

CREATIVITY AND INNOVATION IN FINANCE RESEARCH

Kose John

New York University

Conference on Financial Stability and
Sustainability

Lima, Peru

CREATIVITY AND INNOVATION IN FINANCE RESEARCH

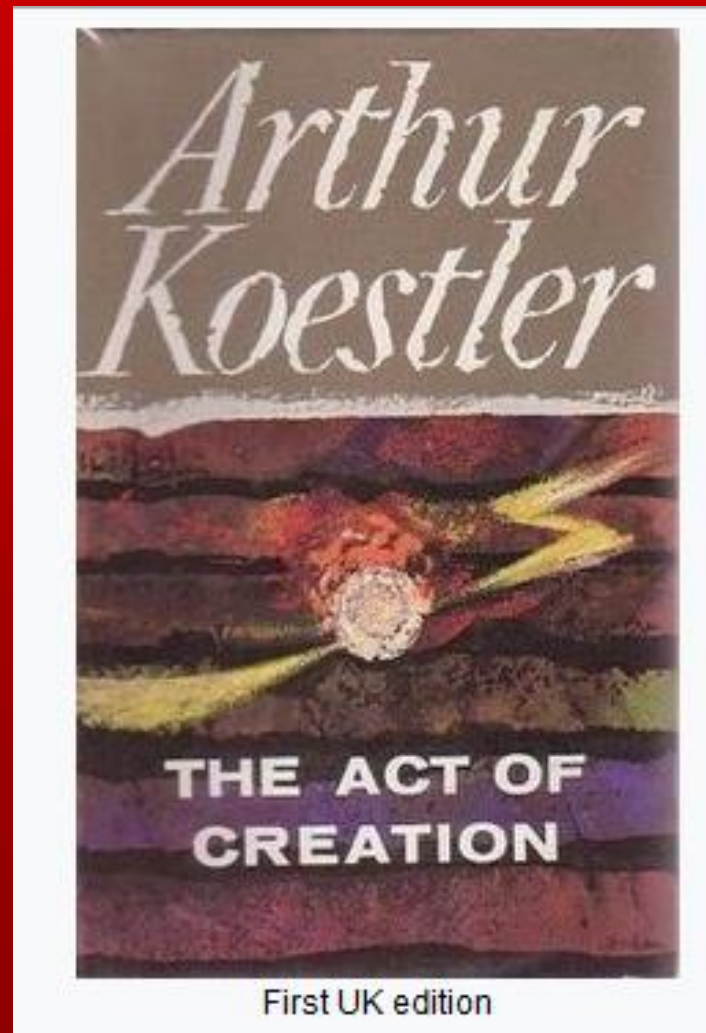
In this talk I will draw upon techniques from the psychology of creativity such as "bisociation of matrices", to demonstrate the creation of high-impact, innovative research ideas in finance.

I will provide several examples of how two very different knowledge matrices came together to create many such fundamental research contributions in finance.

Summary

- Doctoral students and colleagues
- How to be creative and innovative in finance
- C-F Lee said: “You take A from one field, B from another and then you shake and bake”
- A blending of elements drawn from two previously unrelated matrices of thought into a new matrix of meaning
- Bisociation of matrices to illustrate the combinatorial nature of creativity

Koestler Book



Theory of bisociation

- Arthur Koestler 1964
- The Act of Creation: Anatomy of creativity in humor, science, and art
- Bisociation of matrices to illustrate the combinatorial nature of creativity

Theory of Bisociation

- Different examples of invention and discovery
- Share a common pattern which he terms "bisociation"
- A blending of elements drawn from two previously unrelated matrices of thought into a new matrix of meaning
- A process involving comparison, abstraction and categorization, analogies and metaphors.

Theory of Bisociation

- Many different mental phenomena based on comparison (such as analogies, metaphors, parables, allegories, jokes, identification, role-playing, acting, personification, anthropomorphism etc.), as special cases of "bisociation".
- Bisociation is different from association

Bisociation and Humor

- Led to expect a certain outcome compatible with a particular matrix (e.g. the narrative storyline)
- A punch line, however, replaces the original matrix with an alternative matrix to comic effect.
- The structure of a joke, then, is essentially that of bait-and-switch.
- We need the eggs: Pat and Mike
- Irish man (Ryan) walks into a bar

Before and After the punchline

- Before:
- Pat and Mike, Two brothers, no hen
- Pat wants to help his brother
- After the shake-up:
- Mike is a hen keeping the family supplied with eggs
- Pat thinks that Mike the chicken is his brother
- Pat is the one that needs help

Bisociation in Science and Art

- In scientific inquiry, the two matrices are fused into a new larger synthesis. The recognition that two previously disconnected matrices are compatible generates the experience of **Eureka**.
- In the arts, the two matrices are held in juxtaposition to one another. Observing art is a process of experiencing this juxtaposition, with both matrices sustained.

