The Diffusion of Financial Innovation in Indonesia

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1 Introduction

Innovation is clearly an important phenomenon in any sector of a modern economy. Financial innovation has been described as the “life blood of efficient and responsive capital markets” (Van Horne, 1985). In finance sector as elsewhere, innovation is the arrival of a new or better product and/or a process that lowers the cost of producing existing financial services. Innovation embraces the firm that is the first to introduce it and the subsequent spread to others.

The importance of the financial industries has been highlighted by the recent fundamental changes, including deregulation, increasing competition, higher cost of developing new products and the rapid pace of technological innovation, more demanding customers, and consolidation of corporations (Akamavi, 2005). Meanwhile, customers’ expectations of financial services firms are becoming more refined in their requirements of personal finance. These changes have encouraged firms to diversify into new products and new markets.

Despite the recognised importance of financial innovation and an extensive descriptive literature, there have been surprisingly few empirical studies (Frame and White, 2002). Financial services firms rarely involved in R&D activities. Patents for financial products and services are also uncommon and financial services firms are unlikely to be boasting in advertisements about their patenting proclivities. To sum up, the data and research environments have not been conducive to empirical work on financial innovation. Perhaps it is not surprising after all that relatively few research papers have empirically tested hypotheses concerning financial innovation.

History shows that financial innovation has been a critical and persistent part of the economic landscape over the past few centuries. In the years since Miller’s 1986 piece, financial markets have continued to produce a multitude of new products, including many new forms of derivatives, alternative risk transfer products, exchange traded funds, and variants of tax-deductible equity. Surely, when seen from a distance, the Schumpeterian process of innovation—in this instance, financial innovation—is a regular ongoing part of a profit maximizing economy.

As we may already know, most financial innovations were developed in Western countries that have very different backgrounds to those of developing countries. Not surprisingly, adoption has not always been successful in developing countries. At this stage, there are still a limited number of studies on the diffusion of innovation by developing countries. Indonesia has been chosen in this study because it presents a unique and interesting case as a developing nation. Before 1997, Indonesia’s economic growth was one of the fastest in South East Asia. Because of the economic crisis and political instability faced by Indonesia between 1998 and 1999, there was a decline in the economic performance of the country.
The crisis affected the financial industries in Indonesia. It has been undergoing a wide array of economic and political changes in the last few years.

Indeed, we are now almost a year into a credit crisis centred around a sudden evaporation of market liquidity for many structured credit products that rapidly spilled over into wholesale bank funding markets and beyond, given a complex web of interconnections (Bank of England, 2008). It is also interesting to review whether the financial innovation of recent years that created such structured products has indeed been a positive force, as argued by Alan Greenspan,1 or whether it has been a “financial weapons of mass destruction” in the words of Warren Buffett?2

2 Literature Review

Diffusion of innovations refers to the spread of abstract ideas and concepts, technical information, and actual practices within a social system, where the spread denotes flow or movement from a source to an adopter (Rogers, 1983 and 1995). The study of diffusion of innovations began with Gabriel de Tarde’s 1903 book on The Laws of Imitation. A more concerted development of this approach did not occur until Ryan and Gross (1943) published results on the spread of hybrid-corn use among Iowa farmers. Since that study’s publication, numerous research papers have appeared on the diffusion of such diverse innovations as agricultural practices (Fliegel, 1993), technologies (Burt, 1987; Palmer et al., 1993), fertility-control methods (Rogers and Kincaid, 1981), policy innovations (Berry and Berry, 1992; Valente, 1995), to political reforms (Meyer, 1987; Starr, 1991).

Numerous models have also been developed using mathematical and statistical analysis to map diffusion within various industries (Abrahamson and Rosenkopf 1997; Barra, 1986; Chaudhuri, 1994; Gallouj 1998; Mahajan et al., 1990; Rogers, 1983 and 1995). However, Rogers’ work (1983) is the most cited regarding the characteristics of the innovation itself and their influence on diffusion rates. The factors he identifies are: relative advantage of the innovation over current products and methods, compatibility of the innovation with existing modes and customer values, trialability, observability and complexity of the innovation, and the perceived risk associated with the innovation.

The financial services industry has been subject to changes on many fronts and has undergone a dramatic transformation in recent decades. The primary function of the financial system is to facilitate the allocation and deployment of economic resources, both spatially and across time, in an uncertain environment (Merton, 1992). This will encompass a payments system with a medium of exchange, the transfer of resources from savers to investor-users of the resources, the gathering of savings for the purposes of pure time transformation, and the reduction of risk through insurance and diversification (Frame and White, 2002).

