



**UNIVERSITI PUTRA MALAYSIA**

**ECONOMIES OF SCALE AND ECONOMIES  
OF SCOPE OF COMMERCIAL BANKS IN MALAYSIA**

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**ECONOMIES OF SCALE AND ECONOMIES OF SCOPE  
OF  
COMMERCIAL BANKS IN MALAYSIA**

**By**

**MOHD PADZIL HASHIM**

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## Dedication

Bismillahirrahmarnirrahiim  
In the name of Allah s.w.t. the Beneficent and Merciful.  
Praise be to Allah s.w.t. the Lord of the Worlds.  
And Muhammad s.a.w. is his messenger  
By Grace of Allah s.w.t. this thesis was accomplished  
Alhamdullillahirrabiralam

This work is dedicated  
To the memory of my late beloved parents  
Whom I have cherished and admired them most.  
They are hardworking, pious, honest, sincere, simple and humble farmers.  
They are distinguished and respectable village folks.  
Without their prayers, encouragement and love for education,  
I would not have pursued my studies to this very level.  
May Allah bless them the best in hereafter.  
And most important of all  
To my wife and children  
May education and seek of knowledge be their most fondness things in life.  
Wassalam



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**ECONOMIES OF SCALE AND ECONOMIES OF SCOPE OF  
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Commercial banks in Malaysia represent the largest financial institutions in term of assets owned, loans rendered and total deposits. To-date, commercial banks account for about 70 percent of the assets, loans and deposit of all financial institutions in the country. They are considered important because they have contributed significantly in intermediating between the depositors in the financial sector and the borrowers in the real sectors that generate economic growth, besides offering a wide range of financial services. The role of the commercial banks in rendering and facilitating the payments system in the financial and capital markets is particularly important. Thus, without a cost effective and operationally efficient payments system, domestic and foreign economic transactions could not be carried out effectively. Commercial banks are considered efficient and effective if they are able to generate outputs or services at a minimum cost and continuously reap the benefits of economies of scale and scope in the long run.



In essence, economies of scale represent the relationship between the change in cost of input to the unit change in outputs (in monetary terms). If the change in output quantity is more than the change in cost of input then the bank is producing/operating in an economies of scale zone (at decreasing cost or at increasing return to scale or there is a possibility of an increase in profit) and vice-versa. Whilst, economies of scope arise when it is cheaper for a single bank to produce multi-outputs jointly than for a separate banks to produce similar products independently, while diseconomies of scope occurs if it is otherwise.

The evidence on the economies of scale in commercial banks suggests that it exists for small and medium sized banks. However, for economies of scope the findings are perplexing because at times the results are inconsistent with theory. Previous findings on banking efficiency suggests that banks long run average cost of production curve is approximately U-shaped which it varies with different size of bank. The size is measured by total assets or total deposits.

The long-run cost function, the economies of scale, and economies of scope in multi-output commercial banks in Malaysia were estimated using the transcendental logarithmic (translog) function. A pooled cross-sectional time series data of 40 commercial banks for the period from 1988 to 1998 were analysed. The banks were assumed to produce two main outputs, namely, investment and loans. The input prices comprises the cost of funds (or cost of financial capital or

price of funds), cost of labour (price of labour) and cost of physical capital/buildings & equipment (price of physical capital). The results show that the Malaysian commercial banking industry efficiency can be characterised with a constant return to scale, i.e., approximately a straight line long run average cost curve. which do not conforms to the classic U-shaped long-run cost curve. Overall the results indicate that the commercial banking industry in Malaysia is operating neither in economies of scale zone nor in diseconomies of scale zone but in a constant to return scale zone. The estimated constant return to scale coefficients is 0.99827 which is close to unity. This result contradict some common perceptions that the commercial banking industry in Malaysia is efficient in the past decades.

Comparison between the big four banks and the small four banks reveal that the big four are operating in the region of diseconomies of scale region with coefficient of 1.1818 and the small four are operating in the region of economies of scale of 0.90358. Although both value exist in different zone but they are almost close to unity, i.e., constant return to scale. There appears to be some significant economies of scale for foreign banks compared to domestic banks with the coefficient values of 0.92075 and 1.01976 respectively. This implies that foreign banks are more efficient than domestic banks in term of cost management. An analysis on annual basis showed that commercial banks are annually operating in economies of scale region, consistent with the overall findings for all banks from 1988 to 1998. However, a closer examination show that there is some

relationship between the economies of scale values and the events that occurred during the period of study.

Cost complementarities between the two outputs, i.e., investment and loans, were documented. The analysis revealed that the evidence on economies of scope is inconsistent with theory. The coefficient of the economies of scope is usually expected to increase with the size of the banks but the findings were otherwise. The results indicate significant economies of scope for domestic banks, and diseconomies of scope for foreign banks. This might be due to the foreign banks' focus on single or few outputs compared to domestic banks' multi-outputs focus. The expansion path subadditivity revealed that subadditivity exists in a multi-output commercial banking cost function. This suggests that the break-up of large banks into smaller ones might increase the cost of operations.