Examples in Physics and Chemistry

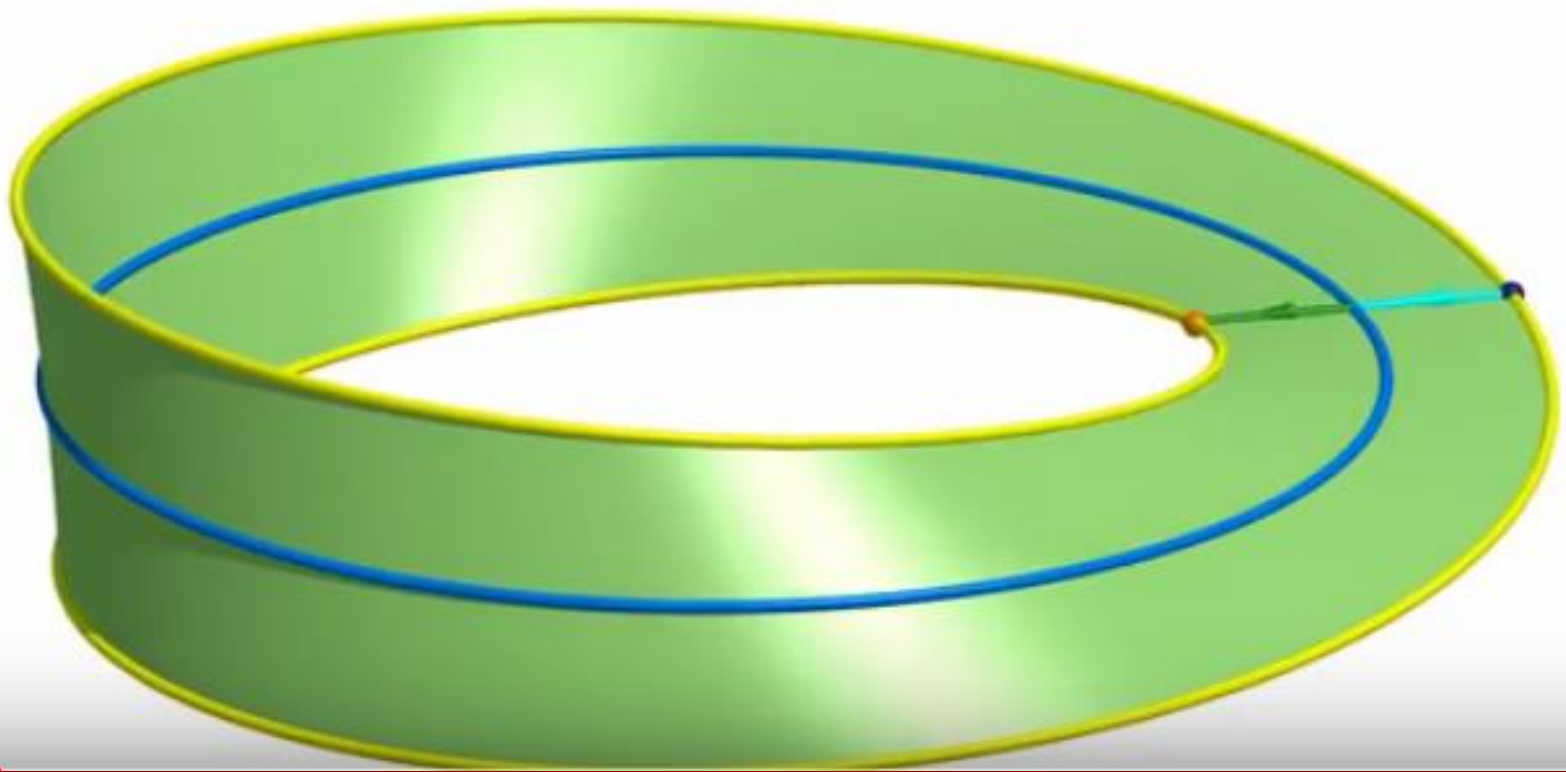
- Wave-Particle Duality
- Magnetism and Electricity
- Cyclic Structure of Benzene Ring
- Mobius strip resistor

