Financial Repression, Bank Deposits, Real Assets, and Black Money

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Introduction

Allocation between real assets (RAs) and financial assets (FAs) in an emerging economy.

Important RAs and FAs for households are real estate and bank deposits respectively.

Singh (2005) compared portfolio choice under symmetric information (SI) with that under asymmetric information (AI).

This paper assumes AI on quality of RA and AI on type of agent - whether or not liquidity shock occurs.

Role of *financial repression* and *black money*.

Financial repression

(1) Low (administered) rates of interest,

(2) Inadequate and delayed adjustment for inflation,

(3) High cost of financial internediation, and

(4) Adverse selection of borrowers due to low accountability.

Financial repression leads to low return on FAs.

Trade in the secondary market in RAs involves black money.

Ex-ante, this can discourage investment in real estate in the primary market.

Investment in FAs will increase in future, if the effect of a reduction in financial repression is stronger than that of reduction of black money.

The Model

Dates 0, z, 1.

At date 0, investment occurs.

At date z, consumption liquidity shock occurs.

Projects yield returns at date 1 only.

At date 0, there is a continuum of identical risk averse agents in $[0, 1]$.

Each such agent has an endowment of 1 unit at date 0 only.

$$U(c_z, c_1) = \begin{cases} u(c_z), & \text{if agent is type 1,} \\ u(c_1), & \text{if agent is type 2.} \end{cases}$$

The proportion of type 1 agents is t.

No aggregate uncertainty.

There are two assets - RA and FA.

RA gives a state contingent return R per unit of investment, where

$$R = \begin{cases} \overline{R}, & \text{if the project is good (G),} \\ \underline{R}, & \text{if the project is bad (B),} \end{cases}$$

and $0 < \underline{R} < \overline{R} < \infty$.

Technology is CRS.

An agent can invest in one RA only.

β is probability that an agent has project G.

Mean return on RA is R^e, and variance is R^v.

Return on FA is certain, $(R^e - m)$, where m is a measure of financial repression, $m > 0$.

Two uncertainties at date 0: (1) Type of agent, and (2) Quality of RA.

Type of agent and quality of RA - independent.

	RA is good (G)	RA is bad (B)
Type 1	$1G$	$1B$
Type 2	$2G$	$2B$

AI on quality of RA, AI on type of agent.

At date z, there exists a secondary market with risk neutral buyers with adequate liquidity.

Sales: (1) *forced sales* by type 1 agents, and (2) *strategic sales* by type $2B$ agents.

Discount rate is zero.

Storage technology is available at zero cost.

Integrated markets and segmented markets.

Integrated markets (I) - one kind of money used.

Segmented markets (S) - white money in one market, and black money in another.

	Primary market	Secondary market
RA	White money	Black money
FA	White money	White money

Y_k^j is return, where $j = r, f$, and $k = I, S$.

P_k^j is price of asset j in case k.

Y_k is return on portfolio in case k.

a_k is investment in RA in case k, $0 \leq a_k \leq 1$.

$$Y_k = a_k Y_k^r + (1 - a_k) Y_k^f$$

$$P_k^f = R^e - m, \quad k = I, S$$

A.1 $W_k = E[Y_k] - \frac{1}{2}\rho V[Y_k]$

$$\beta' = \frac{\beta t}{1 - \beta + \beta t}$$

$$R' = \beta' \overline{R} + (1 - \beta') \underline{R}$$

State	Probability	Y_I^r
$1G$	$t\beta$	$P_I^r = R'$
$1B$	$t(1-\beta)$	$P_I^r = R'$
$2G$	$(1-t)\beta$	$\overline{R}$
$2B$	$(1-t)(1-\beta)$	$\frac{P_I^r}{P_I^f}(R^e - m) = R'$

State	Probability	Y_S^r
$1G$	$t\beta$	$P_S^r = R'$
$1B$	$t(1-\beta)$	$P_S^r = R'$
$2G$	$(1-t)\beta$	$\overline{R}$
$2BG$	$(1-t)(1-\beta)\beta'$	$\frac{P_S^{rs}}{P_S^{rb}}\overline{R} = \overline{R}$
$2BB$	$(1-t)(1-\beta)(1-\beta')$	$\frac{P_S^{rs}}{P_S^{rb}}\underline{R} = \underline{R}$

No margin requirement. Net positions settled.

Assume that markets are competitive and transactions costs are zero.

$$E[Y_I^r] = E[Y_S^r] = R^e$$

$$V[Y_I^r] = R^v(1-t)(1-\beta') <$$

$$V[Y_S^r] = R^v(1-t)(1-\beta')[1 + \frac{\beta'}{\beta}],$$

$$a_k^* = \min[\frac{m}{\rho V[Y_k^r]}, 1], \; k = I, S.$$

$$W_k^* = \begin{cases} R^e - m + \frac{m^2}{2\rho V[Y_k^r]}, & \text{if } 0 < m < \rho V[Y_k^r], \\ R^e - \frac{\rho V[Y_k^r]}{2}, & \text{if } \rho V[Y_k^r] \leq m, \end{cases}$$

Proposition 1 *If* $k = S$*, it pays to switch from one RA to another RA* $\forall P^r$*.*

Proposition 2 *(a) Assume that* $0 < m < \rho V[Y_I^r]$*. Then* $0 < a_S^* < a_I^* < 1$*, and* $\frac{\partial a_k^*}{\partial m} > 0$ *and* $\frac{\partial W_k^*}{\partial m} < 0$*,* $k = I, S$*, and (b)* $W_S^* < W_I^*$*.*

Proposition 3 *Assume that* $0 < m < \rho V[Y_I^r]$*. If an economy shifts from segmented markets to integrated markets, and financial repression is reduced by* $\triangle m$*, then investment in financial assets increases, provided* $\frac{\triangle m}{m} \geq 1 - \frac{V[Y_I^r]}{V[Y_S^r]}$*.*

Conclusion

The standard *lemon* problem involves one strategic sale. In our model, we considered two strategic trades.

Under some conditions, the price at which strategic trade takes place is irrelevant.

Our model of an emerging economy with financial repression and use of black money in some sectors of the economy.

Both reduction of financial repression and integration of secondary markets increase expected utility.

Reduction in financial repression leads to an increase in investment in financial assets, whereas integration of markets leads to a decrease in the same.

Investment in financial assets will rise if financial repression is *adequately* reduced, if we have a shift from segmented markets to integrated markets.