

Strategic Choices of Cross-Border Entry Modes: Syndications or Acquisitions? *

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1 Introduction

Deregulation and advances in information technology have intensified cross-border competition and fostered globalization in the banking industry. Loan syndication and cross-border acquisition are certainly two of the more popular ways in which banks can extend their reach globally, and in particular their reach into developing nations. Dating back to 1995, *SDC Platinum* records over 58,000 worldwide syndicated loans and approximately 2,500 completed cross-border mergers and acquisitions in the banking industry. Besides European nations, many developing countries around the world have also started to open their banking industries to foreign banks. For example,

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India allows foreigners to own up to 49% of Indian banks (*Financial Times*, February 17, 2002); by 2006, foreign banks will have the right to open 100%-foreign-owned branches anywhere in China and take deposits in the local currency (*Business Week*, October 29, 2001).

This globalization is precipitated when a foreign bank has extra capital and searches for either a higher return or risk diversification around the world. Instead of having a general equilibrium model that integrates the entry decision, country selection, and entry strategies, we focus on the entry strategy choices of the foreign bank conditional on entering a specific country.¹

Given that the foreign bank does not have sufficient information about local borrowers and directly acquiring such information would tend to be prohibitively costly, while entering a developing country, the foreign bank intends to use a local bank's knowledge about local borrowers which has been built up through previous lending relationships, deposit taking, and cash management activities. Conditional on relying on a local bank, the foreign bank could choose one of two entry strategies: 1. originating syndicated loans with the local bank while the two banks remain separate legal entities; and 2. acquiring the local bank and setting up a host division or an offshore subsidiary. This study compares the two entry strategies above in terms of the severity of information asymmetry under syndication and a fixed cost associated with a cross-border acquisition.²

¹While lending cross-border, the foreign bank faces information asymmetries both in the ex-ante borrower-selection process (Stiglitz and Weiss, 1981) and in the ex-post monitoring process (Townsend, 1978; Diamond, 1984; and Ramakrishnan and Thakor, 1984). Given the absence of credit bureaus and reliable financial statements in many countries, selecting appropriate borrowers remotely poses a serious problem. In addition, difference in languages and regulatory environments substantially increase monitoring costs, if not rendering monitoring impossible. In this paper, we discuss the influence of information problems in the borrower-selection process on banks' strategic choices of cross-border entry modes. Incorporating the impact of ex-post monitoring process into the decision would be an interesting extension of this research.

²The model is about the relationship between the foreign bank and the local bank.

The information asymmetry poses contractual hazards to the entrant bank while the fixed cost corresponds to the political hazards faced by a foreign-owned bank in the host countries. If the political hazards are more severe than the contractual hazards, that is, if the fixed cost of acquisition is higher than information costs, then syndicating loans is a preferred strategy for cross-border lending; otherwise, acquiring a local bank and lending through this acquired local bank is a better choice.³ By integrating two strands of literatures – the boundaries of the firm and cross-border banking – this research provides a new perspective on cross-border consolidations in the banking industry.

Under syndication, the local bank puts in effort that influences the quality of selected borrowers. A higher effort level gives the local bank a higher probability of choosing a borrower with access to higher NPV projects (named as a good borrower). Given that exerting effort is costly and the effort choice of the local bank is not observable to the foreign bank, the effort-averse local bank has the tendency to shirk. The foreign bank thus needs to design an incentive contract to motivate the local bank to invest efficiently. This constitutes the moral hazard side of the problem. On the other hand, in many situations, only the local bank can directly observe the types of selected borrowers at the interim stage. The foreign bank has to compensate the local bank for revealing the borrower's true type for each individual loan. This constitutes the adverse selection side of the problem.

Under acquisition, either through setting up a host division or an offshore subsidiary, the adverse selection problem in the borrower-selection process is largely reduced because the foreign bank obtains the client network of the lo-

Lower borrowers are assumed to be passive players.

³We are not going to model Green Field investment, another important entry mode of Foreign Direct Investment, in this paper.

cal bank; for instance, the foreign bank gains the access to the client database of the local bank upon acquisition. However, there is a fixed cost associated with an acquisition. As the capital involved in the acquisition is sunk and cannot be recovered once the project is initiated, the foreign bank is then exposed to the expropriation by the host country government via nationalizing foreign firms, limiting capital outflows, and changing tax policies. In addition, acquisition may be costly due to the loss of key employees to competitors in the process of organizational change. Finally, the fixed cost can also be interpreted as the cost of accommodating legal, cultural and accounting differences (Berger et al. 2000); for instance, the foreign bank (the headquarters) may have to dispatch highly-paid managers who master the language, the accounting system, and the legal environment of the host country. This prevents the local bank (the host division or overseas subsidiary) from providing misleading information about the type of chosen borrower on one hand, and increases operating costs of the bank on the other hand.

Comparing information costs under syndication and the fixed cost of acquisition, the foreign bank will choose one of the above two entry strategies. The comparison of the two sources of costs is heterogeneous across countries. Observe that the entry strategy choices have also been evolving over the past 15 years. For example, in the late 1990s, foreign banks in the United States have increased their claims through existing and newly-acquired offshore banking subsidiaries rather than through cross-border lending (Clarke et al., 2002). This study investigates the conditions under which the foreign bank prefers cross-border acquisitions over syndicated loans.

The literature on syndicated loans: This literature investigates the driving force of bank loan syndication and whether agent banks use their informational advantage to expropriate participating banks. Simon (1993)

shows that loan syndications are primarily driven by lead bank's capital considerations. He finds no evidence that lead banks expropriate participating banks by persuading them to take a larger share of inferior loans. Dennis and Mullineaux (1998) show that loans can be syndicated to a greater extent as information about the borrower becomes more transparent, and as the managing agent becomes more reputable. They document that the lead manager holds larger proportions of informationally-problematic loans in its portfolio. Jones, Lang, and Nigro (2000) show that bank capital, loan seasoning, and maturity have significant effects on the average loan share retained by an agent bank. They also find that agent banks retain larger portions of their lower-quality loans, but the agents that specialized in the lower end of the credit spectrum syndicate a larger portion of their low-quality loans.

