

# ECON4335 Seminar 6 2013

April 25, 2013

## A. Bubbles in asset prices

1. Bubbles in asset prices are said to exist when the prices deviate from their fundamental values. What is meant by "fundamental value" in this context? Give examples.
2. Bubbles may sometimes be compatible with rational expectations. Under what conditions can this happen?
3. It is often argued that rational bubbles reduce real investment. How is this explained?
4. Some authors argue that bubbles may actually have an expansionary effect on the economy. Describe in words mechanisms that can lead to this. Why are expansionary bubbles of particular interest when banking crises are discussed? Is there historical evidence that supports this?
5. Some authors claim that bubbles occur often, but that they are caused by expectations that extrapolate trends even when this is not fully rational according to the definition that has been common in modern macroeconomics. Would this kind of bubbles be distinguishable from fully rational bubbles if we look only at credit growth and investment? Are there other macro variables that would be informative?
6. Many studies claim that deregulation is an important risk factor for banking crises. What do the competing theories about bubbles and expectations have to say about this?

## B. A mortgage backed security

An investment bank owns two mortgages that it wants to sell. Mortgages are repaid with probability  $p$  which gives a return 1, and default with probability  $1 - p$  with return 0 (ignore foreclosures in the case of default).

The probabilities of return of the two mortgages are correlated:

$$\Pr(\text{Both loans are repaid}) = p^2 r$$

$$\Pr(\text{Both loans default}) = (1 - p)^2 r,$$

where  $r \geq 1$  (but not too large since probabilities don't exceed 1).

1. What is the probability that one mortgage defaults and another is repaid?

Investors have different tastes for risk. Some require a higher success probability than  $p$  in order to invest in mortgages, while others are fine with owning risky assets. In order to serve the market for different tastes in risk, the investment bank decides to pool the two mortgages and create two new classes (or "tranches") of assets:

(i) Senior class: Holders of this asset gets return 1 if *at least one* mortgage is repaid and 0 otherwise.

(ii) Junior class: Holders of this asset gets return 1 if *both* mortgages are repaid and 0 otherwise.

2. Calculate the expected return of the senior and junior class assets for  $p \in \{0.8, 0.9\}$  and  $r \in \{1, 1.1, 1.2\}$ . Discuss your findings.
3. An independent credit rating agency rates the assets based on probability of repayment. How may errors in estimating the parameters affect the rating each asset receives?
4. How may a fall in housing prices affect the expected return of the different assets?

## C.

Many authors claim that the effect of an increase in the central bank's policy interest rate will be enhanced by an increase in the margin that banks add to their lending rates. Discuss the mechanisms that may lead to this. (No formal model expected).