enough during new issue volume peaks, when the gains from short-run opportunism are much higher than in normal times, to systematically lure reputable analysts and banks into publishing low-quality research? (2) Are personal and bank reputation equally effective in mitigating the conflict of interest problem?

In particular, we examine whether the quality differentials in earnings forecasts between reputable and non-reputable analysts vary with the severity of conflicts of interest. We measure personal reputation using the Institutional Investor All-American (AA) awards, and bank reputation using Carter-Manaster ranks. While both personal reputation and bank reputation are associated with higher-quality forecasts overall, their effectiveness against conflicts of interest differs. The severity of conflicts has a negative and significant effect on the performance of non-AAs at top-tier banks relative to other analysts, while it has a positive and significant effect on the performance of AAs at top-tier banks relative to others. Thus personal reputation is an effective disciplinary device against conflicts of interest, while bank reputation alone is not.

While the existing literature has extensively documented a positive correlation between reputation and research quality, we explicitly investigate whether reputation *mitigates* or *exacerbates* conflicts of interest. If reputation simply captures average “skill”, we do not expect the quality differentials between reputable and non-reputable analysts to vary over time with the severity of conflicts of interest. If reputation either mitigates or exacerbates the conflict of interest problem, however, then the quality differentials would vary with the severity of conflicts of interest.

Thus, by focusing on the dynamic patterns of analysts' research quality differentials, we address this unexplored empirical question. We further contribute to the literature by examining the effectiveness and limitations of two distinct types of reputation: personal reputation and institutional reputation.

This paper was published in the **Review of Financial Studies**, one of the top-three finance journals. This paper and my second paper in this area (**Submitted #1** – see below) have been cited 50 and 55 times, respectively, and not only by finance scholars<sup>2</sup> but also by prominent scholars in other disciplines such as accounting and management.<sup>3</sup>

In my second paper in this area, “**Are Stars' Opinions Worth More? The Relation between Analyst Reputation and Recommendation Values**” (**Submitted #1**), Lily Fang and I examine the relation between analysts' all-star (AA) status and the investment value of their stock recommendations, and to the extent that star analysts make superior recommendations, we attempt to distinguish among alternative sources of their outperformance. We posit a number of hypotheses regarding the relation between star status and performance and its sources. First, it could simply be that star status is completely unrelated to analyst skill, so no relation will be observed between the two (*irrelevant AA hypothesis*). Alternatively, analysts have different abilities (either innate or learned), and the star-election process identifies such skill differences so that star analysts outperform others (*skilled AA hypothesis*). Third, it could be that some analysts are elected to be stars by luck, and while they do not have superior skill, success begets success and their star status makes their future recommendations more influential and appear to have more value (*lucky-and-influential AA hypothesis*). Finally, a slight variation on the lucky-and-influential hypothesis is that, AAs are elected due to luck, but once obtained, star status affords the analyst superior access to company management, giving him a true competitive advantage that translates into continued superior performance (*lucky-and-connected AA hypothesis*).

Our empirical results are most consistent with the *skilled AA hypothesis*. We draw this conclusion from the following set of results. First, we find that stars' opinions are worth significantly more than those of non-stars: Risk-adjusted returns of AAs' recommendations exceed those of non-AAs by about 7% on an annualized basis. This holds for both buys and sells, and the magnitude is remarkably robust to a number of risk-adjustment methods. This rules out the *irrelevant AA hypothesis*. Second, we find that the superior performance among AAs exists even before they were elected as stars; indeed, qualitatively and quantitatively the performance differences between AAs and non-AAs are similar between pre- and post-election periods. This refutes the notion that AAs are elected purely due to luck. Third, we find that the performance difference between AAs and non-AAs does not reverse in the long run, which suggests that stars' outperformance is not driven by the stars' influence or the market's temporary overreaction. Finally, we find that the superior performance among AAs did not disappear after the passage of Reg-FD, which significantly reduced star analysts' privileged information access to company

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<sup>2</sup> See, for example, Mehran and Stulz (2007, *Journal of Financial Economics*).

