

# Religiosity, Neglected Risk and Asset Returns: Theory and Evidence from Islamic Finance Industry

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# Introduction

- Financial innovation leads to expansion
- Additional risks (religiosity, Shariah compliance) attached with Islamic Finance Industry
- Negligence of such risks leads to crises including issuers' assets' risk and return

## **An Example of this narrative for Islamic bond (Sukuk) issuers**

- AAOIFI announcements in 2008 on Shariah compliance
- Resulting decline in the demand for Sukuk and the drop of stock prices of Sukuk issuers
- 50% drop in issuance in 2008 in comparison to 2007

# Literature Review

- Impact of asymmetric information about the products on customer decisions (Murphy and Shleifer, 2004)
- Impact of coarse thinking and imperfect information on investor decisions (Mullainathan, Schwartzstein, and Shleifer, 2008; Gennaioli and Shleifer, 2009)
- Excessive security issuance satisfying investor demand (Shleifer et al, 2011)
- Repackaging of risky assets to structure safe securities leads expansion in issuance (Joshua et.al. 2009)
- After boom caused by capital inflow, economy enters recession (Graciela and Carmen, 1999)

# Gennaiolo, Shliefer and Vishny (2012)

- Potential cause of financial crises- negligence of risks by customers and issuers
- Demand for securities: driven by risk averse nature of customers
- Response of intermediaries
- Arrival of bad news and fire sales

# Literature Gap

- No previous literature discussed causes of financial innovation leading to expansion and then crises in the context of Islamic Finance industry
- Focus of this study - explore the impact of Shariah non-compliance and customer's decision on equilibrium prices and volume of issuance

# Model Set Up

## Basic Setup

- Investment opportunities: Asset A & Asset B
- Time periods:  $t=0,1,2$
- Assets payoff at  $t=2$
- Asset B: riskless bond pays  $R$
- Asset A: pays  $Y$  depending on economic conditions
- Measure 1 of investors, each endowed with wealth  $w$ .
- Highly risk averse investors (postpone consumption to  $t=2$ )

# Model Set Up (Contd...)

- At  $t=0$ : decisions regarding buying assets
- At  $t=1$ : noisy vs observed signal regarding Islamic nature of assets
- At  $t=2$ : payoffs are realized and distributed

# Model Set Up (Contd...)

## Bayesian thinkers before financial innovation

- Bayesian thinkers are rational decision makers

Investor's maximization function

$$\text{Max}_{a,b} w - P_A a - P_B b + \theta R b + \theta \cdot E(Y) a \quad \text{s.t. } w = P_A a + P_B b$$

- a stands for number of shares
- b stands for number of bonds
- captures the preference of investors to postpone the income until last period
- Intermediary's maximization problem

$$\text{Max}_{a,b} \Pi = P_A a + P_B b + R(1 - b) + E(Y)[1 - a]$$

# Model Set Up (Contd...)

## Assumptions

$$E(Y | \underline{s}) > \theta \cdot Y_h$$

- It implies intermediaries value shares more than investors even after receiving bad signal

$$w > \underline{w} = \max[\theta(R + Y_h), \theta(R + Y_l)]$$

- It implies investors are wealthy enough to buy the total supply of bonds at their reservation price

# Model Set Up (Contd...)

Financial markets equilibrium at  $t=0$  with Bayesian thinkers without financial innovation is given by

$$a = 0, b = 1, P_A = E(Y), P_B = \theta R$$

# Model Set Up (Contd...)

## Coarse thinkers and financial innovation

- Definition of financial innovation:

Repackaging of income earned by Islamic banks by risky assets and issuing these claims to reduce the shortage of bonds.

- Volume of new Islamic bonds supplied after financial innovation

$$V^B = \frac{E^B(Y)}{R}$$

And  $V < V^B$  , where  $V$  is volume of bonds issued before financial innovation

# Model Set Up (Contd...)

- Profit of the intermediaries after innovation

$$V^B X (\theta - 1)R = E(Y)(\theta - 1)$$

- Intermediary's profit increases as the expected Islamic income increases and their preference of consumption in later period
- $t=0$ , number of total Islamic bonds issued

$$b = 1 + E^B(Y)/R \text{ at price } P_B = \theta R$$

# Model Set Up (Contd...)

## **Coarse thinkers and financial innovation**

- Customers think by analogies (called coarse thinking)
- Hence co-categories several situations
- Leading to judgment biases
- Deviation from Bayesian thinking

