ONE PRODUCT NOISE EQUILLIBRIUM MODEL

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We develop a toy model of completely rational and informed agents which are bounded "by law" to use investment strategies from a simple set as a set of strategies of constant debt to invested capital ratio or constant leverage (ratio of invested capital to difference invested one and debt (own capital), means constant debt to invested capital ratio).

Economic agent is able to set any leverage he should follow during all the game.

So we get Nash equilibrium where every economic agent is able to predict all the trajectory of all parameters after he understands the rational strategies of all other partners.

We consider two aspects - optimal leverage problem earlier discussed for stock exchange [1] and price system stability/instability switching near long ran equilibrium at high enough credit leverage.

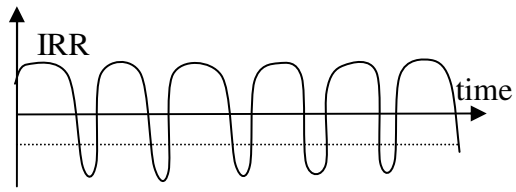

Fig.1(left) Physical capital return depending on time.

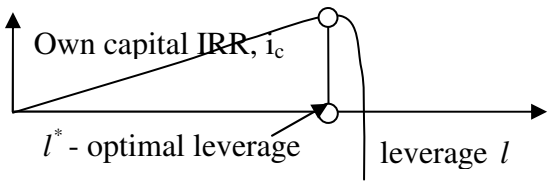

Fig.2 (right) Own capital return depending on credit leverage.

We show that if credit leverage high enough oscillations appear due to price equilibrium destabilization.

We show that in real market under certain natural conditions there is only one source of bounding leverage that connected with impossibility of fast contraction of invested capital finally bonded by depreciation rate of physical capital (at leverage more than 1 at low return physical capital rate investor may need to disinvest faster). After physical capital IRR got negative valleys at certain leverage bankruptcy is unavoidable (Fig.1).

Before that own capital IRR linearly depends on leverage & the maximum of this curve is best response of economic agent (Fig.2) & we obtain equilibrium volatility or oscillation amplitude at real market. Then we come to some aspects of multy-sector model.

References

1. *Кривошеев О.И.* Поиск оптимального кредитного рычага в условиях максимизации ожидаемой скорости роста стоимости портфеля. М.: Проблемы управления Вып.6 за 2015г. – с.35-45.