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Chapter 10.3.1

Adverse selection and competition

- Relationship banking allows banks to obtain an informational advantage over other banks, which should enable them to generate excess profits.
- We will investigate how competition between banks affects the importance of relationship banking.

Key assumptions

- Competition between banks reduces their profits, but profits due to informational advantages are unaffected
- These profits can be used to cover any costs of relationship banking
- Company types can be identified by relationship banks, but not by other banks
- Banks face higher costs in relationship banking due to the continued accumulation and processing of information

Key assumptions

→ We can now model the key differences between relationship and transaction banks and how they affect their respective profits as competition intensifies.

- It is a common result in economics that increasing competition, such as increasing the number of competitors, will reduce profits. However, if a bank has an informational advantage, the profits generated based on this cannot be eroded as other banks do not have access to this information. Thus we can interpret banks with such an informational advantage arising from relationship banking as having a monopoly in this area.
- If relationship banking is costly as much information needs to be collected and processed, these additional profits can be used to cover these costs.
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  - We assume that there are different types of companies, such as high-risk and low-risk companies, can be identified in relation banking due to the accumulated information.
  - Other banks, not engaging in relationship banking with that company, will not be able to identify its type.
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  - We assume that banks engaged in relationship banking face higher costs than banks not engaged in relationship banking, but only in transaction banking.
  - These additional costs in relationship banking are due to the collection of processing of information.

→ Using this framework, we can now determine the optimal loan rates and profits of relationship and transaction banks.

Loan rates

- Banks not lending to a company do not know its type and will assume loans are repaid with the average success rate, and they pay their depositors
- $\Pi_B = \pi(1 + r_L)\, L - (1 + r_D)\, L$

$\Rightarrow 1 + r_L = \frac{1+r_D}{\pi} + \frac{\Pi_B}{\pi L}$

- Banks already lending to a company know the success rate at which the loan is repaid, and they pay their depositors, as well as face additional costs
- $\hat{\Pi}_B^i = \pi_i\big(1 + \hat{r}_L^i\big)\, L - (1 + r_D)\, L - C$

$\Rightarrow 1 + \hat{r}_L^i = \frac{1+r_D}{\pi_i} + \frac{\hat{\Pi}_B^i + C}{\pi_i L}$

Loan rates

→ We are now in a position to determine the profits of banks and from this information, the loan rates they will apply.

▶
- If a bank has not lent to a company before, it cannot know its type and will have to use the average success rate, based on the composition of the population, to assess the likelihood a loan is repaid.
- Banks finance their loan by using deposits, which need to be repaid.

▶ *Formula*

▶ [⇒] For a given level of profits, the bank can set a loan rate as determined here; we simply solve the equation for the loan rate that these transaction banks charge.

▶
- A bank having provided loans before to the company, are assumed to know the type of the company and hence its success rate of repaying the loan. Knowing the type of company, banks will be able to charge different loan rates to companies if different types.
- As with transaction banks they finance their loans using deposits, which need to be repaid.
- As relationship banks they face additional costs for the collection and processing of information.

▶ *Formula*

▶ Similarly, for a given level of profits to the relationship banks, we can determine the loan rate they would charge for each type of company; again we we merely solve the profits equation for the loan rate.

→ We can now relate these two loan rates by relationship and transaction banks with each other.

Bank profits

- Companies accept the offer with the lowest loan rate, so relationship banks will only undercut the loan rate of a new bank marginally: $1 + \hat{r}_L^i = 1 + r_L$

$\Rightarrow \hat{\Pi}_B^i = \left(\frac{\pi_i}{\pi}\Pi_B - C\right) + \pi_i \left(\frac{1}{\pi} - \frac{1}{\pi_i}\right)(1 + r_D)\, L$

- Competition erodes the profits not arising from their informational advantage, the informational advantage is retained

$\Rightarrow \hat{\hat{\Pi}}_B^i = (1 - \theta)\left(\frac{\pi_i}{\pi}\Pi_B - C\right) + \pi_i \left(\frac{1}{\pi} - \frac{1}{\pi_i}\right)(1 + r_D)\, L$

Bank profits

→ We can now relate the profits of relationship and transaction banks.

- Companies are not assumed to be loyal to their existing bank and they would happily change banks if they can obtain a better loan rate elsewhere.
- Thus relationship banks will seek to retain companies they lent to before by offering a loan rate that is very marginally below that of transaction banks. We avoid this marginal difference and set the these loan rates equal.