Financial innovations can be grouped as new products (e.g., adjustable rate mortgages; exchange-traded funds); new services (e.g., on-line securities trading; Internet banking); new “production” processes (e.g., electronic record-keeping for securities; credit scoring); or new

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1 See for example World Finance and Risk Management, delivered at Lancaster House, 25 September 2002.
2 Referring to derivatives in the Berkshire Hathaway Inc. 2002 Annual Report.
organisational forms (e.g., a new type of electronic exchange for trading securities; Internet-only banks) (Frame and White, 2002). Indeed, if a new intermediate product or service is created and used by financial services firms, then it may become part of a new financial production process.

There is a wide range of interesting empirical questions that can be addressed in research on financial innovation. For example, Ben-Horim and Silber (1977) studies New York based banks from 1952 to 1972, and find that regulatory constraints induce innovation such as the negotiable CD. Lerner (2006) investigates the origins of innovation by 15,309 US financial service firms between 1990 and 2002, using Wall Street Journal articles as an innovation indicator. The analysis focuses on the nature of the financial institutions that undertake the innovations.

Hannan and McDowell (1984) find that larger banks registered a higher conditional probability of ATM adoption. This study also found bank product mix, bank holding company affiliation, urban location, branch banking restrictions, and the area wage rate were all positively related to ATM adoption. In a subsequent study, Saloner and Shepherd (1995) find that the expected time to adoption of ATMs declines in both the number of users (deposits) and locations (branches), indicating the presence of network externalities.

With regard to the diffusion process, Molyneux and Shamroukh (1996) examine the diffusion of the underwriting of junk bonds and of note issuance facilities during the 1978-1988 and 1983-1986 periods, respectively. Many studies have called for further investigation of the diffusion of online banking such as Daniel and Storey (1997) and Daniel (1999). More recently, Akhavein, et al (2001) examine the diffusion of small business credit scoring by large banking organisations in the mid-1990s.

3 Research Contribution

It seems clear that considerably more empirical work is possible, especially for testing the hypotheses concerning the conditions that encourage innovation in financial services industry. There is extensive room to find out how financial innovations arise, how their characteristics compare with those of their predecessors, why they succeed or fail, how fast the successful innovations diffuse and why, who uses them and why, etc.

Although not considered as one of the most competitive in the world, Indonesia is a developing economy, especially interesting in the light of the financial liberalisation experienced in the last two decades and the recent crisis. Thus, the contribution of this research to the literature will be twofold. First, it is one of the few empirical studies of financial innovation, especially in the developing economy. Second, it identifies the factors underlying financial innovation and its success.

4 Research Questions

The focus of this research is to investigate innovations among Indonesian financial institutions. Financial innovations that will be used in this study are: new products (bancassurance and exchange-traded funds), new services (mobile banking and Internet
banking), new “production” processes (credit scoring), and new organisational forms (Shariah/Islamic banking). We will address following research questions:

- The diffusion of innovation. The main focus of this research will be in the rapidity with which an innovation is adopted across the financial industry. Much of the research attention to innovation focuses on the new idea. But at least as important is the adoption and spread of an innovation—its diffusion—across an industry. Who are the early adopters? What are their characteristics? What are the conditions that encourage rapid spread? Is geography important? How financial innovations are optimal responses to various basic problem or opportunities, such as incomplete markets that prevent risk shifting or asymmetric information.

- Characteristics that encourage innovation. We will use the environmental factors as suggested by Campbell (1988) as a starting place. Is it true that financial innovation exists to complete inherently incomplete markets as mentioned by Duffie and Rahi (1995)? Are they exists so parties can minimise transaction, search, or marketing costs which leads to multiple products that appeal to wider sets of customers? It is also interesting to find out how additional characteristics of firms—such as organisational form and the characteristics of senior management—influence the innovation.

- Implications on profitability. What are the consequences of financial innovation in terms of the pay-offs to the innovators? Which firms that are most likely to advance industrial technology and why? Is it true that the rate of diffusion should always be related to the expected profitability of adopting the new innovation as mentioned by Hannan and McDowell (1984)? To what extent the profitability of an institution may influence its propensity to adopt new innovation? How innovation may influence competitiveness in the financial marketplace? Is there any paternal change in the relationship between market concentration and financial innovation?