Cross-order bank mergers and acquisitions: One strand of existing literature is about the impact of cross-border bank M&As on the welfare of borrowers, especially small firms. The results are inconclusive. Investigating publicly-traded Norwegian firms, Karceski, Ongena, and Smith (2002) find that the welfare of small borrowers of target banks is hurt while the small borrowers of acquiring banks gain abnormal returns.

Buch and DeLong (2001) investigate the impacts of information costs and regulation on international bank mergers. They find that banks operating in more regulated environments are less likely to be the targets of international bank mergers. Also, mergers tend to be less frequent if information costs are high. They only use country characteristics as independent variables in the regressions.

The other strand of research is to investigate whether foreign-owned banks are more efficient than their domestic counterparts. DeLong (2001) documents that foreign-owned banks in developed markets are less efficient

than domestic banks and Claessens et al. (1998) show that, to the contrary, foreign-owned banks are more efficient than domestic banks.

Comparison of different market entry modes: Comparing cross-border acquisition with Green Field investment, Gilroy and Lukas (2003) present a real-options model based on a two-phase market-entry situation stressing the need to consider sunk costs and uncertainty. They conclude that for a higher marketing cost, the multinational enterprises would favor the cross-border acquisition over Green Field investment, while the propensity for Green Field investment increases as adaptation costs increase.

Tan (1993) collects survey responses on strategic choices of entry modes from 123 US multinational firms and shows that the manager's choice process is hierarchical, where his choice of entry mode is nested within the country choice considerations. The entry mode choices are affected by managerial perceptions of control, efficiency, international business risk, and strategic motivations for foreign market entry.

Institutional economics: Williamson (1991) investigates the influence of changes in the institutional environment that includes property rights, contract law, reputation effects, and uncertainty on the shift of comparative costs of institutional governance. This in turn determines the choice of three generic forms of economic organizations: market, hybrid, and hierarchy. Acquisition falls in the category of hierarchy, while syndication is a hybrid form. Henisz (2000) empirically tests the impacts of political hazards of the host country government – which are based on some set of national-level political, economic, and policy variables – and the impact of the contractual hazards of the transaction-specific partners on the market entry mode choices for manufacturing firms. The probability of choosing a majority-owned plant (vs. minority-owned plant) as a market-entry mode is increasing in the level

of contractual hazards and decreasing in the level of independent political hazards.

The remainder of this paper is organized as follows. Section 2 contains models of syndicated loans, with and without limited liability protection. Section 3 presents models of acquisitions and compares them with models of syndications. Section 4 illustrates the implications of the theory and proposes a research plan of empirical tests. Section 5 concludes.

2 Market Entry Via Syndicated Loans

There are two types of borrowers in the local banking industry that have access to scale-varying, risky projects. The project of a good borrower (G) succeeds with a probability p_G and produces $R(I_G)$ where I_G is the investment. On the other hand, the project of a bad borrower (B) succeeds with a probability p_B and yields a payoff $R(I_B)$ where I_B is the investment. All projects have the same payoff function $R(\cdot)$ that is increasing and concave, satisfying $R'(0) = \infty$ and $R'(\infty) = 0$. In addition, the assumption that $p_B < p_G$ ensures that the good borrower has access to higher NPV projects. The local borrower does not play an active role in the principal-agent problem throughout the paper.

The foreign bank and the local bank both are assumed to have linear utilities; and the local bank may or may not be protected by a limited liability. The local bank expends costly private effort $e \in \{0, 1\}$ that influences the type of selected local borrower $j \in \{G, B\}$. If the local bank exerts effort 1, which costs $\phi > 0$, it chooses a good borrower with probability ν_1 ; and with probability ν_0 , $\nu_0 < \nu_1$, if it exerts effort 0. Given that the local bank's effort choice is private information and the type of chosen borrower is not observable to the foreign bank, the principal-agent problem has both moral

hazard and adverse selection aspects: the moral hazard problem is followed by the adverse selection problem. The foreign bank, as the principal, determines investments and transfers, $\{I_G, t_G\}$ and $\{I_B, t_B\}$, when facing different types of borrowers to motivate the local bank to exert effort and to reveal the type of chosen borrower. We assume throughout that the foreign bank is adequately capitalized to fund the project of the good borrower.

2.1 First-Best Solution

In this subsection, we discuss the first-best solution under which investments maximize the expected social surplus. The principal-agent problem does not exist and the first-best solution is implemented if only one bank is involved in lending. For example, if the foreign bank has the same selection technology in the borrower-selection process as the local bank does, then the latter is not involved in lending. The foreign bank thus chooses the effort level to maximize the expected social surplus. Effort 1 is optimal if

$$\begin{aligned} U(1) &\equiv \nu_1(p_G R(I_G) - I_G) + (1 - \nu_1)(p_B R(I_B) - I_B) - \phi \\ &\geq U(0) \equiv \nu_0(p_G R(I_G) - I_G) + (1 - \nu_0)(p_B R(I_B) - I_B). \end{aligned} \quad (1)$$

Condition (1) could be rewritten as

$$\Delta\nu\Delta U \geq \phi, \quad (2)$$

where $\Delta\nu \equiv \nu_1 - \nu_0$, $\Delta U \equiv U_G - U_B$, $U_G \equiv p_G R(I_G) - I_G$, and $U_B \equiv p_B R(I_B) - I_B$. Without loss of generality, we assume (2) in later sections so that it is socially optimal to exert effort 1 to select the good borrower with a higher probability.

