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The Strategies of International E-Finance under Basel II:

A Complementary Assets Approach

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Abstract

This article adopts the complementary assets model to analyze the environmental issues of international e-finance under the new Basel Accord (Basel II). The capability of a bank to comply with Basel II is regarded as the complementary assets and the e-finance is treated as the innovative new technology in the model. Based on the analysis, several strategies that bankers may take are suggested. The analysis shows that Basel II will obviously foster more e-finance investments and the use e-finance will make the supervisory work under Basel II regulations a challenge.

Keywords: **banking; information and communication technology (ICT); Basel II; electronic finance**

INTRODUCTION

E-banking is the wave of the future. It provides enormous benefits to consumers in terms of ease and cost of transactions, either through Internet, telephone or other electronic delivery channels (Nsouli and Schaechter, 2002) (see Figure 1). Electronic finance (E-finance) has become one of the most essential technological changes in the financial industry. Allen, McAndrews and Strahan, (2002) define that E-finance as the provision of financial services and markets using electronic communication and computation. In practice, e-finance includes e-payment, e-trading, and e-banking.

According to the definitions from the Bank for International Settlement (BIS-EBG, 2003b), e-payment creates considerable efficiencies and is superior to traditional paper based solution. E-trading is referred to as a wide variety of systems that provide electronic order routing, automated trade execution, and electronic dissemination of pre-trade and post-trade information. With the help of the e-trading systems, the transactions can be executed at a remote server and information can be conveyed to a remote location. And e-banking means the provision of retail and small value banking products and services through electronic channels and large value electronic payments and other wholesale banking services delivered electronically Although clients have enjoyed great convenience of e-banking and bankers have improved cost efficiency of banks (Lin and Lin, 2006, 2007), e-banking may lead to unstable financial environments. In other words, e-banking could make the financial markets less manageable by the regulators.

THE FEATURES OF INTERNATIONAL E-BANKING

Furthermore, e-banking can also be extended in the international environment. Intuitively, the international e-banking will make the international financial markets even more complicated and difficult to manage. For instance, the capital flight will become much easier in international e-banking than in the traditional banking industry (Ingo Walter, 2002). The features of international e-banking are (BIS, 2003a):

1) More Cross-border transactions:

Cross-border e-banking is defined as the provision of transactional on-line banking products or services by a bank in one country to residents of another country. The outcome of the development of e-banking is that the financial markets are becoming integrated and globalized.

2) Consolidation of Banking and non-banking businesses

E-banking also fosters further mergers and acquisitions waves in the financial industries. They can be within-industry mergers (e.g., bank-to-bank) to acquire economy of scale or across-industry mergers to achieve economy of scope (e.g., bank-to-insurance).

3) More outsourcing of financial services

In e-banking, outsourcing of financial services becomes easy. In other words, customers, front-desk, and back-office in e-banking could be located in different areas. A bank may outsource its back-office domestically to a low-salary state or overseas to a low-cost country.

THE NEW BASEL ACCORD

According to Saidenberg and Schuermann (2003), Basel II is designed to solve or

alleviate the problems of 1) the capital adequacy problem, 2) lack of risk sensitivity, and 3) ineffective supervision. Basel II is formed by the three-pillar-management. Pillar 1 is the Capital Requirement; Pillar 2 is Supervisory Review and Pillar 3 is Public (market) Disclosure. Saidenberg and Schuermann (2003) state that Basel II uses the three-pillar approach instead of the capital requirement only. It introduces the concept of the probability in regulation. Therefore, the management of banks will be similar to that of an insurance company base on Basel II. It is required that the banks in the G-10 countries should comply with the New Basel Accord.

Pillar 1 Capital Requirements is calculated according to expected loss (EL). Different from the Basel I, the capital requirements here call for complicated calculation of probability. The knowledge in actuarial science is a must. The formula to calculate EL is as follows.

