Islam and the Stock Market: Evidence from the United States

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Literature Review

Naughton and Naughton (2000)

- **Common stocks are legitimate in Islam provided some rules are followed.**
- **Short selling and margin trading are severely restricted.**
- **The use of equity futures and options is questionable.**

Literature Review

Tag El-Din (1996) and Kia (2001) introduce Normative Stock Exchange:

> **Stock markets must be fully regulated to eliminate wasteful transactions.**

Literature Review

The current literature concentrates on three aspects of Islamic stock markets:

(i) Outperformance of Islamic stock markets

(ii) Correlation between Islamic and conventional stock indexes

(iii) Excessive speculative activities

Literature Review

(i) Outperformance of Islamic stock markets

Wilson (1997), Hussein and Omran (2005), Tag El-Din and Hassan (2007), Al-Zoubi and Maghyereh (2007), Abdul Rahim *et al.* (2008) and Guyot (2011)

Literature Review

(ii) Correlation between Islamic and conventional stock indexes

There is a weak correlation

Abdul Rahim *et al.* (2008)

Literature Review

(iii) Excessive speculative activities

Tag El-Din (1996) views that a highly regulatory normative stock exchange is needed in a competitive market.

Literature Review

(iii) Excessive speculative activities

Kia (2001), using Canadian stock markets, shows that the application of the Islamic law automatically guarantees stable and efficient stock markets.

Literature Review

(iii) Excessive speculative activities

Tag El-Din and Hassan (2007) raise the question of how much speculation is allowed in an Islamic stock exchange market.

Extension of the Existing Literature

Predictions of Islam for the conventional stock markets are not tested.

Characteristics of Stock Exchange in Islam

Rule 1: One must not obtain any property in vanities or unacceptable ways or illegally.

Characteristics of Stock Exchange in Islam

Rule 2: The trade must be based on goodwill and intention among trading participants.

Characteristics of Stock Exchange in Islam Rules 1 and 2

These two rules are based on verse 29 of Chapter 4 of the *Qur-an* which says: "O ye who believe! Eat not up your property among yourselves in vanities: But let there be amongst you traffic and trade by mutual good-will: Nor kill (or destroy) yourselves: for verily God hath been to you Most Merciful!"

Characteristics of Stock Exchange in Islam

Rule 3: Usury is prohibited.

Characteristics of Stock Exchange in Islam Rule 3

***Qur-an*, v. 2:275**

"Those who devour usury will not stand except as stand one whom the evil one by his touch hath driven to madness. …"

Characteristics of Stock Exchange in Islam

Rule 4: One cannot sell a commodity which is less than what the seller claims or the label indicates.

Characteristics of Stock Exchange in Islam Rule 4

***Qur-an*, v. 83-1, 2 and 3**

"Woe to those that deal in fraud, those who, when they have to receive by measure from men, exact full measure, but when they have to give by measure or weight to men, give less than due."

Characteristics of Stock Exchange in Islam Rule 4

***Qur-an, v.* 55-9 "So establish weight with justice and fall not short in the balance."**

***Qur-an, v.* 55-8 "In order that ye may not transgress (due) balance."**

***Qur-an, v.* 2-181 "Give just measure, and cause no loss (to others by fraud)."**

Characteristics of Stock Exchange in Islam
Rule 4

***Qur-an*, v. 11- 85**

Prophet Hud said to his people:

"And O my people! give just measure and weight, nor withhold from the people the things that are their due: commit not evil in the land with intent to do mischief."

Stock Market Based on the Four Rules

Stocks which are issued by companies whose activities violate these rules are not allowed in Islam.