Taking the first order derivatives of $U(1)$ with respect to I_G and I_B , respectively, we obtain

$$R'(I_G) \equiv \partial R(I_G)/\partial I_G = 1/p_G, \quad (3)$$

and

$$R'(I_B) \equiv \partial R(I_B)/\partial I_B = 1/p_B. \quad (4)$$

Given that $p_G > p_B$ and the fact that $R(\cdot)$ is increasing and concave, we have $I_G^{FB} > I_B^{FB}$. This implies that the investment in the good borrower is higher than that in the bad borrower.

With investment choices in hand, along with this socially optimal effort choice of one, we see that the foreign bank will lend if the expected surplus is greater than its reservation utility (which is normalized to zero), i.e.,

$$\nu_1 U_G + (1 - \nu_1) U_B - \phi \geq \underline{U} \equiv 0. \quad (5)$$

2.2 Second-Best Solution without Limited Liability

In Section 2.1, we considered the first-best solution when only the foreign bank was involved in lending. In a more practical setting, the local bank has a better selection technology than the foreign bank in the borrower-selection process; and the two banks offer a syndicated loan.

The timing of contracting is as follows.

- At time 0, the foreign bank offers a contract $\{(I_G, t_G); (I_B, t_B)\}$ to the local bank, where t_G and t_B are the transfers, and I_G and I_B are investments in a good and bad borrower, respectively. Observe that the foreign bank provides the investment capital for the loan, in exchange for a committed transfer from the local bank.
- At time 1, the local bank accepts or rejects the contract at an ex-ante stage.
- After accepting the contract, at time 2, the local bank exerts effort $e \in \{0, 1\}$.

- At time 3, the type of borrower $j \in \{G, B\}$ is realized and only the local bank learns this type j .
- At time 4, the local bank invests I_j in type j borrower and transfers t_j to the foreign bank, where $j \in \{G, B\}$.

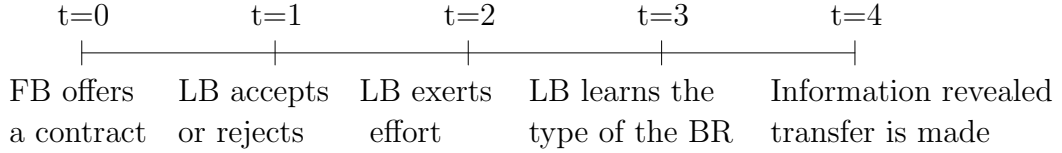


Figure 1: Timing of events

We assume that the local bank has neither capital nor protection of limited liability. The second-best solution with limited liability protection is the topic of Section 2.3. The situation in which the local bank provides partial capital will be discussed in Section 2.4 for the case without limited liability protection.

The expected profit of the local bank with effort 1 is

$$\pi(1) \equiv \nu_1(p_G R(I_G) - t_G) + (1 - \nu_1)(p_B R(I_B) - t_B) - \phi, \quad (6)$$

while the expected profit of the local bank with effort 0 is

$$\pi(0) \equiv \nu_0(p_G R(I_G) - t_G) + (1 - \nu_0)(p_B R(I_B) - t_B). \quad (7)$$

The moral hazard IC constraint is

$$\pi(1) \geq \pi(0), \quad (8)$$

which is equivalent to

$$\Delta \nu \Delta u \geq \phi, \quad (9)$$

where $\Delta u \equiv u_G - u_B$, $u_G \equiv p_G R(I_G) - t_G$, and $u_B \equiv p_B R(I_B) - t_B$.

Given that the local bank is privately informed about the type of borrower, and also the fact that the optimal level of investment varies by borrower type, there are two relevant incentive compatibility constraints on the behavior of the local bank. The adverse selection IC constraint when facing the good borrower is

$$p_G R(I_G) - t_G \geq p_G R(I_B) - t_B, \quad (10)$$

while the IC constraint when facing the bad borrower is

$$p_B R(I_B) - t_B \geq p_B R(I_G) - t_G. \quad (11)$$

The above IC constraints ensure that the local bank does not benefit from providing erroneous information about the type of borrower chosen. This is a direct application of Revelation Principle. Note that the IC constraint for the good borrower (10) could be rewritten as

$$u_G \geq u_B + \Delta p R(I_B), \quad (12)$$

while the IC constraint when facing the bad borrower (11) reduces to

$$u_B \geq u_G - \Delta p R(I_G), \quad (13)$$

where $\Delta p \equiv p_G - p_B$ is the difference in the project success rates for a good and a bad borrower, respectively.

As discussed in the first-best case, the IR constraint for the high effort choice is satisfied when

$$\nu_1 u_G + (1 - \nu_1) u_B - \phi \geq \underline{u} \equiv 0. \quad (14)$$

Focusing on the case where it is optimal to induce effort 1, we characterize the foreign bank's problem as

$$\max_{\{(I_G, t_G); (I_B, t_B)\}} \nu_1 (-I_G + t_G) + (1 - \nu_1) (-I_B + t_B) \quad (15)$$

subject to the moral hazard IC constraint (9), the adverse selection IC constraint when facing the good borrower (12), the adverse selection IC constraint when facing the bad borrower (13), and the moral hazard IR constraint (14).

Because many developing countries compete for capital, the foreign bank typically has the bargaining power and extracts all the surplus. In the model, such an assumption formally implies that the IR constraint (14) is binding. In addition, the adverse selection IC constraint when facing the good borrower (12) is binding as in a typical adverse selection model; or the principal could improve its expected surplus further. Substituting (12) and (14) into (15), we rewrite the principal's problem as

$$\max_{\{I_G; I_B\}} \nu_1(p_G R(I_G) - I_G) + (1 - \nu_1)(p_B R(I_B) - I_B) - \phi. \quad (16)$$

The first order conditions with respect to I_G and I_B generate

$$R'(I_G) = \frac{1}{p_G}, \quad (17)$$

and

$$R'(I_B) = \frac{1}{p_B}. \quad (18)$$

Not surprisingly, the risk-neutrality of the two banks implements the first-best solution.

