Seminar 6

Problem 1 – 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**.

   An asset price bubble represents a mispricing of asset values relative to prices that would be consistent with the existence of efficient markets.

   The fundamental value of an asset is the present value of the stream of cash flows that its holder expects to receive. These cash flows include dividends that the asset is expected to generate and the asset is expected to generate and the expected price of the asset when sold. In an efficient market, the price of an asset is equal to its fundamental value.

   The fundamental solution can be written as:

   $V_t^* = \sum R^{-i} E_t d_{t+i}$

   Where *R* is risk-free interest rate, *d* is dividend and *E* is equity value at time *t*.

2) **Bubbles may sometimes be compatible with rational expectations. Under what conditions can this happen?**

   If investors rationally expect an asset’s selling price to increase, then including this in their assessment of the asset’s fundamental value would be justified. It is possible, then, that the price of such an asset could grow and persist even if the viability of its issuing company is unlikely to support these prices indefinitely. This situation can be called a “rational bubble.”

Here, investors know the fundamental value and are fully conscious that they buy into a bubble. Investors invest in the bubble in belief that it will continue and get bigger.

There are several conditions that are necessary for a rational bubble to occur:

- Has to be infinitely many investors that the bubble can be passed on to
- Expected return must be equal to or exceed the risk-free interest rate (requirements for a rational bubble → otherwise no one would invest in the bubble)
- Investable funds cannot grow faster than economy forever
- Expected return must not exceed the growth rate of the economy
- Rational bubbles can only exist if interest rate is below growth rate
- Bubbles cannot be negative
- The asset must not be easily reproducible

Requirements for a rational bubble:
Must have expected return equal to interest rate
$(E_t b_{j,t+1})/b_{j,t} = E_t R_{t+1}$

3) It is often argued that rational bubbles reduce real investment. How is this explained?

There are two channels by which an increase in asset prices in the economy is thought to increase real investment: Balance Sheet Channel and Bank Lending Channel. (Both featured in the model of Holmstrom and Tirole, 1997)

However, bubbles may also have a negative effect on productive real investments. The classic theory of rational bubbles (e.g., Tirole (1985)) predicts that they might crowd out productive real investments by increasing interest rates and making firms want to invest less. In other words, since some assets are priced higher than their fundamental value, some portion of savings will be spent

on buying into the bubble, instead of real investment. This effect is stronger when firms are financially constrained. This is called the leverage effect (Farhi and Tirole (2012) which lead to attenuation rather than amplification of the initial stock.

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?**

Expansionary bubbles can appear where the value of the bubble increases investments, making the capital of the economy expand.
The bubble makes future firm prices high, which will lead to an increase in credit available to firms and again lead to more investments.

The bubbles can start out small and then grow for a long period of time. A good example of an expansionary bubble bursting is the recent financial crisis in 2008 (Martin and Ventura 2011). This can explain how crisis occur without any particular shock and new information added.

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?**

In both cases investors will expect the bubble to keep growing, and we would therefore see an increase in investment and credit growth. As a result the bubbles that occur due to extrapolation will not be distinguishable from the bubbles that occur due to rational expectations.

Other macro variables?

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?**

In periods with financial liberalization the total volume of credit is increased, which leads to a greater chance of a bubble. Deregulation can be a good thing, since the rational bubble will increase investment, but there might be negative effects if the bubble bursts.
In expectation theory regulation is a necessity in order to keep the extrapolation of trends under control. Imposing some regulations on banks will reduce the risk of banking crises.