

XIAOHUI GAO BAKSHI

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PERSONAL INFORMATION

- Female; U.S. citizen

EDUCATION

Ph.D. in Finance - Department of Finance, University of Florida - Gainesville	8/2003 - 7/2008
Master of Science in Mathematics - Department of Mathematics, University of Florida - Gainesville	8/2001 - 5/2003
Bachelor of Science in Mathematics - Department of Mathematics, Fudan University	9/1997 - 6/2001

RESEARCH INTERESTS

Empirical Corporate Finance; Theoretical and Empirical Asset Pricing; Behavioral Finance; Entrepreneurship; International Finance

ACADEMIC POSITIONS

1. Associate Professor of Finance (Research), Fox School of Business, Temple University, August 2018 –
2. Assistant Academic Director of the Doctor of Science in Global Finance (DS-GF) program (joint program with Tsinghua University)
3. Visiting Assistant Professor of Finance, University of Maryland, College Park, August 2013 – June 2018
4. Assistant Professor of Finance (tenure track), Faculty of Business and Economics, the University of Hong Kong, August 2008 – 2013

RESEARCH

Publications

1. [Dark Matter in \(Volatility and\) Equity Option Risk Premiums](#) Accepted at *Operations Research* (with Gurdip Bakshi and John Crosby)

Emphasizing the statistics of jumps crossing the strike and local time, we develop a decomposition of equity option risk premiums. Operationalizing this theoretical treatment, we equip the pricing kernel process with unspanned risks, embed (unspanned) jump risks, and allow equity return volatility to contain unspanned risks. Unspanned risks are consistent with negative risk premiums for jumps crossing the strike and local time and imply negative risk premiums for out-of-the-money call options and straddles. The empirical evidence from weekly and fartherdated index options is supportive of our theory of economically relevant unspanned risks and reveals “dark matter” in option risk premiums.

2. [Recovery with Applications to Forecasting Equity Disaster Probability and Testing the Spanning Hypothesis in the Treasury Market](#). Accepted at *Journal of Financial and Quantitative Analysis* (with Gurdip Bakshi and Jinming Xue).

We investigate the implications of recovering real-world conditional expectation of return functions using options on the S&P 500 index and Treasury bond futures. First, we construct estimates of the probability of

disasters, defined as higher than 6%, 5%, or 4% equity market declines over option expiration cycles. This measure of disaster probability forecasts realized disasters. Second, we employ options on the futures of the 10- and 30-year Treasury bonds to construct estimates for the expected return of bond futures. These measures display forecasting ability for subsequent futures returns beyond the level, slope, and curvature variables extracted from the yield curve.

3. [Decoding Default Risk: A Review of Modeling Approaches, Findings, and Estimation Methods](#) (with Gurdip Bakshi and Zhaodong Zhong), February 2022, *Annual Review of Financial Economics* (in press).

Default risk permeates the behavior of corporate bond returns and spreads, credit default swap spreads, estimation of default probabilities, and loss in default. Pertinent to this review are salient empirical findings and implications of default process estimations over 1974 to 2021. Both structural and reduced-form models are covered. In structural models, there is default if the value of assets falls below some threshold obligation. The reduced-form models involve assumptions about the default process combined with recovery in default. Default process estimations and measurements of default probability have improved by exploiting data on defaultable bonds, credit default swaps, tally of default realizations, and options on individual equities. Empirical investigations continue to address the relevance of stochastic asset volatility, jumps in asset values, and modeling of default boundary and firm leverage process.

4. [A Theory of Dissimilarity Between Stochastic Discount Factors](#), *Management Science* 67 (7), 2021, 4602-4622, (with Gurdip Bakshi and George Panayotov)

This paper proposes a measure of dissimilarity between stochastic discount factors (SDFs) in different economies. The SDFs are made comparable using the respective bond prices as the numeraire. The measure is dimensionless, synthesizes features of the risk-neutral moments of excess currency returns, and can be extracted from currency option prices. Linking theory to data, we provide evidence gathered from (i) the cross-section of 45 currency option prices, (ii) the time-series of currency returns, (iii) estimated SDFs using model-free restrictions, and (iv) structural models in international finance.