EL=PD*LGD*EAD
EL: Expected loss
PD: The probability of default of a borrower over a one-year horizon.
LGD: The loss given default as a percentage of exposure at default.
EAD: Exposure at default (an amount)
M: Maturity

If the probability of default is not available, the probability of default for the lowest rated loan is assigned. In addition, there are at least three methods to calculate capital requirements: Value at Risk (VaR), GARCH (Berkowitz and O'Brien, 2002), and Extreme Value Theory (EVT) (Embrechts, Kluppelberg, and Mikosch, 1997). All of them call for complicated statistical modeling and computing. The use of e-banking tools helps apply these models in the calculation of capital requirements.

The second pillar takes advantage of the supervisory review to monitor the performance and risk of a bank. Pillar 2 Supervisory Review asks each bank should assess its internal capital adequacy in light of its risk profile and supervisors should view internal assessments. Of course, it is also required that a bank should hold capital above regulatory minimums. Lastly, supervisors are required to intervene at an early stage.

Pillar 3 Public Disclosure enforces banks to be transparent to the investors and stakeholders. Through enhanced transparency, market disciplines over banks are introduced and promoted. It calls for improved disclosures of banks across markets and public disclosures of capital adequacy and risk information. By doing so, the public and the regulator are able to jointly watch over the default risk of a bank.

THE COMPLEMENTARY ASSETS MODEL

The complementary assets model was proposed by Teece (1986) and applied by Afuah (1998). The taxonomy of this theory is composed by a two-dimensional analysis: Imitability and complementary assets. Imitability is the degree to which that technology can be copied by other competitors in the market; and the complementary assets are the tangible and intangible assets they a firm needs to implement the technology. Figure 1 demonstrates that when the party with technology or complementary assets can make money in the market.

In order to apply the complementary assets model in international e-finance, I treat e-finance as the innovative technology and the capability of a bank to comply with Basel II is the complementary assets. First, the critical question needs to be raised is: Is e-finance technology highly imitable? Usually, it is not hard for a bank to purchase software and know-how from outside vendors. In addition, the bank for international settlement (BIS) releases all information needed to comply with Basel II. In terms of information technology, it is easy to find good technical persons in developing countries since banks in developing countries may leapfrog over those in the developed countries in terms of information technology.

The second question is that, "Are the complementary assets important or available in international e-finance?" The most important intangible complementary asset is the ability to comply with the three pillar regulations in Basel II. Following the three-pillar structure of Basel II, the ability or capability to conform to Basel II includes 1) the ability to assess the default probability of each borrower, 2) a clean and capable supervisory body that is trustworthy and independent, and 3) a publicly traded stock market and a disclosure system to report or announce to public investors.

The ability to assess default risk and probability calls for excellent actuarial scientists and statisticians' assistance. Not many banks own this luxury to hire numerical experts to do the job. Moreover, the bank should be able to acquire detailed credit reports from the third party. Unfortunately, this credit report system is not readily available in many emerging economies.

Second, a clean and capable supervisory body is important. Unfortunately, it is extremely rare in most emerging economies. For instance, the Singapore government is comparatively clean and capable, but it is still not an ideal regulatory body since it is holding stocks of banks and may speak for the bankers. And the collusion of bankers and monetary authorities is possible for many state-owned banks (e.g., big four banks in China).

Third, a publicly traded stock market and a disclosure system are available for emerging economies but their functions are not so well developed. These markets may be manipulated or interrupted by the major stockholders and the disclosure of relevant financial information is not thorough. Therefore, the third pillar of Basel II may not function very well.

In short, the ability to implement Basel II calls for strong, clean, and independent governance at both bank level and regulatory level, very good numerical skills in calculate expected loss and capital requirements, independent credit rating, and very healthy stock markets and disclosure systems. In other words, it takes very good infrastructure of financial markets and institutions to put Basel II into practice. All these complementary assets are either expensive or time-consuming to develop. Therefore, the banks that own these strengths will be the party that gains in the international e-finance in Basel II.

BUSINESS STRATEGIES FOR BANKS UNDER BASEL II

As per discussion in section 2, the international e-finance industry should fall into Cell II

in this taxonomy where the imitability is high and complementary assets are tightly held and important. The bankers who own the capability to comply with Basel II will make money in the market since it is easy to copy or acquire the e-finance technologies. In terms of strategies, the complementary assets holder can either team up with technology vendor or develop the technologies internally, as indicated in Cell II of Figure 2. These strategies are detailed as follows.