2.3 Second-Best Solution with Limited Liability

The local bank, in practice, is protected by a limited liability as a separate legal entity. Therefore, the utility of the local bank with any type of chosen borrower must be greater than $-l$ ($l \geq 0$), where l denotes the shareholders' equity of the local bank. We assume $l = 0$. Essentially, the local bank has this single borrower. The nature of the solution does not change if we have $l > 0$.

The foreign bank chooses (I_G, t_G) and (I_B, t_B) to maximize the expected profit

$$\max_{\{(I_G, t_G); (I_B, t_B)\}} \nu_1(-I_G + t_G) + (1 - \nu_1)(-I_B + t_B), \quad (19)$$

subject to the moral hazard IC constraint (9), the adverse selection IC constraint when facing the good borrower (12), the adverse selection IC constraint when facing the bad borrower (13), the moral hazard IR constraint (14), and in addition, two limited-liability constraints:

$$u_G = p_G R(I_G) - t_G \geq 0 \quad (20)$$

and

$$u_B = p_B R(I_B) - t_B \geq 0. \quad (21)$$

The limited liability constraint when facing the bad borrower (21) is binding; otherwise, the foreign bank could redesign the contract and improve the expected surplus in the borrower-selection process.

Depending on the relative severity of the moral hazard problem and the adverse selection problem, the optimal contract may exhibit different properties. Indeed, the ratio of the disutility and the increase in probability of selecting the good borrower by exerting high effort, $\frac{\phi}{\Delta\nu}$, quantifies the magnitude of the moral hazard problem. Using these criteria, there are then three possible cases: a pure adverse selection problem, a mixed moral hazard and adverse selection problem, and a pure moral hazard problem.⁴

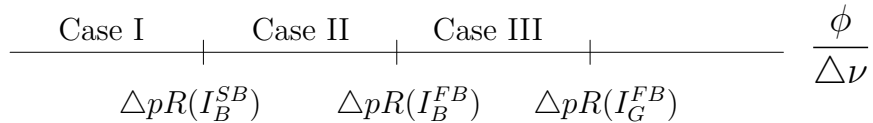


Figure 2: A mixed model

⁴If $\frac{\phi}{\Delta\nu} > \Delta pR(I_G^{FB})$, the moral hazard problem is overwhelmingly severe and exerting effort 1 is too costly to be optimal.

Case I: if $\frac{\phi}{\Delta\nu} < \Delta pR(I_B^{SB})$, a pure adverse selection problem exists. In this case, the cost of exerting effort is so low that the effort-aversion moral hazard problem disappears. Only the adverse selection IC constraint when facing the good borrower (12) and the limited liability constraint when facing the bad borrower (21) are binding. In such an environment, we then obtain

$$R'(I_G^I) = 1/p_G = R'(I_G^{FB}) \quad (22)$$

and

$$R'(I_B^I) = 1/(p_B - \frac{\nu_1}{1 - \nu_1}\Delta p) > 1/p_B = R'(I_B^{FB}). \quad (23)$$

Therefore, $I_G^I = I_G^{FB}$ and $I_B^I \equiv I_B^{SB} < I_B^{FB}$ (superscript “I” represents case I, “FB” denotes the first-best, and “SB” denotes the second-best). As in a typical adverse selection model, the investment in the good borrower is efficient while the investment in the bad borrower is distorted downward. The transfer to the foreign bank from the local bank when financing the bad borrower is

$$t_B^I = p_B R(I_B^{SB}) \quad (24)$$

and that when financing the good borrower is

$$t_G^I = p_G R(I_G^{FB}) - \Delta p R(I_B^{SB}). \quad (25)$$

The expected surplus of the local bank is $\nu_1 \Delta p R(I_B^{SB}) - \phi$.

Case II: if $\Delta p R(I_B^{SB}) \leq \frac{\phi}{\Delta\nu} < \Delta p R(I_B^{FB})$, both the moral hazard problem and the adverse selection problem exist. The moral hazard IC constraint (9), the adverse selection IC constraint when facing the good borrower (12), and the limited liability constraint when facing the bad borrower (21) are binding. We have

$$R'(I_G^{II}) = 1/p_G = R'(I_G^{FB}) \quad (26)$$

and

$$R(I_B^{II}) = \phi / (\Delta\nu\Delta p) < R(I_B^{FB}). \quad (27)$$

Therefore, $I_G^{II} = I_G^{FB}$ and $I_B^I \leq I_B^{II} < I_B^{FB}$. That is, the investment in the good borrower remains efficient and the investment in the bad borrower moves closer to the first-best than in the case of a pure adverse selection problem. The foreign bank receives

$$t_G^{II} = p_G R(I_G^{FB}) - \Delta p R(I_B^{II}) = p_G R(I_G^{FB}) - \phi / \Delta\nu \quad (28)$$

and

$$t_B^{II} = p_B R(I_B^{II}) = p_B \phi / (\Delta\nu\Delta p) \quad (29)$$

from loans extended to the good and bad borrower, respectively. The expected surplus of the local bank is $\nu_1 \frac{\phi}{\Delta\nu} - \phi$. Notice that since $\frac{\phi}{\Delta\nu} > \Delta p R(I_B^{SB})$ in this case, the expected surplus of the local bank in case II is higher than that in Case I.