# Model Set Up (Contd...)

Coarse thinker calculates the total Islamic income earned by the intermediary as

$$E^{C1}(Y) = E^C(Y_I|P_I, S_I, C_1) \cdot P^C(P_I|S_I, C_I) \cdot P^C(S_I|C_I) + E^C(Y_I|P_C, S_I, C_1) \cdot P^C(P_C|S_I, C_I) \cdot P^C(S_I|C_I)$$

Equilibrium at  $t=0$

Number of new Islamic bonds that intermediaries can issue is

$$V^C = \frac{E^{C1}(Y)}{R}$$

where

$$E^{C1}(Y) = E^C(Y_I|P_I, S_I, C_1) \cdot P^C(P_I|S_I, C_I) \cdot P^C(S_I|C_I) + E^C(Y_I|P_C, S_I, C_1) \cdot P^C(P_C|S_I, C_I) \cdot P^C(S_I|C_I)$$

$$V^B < V^C$$

# Model Set Up (Contd...)

This leads to:

**Proposition 1:** Under financial innovation with coarse thinkers, the volume of new claims issued in the market is  $b = I + V^C$  and their price will settle at

$$(a) P_B = wR / (R + E^C(Y)), (b) P_B = \theta R$$

# Model Set Up (Contd...)

**Proposition 2:** After arrival of bad news, the price of innovated Islamic bonds drops with two possibilities:

- I. If reservation price of intermediary is less than investor, i.e  $\rho < \frac{E^B(Y)}{E^{C1}(Y)}$  no trade will take place and price will settle at investors reservation price  $\frac{E^B(Y)}{E^{C1}(Y)} \cdot \theta R$
- II. If  $\rho > \frac{E^B(Y)}{E^{C1}(Y)}$  the price will depend on the wealth  $w$  intermediaries are carrying in  $t=2$ .  
For  $w=0$ ,  $P_B = \frac{E^B(Y)}{E^{C1}(Y)} \cdot \theta R$  ,and for  $w=1$ ,  $P_B = \rho \cdot R$

# Model Set Up (Contd...)

**Proposition 3:** Operating mechanism of Islamic finance in the form of collateralized issuance of bonds can assist to stabilize the economy soon after the bad news is revealed.

**Proposition 4:** Expected loss in case of downturn can be reduced by decreasing sharia premium that investors are willing to pay, which in turn can be controlled by optimal level of R offered by intermediaries.

$$\frac{wR}{R+E^C(Y)} - \rho \cdot R = \text{Sharia premium}$$

$$\frac{wR}{R+E^C(Y)} - \left[ \left( \frac{E^B(Y)}{E^C(Y)} \right) \cdot \Pr(E^B(Y)|\underline{s}) + \Pr(E^C(Y)|\underline{s}) \right] \cdot R = \text{Sharia premium}$$

# Empirical Analysis

- Explored impact of news on behavior of stock prices of Islamic bonds (Sukuk) issuers
- Data and Methodology:
  - Daily stock price data for 104 Islamic bond (Sukuk) issuers January 2007 to December 31, 2009
  - Standard Event Study procedures with symmetric and asymmetric event windows

# Empirical Analysis (contd...)

- Formal and informal disclosure of news on Shariah standards of Sukuk.
- Events considered:

Event dates	Event details
September 8, 2007	Informal disclosure of news in AAOIFI meeting
February 14, 2008	Formal announcement in the AAOIFI meeting
October 20, 2008	Informal announcement of accounting standards
October 30, 2008	Formal Issuance of accounting standards

- **Results:** Islamic bond issuers experienced a significant decline in their stock prices, following multiple formal and informal announcements in late October 2008 on Sukuk's religious legitimacy. Evidence of abnormal returns.

# Empirical Analysis (contd...)

## **Sensitivity analysis**

Tests with different ~

- Event dates
- Proxy for market's expected returns
- Duration for event and estimation windows

## **Results**

Mean of abnormal returns significantly different from zero

# Implications

- Issuance and review of Shariah compliance certificate
- Disclosure of relevant information at the time of issuance
- Higher liquidity
- Less leverage

# Conclusion

The paper captures the movement of Sukuk issuers' stock returns followed by over reaction of Shariah conscious investors on arrival of key news in the market.

Intermediaries cater this high demand of safe Islamic securities out of risky assets. But investors, being coarse thinkers, neglect certain risks attached to Islamic bonds, for instance, uncertainty attached to the Shariah compliance of the product, hence the issuance is excessive. When the bad news arrives in the market regarding Islamic nature of bonds, investors over react and initiate fire sales causing asset prices drop sharply and market becomes fragile.