5. [Understanding the Sources of Risk Underlying the Cross-Section of Commodity Returns](#), *Management Science*, 65 (2), 2019, 619-641, (with Gurdip Bakshi and Alberto Rossi).

We show that a model featuring an average commodity factor, a carry factor, and a momentum factor is capable of describing the cross-sectional variation of commodity returns. More parsimonious one- and two-factor models that feature only the average and/or carry factors are rejected. To provide an economic interpretation, we show that innovations in global equity volatility can price portfolios formed on carry, while innovations in a commodity-based measure of speculative activity can price portfolios formed on momentum. Finally, we characterize the relation between the factors and the investment opportunity set.

6. [A Recovery That We Can Trust? Deducing and Testing the Restrictions of the Recovery Theorem](#), *Review of Financial Studies* 31(2), 2018, 532-555, (with Gurdip Bakshi and Fousseni Chabi-Yo).

How reliable is the recovery theorem of Ross (2015)? We explore this question in the context of options on the 30-year Treasury bond futures, allowing us to deduce restrictions that link the physical and risk-neutral return distributions. Our empirical results undermine the implications of the recovery theorem. First, we reject an implicit assumption of the recovery theorem that the martingale component of the stochastic discount factor is identical to unity. Second, we consider the restrictions between the physical and risk-neutral return moments when the recovery theorem holds, and reject them in both forecasting regressions and generalized method of moment estimations.

7. [Do Individual Investors Treat Trading as a Fun and Exciting Gambling Activity? Evidence from Repeated Natural Experiments](#), *Review of Financial Studies* 28 (2015), 2128-2166 (with Tse-Chun Lin).

We hypothesize that individual investors treat trading as a fun and exciting gambling activity, implying substitution between this activity and alternative gambling opportunities. To examine this hypothesis, we study the lottery jackpots and the trading of individual investors in Taiwan. When the jackpots exceed 500 million Taiwan dollars, the trading volume decreases between 5.2% and 9.1% among stocks preferred by individual investors and between 6.8% and 8.6% among lottery-like stocks. The decline in individual buy volume is statistically indistinct from the decline in sell volume. Large jackpots are associated with less trading in options with high sensitivity to volatility.

8. [Where Have All the IPOs Gone?](#) *Journal of Financial and Quantitative Analysis* 48 (2013), 1663-1692 (with Jay Ritter and Zhongyan Zhu). [awarded the 2013 JFQA William F. Sharpe Award]
[This paper is also the basis of the [Testimony of Jay Ritter before the Senate Committee on Banking, Housing, and Urban Affairs, March 6th 2012](#)].

During 1980–2000, an average of 310 companies per year went public in the United States. Since 2000, the average has been only 99 initial public offerings (IPOs) per year, with the drop especially precipitous among small firms. Many have blamed the Sarbanes-Oxley Act of 2002 and the 2003 Global Settlement’s effects on analyst coverage for the decline in IPO activity. We find very little support for the conventional wisdom, and we offer an alternative explanation. Our economies of scope hypothesis posits that the advantages of selling out to a larger organization, which can speed a product to market and realize economies of scope, have increased relative to the benefits of operating as an independent firm.

9. [The Marketing of Seasoned Equity Offerings](#) (with Jay Ritter), *Journal of Financial Economics* 97 (2010), 33 - 52. [awarded the first prize of the 2010 JFE Jensen Prizes for Corporate Finance and Organizations].

In an accelerated seasoned equity offering (SEO), an issuer foregoes the investment bank’s marketing efforts in return for a lower fee. To explain why many issuing firms choose a higher cost fully marketed offer, we posit that the marketing effort flattens the issuer’s shortrun demand curve. Alternatively stated, with a fully marketed offer, the issuer is paying investment bankers to create demand, making the elasticity of demand at the time of issuance an endogenous choice variable. Empirical analysis shows that both the pre-issue elasticity of the issuing firm’s demand curve and the offer size are important determinants of the offer method choice. We find evidence of a large transitory increase in the elasticity of demand for issuers conducting fully marketed SEOs.