Case III: if $\Delta p R(I_B^{FB}) \leq \frac{\phi}{\Delta\nu} < \Delta p R(I_G^{FB})$, a pure moral hazard problem exists. In this case, the cost of exerting effort is higher than the previous cases. At the same time, it is more harmful for the local bank to reveal a wrong type. Thus, only the moral hazard IC constraint (9) and the limited liability constraint when facing the bad borrower (21) are relevant. We have

$$R'(I_G^{III}) = \frac{1}{p_G} = R'(I_G^{FB}) \quad (30)$$

and

$$R'(I_B^{III}) = \frac{1}{p_B} = R'(I_B^{FB}). \quad (31)$$

Therefore, $I_G^{III} = I_G^{FB}$ and $I_B^{III} = I_B^{FB}$. The first-best investments for both borrower types are now achieved without any distortion. The transfers to the foreign bank from the good and bad borrower are now given by

$$t_B^{III} = p_B R(I_B^{III}) \quad (32)$$

and

$$t_G^{III} = p_G R(I_G^{FB}) - \phi / \Delta \nu, \quad (33)$$

respectively. The expected surplus of the local bank is $\frac{\phi}{\Delta \nu} - \phi$ which is the same as the surplus in case II and is greater than the surplus in case I.

Notice that in all three cases, the good borrower always gets the first-best investment: $I_G^I = I_G^{II} = I_G^{III} = I_G^{FB}$, while the bad borrower is distorted downward in cases I and II in which the adverse selection problem exists: $I_B^I \leq I_B^{II} < I_B^{III} = I_B^{FB}$. An interesting finding is that the allocative distortion in case II which has both the adverse selection problem and the moral hazard problem is less severe than the allocative distortion in case I which has a pure adverse selection problem. Also, the expected surplus of the foreign bank in case II is greater than that in case I. The incentive contract which enforces the local bank to exert high effort, at the same time, motivates the local bank to reveal the true type of borrower chosen. The deviation from the first-best solution is caused by the combination of the adverse selection problem and the limited liability protection which makes the local bank risk averse.

Comparing transfers, we have $t_B^I \leq t_B^{II} < t_B^{III}$ and $t_G^I \geq t_G^{II} = t_G^{III}$. When the moral hazard problem becomes more severe, the transfer increases with respect to loans to the bad borrower and reduces with respect to loans to the good borrower. This motivates the local bank to exert effort in cases II and III and to truthfully reveal borrower types in cases I and II.

2.4 Discussion

In Sections 2.2 and 2.3, we assumed that the local bank had no capital. Now, we discuss the situation in which the local bank has enough capital to partially finance the project. We will show that the results in both Sections 2.2 and 2.3 hold. Indeed, only the total investment of the two banks is

crucial. For example, in the first-best solution, we have $R'(I_G^p + I_G^a) = 1/p_G$ and $R'(I_B^p + I_B^a) = 1/p_B$, where I_j^p is the investment in project type j by the foreign bank (the principal) and I_j^a is the investment in project type j by the local bank (the agent), where $j \in \{G, B\}$. Thus, we have $I_G^p + I_G^a = I_G^{FB}$, and $I_B^p + I_B^a = I_B^{FB}$. At the same time, transfers to the foreign bank are reduced exactly by the amount of the local bank's investment: $t_G = t_G^{FB} - I_G^a$ and $t_B = t_B^{FB} - I_B^a$.

3 Market Entry Via Acquisitions

In Section 2, we considered different scenarios when loan syndication was the chosen entry strategy. In reality, the foreign bank could also acquire the local bank and establish a host division or an offshore subsidiary, a separate legal entity. After an acquisition, the adverse selection problem arguably disappears because the foreign bank access the client database of the local bank and observes the types of borrowers directly. However, we assume that the acquisition incurs a fixed cost F . The fixed cost represents the potential loss due to the expropriation of the host country government, the cost of adjusting to legal, cultural and accounting differences, and the cost due to organizational changes.

We assume that the foreign bank bears the fixed cost F . This gives the lower bound on the expected profit of the foreign bank. The bargaining process of sharing the fixed cost between the two banks is not modelled here.

3.1 Solution without Limited Liability

If the local bank is established as a host division after acquisition, the foreign bank (the headquarters) can extract additional rents by eliminating the protection of limited liability on the local bank (the host division). Notice that

the adverse selection problem disappears but not the moral hazard problem.

We compare the expected benefits of the foreign bank under acquisition and syndication in the following. The foreign bank chooses investments and transfers (I_G^A, t_G^A) and (I_B^A, t_B^A) to maximize the expected profit (superscript ‘‘A’’ denotes acquisition):

$$\max_{\{(I_G^A, t_G^A); (I_B^A, t_B^A)\}} \Pi^A \equiv \nu_1(-I_G^A + t_G^A) + (1 - \nu_1)(-I_B^A + t_B^A) - F, \quad (34)$$

subject to the participation constraint of the moral hazard problem:

$$\nu_1(p_G R(I_G^A) - t_G^A) + (1 - \nu_1)(p_B R(I_B^A) - t_B^A) - \phi \geq 0, \quad (35)$$

the incentive compatibility constraint of the moral hazard problem:

$$\begin{aligned} & \nu_1(p_G R(I_G^A) - t_G^A) + (1 - \nu_1)(p_B R(I_B^A) - t_B^A) - \phi \\ & \geq \nu_0(p_G R(I_G^A) - t_G^A) + (1 - \nu_0)(p_B R(I_B^A) - t_B^A). \end{aligned} \quad (36)$$

The participation constraint (56) and the IC constraint (57) of the moral hazard problem are binding. Plugging equality constraints (57) and (56) into (34), we obtain the expected surplus function

$$\Pi^A = \nu_1(p_G R(I_G^A) - I_G^A) + (1 - \nu_1)(p_B R(I_B^A) - I_B^A) - \phi - F. \quad (37)$$

Hence, the first order conditions of (37) with respect to I_G^A and I_B^A render

$$R'(I_G^A) = \frac{1}{p_G} \quad (38)$$

and

$$R'(I_B^A) = \frac{1}{p_B}, \quad (39)$$

respectively. Not surprisingly, the investment levels for both types of borrowers, good and bad, are socially optimal, i.e., $I_G^A = I_G^{FB}$ and $I_B^A = I_B^{FB}$ because the combination of the adverse selection problem and the limited liability protection that distorts investments under syndication does not exist here.