First, even though a complementary asset holder owns the market power, when the banking market extends to a global one, the complementary asset holder still have to team up with other bankers in the other countries to broaden its market access and network. By doing so, the international bankers can enjoy the network externality in international e-finance. In addition, to team up with other foreign technology vendors also help international bankers adapt to local needs and enter the new foreign markets. The joint venture is the strategy adopted in a country such as China where the government requires a certain amount of domestic stock holding; a strategic alliance strategy is particularly good for a banker who may not have sufficient cash flows to acquire or form a new legal entity in foreign countries; and an acquisition of foreign existing companies can make sure an easy entry to the market with existing distributional channels and networks. The acquisition strategy also guarantees the corporate control of the parent company over the subsidiaries.

Will the block strategy work in international e-finance? It seems that the e-finance technologies are always highly imitable: the information technologies are usually available in the market for the developing countries. Therefore, we may not see that the international e-banking will become monopoly or oligopoly in the market and the e-finance market will remain in Cell II in Figures 1 and 2 in the foreseeable future.

The other interesting question is: Does leapfrog effect exist in international e-finance? In the literature of IT, leapfrog effect means the emerging economies may outperform industrialized countries in the use of IT. The banking industry uses IT more intensively than any other industries so the leapfrog effect may exist in the international e-banking industry. Nevertheless, I suspect that the leapfrog effect may exist technologically only, not in terms of the performance of banks. Lin (2004) does not find any evidence supporting leapfrog effect by estimating the contribution of IT investments of the cost and profit efficiencies for commercial banks. According to Lin and Lin (2007), IT investments contribute more in the performance of banks for the member countries of the Basel Accord, which are generally industrialized nations. Nevertheless, if the banks in emerging economies practice in accord with Basel II and adopt updated e-banking skills, leapfrog is still theoretically possible for fast developing nations.

Basel II contributes to e-banking particularly for the member countries. Basel II triggers a new wave of IT investments in the banking industry since the intensive use of IT saves time and salary costs for banks when they comply the operations with the regulations of Basel II. After a bank invests more in IT, Basel II can be implemented more easily.

RELATIONSHIP BETWEEN E-FINANCE AND THREE-PILLAR REGULATIONS IN BASEL II

Under the framework of Basel II, the important questions are:

Does E-finance make the New Basel Accord more or less feasible? Does E-finance contribute to the New Basel Accord? Does the New Basel Accord provide the soil for E-finance to grow? The answers to these questions decide how a banker manages a bank and how a regulator oversees the market.

- E-Finance and Pillar 1

E-finance makes the calculation of complicated models such as VaR and GARCH easier when all transactions are electronically processed since all data are originally readily electronic. In addition, e-finance makes it possible to estimate PD for each customer when the detailed probability is essential in Basel II.

E-finance causes consolidation across different types of financial institutions more frequently. The manageability and marketability of banks are strengthened remarkably and a merged bank may be composed of different subsidiaries. Therefore, the estimation of capital adequacy becomes complex because a bank may consist of several institutions from different regions.

- E-Finance and Pillar 2

The contributions of e-finance of Pillar 2 are unknown. It is easier for a banker to fill in the self-assessment to report to the regulator. Nevertheless, in e-finance, auditability of the book and statements is always a problem. Because of the convenience of e-payment, the exposure is volatile. Thus, the capital requirement is changing rapidly. It is even harder to supervise overseas outsourced financial services. An auditor has to be very familiar with the software and computer procedure to proceed effective auditing. And to certain degree, the auditor is forced to rely on the internal auditing in the bank (Wiese, 2001). Moreover, when an e-bank involves insurances and/or other services, the boundary between banks and insurance firms is blurred. This will make the assessment of capital adequacy perplexing. International e-finance also involves regulations of the home country and that of the domestic country (Walter 2002). Overall, it is harder to oversee and regulate international e-finance.

- E-Finance and Pillar 3

E-finance definitely helps enhance transparency of banks since it is easy to post and report e-statements to the public. There is also a drawback that it is difficult to disclose risk information when a bank operates across different financial services.