Cyclic Structure of Benzene Ring

- 1865 Dream of Kekule



Mobius strip resistor



INTERACTIONS

- Risk
- Governance
- Institutions
- Innovation
- Survey of Existing Literature, Brainstorming
- New Important High-Impact Unresolved Problems to Solve

Risk

- Systematic Risk
- Unsystematic Risk
- Asset Pricing
- Tail Risk
- Systemic Risk
- Gompers, Ishi, Metrick (QJE 2001),
Cremers, Nair and John (RFS 2009)

An Example

- Takeovers and asset pricing
- Gompers, Ishi, Metrick (QJE 2001)
- Corporate Events and unsystematic risk
- Cremers, Nair and John (RFS 2009)
- Two unrelated knowledge matrices
- Bisociation and solution to the problem

Corporate Events and Systematic Risk

Takeovers and the Cross-Section of Returns

John, Cremers, and Nair

Review of Financial Studies 2009

Quintet of empirical results

- **Abnormal returns related to takeover vulnerability, 'Takeover' factor**
- **Using estimates of takeover likelihood, construct a takeover spread portfolio**
- **Relative to Fama-French-Carhart four-factor model, 11.7% annualized abnormal return**
- **Takeover factor predicts real takeover activity**
- **Explains differences in cross-section of equity returns**
- **Cross-sectional pricing of BM/size-sorted portfolios**
- **Relation to to governance portfolios: Decrease significantly once we add the Takeover factor to the asset-pricing model**

Two more examples: Governance and Risk

- **Governance and risk-taking by managers.**
 - John, Litov, Yeung (JF 2008)
-
- **Governance and unsystematic (unpriced) risk**
 - John and Kadyrzhanova (WP 2015)

Corporate Governance and Managerial Risk-Taking: Theory and Evidence

Kose John, Lubomir Litov, Bernard Yeung

Journal of Finance 2008

What is this paper about?

- **Large existing literature**

Better investor protection → lower cost of capital, more informed and developed capital markets, better capital allocations → faster growth

- **Offer an additional angle**

Better investor protection → managers undertake more value enhancing risky investment → faster growth

Governance and Risk

- **Corporate managers are sub-optimally conservative in the presence of large perks.**
- **Better governance mechanisms lower perks, leading to more value-enhancing risky investments.**
- **Document robust relationship between:
corporate accountability and risk-taking.
Not caused by income-smoothing.**

Governance and Unsystematic Risk

**Agency Costs of Idiosyncratic Volatility,
Corporate Governance, and Investment**

**Kose John and Dalida Kadyrzhanova
NYU WP 2015**

Agency Costs of IVOL

- **Identifies new fundamental conflict of interest due to firm-specific uncertainty**
- **Agency problem may arise since managers are exposed to total risk, while shareholders aren't**
- **Managers of high IVOL firms will want to turn down too many risky projects & accept too many safe projects**
- **Key insight: agency problem is likely to be more severe when the *wedge* between total risk and priced risk (IVOL) is high**

Testable Hypothesis

Agency costs of idiosyncratic volatility are higher for firms with ATPs, whose managers are more entrenched

First-order effect is on capital budgeting decisions (corporate investments and R&D)

Governance

- Equity Governance
- Debt Governance
- Stakeholder Governance
- Social Optimality

Institutions

- Agency Theory and Second-best Contracts
- Ways of doing things
- Legal Institutions
- Financial Institutions
- Financial Architecture
- Culture, Trust, Religiosity

Innovation

- What is it?
- Empirical measures?
- Number of Patents
- Number of Patent Citations

SYSTEMATIC LOOK AT LINKS

- Different types of risk
- Different types of governance
- Different types of institutions
- Innovation and Institutions
- What links exist in the literature
- Are the missing links interesting, important, high-impact, deep?