Working Papers

1. The Puzzle of Treasury Option, with Gurdip Bakshi and John Crosby, 2021, presented at AFA 2020 in San Diego, presented at MFA 2019 in Chicago).

Puzzling to many workhorse interest-rate models, average excess returns of out-of-the-money puts and calls on bond futures are both negative, unconditionally and conditional on economic states. We explore sources of negative average option excess returns and empirically reject hypotheses linked to the predominance of spanned risks and workings of inflation expectations. Resolving the puzzle, we develop economically motivated restrictions in the context of a theory in which the pricing kernel is a general diffusion process with spanned and unspanned components. Our reconciliation is a framework that introduces market incompleteness and priced unspanned volatility risks, allowing for time-varying futures risk premiums.

2. [Negative Correlation Condition and the Dark Matter Property of Asset Pricing Models](#) (with Gurdip Bakshi, John Crosby, and Wei Zhou, 2021, presented at Virtual Derivatives Workshop 2021)

Martin (2017) employs the negative correlation condition (NCC) to derive a lower bound of the equity premium. This paper exploits theoretical and empirical constructions to refute the hypothesis of the NCC. Using options on the S&P 500 index and STOXX 50 equity index, the bootstrap-based tests favor rejection. Our empirical counterexamples of the pricing kernel contradict the universality of the NCC, exhibit variance-dependence and incorporate an increasing region to the return upside.

3. Implications of a General Formula for the Expected Excess Return of the Market (with Gurdip Bakshi, John Crosby, and Wei Zhou, 2021; this is a substantially revised version of the paper previously titled "A New Formula for the Expected Excess Return of the Market")

We derive a general formulation for the conditional expected excess return of the market that is robust to specifications of the SDF projection. In our approach, the conditional expected excess return of the market is adapted to the information in the risk-neutral return central moments. We examine the empirical implications of our approach using data on options on the S&P 500 equity index and other international indexes.

4. [The Geography of Exchange Rate Disconnect](#) (with Gurdip Bakshi and John Crosby, 2021, presented at Midwest Finance Association 2022, presented at Eastern Finance Association 2021)

This paper proposes a measure of exchange rate disconnect. Working in a two-currency international economy, our theory implies that the disconnect is the ratio of two martingales. We analyze empirically our measure of disconnect using 406 pairs of economies to reveal a geography of disconnect. Linking theory to returns of international bonds and equities, we examine cross-sectional disparities in disconnect with respect to multidimensional attributes of the global economy.

5. [Volatility Uncertainty, Disasters, and the Puzzle of VIX Futures Contango](#) (with Gurdip Bakshi, John Crosby, and Jinming Xue, revised December 2021, to be presented at SoFie 2022 and CICF 2022).

The VIX futures curve is most often in contango but displays backwardation during unfavorable market conditions. We construct an explanation based on the notion of stochastic orders of volatility uncertainty – meaning that investors view short-dated volatility uncertainty as being less likely to take on larger values than long-dated volatility uncertainty – under all pricing measures. We complement this theory with tractable equity price processes, whose paths consist of continuous shocks interspersed with jump discontinuities, the latter reflecting disaster uncertainty with time-varying disaster probability.

6. [Madam Yellen Is Right about Minimum Wage Policies: Evidence from Millions of Sole Proprietors](#) (First draft 2018, being revised).

During her nomination hearing, Janet Yellen repeatedly defended the benefits of a higher minimum wage (Question 66 and follow-up). This study empirically investigates the question posed: How do minimum wage policies impact the profitability of sole proprietors? Utilizing a data set consisting of 430 million sole proprietors' reported net income with the IRS from 2004 to 2018, I examine a panel regression framework with all counties and continuous border county-pairs, as well as a difference-in-differences approach. In each identification strategy, minimum wage hikes are linked to higher net income among sole proprietors. The estimated elasticity ranges between 0.15 and 0.20.