The transfers from the local bank to the foreign bank are given by

$$t_G^A = p_G R(I_G^A) - \frac{1 - \nu_0}{\Delta \nu} \phi \quad (40)$$

and

$$t_B^A = p_B R(I_B^A) + \frac{\nu_0}{\Delta \nu} \phi. \quad (41)$$

The expected surpluses are

$$u_G^A = \frac{1 - \nu_0}{\Delta \nu} \phi \quad (42)$$

and

$$u_B^A = -\frac{\nu_0}{\Delta \nu} \phi. \quad (43)$$

Recall that in case I under syndication, a pure adverse selection problem exists, and the expected profit of the foreign bank is given by

$$\Pi^{SI} = \nu_1 (p_G R(I_G^{FB}) - \Delta p R(I_B^{SB}) - I_G^{FB}) + (1 - \nu_1) (p_B R(I_B^{SB}) - I_B^{SB}), \quad (44)$$

where

$$R'(I_B^{SB}) = \frac{1}{p_B - \frac{\nu_1}{1 - \nu_1} \Delta p} > R'(I_B^{FB}). \quad (45)$$

The incremental benefit of acquisition to the foreign bank is then calculated as the difference between the expected surpluses between the two modes:

$$\begin{aligned} & \Pi^A - \Pi^{SI} \\ &= \nu_1 \left(\Delta p R(I_B^{SB}) - \frac{\phi}{\Delta \nu} \right) + (1 - \nu_1) \left((p_B R(I_B^{FB}) - I_B^{FB}) - (p_B R(I_B^{SB}) - I_B^{SB}) \right) \\ & \quad + \frac{\nu_0}{\Delta \nu} \phi - F. \end{aligned} \quad (46)$$

In (46), $\Delta p R(I_B^{SB}) > \frac{\phi}{\Delta \nu}$ holds by assumption and $p_B R(I_B^{FB}) - I_B^{FB} > p_B R(I_B^{SB}) - I_B^{SB}$ holds by definition of the first-best solution. Hence, the acquisition brings a positive payoff to the foreign bank by eliminating the

adverse selection problem, with an offsetting effect of the fixed cost F . In addition, the elimination of limited liability protection transfers $\frac{\nu_0}{\Delta\nu}\phi$ from the local bank to the foreign bank.

In case II under syndication, both adverse selection and moral hazard problem exist. The incremental benefit of acquisition to the foreign bank is given by

$$\begin{aligned} & \Pi^A - \Pi^{SII} \\ & = (1 - \nu_1) \left((p_B R(I_B^{FB}) - I_B^{FB}) - \left(p_B \frac{\phi}{\Delta\nu\Delta p} - I_B^{SII} \right) \right) + \frac{\nu_0}{\Delta\nu}\phi - F \end{aligned} \quad (47)$$

where

$$R(I_B^{SII}) = \frac{\phi}{\Delta\nu\Delta p} < R(I_B^{FB}). \quad (48)$$

Notice that $p_B R(I_B^{FB}) - I_B^{FB}$ is greater than $p_B \frac{\phi}{\Delta\nu\Delta p} - I_B^{SII}$ by definition of the first-best solution. As in case I, the acquisition brings a positive payoff to the foreign bank by eliminating the adverse selection problem, which is at least partially offset by the fixed cost F . Again, the elimination of limited liability protection, in addition, brings the foreign bank a rent $\frac{\nu_0}{\Delta\nu}\phi$.

In case III, the incremental benefit of acquisition to the foreign bank is given by

$$\Pi^A - \Pi^{SIII} = \frac{\nu_0}{\Delta\nu}\phi - F. \quad (49)$$

Observe that the acquisition per se does not create any value for the foreign bank in case III because there is no adverse selection problem under syndication. However, the elimination of limited liability protection gives the foreign bank a rent $\frac{\nu_0}{\Delta\nu}\phi$ which must be balanced against the fixed acquisition cost F .

With acquisition, we eliminate the adverse selection problem but not the moral hazard problem. Thus, if the adverse selection problem is a priori

severe (low ϕ), the incremental benefit to acquisition compared with syndications is greater: $\Pi^A - \Pi^{SI} > \Pi^A - \Pi^{SII} > \Pi^A - \Pi^{SIII}$. As in Section 2.1, without limited liability protection, the first-best solutions are achieved in all three cases.

3.2 Solution with Limited Liability

If the acquired local bank is established as an offshore subsidiary, it still has the protection of limited liability:

$$p_G R(I_G) - t_G \geq 0 \quad (50)$$

and

$$p_B R(I_B) - t_B \geq 0. \quad (51)$$

Hence, the foreign bank (the headquarters after acquisition) cannot extract additional rents by giving the subsidiary a negative payoff when they are facing a bad borrower. The incremental benefit of acquisition is then a tradeoff between the benefit of eliminating the adverse selection problem and the fixed cost of acquisition. If this net benefit is positive, the foreign bank will acquire the local bank. Now, the IC constraint of the moral hazard problem (57) and the limited liability constraint of the bad type (51) are binding. The investments by both types are efficient and the expected surplus of the foreign bank is given by

$$\Pi^A = \nu_1(p_G R(I_G^{FB}) - I_G^{FB}) + (1 - \nu_1)(p_B R(I_B^{FB}) - I_B^{FB}) - \frac{\nu_1}{\Delta\nu}\phi - F. \quad (52)$$

Similar to the case without the protection of limited liability, after eliminating the adverse selection problem, the first-best solutions are achieved.