Overview

- **Very interesting interaction between risk and corporate governance**
- **Equity Governance and Debt Governance**
- **Between governance and leverage**
- **Governance in Banks**
- **Bank capital**

Corporate Governance

- Why is corporate governance important?
- The people in charge of the major decisions own only a fraction of the claims in the firm (0.3% CEO holding)
- They may make decisions about projects/capital structure/dividends that maximize their private objectives.
- How agency problems are solved determines pledge able capital and therefore which projects are financed.

Interaction of Governance and Risk

- **Governance and Risk are closely related**
 - **Holmstrom—Risk-neutral agent case**
 - **Risk complicates design of executive compensation**
- **Partial ownership agency problems**

Example

Two investors Problem

Governance and Risk

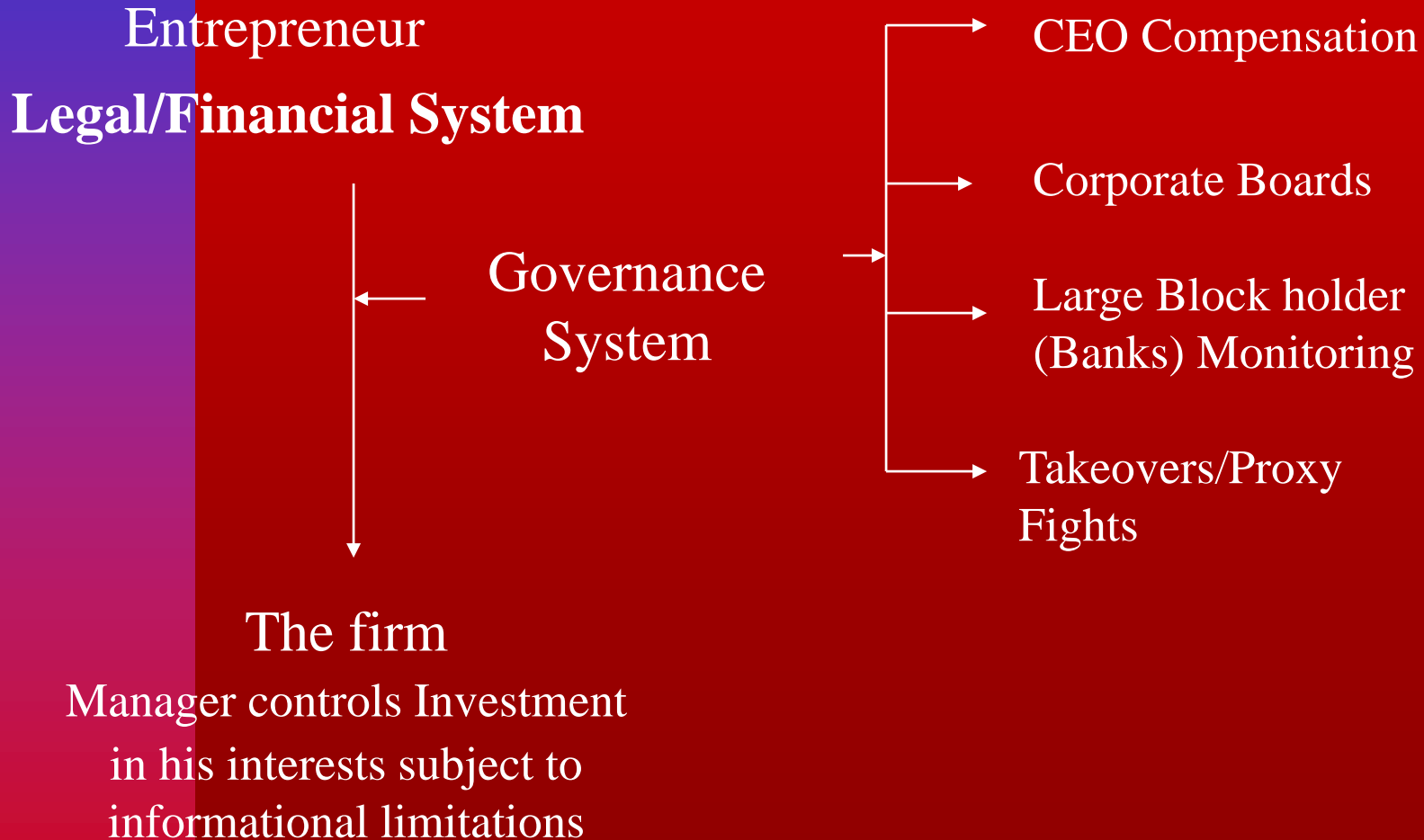
- **Governance and Systematic Risk**
- **Governance and Unsystematic Risk**
- **Governance and Banks/Bondholders**
- **Dark Side of Complete Markets**
- **Tail Risk and Fake Alphas**
- **Deferred Compensation and Claw-Back Provisions**
- **Paradigm shift?**
- **Corporate Governance and Asset Pricing**