7. [Caution under Ambiguity and Blowups](#) (with Gurdip Bakshi and John Crosby, Revised April 2021, presented at Eastern Finance Association 2021, presented at European Finance Association 2018).

We develop an axiomatically consistent way of ranking and scoring actively managed funds and investment strategies. Our performance measure accounts for the feature that investors may exhibit caution, via the mechanism of ambiguity aversion, when evaluating investment strategies. Linking developed theory to data, we feature evidence on a real-world question: Do investors gain by selling the tails of return distributions? Using data on options on (i) the S&P 500 equity index, and (ii) Treasury bond futures, our answer to this

question is in the negative. We complement our evidence from options on STOXX 50, FTSE, and Nikkei equity indexes.

8. [The Scourge of Pandemics and Risk Premium](#) (with Gurdip Bakshi, 2020)

Pandemics pressure vulnerabilities in the ecosystem of societies, including corporate profitability. This paper seeks an answer to an unresolved question: What could be the risk premium for pandemics? We present a framework to derive expressions for equity price and risk premium and then consider an approach to identify risk premium for pandemics that is data-informed. Bridging theory and investment practice, our implementations indicate that the estimate of pandemic risk premium is 2.55% over 01/1871 to 12/2019 (149 years). We benchmark the risk premium for pandemics to those for wars and Great Depression.

9. [The Bond Risk Premium Channel of Monetary Policy: Reconciling the Moving Parts in the FOMC Announcement Effects](#) (with Gurdip Bakshi and Fousseni Chabi-Yo, 2020).

Bond risk premiums undergo a realignment around FOMC announcement. We construct daily conditional risk premiums on the long-term bond (and equity) using options on Treasury bond futures to examine hypotheses about FOMC announcement effects. Connecting theory to extracted risk premiums and tail risks, we provide evidence that (i) bond and equity risk premiums rise on pre-announcement day, but fall on announcement day, (ii) FOMC announcement recalibrates bond and equity tail risks, and (iii) bedrock relations between equity returns, risk premiums, and market uncertainty behave anomalously preannouncement (and alludes to leakage). We formalize a theory that synthesizes bond risk premiums.

10. [Measuring and Understanding Uncertainty of Uncertainty](#) (with Jinming Xue, under revision).

Uncertainty of uncertainty characterizes the dispersion of the cost of insuring equities. We propose a methodology that measures and extracts uncertainty of uncertainty from options on the VIX futures. Uncertainty of uncertainty is high, variable, and not highly correlated with extant uncertainty indexes. Exploring its macroeconomic origins in the setting of a large macroeconomic data set, we find that uncertainty of uncertainty can be forecast by principal components that echo concerns about monetary policy outcomes, flight to safety, and deflation. We draw inferences about the predictive coefficients based on a number of statistical tests, including a parametric bootstrap procedure.

Google scholar page: <https://scholar.google.com/citations?user=6zgpsEAAAAAJ&hl=en>

Total Web of Science citations: 369;

Total google scholar citations: 1260 (as of December 2021)

RESEARCH AWARDS

- The 2013 JFQA *William F. Sharpe Award* at the *Journal of Financial and Quantitative Analysis* (<http://depts.washington.edu/jfqa/SharpeBallot2000/SharpeAwardWinners.html>)
- The first prize of the 2010 *Jensen Prizes for Corporate Finance and Organizations* at the *Journal of Financial Economics* (<http://jfe.rochester.edu/winners.htm>)

TEACHING

Teaching Interests

Corporate Finance; Investments; Fixed Income Securities; International Finance; Entrepreneurship and Private Equity

Classes Taught and Teaching Ratings at the FOX School of Business

- Intermediate Corporate Finance (FIN 3504)

- Empirical Corporate Finance (Ph.D. program; FIN 9002)

Two-year moving average of the teaching ratings is 4.2 out of 5 (average across items 3, 4, 5, 8, and 11)

Classes Taught and Teaching Ratings at the Smith School of Business

- Investments (BMGT 343)
- Entrepreneurial Finance and Private Equity (Master of Finance and MBA program; BUFN 755)

Five-year moving average of the teaching rating is 3.42 out of 4.00.