There are still several other concerns in international e-finance. First, “Transparency” in Pillar 3 may conflict with “security” in e-finance. When the information is open to the public, the information systems of a firm will be accessible by outsiders and thus become vulnerable and less secured. The security of IT systems becomes a serious issue when Pillar 3 is implemented.

- Does Basel II contribute to e-banking?

Any international supervisory work will help develop e-banking. A universal standard of e-banking makes different systems compatible so the e-finance tools extend the network to remote regions. The bankers can fully enjoy the network externality in the e-finance world. Thus, the marketability of banks is enhanced. Big players in the banking market could benefit more in Basel II.

Furthermore, the regulation should include the universal e-banking platform to enhance compatibility of e-banking systems both technically and technologically. The format and standard of practices should also be unified. For Pillar 3, it is essential to enforce banks to post risk and reserve information on the web to make them transparent. Both the self-

assessment and reports from regulatory bodies should be publicly available.

CONCLUSION

This article adopts the complementary assets model (Teece, 1986) to analyze the business strategies of international e-finance under the environment of Basel II. The two dimensional approach is formed by innovative technology and complementary assets: The capability of conforming to regulations under Basel II is regarded as the complementary assets and the e-finance application is treated as innovative technology. In the international e-finance, the innovative technology is highly imitable but the capability to comply with Basel II is hard to acquire. Therefore, a banker may develop the technology internally or team up with technology vendors and other foreign bankers.

Furthermore, the application of international e-finance definitely contributes to Pillar I Capital Requirements and Pillar 3 Disclosure and Market Monitoring of Basel II. E-finance technology helps bankers to utilize complicated probability and actuarial models in figuring out capital requirements and the use of internet makes the disclosure and public monitoring easy. The use of e-finance contributes to Pillar 2 only when the auditors are familiar with the internet technology or the computer-based, paperless work (Wiese, 2001) and the internal control of the bank is reliable. E-payment also makes the bank reserves more mobile and thus hard to be traced. Overall, as I can expect, Basel II will trigger a new wave of new information technology investments in the field of e-finance.

To sum up, e-finance and Basel II working together will generally complement each other and the productivity of banks is expected to increase after the use of e-finance prevails in major banks all over the world under Basel II. It is imperative to take the corresponding business strategies under the framework of this new trend of technologies and regulations. The clients will enjoy more convenient financial services but more serious global competition in banking is waiting ahead.

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Figure 1 Who Profits from International E-Banking under Basel II

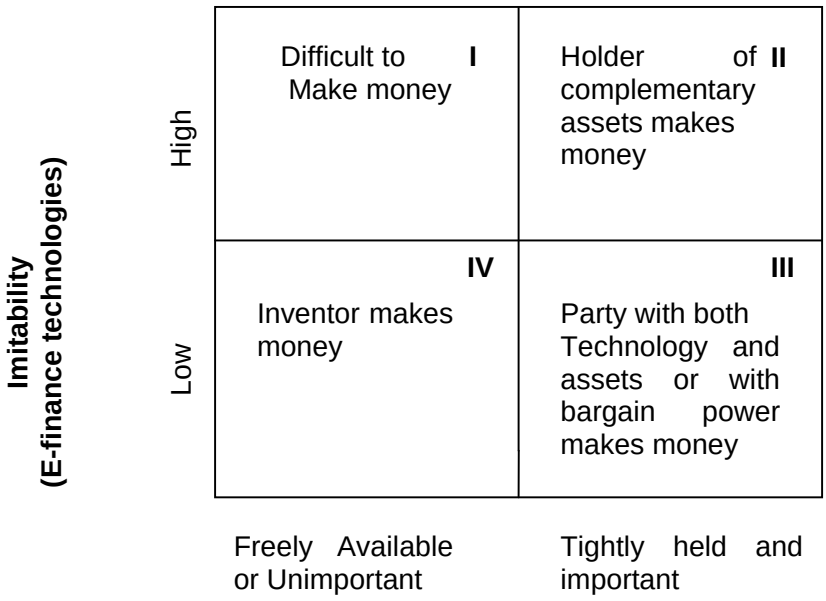

Figure 2 Strategies for Building E-finance Model under Basel II