5 Research Methodology

A multi-method approach will be adopted. This approach facilitates explanation and prediction and helps to develop a more holistic view (Perry et al., 1999). Exploratory interviews will be conducted in Indonesia with senior banking officials. Interviews will also be conducted with related parties such as suppliers, regulators, consultancies, etc. The interviews explored the nature of several new products and new services as an innovation, its diffusion, factors influencing the diffusion, barriers of innovation, its impacts, and the future of those innovations. These interviews were combined with the literature on diffusion of innovation to inform the development of a questionnaire which was subsequently piloted and refined.

To estimate the likelihood of financial innovation, typical measures such as IT expenditure and personnel involved in R&D will be used as the inputs. While the main proxies for innovative output will be the number of patents or innovations and various indices of the market value of innovations. To test for the determinants of the success of a firm’s innovation, the dependent variable will be the innovation sales ratio—the sale of innovations as a share of total sales or the extent to which the innovation is reflected in total sales. The
independent variables are chosen from the key influences on financial innovation such as firm size, firm age, number of ATM, internet banking and mobile banking users, IT investment intensity, and the quality of human capital.

### Table 1. Research Sites

<table>
<thead>
<tr>
<th>Bank Name</th>
<th>Assets</th>
<th>Loans</th>
<th>Deposits</th>
<th>Branches</th>
<th>ATM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bank Bukopin Tbk</td>
<td>35</td>
<td>20</td>
<td>28</td>
<td>290</td>
<td>321</td>
</tr>
<tr>
<td>Bank Central Asia Tbk.</td>
<td>215</td>
<td>84</td>
<td>184</td>
<td>814</td>
<td>5,681</td>
</tr>
<tr>
<td>Bank CIMB Niaga Tbk</td>
<td>95</td>
<td>63</td>
<td>78</td>
<td>665</td>
<td>1,224</td>
</tr>
<tr>
<td>Bank Danamon Indonesia Tbk</td>
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<td>54</td>
<td>60</td>
<td>449</td>
<td>779</td>
</tr>
<tr>
<td>Bank Internasional Indonesia Tbk</td>
<td>55</td>
<td>34</td>
<td>38</td>
<td>235</td>
<td>725</td>
</tr>
<tr>
<td>Bank Mandiri Tbk</td>
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<td>224</td>
<td>956</td>
<td>3,186</td>
</tr>
<tr>
<td>Bank Negara Indonesia Tbk</td>
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<td>126</td>
<td>978</td>
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<tr>
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<td>28</td>
<td>30</td>
<td>276</td>
<td>547</td>
</tr>
<tr>
<td>Bank Rakyat Indonesia Tbk</td>
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<td>119</td>
<td>160</td>
<td>5,095</td>
<td>971</td>
</tr>
<tr>
<td>Pan Indonesia Bank Tbk</td>
<td>58</td>
<td>32</td>
<td>18</td>
<td>236</td>
<td>345</td>
</tr>
</tbody>
</table>

Assets, loans, and deposits stated in trillion Rupiah. Branches and ATM stated in number.

*Source:* Bank Indonesia, Company Reports, Company Website

Survey will be conducted mainly on 10 biggest national banks in Indonesia to obtain information on financial innovation over up to five years. The questionnaire will includes sections on innovation performance, innovation inputs, factors that hamper innovation, types of innovative collaboration, sources of information used, and the impact of innovation on the business. It will also compiles data on the general characteristics of individual firms such as their industry of affiliation, sales, employment, etc. Case study investigation will be followed to understand the reason underlying the dissimilarities between the leader and the laggard in financial innovation.

### 6 Research Plan

It is envisaged that research duration will be over three and half years.

- 1st year: (a) expanding horizon of theories and methodologies, (b) finalizing research proposal, (c) refining concepts and approaches, (d) constructing data collecting instruments, (e) testing instruments, (f) building contacts in research area, (g) acquiring permits needed for conducting research, and (h) preparing research logistics (e.g. accommodation, translators, etc).

- 2nd year: (a) revise or plan for data collection, (b) data collection, (c) data processing, (d) preliminary data analysis, and (e) report on data collection and analysis.

- 3rd year: (a) data analysis, (b) writing papers for journal, (c) contributing to relevant conferences, (d) writing-up PhD report, and (e) PhD defence.

### 7 Concluding Remarks

The study ideally concludes in how financial innovations diffuse, who uses them and why, what are the underlying factors, etc. The objective is to add an empirical contribution of
financial innovation, especially in the developing economy. This could give an indication to answering the question how sustainable the current innovation is, and in which direction financial institutions could develop further.

I hope that this proposal will help me to reiterate that I possess the background, the ability and the motivation to make a significant contribution to the research in innovation area.
References