The incremental benefits of acquisition for the foreign bank in the three

cases are given by:

$$\begin{aligned}
\Pi^A - \Pi^{SI} &= \nu_1 \left(\Delta p R(I_B^{SB}) - \frac{\phi}{\Delta \nu} \right) \\
&\quad + (1 - \nu_1) \left((p_B R(I_B^{FB}) - I_B^{FB}) - (p_B R(I_B^{SB}) - I_B^{SB}) \right) - F, \\
\Pi^A - \Pi^{SII} &= (1 - \nu_1) \left((p_B R(I_B^{FB}) - I_B^{FB}) - \left(p_B \frac{\phi}{\Delta \nu \Delta p} - I_B^{SII} \right) \right) - F, \\
\Pi^A - \Pi^{SIII} &= -F.
\end{aligned} \tag{53}$$

Consequently, the model suggests that it is not a good decision to acquire the local bank as a subsidiary if there is no adverse selection problem. In addition, because $I_B^{SB} < I_B^{SII} < I_B^{FB}$, we have $p_B R(I_B^{SB}) - I_B^{SB} < p_B \frac{\phi}{\Delta \nu \Delta p} - I_B^{SII}$. Therefore, the incremental benefit of acquisition is bigger in case I than that in Case II. Indeed, we have following order again $\Pi^A - \Pi^{SI} > \Pi^A - \Pi^{SII} > \Pi^A - \Pi^{SIII}$.

3.3 A Numerical Example

In this subsection, we provide an example using square root production function. Assuming $R(I) = 4\sqrt{I}$, we have $R'(I) = 2/\sqrt{I}$. Because $R'(I_G^{FB}) = 2/\sqrt{I_G^{FB}} = 1/p_G$, we have $I_G^{FB} = 4p_G^2$; similarly, $I_B^{FB} = 4p_B^2$.

Parameters are specified as follows: $p_G = 0.8$, $p_B = 0.5$, $\nu_1 = 0.6$, and $\nu_0 = 0.3$. Then, we have $I_G^{FB} = 4 * 0.8^2 = 2.56$, $R(I_G^{FB}) = 4 * \sqrt{2.56} = 6.4$; $I_B^{FB} = 4 * 0.5^2 = 1$, and $R(I_B^{FB}) = 4 * \sqrt{1} = 4$. In addition, $R'(I_B^I) = \frac{1}{p_B - \nu_1 \Delta p / (1 - \nu_1)} = \frac{1}{0.5 - 0.6 * 0.3 / (1 - 0.6)} = 20 = \frac{2}{\sqrt{I_B^I}}$. Thus, we have $I_B^I = 0.01 < I_B^{FB}$ and $R(I_B^I) = 4 * \sqrt{0.01} = 0.4$.

Plugging $p_G, p_B, \nu_1, \nu_0, I_G^{FB}, I_B^{FB}$, and I_B^I into (53), we have the following incremental benefits of acquisition for the foreign bank, with limited liability protection:

$$\begin{aligned}
\Pi^A - \Pi^{SI} &= 0.252 - 2\phi - F, \\
\Pi^A - \Pi^{SII} &= 3.09\phi^2 - 6.17\phi - 0.32 - F, \\
\Pi^A - \Pi^{SIII} &= -F.
\end{aligned} \tag{54}$$

Without limited liability protection, the incremental benefit of acquisition for the foreign bank is increased by $\frac{\nu_0}{\Delta\nu}\phi$, where $\frac{\nu_0}{\Delta\nu}\phi = 0.3/0.3 * \phi = \phi$. We have

$$\begin{aligned}\Pi^A - \Pi^{SI} &= 0.252 - \phi - F, \\ \Pi^A - \Pi^{SII} &= 3.09\phi^2 - 5.17\phi - 0.32 - F, \\ \Pi^A - \Pi^{SIII} &= \phi - F.\end{aligned}\tag{55}$$

3.4 Green Field Investment

Besides syndications and acquisitions, there is a third entry mode for the foreign bank: green field investment (De Novo entry or “Organic Growth”). If the adverse selection problem under syndicated loans is overwhelmingly severe and the fixed cost of acquisition is very large, the foreign bank may consider setting up overseas branches or subsidiaries directly. Without the involvement of the local bank, there is no adverse selection problem. However, the foreign bank is inferior in screening technology and incurs a higher cost ψ ($\psi \equiv \phi/\alpha$, $0 < \alpha < 1$) to exert high effort. On the other hand, compared with acquisition, green field investment has a lower fixed cost G ($0 < G < F$). Although the foreign subsidiary is also exposed to the expropriation of the host country government, gradually entering into the market effectively reduces the sunk cost. Moreover, green field investment gets less resistance from host country nationalists and is less likely to overpay compared with acquisitions. Thus, the foreign bank may establish a branch in the developing country directly if F is big and ψ is not too big.

3.5 An Alternative Model of Acquisitions

Acquisition eliminates the adverse selection problem but exacerbates the moral hazard problem. There are two interpretations. Acquisition creates

a bigger organization with more layers (especially in the case of setting up a host division). The headquarter may rationing the proposals from different divisions after their costs of exerting effort are sunk. For instance, with probability $0 < \alpha < 1$, the headquarter takes the project proposed by the host division. As a result, the host division has a weaker incentive to exert effort than before the acquisition.

An alternative interpretation is the the probability of being expropriated by the host country is $1 - \alpha > 0$; or with probability $\alpha < 1$, the project will be completed as it does under syndications but the cost of exerting effort ϕ is sunk.

