FinTech and Banks: The need for Open Banking

One of the important recent phenomena in financial intermediation is *open banking*, a situation where several new types of financial intermediators, known as FinTech, can offer investment possibilities to savers in other ways than the traditional banks, but on the other hand are more restricted in their access to savers as well as to borrowers. For the new approaches to financial intermediation to work smoothly, there is a need for some exchange of information between banks and fintech investors, something which may not be easily achieved given that fintech organizations are seen by the banks as competitors in the market for financial services. Since this form of competition is not a simple one, since it is not as much a question of capturing customers for given services from the competitors but rather one of developing joint fields of business, there may be a need for regulation of the intercourse between banks and fintech firms.

To see what is at stake in a very simple setting, we consider a model proposed by Brunnermeier and Payne (2024), here adapted to our purposes.

We assume that entrepreneurs have access to technologies which transforms an initial input of 1 at $t = 0$ to a result at $t = 1$ consisting of two of parts,

$$1 \mapsto z + k,$$

where z may be thought of as the value of the current output and k the value of the plant to be used in future production. Both z and k are random variables, expressing that the details of the project is private information of the entrepreneur. We assume that z is uniformly distributed in the interval $[0, \bar{z}]$ and k similarly has a uniform distribution in an interval $[0, \bar{k}]$.

We disregard discounting, so that a project will be worthwhile from the point of view of society if

$$z + k \geq 1. \tag{1}$$

Entrepreneurs need financing to carry out projects, and for this they will have to use either a (traditional) *bank* or an alternative internet-based source of financing, in the following called *platform*. We assume that the platform can observe z either from registering the demand for the particular output or in other ways, but the bank cannot observe z. However, the bank can observe k and can seize it as collateral if entering into a loan contract with the entrepreneur.

The bank is assumed to work in a competitive market so that profits are zero, and if the bank is alone in offering loans, it will accept a loan contract only if $\mathbb{E}[z] + k \geq 1$ or equivalently

$$k \geq 1 - \frac{\bar{z}}{2}. \tag{2}$$

Comparing (1) and (2), one sees that the arrangement is far from being optimal, there are many cases (when k is small) where socially desirable projects are not carried out, and conversely there are cases where z is very small but where the project will be financed since the bank observes only k.

Now we add the alternative possibility that loans can be obtained from the platform. The entrepreneur can contact either one or the other for the loan, and we assume that if both are available, the entrepreneur will use the platform. Since the platform can observe z, it will offer a contract if $z \geq 1$. This means that if the entrepreneur contacts the bank, it must be because the platform would not accept a contract, meaning that $z \leq 1$. The bank which cannot observe z directly but is nevertheless able to infer that it is at most 1, will then agree to offer a loan if

$$\mathbb{E}[z \mid z \leq 1] + k \geq 1,$$

or equivalently if

$$k \geq 1 - \frac{1}{2} = \frac{1}{2}.$$

Summing up, the projects which can be carried out with two alternative sources of financing will be all the combinations of z and k for which $z \geq 1$ or $k \geq 1/2$. This differs from the previous situation, allowing for some further combinations but possibly missing others, and again it does not agree with what is socially optimal.

Allowing now for partial financing, so that the entrepreneur can borrow part of the necessary sum from the platform and the remaining part from the bank, some new possibilities arise. We must now look for equilibria where each intermediator chooses the right amount of the loan given that of the other intermediator, and there are two such equilibria for given z and k, namely

(a) any of the two can finance the project alone, which happens if $z \geq 1$ or $k > 1$,

(b) suppose that for some z^*, k^* with $z^* + k^* = 1$, the bank expects the platform to finance $z^* \leq z \leq 1$ and finances the rest, $1 - z^* = k^*$, and similarly, the platform expects the bank to finance k^* and then finances $1 - k^* = z^*$.

It is seen that any project (z, k) satisfying (1) can be sustained in an equilibrium, so that on the face of it we have found a way of implementing the social optimum. However, a closer look at the equilibria of type (b) show that they are achieved only when the participants have the correct expectations, and there is no obvious way of achieving this as long as they cannot communicate directly.

At this point it might be suggested that since the problem is one of *coordination*, where the bank doesn't know z and the platform doesn't know k (or knows it but cannot seize if if the loan is defaulted), then it could be solved with access to the information of the other party. This is true in our model, but then the model is over-simplified in the sense that the characteristics of the project, in particular k, is known perfectly to at least one of the borrowers at the very outset, before the decisions about financing the project are taken. This does not fit very well with reality, there should be some uncertainty for all involved, and for this we extend the model slightly.

We add an intermediate date $t = 1/2$, so that decisions must be taken at $t = 0$ but k is revealed to the bank only at $t = 1/2$ (and never to the platform). The project can now be liquidated at a price l (which has been known all the way). In the loan contract it will be specified whether the bank has the right to liquidate at $t = 1/2$.

If the contract is one without right to liquidate, then we have only the coordination problem considered already, and if the bank can offer loans up to the expected value of k, which is $\mathbb{E}[k] = \overline{k}/2$, so that projects with

$$z + \frac{\overline{k}}{2} \geq 1$$

can be financed. Not surprisingly, the lack of information on the part of the bank results in a discrepancy between socially optimal and market solutions.

If the contract allows the bank to liquidate, then we need to consider also what happens at $t = 1/2$: If a joint financing is achieved, where the platform finances some $z^0 \leq z$ and the bank finances the rest, then the bank may want to renegotiate threatening to liquidate the project unless the platform transfers some or all of its repayment to the bank. As long as $l \geq 1 - z^0$, this threat is realistic, meaning that the platform cannot participate with more than $1 - l$.

For large values of l, this practically excludes joint financing, so that the bank is alone and it will offer credits at $t = 0$ if

$$\frac{\overline{z}}{2} + \mathbb{E}\left[\max\{l, k\}\right] \geq 1.$$

Here the first member of the left-hand side is the expected value of z, and the second represents the expected outcome for the bank if taking over the project, either by liquidation at $t = 1/2$ or by seizure of collateral at $t = 1$.

Summing up, what is seen from the model is that the access to information matters for the well-functioning of financial intermediation, and there seems to be no way of overcoming by the participants alone. In other words, there is a need for government regulation of this market.

References

Brunnermeier, M.K. and J.Payne (2024), FinTech Lending, Banking, and Information Portability, Discussion Paper, Princeton University, April 2024.