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Editorial

I am pleased to bring you the first issue of the HKMA Research Letter. The aim of these Letters is to summarise the results of research projects carried out by the HKMA and make them accessible to members of the public who are interested in monetary and financial issues that are important to the Hong Kong economy. Research is an important part of the work of all monetary authorities and the HKMA is no exception. In our *Quarterly Bulletin* we regularly publish articles based on our research. The HKMA's Working Papers, Research Notes and China Economic Issues are other research outputs produced by our staff. These publications are available on our website at www.hkma.gov.hk.

Peter Pang, Deputy Chief Executive

Competition, Efficiency and Profitability in Hong Kong's Banking Sector[1]

This article summarises the main results of a recently completed research project on the banking sector in Hong Kong. The project generated four working papers assessing the current levels and trends of efficiency and competition in the banking industry, whether collusion exists, and whether large banks are benefiting from scale economies and have substantial pricing power over smaller banks.

While each of the papers is by itself a stand-alone study and examines specific issues, together they present a cohesive picture for the industry. It is therefore useful to sum up the key findings of the papers and to draw inference from the project as a whole.

The key findings can be grouped into three areas:

(1) Market structure, competition and collusion

Competition could have a significant impact on efficiency and profitability. The degree of competition in the banking industry is therefore always of interest. This is particularly the case for Hong Kong, where the industry is characterised by a few major banking groups and a relatively high degree of market concentration. Evidence of co-movements of the best lending rates and fee setting among banks, even after the removal of the interest rate agreement, has also caused some concerns about the possible existence of

[1] This article was contributed by Jim Wong, Senior Manager and Eric Wong, Manager, Market Research Division, Research Department.

oligopolistic coordination among banks. Whether such a phenomenon reflects collusive pricing behaviour or is simply the result of price competition is of interest to policy markers.

To examine the issue rigorously, three different approaches have been employed:

(i) The first is the Panzar-Rosse approach which reveals the market structure by investigating the responsiveness of revenues to changes in input costs of banks. The relationship between the responsiveness and market structure is directly derived from standard economic theories.

(ii) The second is the conjectural variation approach which reveals the degree of price co-ordination among banks by estimating price inter-dependence from a system of equations that describes the demand, supply and cost structures of banks.

(iii) The third approach, due to Berger and Hannan, provides estimates of how market structure (such as market concentration and market shares of banks) and efficiency affect the profitability and pricing power of banks. Under this approach, competitive pressures in a market are reflected by how a decrease in the number of banks or the existence of some dominant banks leads any bank to charge higher prices and earn higher profits.

The empirical results all suggest that the degree of competition in the banking sector was fairly high during the period 1992-2002, with banks operating in a competitive fashion without any significant sign of collusion on pricing. The market conduct was largely maintained from 2003 to 2005, notwithstanding significant changes in the operating conditions, in particular a number of mergers and acquisitions.

The studies show that the market structure of Hong Kong's banking sector is one of monopolistic competition, which is similar to most other banking centres, including Germany, Japan, Switzerland, the UK, the US and many other OECD countries. Such a market structure has the following characteristics: (a) Each bank provides some products which are differentiated from other banks (i.e. imperfect substitution of products), implying that any particular bank would find it difficult to get the entire market share of a particular product. (b) There is free entry and exit of banks in response to profit. If any bank is making significant profit with a particular product, it signals to other banks to produce similar products. Other banks which are not then present will also be attracted to the market. Because of the large number of suppliers and choices available in the market, high competitive pressures are maintained, and they force abnormal profit to zero in the long-run. In reality, while bank entries and exits are not frequently observed in Hong Kong, it is not difficult to observe that if a bank launches a new product which draws positive responses from customers, other banks will usually offer very similar products (but not exactly the same) to compete in a very short period of time (e.g. HIBOR-based mortgages). This observation is consistent with the finding that the banking market in Hong Kong is one of monopolistic competition.

The estimation results also found that competitive pressures are higher among larger banks than among smaller banks, reflecting that larger banks may be subject to stronger pressures from regional or international competitors in the corporate banking market, wealth management and other off-balance sheet activities, where they are more heavily involved. **With some smaller banks growing in size, how they would perform when they venture into these areas may warrant some attention.**

(2) How have recent mergers and acquisitions affected competition?

The impact of industry consolidations on market concentration is apparent. As shown in the studies, the degree of market concentration measured by the Herfindahl-Hirschman Index increased sharply around the second half of 2001, reflecting merger and acquisition activities. Unfortunately, the precise effect of increased market concentration on competition cannot in this case be clearly estimated econometrically, as the major mergers and acquisitions around 2002 happened to coincide with major regulatory liberalisation, including the full implementation of interest rate deregulation. This has resulted in a close resemblance of the time series data representing de-regulation and those representing market concentration. As a result, our analysis can only estimate the net effect of these two developments, but not their separate impacts.

On the whole, the studies found that market concentration either has not had a significant negative impact on competition or that its adverse effect has been largely offset by regulatory liberalisation (and technological progress). The emergence of a number of larger banks through mergers and acquisitions which should be more capable of competing with existing large banks may have also contributed. **Given the uncertainties surrounding the estimates of the effect of market concentration on competition, the consequence of ongoing industry consolidations should be monitored closely in the years to come.**

(3) Do large banks have substantial pricing power over smaller banks?

The study which assesses the main determinants of banks' profitability found that banks' profits and margins are mainly determined by their cost efficiency and the macroeconomic environment. The empirical results suggest that banks with lower production costs may earn higher profits through optimising the input mix. Combined with findings in other studies that larger banks are in general more cost efficient than smaller banks, this finding suggests that larger banks can offer services at lower prices than smaller banks, yet attaining a similar or even higher level of profit. **Smaller banks are therefore more vulnerable to intense competitions than larger banks.**

To illustrate the relationship between cost efficiency and profits, we compare and contrast three large banks with three smaller banks. Using the estimated model, the difference in cost efficiency has, on average, caused the rate of return on assets (ROA) of larger banks to be 0.34 higher than that of smaller banks. Due to cost efficiency, larger banks have also been able to operate with a lower interest rate margin -- the margin of the three selected larger banks is 0.13% lower than that of smaller banks. These differences are considered significant, given that the average annualised ROA and interest rate spread of all banks in the dataset are only 1.44% and 3.04% respectively. The difference is also partly reflected in the gap between the composite interest rate (which measures average funding costs) of big banks and smaller banks. For a group of three large banks, it averaged 2.75% in February 2007, compared with 3.35% of a group of three smaller banks. The analysis thus suggests that larger banks may be able to exert significant pricing pressures on smaller banks. **Although there has been no sign of cut-throat competition so far, as price competition in the mortgage market has intensified lately, this is an area that needs to be monitored.**

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HKMA working papers are available at
http://www.info.gov.hk/hkma/eng/research/