We then have modified IC constraint and IR constraint for the moral hazard problem:

$$\alpha \left(\nu_1 (p_G R(I_G^A) - t_G^A) + (1 - \nu_1) (p_B (R(I_B^A) - u_B^A)) \right) - \phi \geq 0, \quad (56)$$

the moral hazard incentive compatibility constraint:

$$\begin{aligned} & \alpha \left(\nu_1 (p_G R(I_G^A) - t_G^A) + (1 - \nu_1) (p_B R(I_B^A) - u_B^A) \right) - \phi \\ & \geq \alpha \left(\nu_0 (p_G R(I_G^A) - t_G^A) + (1 - \nu_0) (p_B R(I_B^A) - u_B^A) \right). \end{aligned} \quad (57)$$

Observe that this is equivalent to increase the fixed cost from ϕ to ϕ/α .

The investments by both types are still efficient and the expected surplus of the foreign bank is give by

$$\Pi^A = \nu_1 (p_G R(I_G^{FB}) - I_G^{FB}) + (1 - \nu_1) (p_B R(I_B^{FB}) - I_B^{FB}) - \frac{\phi}{\alpha}. \quad (58)$$

If there is limited liability protection, the IC constraint of the moral hazard problem and the limited liability of the bad type are binding. The investments are still efficient and the expected surplus of the foreign bank is given by

$$\Pi^A = \nu_1 (p_G R(I_G^A) - I_G^A) + (1 - \nu_1) (p_B R(I_B^A) - I_B^A) - \frac{\nu_1}{\alpha \Delta \nu} \phi. \quad (59)$$

4 Implications

Hypothesis: when the information costs are greater than the fixed cost, acquisition is a preferred entry mode for the foreign bank.

Main database

SDC Platinum, published by *Thomson Financial Securities Data*, has collected daily data on worldwide syndicated loans beginning as early as 1983 and daily transaction data on worldwide M&As dating back to 1985. We are interested in cross-border syndicated loans and cross-border acquisitions in the banking industry.

How to match syndicated loan and acquisition data

We need to match syndicated loans with acquisitions by the acquirer/target-nation (bank/borrower-nation) pair. We'll start with using data between 1995 and 2002 because most cross-border acquisitions have occurred after 1995. Panel data analysis would be ideal. However, it's difficult to get time-series data of bank characteristics and borrower-nation characteristics for each year. As the first step, we will do cross-sectional analysis and use independent variables – acquirer (bank) characteristics and target-nation (borrower-nation) characteristics – in 1999.

The adverse selection proxies. Information asymmetry between the foreign bank and the local bank is a contractual hazards between two contractual joint venture partners; that is, how likely the local bank expropriates the foreign bank through the joint venture. The total amounts of outstanding domestic loans (A+), ADRs (A-) or overseas listing (A-), domestic credit reporting services, accounting standards, the number of years that foreign banks have entered the market (A-) should help to characterize the information asymmetry about local borrowers. Notice that when the value of a variable is increased , “A+” means the adverse selection problem becomes

more severe. Hence, we prefer acquisitions.

The fixed cost proxies. Country specific characteristics should quantify the magnitude of the fixed cost. Political risks, macroeconomic risks (It may include the growth of GDP per capita and population), and legal risks (F+)(provided by *World Market Research Center* for 2001 over 186 countries. It could also include creditor rights protection (F-); see LLSV, 1998) should also affect the fixed cost. Furthermore, government ownership of commercial banks (F+) (EIU data in 1999), foreign ownership of commercial banks (F-) (EIU data in 1999), the regulation in the banking industry, for instance, the application process of bank license; the importance of commercial banks in the local financial services industry (F?) – total bank assets divided by GDP (EIU data in 1999, 13 missing observations) –, and the concentration of the banking industry in the host country (F?) – the percent of deposits accounted for by 5 largest banks (EIU data on 1999, 44 missing observations) – may also approximate the fixed cost of acquisition. Notice that “F+” means that the fixed cost increases when the value of a variable is increased. As a result, we prefer syndicated loans if $F+$ holds.

In addition, we need to include some characteristics of acquirer-nation/target-nation pairs (bank-nation/borrower-nation pairs): the geographic distance (F+), a common language (F-), the same legal origin (Buch and DeLong 2001), etc.

Moreover, we need to control for the characteristics of the acquirer (bank), including the bank size, its previous cross-border lending experiences, the competition among banks in the home country, and economic growth potential (change of GDP) of the home country.

Regressions

We will use the difference of transaction numbers between cross-border

syndicated loans and acquisitions for each acquirer/target-nation (bank/borrower-nation) pair as the dependent variable.^{5 6} Independent variables include all factors listed above that characterize the adverse selection problem and the fixed cost. The signs of the coefficients are the focus of research.

5 Conclusion and Discussions

Two entry strategies, syndication and acquisition, are compared in the paper. Which strategy a foreign bank should take depends on the relative costs of the adverse selection problem in the borrower-selection process and the fixed cost associated with acquisition.

There are two directions along which the paper could be extended. First, to endogenize the fixed cost of acquisition. Second, to include the local borrower as an active player in the model, that is, to have a model with two layers and three players.

One extended application of the theory is the research on universal banking. We could compare two organizational modes: 1) a Section 20 investment banking subsidiary of a commercial bank and 2) an internal investment banking division within a commercial bank in terms of the severity of the adverse selection problem and the cost associated with conflicted interests of the two parties.

⁵An alternative choice is the difference of transaction amounts. However, 43% transaction amounts are missing in the cross-border M&A database.

⁶Alternatives are: the difference of numbers of syndicated loans through overseas subsidiaries and non-subsidiaries; the difference of numbers of being a lead bank before and after acquisitions; the difference of numbers or participating in syndicated loans

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