- [⇒] Inserting for these loans rates, we obtain this *formula*.
- The first term represents the profits generated from transaction banking, where relationship banks have only a different assessment of the risks of the company and face additional costs. We assume that these profits are eroded through competition and only fraction of these profits can be realised. Perfect competition corresponds to $\theta = 1$. We can interpret θ also as inertia for companies to switch banks and thus allow relationship banks to retain some profits not related to their informational advantage.
- The second term denotes the profits arising from the informational advantage the relationship bank has. These profits cannot be eroded through competition as only the relationship banks holds this information.

- *Formula*

→ We can now use this relationship to assess whether relationship banking is feasible.

Feasibility of relationship banking

- Transaction banks are competitive as they are all competing for the loan, hence $\Pi_B = 0$
- Relationship banking is feasible if it is more profitable than transaction banking: $\hat{\hat{\Pi}}_B^H \geq \Pi_B = 0$

$\Rightarrow \frac{\pi_L}{\pi_H} \leq \xi^* = \frac{(1+r_D)(1-p)-(1-\theta)p\frac{C}{L}}{(1-p)\left(1+r_D+(1-\theta)\frac{C}{L}\right)}$

- $\frac{\pi_L}{\pi_H}$ can be interpreted as the degree of asymmetric information or adverse selection between relationship and transaction banks

Feasibility of relationship banking

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- Let us assume that there are a large number of transaction banks competing with each other. This will result in the profits of transaction banks to be diminished to zero.
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  - Banks will prefer relationship banking over transaction banking, if the profits they can generate are higher.
  - We are only concerned with low-risk companies, that is companies with a high probability of success.
- [⇒] We obtain that the difference between the high and low success rates must be sufficiently large, here expressed as the ration of low and high success rate being small.
- This ratio can be seen as the degree of asymmetric information between relationship banks and transaction banks. It measures the difference between the two company types and the larger this difference, the larger the informational advantage that relationship banks have from knowing the type of company.

→ Hence this result states that the degree of asymmetric information must be sufficiently large for the informational advantage of relationship banks to overcome the additional costs. We see that in the absence of costs, this ration can be 1.

The effect of competition

- $\frac{\partial \xi^*}{\partial \theta} = \frac{C}{L} \frac{1+r_D-(1-\theta)(1-p)\frac{C}{L}}{(1-p)\left(1+r_D+(1-\theta)\frac{C}{L}\right)^2} > 0$
- Competition reduces the amount of adverse selection needed to make relationship banking feasible

$\Rightarrow$ Relationship banking is more widespread with increased competition

The effect of competition

→ We can now determine the effect of competition on the feasibility of relationship banking. We will focus on the degree of asymmetric information required to sustain relationship banking.

- θ measured the degree of competition between banks. We can therefore see what impact a change in competition has on the required level of symmetric information, which is also referred to as adverse selection as transaction banks will pick up the loan to companies with low success rates as they offer better loan conditions than relationship banks who have identified them as high-risk.
- We see that the impact of competition is to increase the ratio, which implies that the success rates can move closer together, meaning that less asymmetric information or adverse selection is required to make relationship banking feasible.
- [$\Rightarrow$] We can thus conclude that with increasing competition between relationship and transaction banks, relationship banking becomes more easily sustainable.

→ Thus increased competition between banks will make relationship banking more widespread.

Summary

- Increased competition makes informational advantage more important as a source of profit
- This implies that in order to generate profits, banks are seeking more relationship banking despite its costs
- Markets with high adverse selection should observe more relationship banking
- The higher competition is, the more common relationship banking is, as long as its costs are not prohibitive

Summary

→ We can now conclude the impact competition has on the degree of relationship banking in a market.

- As competition between increases, the informational advantage is an ever more important source of profits for banks. The profits arising from imperfect competition between transaction and relationship banks are becoming smaller and smaller and banks will seek to maintain their profits by expanding the profits from their informational advantage.
- With increasing competition, relationship banking becomes more and more important as a source of profits and despite the costs of relationship banking, it becomes more widespread as it becomes preferred for companies with less and less degrees of symmetric information.
- Similarly, in markets with a high degree of asymmetric information, relationship banking should be more widespread, for example in industries where public information is scarce and company disclosures are typically of low quality, and instead information can be gained through interactions with the company.
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  - We this observe more competitive markets should have a larger degree of relationship banking.
  - This is, of course, only sustainable if the costs of relationship banking are not too high.

→ We have therefore established that more competitive markets are more likely to put emphasis on relationship banking.

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