Lecture 12:
Competition and Risk Taking

We stopped just before the circular-city model in the last lecture, so this is where we start in the go on with the market solution and from there to the rest of the discussion of this model. All this was commented upon in the handout for Lecture 11, so we do not repeat it here but procced directly to what is the most important part of Chapter 11, namely the connection between competition and risk-taking.

Intuitively, a banking sector with many independent banks competing to catch the costumers might result in less careful consideration of the projects according to which loans are granted, so that the amount of credits which are not repaid may increase. But one might as well argue that lack of competition leads to large monopoly profits and again the less careful less careful treatment of the loan applications. Thus, there is no simple argument for either positive or negative effects of competition.

We skip part of the section, reading only subsections 11.5.1 and 11.5.4. The Matutes-Vives model in 11.5.1 is quite simple once you get the basic idea: The model is such that current expected profits are independent of the risk level chosen by the bank, this level of risk only influences the probability of survival (so that if high risk is chosen, then the probability of default is large, but then the profits when not defaulting is correspondingly higher). Where does competition come in? Actually it comes only through the *franchise value* of the bank (the value of having a bank which may earn money in the future), if there is sufficiently fierce competition, then this frachise value is 0, so that banks do not care at all about risk.

To obtain that current expected profits is independent of risk, this risk must of course enter in a specific way, and indeed it does: We introduce a riskiness parameter σ, and all possible loans have a the same mean repayment μ, but dispersion increases with σ. Banks cover all loans by deposits, and repayment $r_D(\sigma)$ on deposits depend on σ, since expected repayment to depositors, including the case of default, where depositors get only the repayment on the loans of the defaulted bank, should be equal to what depositors could get elsewhere (here assumed to be 1). Given this situation, one gets that the total expected income (of bank and depositors taken together) is μD (here D is the size of the engagement), and since the depositors get the mean repayment D, the bank gets expected profit $\mu D - D = (\mu - 1)D$ which is independent of σ.

Taken together, we have that a state of competition which make the banks neglect their franchise values may result in a very large level of risk (although strictly spe-

aking the banks have no special preference for risk, so it will happen only if extension of business can occur only if more and more risky loans are taken on).

The simple model becomes more blurred if it is taken into account that depositors cannot see the value of σ chosen by the bank (which of course they cannot in the real world). This is discussed in the large couple of paragraphs of the subsection, and it is enough to know that the situation then is less clear-cut then in the simple version.

Subsection 11.5.4 treats the standard model of competition and risk, the Allen-Gale model. It is basically a model of the type that we saw when dealing with quantity-choosing oligopoly banks, extended with a couple of new features. The first of these is the *risk-payoff tradeoff* in choosing projects, this tradeoff takes a form which looks like a demand curve, with s (average project payoff) on the horizontal axis and $p(s)$ (probability of getting the payoff s) on the vertical (draw such a curve!).

Expected profit is at the bottom of p.233, and it looks more or less like (12) on p.221, except for the payment α of an insurance premium on deposits. We shall have much more to say about deposit insurance later, take it just as add-on at this point, but it serves a purpose: Since deposits are insured, depositors do not care about the risk taken on by the bank, they get their money anyway, and in terms of our model, we get that the deposit rate depends *only* on the overall amount of deposits (not in the risks chosen by the banks, which would have made the model much more complicated).

On p.234 the equilibrium is analyzed using the first-oder conditions in the two decision variables, demand and riskiness (and assuming that all choose the same, which is reasonable here). It is important that the number n of banks enter into the equilibrium conditions, as we also know from section 11.3 that it does. It is less important to follow the computations, what comes out is fairly intuitive: When the number of banks increases, then the competition for deposits gets more fierce, and deposit rates go up. This disturbs the overall equilibrium so that banks then to counteract in a way so as to increase the income from their projects, and the result is an increase in s and therefore a higher level of riskiness of the banks.

This conclusion may be considered as supporting the argument that more competition leads to higher riskiness, but it should be taken with some salt, as shown by Boyd and de Nicoló and described from the the bottom of p.234 and onwards. You should concentrate on the description around formula (35) and down to around (37), and the basically skipping the rest of the formalism in order better to enjoy the logic: They argue – and rightly so – that banks do not select projects themselves but rather provide credits for entrepreneurs who then engage in projects, so following the setup in Allen-Gale we must add a loan market, where the demand for loans is derived from the connection between mean payoff and probability of success, so that higher loan rate forces entrepreneurs to choose projects with larger s and therefore smaller $p(s)$ (this is what is shown in (35) of you doubt). Banks of course are influenced by

the choices of the entrepreneurs and their expected profits will look as in the formula on the top of p.235.

Using the same intuitive reasoning as in the Allen-Gale model, we now get the opposite conclusion: When the number of banks increases, competition for deposits will raise the deposit rate as before, but since banks are also competing in their loan business, the larger number of banks will result in a lower loan rate, which will transplant through the entrepreneurs to a lower level of risk, so now increased competition gives a less risky financial sector.

Who, then is right? This is perhaps not the right question to ask, both models are simplifications and may be neglecting some important features of both competition and risk-taking. The morale – if there is any – is rather that what will happen depends very much on the particular circumstances of the case (here the increase in the number of financial intermediaries). The importance of using economic theory and models is that it forces you to check thoroughly the background for your forecasts of what will happen.

We have in this chapter been concerned with competition between *banks*, but banks are increasingly facing competition from new organizations, proposing intermediation not only between savers and investors but also between savers and banks. These organizations, known as the *fintech* sector, may need access to their customers' bank accounts, and the banks are increasingly providing the type of information required, as it may indeed be in the interest of both parties. We shall take a brief look at this new feature of *Open Banking* and why it may fill a gap in the existing intermediation.

We read: Chapter 11, sections 4, 5.1 and 5.4.