<sup>3</sup> See, for example, Burt (2007, *Academy of Management Journal*) and Bonner, Hugon, and Walther (2007, *Journal of Accounting Research*).

management. This suggests that AAs outperformance does not purely come from having better information access. Collectively, these results are consistent with the *skilled AA hypothesis*, and indicate that there is a persistent skill difference among analysts that is not completely explained by either (temporary) market influence or superior information access. These findings indicate that, despite its imperfections, the AA election process reflects institutional investors' appraisals of analyst skills, and that the resulting AA status is a useful signal of analyst skill.

We recently updated the data sample period to include the recent crisis years (up to December 2009) and submitted the paper to the **Review of Financial Studies**, where it is currently under review.

Lily Fang and I wrote a summary of our research findings in the two papers for general reader audience titled "**Reputation Matters**" and published it in Mastering Financial Management Series in the Financial Times. This body of research was also featured in another article in the Financial Times in June 2006.

#### IV. Venture Capital and Private Equity

Worldwide, private equity funds manage approximately \$1 trillion of capital. About two-thirds of this capital is managed by buyout funds, where leverage can multiply the investment size by three or four times base capital. In the peak years of the early 21st century cycle, these buyout funds were responsible for about one-quarter of all global M&A activity. Venture capital funds – the other main type of private equity – raised nearly \$160 billion of capital during the boom years of 1999 and 2000, and made early investments in recent successes like Google (in the United States), Skype (in Europe), and Baidu (in Asia). Overall, private equity funds play an increasingly important role as financial intermediaries in addition to their significant day-to-day involvement as board members and advisors. Nevertheless, relatively little is known about industrial organization of the private equity sector, mostly due to data limitations.

In "**The Economics of Private Equity Funds**" (**Publication #4**), Andrew Metrick (a former Wharton colleague) and I aim to fill that gap using a database of fund characteristics, past performance, and fund terms provided by one of the largest private-equity investors in the world. We build a novel model to estimate the expected compensation to managers as a function of their investor contracts, and we test how this estimated compensation varies across the characteristics of our sample funds. Among our sample funds, about two-thirds of expected revenue comes from fixed-revenue components that are not sensitive to performance. We find sharp differences between venture capital (VC) and buyout (BO) funds. BO managers build on their prior experience by increasing the size of their funds faster than VC managers do. This leads to significantly higher compensation per partner and per professional in later BO funds. The results suggest that the BO business is more scalable than the VC business, and that past success has a differential impact on the terms of their future funds.

While other papers have studied terms of venture capital partnerships, we provide one of the first evidence on buyout funds, which comprises the largest part of our sample and the part with the most variation in fund terms. We also contribute to

the literature by adopting an option-pricing framework for the valuation of carried interest (which is a form of performance pay) and to anchor all of our key model inputs to industry data. This framework allows us to identify several important determinants of fund revenue (for example, volatility of fund assets) that have not previously been measured. Furthermore, by analyzing both venture capital and buyout funds using a common framework, we identify a critical difference in their respective business models, namely the degree of scalability, and how this impacts the terms of their future funds.

This paper was solicited by and published in the **Review of Financial Studies**, one of the top-three finance journals. The paper has received a high level of attention both inside and outside the academia — it has been cited more than 80 times, and is currently one of the Top-100 All-Time Most-Downloaded Papers, with 9,505 downloads, across all disciplines on SSRN (Social Science Research Network), a leading outlet for social science and management research. The paper has also been featured in a number of national media outlets such as The Wall Street Journal, Financial Times, and Bloomberg News, was summarized in CFA Digest (November 2010, vol. 40, no. 4), and has been cited by policymakers in discussions on taxing private equity.

Continuing our collaborations, Andrew Metrick and I co-authored (the second edition of) an MBA-elective textbook on venture capital and the finance of innovation. While this is not an academic publication, the body of research conducted in preparation for the book spills over to my academic research work (for example, to **Working Paper #1** and **Work-in-progress #3**). The book presents, among other materials, the latest empirical evidence on the relationships between risk and return in venture capital; up-to-date industry data and valuation models used to value a high-growth company; and a contingent-claim framework to evaluate typical terms of convertible preferred stock used in venture capital transactions. The book (**Publication #5**) is entitled **Venture Capital and the Finance of Innovation** and was published in September 2010 by Wiley & Sons, a premier textbook publisher. Since its publication, the book has been received very well and its second printing has already been ordered as of December 2010.