Institutions and Governance

- Law and Finance Literature
- Large Body of Empirical Literature
 - Theory is lacking:
 - Theory of Comparative Governance?
 - How are the mechanisms of corporate governance combined into optimal systems
 - Characteristics of the Economy?
 - Insider Systems and Outsider systems

Setup

Mechanisms



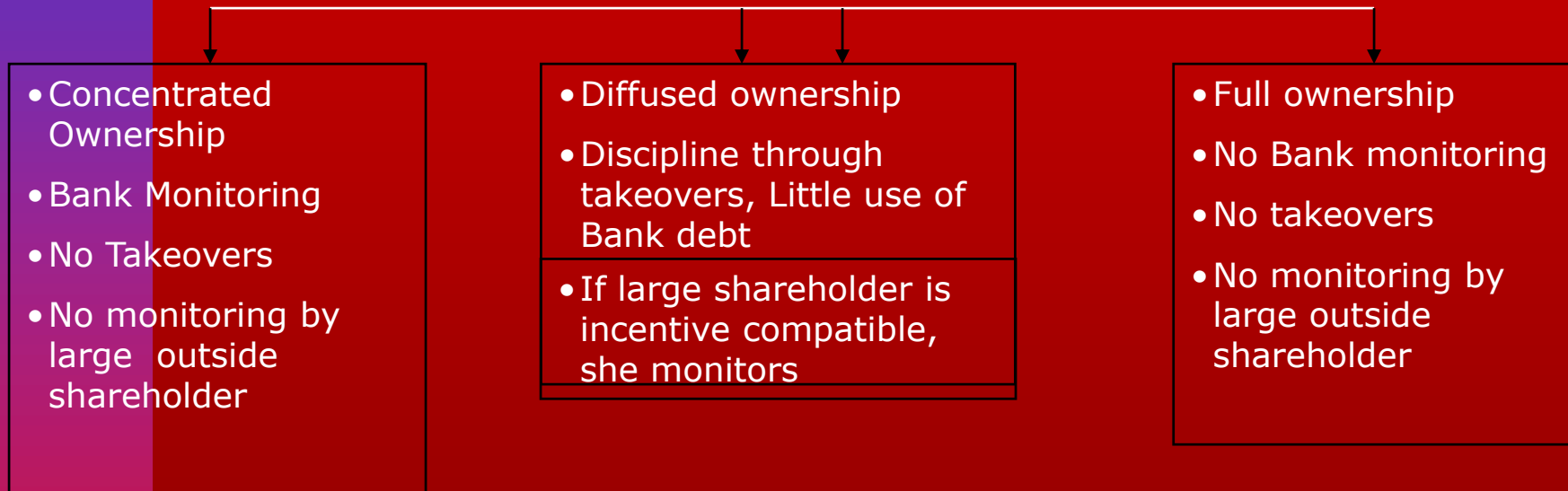
Two Step Decision

- Step 1:
 - How do the different mechanisms interact
 - How are the different mechanisms combined
 - Natural configurations of mechanisms emerge
- Step 2:
 - Which of these three configurations does the entrepreneur choose: Which is optimal? Depends on economy characteristics
 - John and Kedia (2017)

Main Results

Myriad structures possible

Results on the nature and interaction of the mechanisms imply that four natural groupings arise



■ Correspond loosely to

Bank-Based
Governance
Structures

Market-Based
Governance Structures

Family-Based
Governance
Structures

Institutions and Endogenous Risk

- Institutions Affect Incentives
 - Dynamic complications
 - Innovation and Institutions
 - Risk and Optimal Regulation

Institutions and Systemic Risk

- **Financial Architecture and systemic risk**
- **Stability in financial networks**
- **Interconnectedness and Contagion**
 - **Acemoglu, Ozdaglar and Tahbaz-Salehi (AER, 2015)**
- **Governance failures and financial crisis?**
- **Two objective functions?**
- **Dynamically optimal compensation structures**