The Model

$$sp_t = E_t\,[(1+r_t)^{-1}(sp_{t+1} + D_{t+1})], \qquad (1)$$

If transversality condition holds:

$$\lim_{n\to\infty} E_t[(1+r_{t-n})^{-n}\,(sp_{t+n})]=0$$

$$fsp_t = sp_t = E_t\,[\sum_{i}^{\infty}(1+r_{t+i-1})^{-i}(D_{t+i})] \qquad (2)$$

The Model

$$fsp_t = sp_t = F(rgdp_t, cpi_t, dy_t, cor_t, defgdp_t, debtgdp_t, dforgdp_t, oil_t, q_t, z_t) \quad (3)$$

$$lsp_t = \beta_0 + \beta_1\, lrgdp_t + \beta_2\, lcpi_t + \beta_3\, dy_t + \beta_4\, cor_t + \beta_5\, defgdp_t + \beta_6\, debtgdp_t + \beta_7\, dforgdp_t + \beta_8\, loil_t + \beta_9\, lq_t + u_t \quad (4)$$

$\beta_1>0$, $\beta_2=?$, $\beta_3<0$, $\beta_4<0$, $\beta_5<0$, $\beta_6<0$, $\beta_7>0$, $\beta_8=?$ and $\beta_9>0$

The Model

$\beta_4<0$, $\beta_5<0$, $\beta_6<0$ justify

Rule 3, "…are companions of the Fire: They will abide therein (forever)." (2:275), "God will deprive usury of all blessing,…" (2:276), "O ye who believe! Fear God, and give up what remains of your demand for usury..." (2:278)

The Model

"… Take notice of war from God and His Messenger. But if ye turn back, ye shall have your capital sums: Deal not unjustly…" (2:279)

"… Devour not usury, doubled and multiplied; but fear God that ye may (really) prosper." (3:130)

Bubble Model – Stock Market Suicide

If the transversality condition does not hold, then $sp_t = fsp_t$ does not have a unique solution.

$$sp_t = fsp_t + B_t \qquad (5)$$

$$B_t = (1+r)^{-1}E_t(B_{t+1}) \qquad \textit{à la}\ \text{Kia (2001)}$$

Bubble Model – Stock Market Suicide

Following Kia (2001) we will test this hypothesis:

$$E(sp_t) = E(fsp_t) \qquad (6)$$

Namely, the unconditional mean of real speculative or "bubbly" prices is equal to the unconditional mean of real fundamental values.

Bubble Model – Stock Market Suicide

The second hypothesis: The excess speculative activities add no information to stock markets and result in a lower return, $b_1 \leq 0$

$$NR_t = b_0 + b_1 (S_{t-1} - S_{t-2}) + DUM'_t\delta + u_t \qquad (7)$$

$$NR = 100*[(SP_t/SP_{t-1} - 1) + (Div_t/SP_{t-1})$$

$$S_t = 100*(B_t/sp_t)$$

Bubble Model – Stock Market Suicide

DUM incorporates all policy regime changes and exogenous shocks which could affect the nominal rate of return.

Oct87=1, in the last quarter of 87, and = 0, otherwise

pwar = 1 from 1990Q3 to 1991Q1, and = 0, otherwise

Bubble Model – Stock Market Suicide

nafta = 1 since 1994Q1, and = 0, otherwise

awar = 1 since 2001Q4, and = 0, otherwise

uscrisis = 1 from 2007Q3 to 2009Q3,

and = 0, otherwise

AS97 = 1 for 1997Q4, and = 0, otherwise

Data (United States)

Quarterly Observations

- **1871Q1-2011Q4 for testing the bubble model**
- **1973Q1-2011Q4 for testing price model**

Stationarity Tests

$$lsp_t = \beta_0 + \beta_1\, lrgdp_t + \beta_2\, lcpi_t + \beta_3\, dy_t + \beta_4\, cor_t + \beta_5\, defgdp_t + \beta_6\, debtgdp_t + \beta_7\, dforgdp_t + \beta_8\, loil_t + \beta_9\, lq_t + u_t$$

All variables have a unit root.

Tests: Dickey-Fuller, Phillips-Perron, Lee and Strazicich (2003) for four structural breaks, Zivot and Andrews (1992).