Andrew Metrick and I completed another paper, “**Venture Capital and Other Private Equity: A Survey**” (**In-Press #1**), which was solicited by and is forthcoming in the **European Financial Management**, a solid finance field journal.<sup>4</sup> The paper emphasizes the economic rationales for private equity as an alternative asset class to publicly-traded securities, and discusses the current state of the literature on performances, contracts, and economic value-added of venture capital and buyout funds. Since the paper was circulated on SSRN, it has been listed on the network’s Top Ten download list for over a month for various Finance, Entrepreneurship, and Economics topics.

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<sup>4</sup> Its 2009 ISI Journal Citation Impact Factor = 0.892. In comparison, Financial Management = 0.727 and the Financial Analysts Journal = 0.512. Source: Journal Citation Reports.

In “**On the Consistency and Reliability of Venture Capital Databases**” (**Working Paper #1**), my co-authors and I examine the reliability and consistency of VentureXpert (VX) and VentureSource (VS), the two most commonly used databases of venture capital investments in the U.S. We examine VC investments made by a sample of 40 funds raised between 1993 and 2003. We find that VX has a more complete coverage of portfolio companies associated with a given fund, whereas VS is more accurate in tracking the investment outcomes of those companies that it covers. Selection in VS is not random; uncovered companies are predominantly those that have been written off. VX covers 16.4 companies per fund, compared to 12.5 per fund for VS. Comparisons of the two databases reveal that the data consistency between them is relatively low.

Frederike Maats (a former exchange masters student from Erasmus University), Andrew Metrick and I are the leading authors of the paper; Brian Hinkes and Sofia Vershovski were both undergraduate Wharton students when the initial draft of the paper was written and contributed to the project as well. Frederike Maats previously worked for me as a research assistant for another project (**Work in Progress #1**—see below), and this paper grew out of our collaborations. This paper is soon to be submitted.

Andrew Metrick and I have been working on “**Power-sharing Rules, Risk Taking and Performance of Private Equity Partnerships**” (**Work in Progress #1**), in which we study the empirical relation between decision-making rules and fund risk-taking and performance. Our goals are to answer the following three questions: (1) Do funds that have more “dictatorial” decision-making rules for their investment committees take more risks than funds that are more “democratic” in their decision-making rules? (2) Does the difference in decision-making rules affect fund performance, conditional on other factors (such as firms’ age, sector focus, etc.)? (3) Does distribution of carried interest among fund partners also affect risk-taking behavior of the funds and subsequent performance, over and above the decision-making rules? The results of our study will provide novel and valuable knowledge base for investors and investment advisors in the effects of organizational design on the decision-making and performance of private equity funds in particular and knowledge-based firms in general. To the best of our knowledge no prior study has shed light on these questions before. We expect to complete the study in the next 12 months.

Wilson Choi, Andrew Metrick and I have been working on “**A Model of Private Equity Fund Compensation**” (**Work in Progress #2**), which is a methodology paper that extends the simulation model originally developed for my **Publication #4**. Wilson Choi is a former Ph.D. advisee and previously worked for me as a research assistant for another project (**Publication #4**). Some non-quantitative clauses of private equity partnership agreements were not analyzed in the previous project, and we are extending the model so that we can quantify the effects of having these qualitative fund terms on the expected values of compensation to the fund managers. In particular, we plan to analyze the extent to which these terms would affect the fund managers’ incentives to inflate the reported values of the funds’ portfolio companies

while these companies remain private. We have accepted the invitation to present the paper in an invited session/plenary panel on Financial Institutions and Behavior at the International Economics Association (IEA) World Congress, to be held in Beijing, China in July 2011. The Proceedings of the invited session papers will be published by Pelgrave-MacMillan as a multiple-volume book publication.