Bank Capital

- I am going to argue that the problem of optimal bank capital and optimal capital regulation is an unsolved problem of overarching importance

Issues in Bank Capital

- Required bank capital and regulation of bank capital is laid down by Basel agreements
- Most central aspects of modern banking.
- Most surprisingly – Yet unresolved
- Most surprisingly – not based on any accepted theory

Issues in Bank Capital

- What is the optimal capital structure for a bank?
- Optimality of current bank capital
- Optimality of capital regulation rules.
- Federal deposit insurance and capital regulation
- Contingent Capital
- Capital regulation to prevent contagion and systemic risk

Framework

- No agreement—different groups
 - Stanford, Chicago
 - Vast array of proposals
-

Capital Regulation to prevent Contagion and Systemic Risk

- Measures of systemic risk
- Measures of connectedness
 - Network Theoretic approaches
- Contribution of Individual LCFIs
- How much additional capital is required?
- More theory needed.

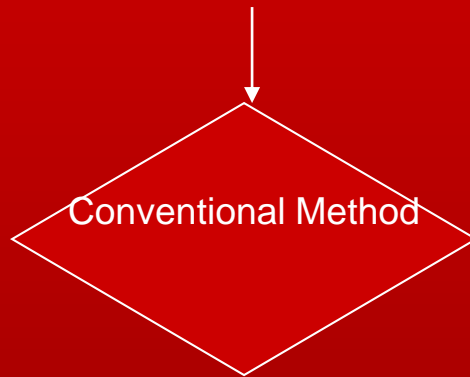
Innovation and Institutions

- Large Empirical Literature
- Private Firms innovate but generate risk on society
 - Positive and Negative externalities
 - Capital suppliers and aligned managers discount these
 - Regulate innovation?
 - Design an umbrella of institutions that control incentives but do not impose mandated restrictions

t=0

THE MODEL

**Social
planner**



t=1



H

L

I

Social Benefits ($B_H, 0_L$); Social Costs (C_H, C_L)

Innovation, Institutions, Regulation

Social Planner



← Organization
al Form
Choice



**The firm chooses
organizational form and
controls investment in a
privately optimal manner
= socially optimal?**

Institutions and Innovation: Empirical

- Very interesting Literature
- Banking, Bankruptcy systems and Innovation
- Finance Source and Innovation
- Unions and Innovation
- Culture, Trust, Religiosity
- Religiosity and Innovation

Culture and corporate behavior

- Culture and corporate behavior and performance
 - Guiso, Sapienza, and Zingales, 2014; Pan, Siegel, and Wang, 2014
- Religiosity as quantifiable measure for culture
- Religiosity has real impact on corporate decisions
 - Less risk taking
 - ▣ Hillary and Hui (2009), Adhikari and Agrawal (2014)
 - More honest behavior
 - ▣ Grullon, Kanatas, and Weston (2009), McGuire, Omer, and Sharp (2012), Dyreng, Mayew, and Williams (2012), Callen and Fang (2013).

Earthly Reward to the Religious: Religiosity and the Costs of Public and Private Debt

Jiang, John, Li and Qian

JFQA forthcoming

Religiosity and cost of borrowing

- Hypothesis 1 and 2: High religiosity → Higher credit rating → Low cost of borrowing
 - Risk aversion → low default risk → low cost of borrowing
 - Honesty → low agency problems → low cost of borrowing
- Hypothesis 3 and 5: The effect is stronger for firms with greater asymmetric information, and when the lender is a small bank
- Hypothesis 4: Additional impact on cost of loans after controlling for credit rating

Islamic Microfinance Institutions

- Small noncollateralized loans
- Fin Tech lenders
- Difference between microfinance and FinTech loans
- Difference between traditional loans and FinTech loans
- Sharia compliant products and borrower incentives
- Religiosity and borrower incentives

New Research:

Important Missing Links?

- **Interesting Interaction between risk and Governance: Systematic risk, unsystematic risk and systemic risk**
- **Institutions and Governance: Do not have good theories**
- **Financial Architecture and Financial System fragility: Preliminary**
- **Optimal Bank Capital**
- **Institutions and Innovation: Both more theory and empirical work needed**