Long-Run Cointegration Test Result

H_0= r	0	1	2	3	4	5	6	7	8	9
Trace	283	204[a]	147	114	89	62	34	16	5	1
Trace 95	267	225	184	148	117	97	63	42	26	13
p-value	0.00	0.29[a]	0.75	0.76	0.69	0.76	0.95	0.99	1.00	0.99

Long-Run Cointegration Test Result

- **Autocorrelation**
- LM(1) 0.368
- LM(2) 0.210
- **ARCH**
- LM(1) 0.062
- LM(2) 0.022
- **Normality** 0.00
- **Lag length = 4**

Long-Run Cointegration Test Result

Long-Run Cointegrating Relationship

$$lsp_t = -8.4\ lrgdp_t - 0.6\ lcpi_t - 0.3dy_t$$

t-stat. (-10.1) (-3.1) (-12.1)

$$-0.2\ cor_t - 0.5\ defgdp_t - 0.001debtgdp_t$$

t-stat. (-0.3) (-10.2) (-0.4)

$$-0.04\ dforgdp_t - 0.2\ loil_t - 0.3\ lq_t + 0.1\ trend$$

t-stat. (-5.7) (-5.0) (-2.2) (12.1)

Long-Run Cointegration Test Result Phillips and Hansen's (1990) FMLS

Long-Run Cointegrating Relationship FMLS

$lsp_t = 7.8 - 1.4\ lrgdp_t - 0.00\ lcpi_t - 0.3dy_t$

t-stat. (3.2)(-3.2) (-0.0) (-18.6)

$-0.9\ cor_t - 0.2\ defgdp_t - 0.01 debtgdp_t$

t-stat. (-2.2) (-9.9) (-2.5)

$0.01\ dforgdp_t - 0.0\ loil_t - 0.2\ lq_t + 0.02\ trend$

t-stat. (2.9) (-0.2) (-1.9) (4.3)

Stock Market Suicide: Test Result

Test: The unconditional mean of real speculative or "bubbly" prices is equal to the unconditional mean of real fundamental values.

$E(sp_t) = E(fsp_t)$

fspt = m D_t. Under this hypothesis m is equal to the mathematical expectation of price dividends ratio.

μ = $E(SP_t/Div_t)$ = 27.12382294 for 141-year sample period (1871Q1-2011Q4)

$FSP_t = 27.12382294(Div_t/SP_t)$

Stock Market Suicide: Test Result - 1st Hypothesis

$E(sp_t) - E(fsp_t) = E(SP_t) - E(FSP_t) = B_t$

$E(SP_t) = 183.07195299$

$E(FSP_t) = 112.3443539$

$B_t = 70.7275991$

t-stat = 8.14 reject $B_t = 0$

Stock Market Suicide: Test Result – 1st Hypothesis

$E(SP_t) = E(FSP_t)$

Mann-Whitney U = 477426

Wilcoxon W = 333856

Z-Score = 2.829 (*p*-value = 0.005)

Stock Market Suicide: Test Result - 2nd Hypothesis

$$NR_t = b_0 + b_1 (S_{t-1} - S_{t-2}) + DUM'_t\delta + u_t$$

NR is stationary:

ADFuller =29.31>3.43 at 1%

PP =29.03>3.44 at 1%

ZA = 11.07 (at 1918Q1) > 5.34.80 at 1%

Stock Market Suicide: Test Result - 2nd Hypothesis

Excess speculative = ($S_{t-1} – S_{t-2}$) is stationary:

ADF =28.80>3.43 at 1%

PP =28.60>3.44 at 1%

ZA = 12.38 (at 1932Q3) > 5.34.80 at 1%

S_t (=100*(B_t/sp_t))

Stock Market Suicide: Test Result - 2nd Hypothesis

Bai and Perron (2003) for 10 breaks

Optimal breaks: 1926Q2 and 1932Q3

The estimated b_1 for the whole sample:

-0.1633 (*t*-statistics= -6.26)

The estimated b_1 for the 1st sample:

-0.112 (*t*-statistics= -2.55)

The estimated b_1 for the 2nd sample:

-0.594 (*t*-statistics= -8.34)

Concluding Remarks

Islamic point of view:

Economic (stock market) suicides exist if properties are obtained in vanities, if there is no goodwill and intention in trade, if there is usury and if trading of goods/stocks is based on asymmetric information.

Concluding Remarks

There is economic (stock markets) suicide in the United States.

Thank You