Brad Barber and I have been working on “**Risk-adjusted Returns in the Venture Capital and Buyouts Industry**” (Work in Progress #3), which empirically examines the effects of controlling for illiquidity, stale prices (valuations of private portfolio companies are updated infrequently), and covariance with leveraged debt market conditions on the risk-adjusted returns to the venture capital and buyout industry. While a simple CAPM model yields low covariance with the market return and a large and significantly positive alpha, more careful risk-adjustments reveal that both venture capital and buyouts as asset classes do not earn abnormal returns on average. While the results are consistent with the prior literature, the explicit inclusion of illiquidity controls and leverage debt market conditions allows us to show how much exposure to these factors matters over and above the exposure to market returns. We expect to complete this study in the next 12 months.

#### V. Institutional Bond Investors as Creditors to the Firms

In the third research area, I study institutional bond investors, whose importance as creditors to the firms has grown significantly in the recent years, and whose behavior can thus have significant impacts on the firms and the economy. In a sharp contrast to equity mutual funds, which have been widely studied in the academia and for which large volumes of papers have been written, relatively little has been known about institutional bond investors. In my recent and ongoing projects I aim to fill this gap in the literature by using a novel data of institutional investors' bond holdings and exploring several key questions.

In “**The Role of Institutional Investors in Propagating the 2007-8 Financial Crisis**” (In-press #2, forthcoming in the **Journal of Financial Economics**), which is co-authored with Alberto Manconi (a former Ph.D. advisee) and Massimo Massa, we study a transmission mechanism that explains the contagion of the financial crisis of 2007-2008 from the securitized bond market to the corporate bond market. We argue that the crisis shock was propagated by the behavior of institutional investors, which held both securitized bonds and corporate bonds and had to liquidate portions of their portfolios due to their liquidity needs. When securitized bonds became “toxic” in August 2007, mutual funds facing liquidity needs retained the now illiquid securitized bonds and sold their corporate bond holdings. Funds with negative contemporaneous flows and high liquidity needs liquidated greater portions of their corporate bond holdings than others. Yield spreads and bond sales increased more for corporate bonds whose pre-crisis bondholders were more heavily exposed to securitized bonds, compared to *same-issuer* corporate bonds held by unexposed investors. In contrast, insurance companies sold little regardless of their exposure to securitized bonds as long as they were above the minimum capital ratio threshold. These findings suggest that liquidity-constrained investors with exposure to

securitized bonds played a role in propagating the crisis from securitized bonds to corporate bonds.

This paper has been presented at various select conferences and seminars such as the NBER-JFE Project on Market Institutions and Financial Market Risk Conference and the WFA annual meeting, and is forthcoming in the **Journal of Financial Economics** (one of the top-three finance journals) for a special issue on the financial crisis. The paper was also nominated for a Best Paper Award at the 2010 FMA Annual Meeting.

In “**Investment Horizon of the Bond Investor Base and the Leverage of the Firm**” (**Submitted #2**), Massimo Massa, Lei Zhang and I examine the effect of the investor horizon of institutional bondholders (e.g., mutual bond funds and insurance companies) on the leverage of the firm. Our main finding is that the investment horizon of the firm’s bond investor base has a positive and significant effect on the leverage of the firm. The investment horizon also has a positive and significant effect on the firm’s probability of issuing bonds, and a negative and significant effect on the firm’s probability of issuing equity and borrowing from banks. The results are robust to controlling for potential endogeneity of the investor-firm matching using geography-based instruments. Our results highlight the vulnerability of companies that depend on short-horizon mutual funds as primary bond investors.

This paper has been presented at various select conferences and seminars such as the AFA annual meetings and the NBER Summer Institute (Corporate Finance Workshop), and has received a revise-and-resubmit request at the **Journal of Financial Economics**, one of the top-three finance journals.

In our previous collaboration on **Submitted #2** (see above), Massimo Massa, Lei Zhang and I discovered that there is a strong local bias in institutional investor holdings of corporate bonds within the United States. In “**Local Bias in Corporate Bond Holdings**” (**Work in Progress #4**), we are examining determinants of this phenomenon in a follow-up study, which we expect to complete sometime in 2011.

## VI. References

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