- Short term study abroad course in China and Hong Kong, Entrepreneurship, Financial Markets, and Corporate Finance (BMGT 4380)

REFERENCES

- Jay Ritter
Joe B. Cordell Eminent Scholar in Finance
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- David Hirshleifer
Robert G. Kirby Chair in Behavioral Finance, Professor of Finance and Business Economics
University of Southern California, Marshall School of Business, Los Angeles, CA 90089
Email: hirshlei@marshall.usc.edu, Phone: 213-740-5615
- Albert (Pete) Kyle
Charles E. Smith Chair Professor of Finance
University of Maryland, Robert H. Smith School of Business, College Park, MD 20742
Email: akyle@rhsmith.umd.edu, Phone: 301-405-9684
- Robin Greenwood
George Gund Professor of Finance and Banking
Harvard Business School, Boston, MA 02163
Email: rgreenwood@hbs.edu, Phone: 617-495-6979

INVITED PRESENTATIONS

- Chinese University of Hong Kong; Hong Kong University of Science and Technology; Pennsylvania State University; Georgia State University; University of California-Irvine; University of Maryland-College Park; University of Texas-Dallas; Georgetown University; George Mason University; Rutgers University; American University.

CONFERENCE PRESENTATIONS

- 2022 Midwest Finance Association
- 2021 ITAM Conference

- 2021 Virtual Derivatives seminar
- 2021 SoFiE Finanacial Econometrics Conference
- 2021 Eastern Finance Association
- 2021 Midwest Finance Association (Chicago)
- 2021 Virtual Derivatives Workshop
- 2020 Canadian Annual Derivatives Conference (Montréal)
- 2020 Midwest Finance Association (Chicago)
- 2020 American Finance Association (San Diego)
- 2019 Midwest Finance Association (Chicago)
- 2018 Midwest Finance Association (San Antonio, invited)
- 2018 Midwest Finance Association (San Antonio, invited)
- 2018 American Finance Association (Philadelphia)
- 2017 SFS Cavalcade Asia (Beijing)
- 2017 IFSID – Sixth Conference on Derivatives (Montreal), September 2017
- 2017 Midwest Finance Association (Chicago)
- 2016 SFS Finance Cavalcade (Toronto)
- 2015 Conference on Financial Economics and Accounting, Rutgers University
- 2015 University of Oregon Summer Finance Conference
- 2015 American Finance Association (Boston)
- 2013 NBER Meetings on Economics of Commodity Markets
- 2011 Western Finance Association

PROFESSIONAL SERVICES

Journal referee: Journal of Finance, Review of Financial Studies, Journal of Financial and Quantitative Analysis, Review of Finance, Management Science, Journal of Banking and Finance, Journal of Money, Credit, and Banking, Journal of Financial Intermediation, Financial Management, Review of Derivatives Research, Review of Corporate Finance Studies, and Journal of Empirical Finance.

RESEARCH GRANTS

- General Research Fund, competitive grants: HK\$160,000 in 2012; HK\$162,800 in 2010; HK\$462,240 in 2009

CITATIONS

Citations as of August 2021				
Title of the Publication	Published in:	Year	Google Scholar	Web of Sciences
The Marketing of Seasoned Equity Offerings	Journal of Financial Economics	2010	403	126
Where Have All the IPOs Gone?	Journal of Financial and Quantitative Finance	2013	476	145
Do individual investors treat trading as a fun and exciting gambling activity? Evidence from repeated natural experiments	Review of Financial Studies	2015	154	51
A recovery that we can trust? Deducing and testing the restrictions of the recovery theorem	Review of Financial Studies	2018	47	13
Understanding the Sources of Risk Underlying the Cross Section of Commodity Returns	Management Science	2019	123	33
A Theory of Dissimilarity Between Stochastic Discount Factors	Management Science	2021	5	1
Recovery with Applications to Forecasting Equity Disaster Probability and Testing the Spanning Hypothesis in the Treasury Market	Journal of Financial and Quantitative Finance (forthcoming)			
Total of all papers, including working papers			1260	369