金融制度設計における情報とインセンティブ

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ヘッジファンドのガバナンスとバブル

(1) Behavioral aspects of arbitrageurs in timing games of bubbles and crashes (Matsushima, 2009)
(2) Incentives in hedge funds (Matsushima, 2010)
(3) Financing harmful bubbles (Matsushima, in preparation)
What is hedge fund?

- Bonus fee
- Limited withdrawal
- Weak regulation (derivatives, leverage, long/short, …)
- Low transparency
- Dynamical investment strategy (cf. buy & hold)
- Alpha
What is ideal hedge funds’ role?

• Stabilize Financial System: Generate Alpha, Market Efficiency

How is current hedge funds’ rule?

• No penalty

• Separation of investors’ fund and personal fund

“Fund managers argue that the lower (tax) rate is appropriate because of the risky nature of hedge fund investments. This is, in effect, the same argument often been used to justify lower tax rates on investments generally. The critics, however, note that most fund managers have very little of their own money at risk. They raise and manage the money of other investors and in this sense function as investment managers and advisors—just as managers of investor stock portfolios do.” (Donaldson (Hedge fund ethics, 2008/10))
• Tax haven
Hedge fund is problematic!

- Destabilize Financial System:

Lemon (Fake)

Bubbles

We Need Governance!
Lemon (1): Capital Decimation Partners

Lo (2001)

Fake Manager

Safe Asset 1 Unit (HF)

Safe Asset $p$ Unit

Safe Asset $p^2$ Unit

Option:
Give safe asset to third party if S&P500 declines (Prob. $p$)

Third party

Price $p$

Price $p^2$

Price $p^3$
Lemon (2): Collaterals take away opportunity from skilled

Foster and Young (2008/9), Matsushima (2010 (1))

Investors’ fund 1, Personal fund $M$, Bonus $Y$, Penalty (collateral) $X < 1$, Effort cost $c > 0$

Media (FT (18/3/08), NYT (3/8/08)) says:

“Hedge funds never survive. More regulation, more transparency!”
Lemon (3): Capital gain tax saves hedge funds!

Matsushima (2010 (1))

Skilled’s outside opportunity
Manage entire personal fund $M$

Pay CG tax $tMa$

Skilled save CG tax $tXa$

Skilled’s HF business
Put $X$ in Escrow

Pay CG tax $t(M - X)a$

Equity stake $M$

Fake’s CDP (covered by equity stake)

Return $M(a + 1)$ prob. $\frac{1}{a + 1}$

CGtax $tMa > 0$

Fake’s expected payoff declines $M - tMa < M$

Return 0 prob. $\frac{a}{a + 1}$
Lemon (4): Tax heaven is fake!

Hedge fund managers

Skilled

Fake

High tax rate

Low tax rate

Investors

Tax haven
Bubbles (1): Masses misperceive stock value

\[ \text{Misperception: } \rho > 0 \]

\[ e^\rho, \exp[\rho t], FV 0 \]

Initial time \( t \)
Terminal time 1

Time
Bubbles (2): Hedge funds are “phantasy”

- Euphoria continues as long as hedge fund keeps share $s$
- Euphoria stops once hedge fund’s share becomes less than $s$

Hedge funds determine bubbles and crashes
Bubbles (3): Hedge funds time market

$$\exp[\rho t]$$

Endogenous Timing

Stock price

0  Crash time  \( t \)  1

Time
Bubbles (4): Market Efficiency

Money game among hedge funds quickly bursts bubbles
Bubbles (4): Even hedge funds become slave to bubbles

Shiller (Irrational exuberance, 2000)

Timing game with incomplete information

Matsushima (2010 (2))

• Rival hedge fund is rational with prob. $1 - \varepsilon > 0$

• Rival hedge fund is irrational with prob. $\varepsilon > 0$
Bubbles (5): Bubbles and crashes (two hedge funds)

\[ D(t; q) = 1 - \left[ \varepsilon + (1 - \varepsilon)(1 - q(t)) \right]^2 \]

\[ \tilde{\tau} = 1 + \frac{\ln \varepsilon}{\rho} < 1 \]

Constant hazard rate

\[ 2\rho \]

\[ 1 - \varepsilon^2 \exp[2\rho(1-t)] \]
Harmful bubbles (1): Matsushima (in preparation (3))

Bubble expands by publishing stocks

\[ \text{Number of equities: } \lambda \geq 0 \]

\[ e^\lambda \]

\[ \exp[\lambda t] \]

\[ 1 \]

\[ 0 \quad t \quad 1 \]

Time
Harmful bubbles (2): Social cost expands

\[ \frac{\lambda}{\rho + \lambda} \left( e^{(\rho + \lambda)t} - 1 \right) \]
Harmful bubbles (3): Hedge fund buys stock by debt financing

Leverage ratio \( L = \frac{\rho + \lambda}{\rho} \), social cost \( \frac{L-1}{L}(e^{(\rho+\lambda)t} - 1) \)
Harmful bubbles (4): Bubbles and crashes (two hedge funds)

\[ D(t;q) \equiv 1 - [\varepsilon + (1 - \varepsilon)(1 - q(t))]^2 \]

Constant hazard rate

\[ 2\rho L \]

\[ \tilde{\varepsilon} \equiv 1 + \frac{\ln \varepsilon}{\rho L} < 1 \]