**HARRAS AND SORNETT 2011**

It’s an ABM model.

* All agents are the same and just different on their initialization values for their parameters
* Agents have a private signal (an iid noise)
* They also observe a public signal (another iid noise)
* Finally they observe the decisions of their peers (a neighborhood of 4 other agents. They test the model with different numbers and find predictions are robust).
* The agents compute a propensity score to buy or sell which is a weighted sum of the elements:
  + Their private signal
  + Their public signal
  + The mean of the expected purchases/sales of their peers
* If the propensity score is above a threshold they buy and if it is below, they sell. They only buy or sell a fixed predetermined amount of their available cash.
* THE MOST IMPORTANT:
  + Agents are adaptive in a backward looking fashion
  + They adjust the weights with which they determine their propensity score according to some rules that makes the weight of a component go up the more correlated it is with the future returns of the asset.
* Other stuff
  + There is a market maker agent that adjust prices linearly based on excess demand (apparently not a bad approximation for not very short term horizons)
  + The number of agents is fixed (no foreign investors enter the market) and there is no credit. So the price of the asset is capped above and below because it is limited by the cash of the liminted number of agents.

What do they find:

* There is a tendency for bubbles to appear when there are successive positive shocks of the public signal.
* Basically:
  + When successive positive public signals, people with positive private signals will have more propensity.
  + The less risk averse of them (lower buying threshold) will buy.
  + Market maker will need to increase prices
  + Neighbors of buyers will see that price goes up at the same time that they are buying, so they increase the weight of their neighbors decisions and they will end up buying, too.
  + Herding behavior emerges, pumping the bubble.
  + The agents cannot keep buying because they are liquidity constrained.
  + Eventually the bubble crashes because of the same mechanism in the opposite direction.

Critique:

* They say it is a model they are not intending to match to reality. It’s just an experiment to see how a set of initial conditions that have been observed empirically interact.
* But they are just forcing a lot of very strong assumptions and rules of thumb on the behavior of agents.
  + Usually, you set the information set of agents, their limited information and their limited capacity to compute if any. You assume full rationality.
  + Here they just impose arbitrary heuristics, that are not so specifically supported by literature as they claim them to be.
  + For example, it is much more likely that financial market players adjust their weighting of different information sources using a much more refined behavior than the very simple updating rules they just put out of nowhere.
  + Also, it is very ugly that they have a public signal that is just noise and is assumed to affect propensity. At least it could be some type of dividend process. Basically it is very ugly to simplify agents to a buying selling machine determined by an assumed propensity score being more or less than some thresholds. It is more unrealistic than assuming profit maximization. Not even an empirical justification for using that process.

Question: this paper assumes herding directly. It forces it. In all papers commented by Brunnermeier and Oehmke herding arises from rational decision making of agents looking at the price and information set of competitors, not from herding as an optimal strategy giving information asymmetry. Maybe interesting to see to what extent the representative investor in a market uses herding as a strategy or is just an observed pattern determined by some other underlying cause.