The possibility for mergers of small banks into a larger entity would generate economies of scale and increase cost efficiency. However, the creation of oligopolies or monopolies through the restructuring exercise can lead to barriers to entry problem in the industry in the long run. This could create diseconomies of scale.



Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia  
Sebagai memenuhi keperluan untuk ijazah Doktor Falsafah.

**SKEL EKONOMI DAN SKOP EKONOMI BAGI  
BANK PERDAGANGAN DI MALAYSIA**

Oleh

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Di Malaysia, bank perdagangan merupakan institusi kewangan yang terbesar dari segi aset yang dimiliki, pinjaman yang dikeluarkan, dan dalam aktiviti pengambilan deposit. Kini bank perdagangan merangkumi kira-kira 70 peratus dari aset, pinjaman dan deposit seluruh institusi kewangan dalam negara. Bank perdagangan dianggap penting kerana sumbangannya terhadap sektor kewangan dengan sektor ekonomi sebenar yang seterusnya menjana pertumbuhan ekonomi, disamping menyediakan pelbagai khidmat kewangan. Peranan bank perdagangan dalam menyediakan dan memudahkan system pembayaran kewangan di pasaran kewangan dan di pasaran modal khususnya adalah sangat penting. Justeru itu, tanpa kos yang rendah dan sistem operasi pembayaran yang cekap, maka semua urusan tempatan dan antarabangsa mungkin tidak dapat dilaksanakan dengan berkesan. Bank perdagangan adalah dianggap cekap dan





berkesan, jika mampu mengeluarkan output-output atau khidmat-khidmat pada kos yang minima serta berterusan menikmati faedah-faedah skel ekonomi dan skop ekonomi dalam jangka panjang.

Ringkasnya, skel ekonomi merupakan hubungan antara perubahan dalam kos pengeluaran dengan perubahan dalam kuantiti outputnya (diukur dalam nilai kewangan). Jika perubahan dalam output itu lebih dari perubahan dalam kos input maka bank berkenaan dikatakan beroperasi dalam lingkungan skel ekonomi (pada kos sedang menurun atau pada pulangan skel menaik atau kemungkinan sedang mengalami peningkatan dalam keuntungan) dan sebaliknya. Sementara itu, skop ekonomi akan wujud apabila sesebuah bank perdagangan mampu mengeluarkan pelbagai output serentak, dengan kos yang lebih rendah daripada keluaran output yang sama oleh beberapa bank-bank lain secara berasingan. Bukti yang didokumentasi mengenai kewujudan skel ekonomi di bank perdagangan menyatakan bahawa ia akan kekal setakat tahap saiz banks yang kecil atau sederhana dalam jangka panjang. Namun demikian, bagi skop ekonomi keputusan-keputusan yang diperolehi adalah sukar difahami kerana ada ketikanya penemuan tersebut tidak selaras dengan tiori. Penemuan kajian yang lepas mengenai kecekapan bank menunjukkan bahawa keluk kos purata pengeluaran jangka panjang adalah lebih kurang berbentuk “ U ” dimana ia berubah mengikut saiz bank. Saiz bank berkenaan biasanya diukur dari segi nilai aset atau jumlah deposit.

Pengiraan skel ekonomi dan skop ekonomi bagi bank perdagangan yang mengeluarkan pelbagai output di Malaysia telah dianggarkan dengan menggunakan fungsi trancendental logarithmic (translog). Data rentas siri masa disatukan bagi 40 buah bank perdagangan untuk jangka masa 1988 kepada 1998 telah dianalisa. Bank-bank tersebut diandaikan mengeluarkan dua jenis output utama iaitu, pelaburan dan pinjaman. Harga-harga atau kos-kos input meliputi kos dana ( atau kos modal kewangan atau harga dana), kos buruh ( harga buruh) dan kos modal tetap/ bangunan dan peralatan (harga modal tetap).

Keputusan kajian menunjukkan bahawa industry bank perdagangan Malaysia mempunyai ciri-ciri kos purata jangka panjang yang berbentuk garis lurus, iaitu pulangan malar mengikut skel. Penemuan tersebut adalah tidak sejajar dengan bentuk kos purata jangka panjang yang klasik iaitu yang berbentuk "U". Hasil kajian ini jelas menunjukkan industry bank perdagangan adalah beroperasi dalam ruang pulangan malar mengikut skel. Nilai koefisiennya adalah bererti secara statistic iaitu 0.99827, yang menghampiri nilai satu. Ringkasnya, kecekapan industri bank perdagangan Malaysia didapati adalah serdahana dalam tempoh kajian berkenaan.

Perbandingan antara empat bank terbesar dengan empat bank terkecil menunjukkan bahawa empat bank terbesar tidak beroperasi secara skel ekonomi

dengan koefisien 1.1818 dan empat bank terkecil didapati beroperasi dalam ruang skel ekonomi dengan koefisien 0.90358. Terdapat perbezaan dalam skel ekonomi bagi bank asing berbanding dengan bank tempatan dengan nilai koefisien masing-masing 0.92075 and 1.01976. Ini bererti bahawa bank asing adalah lebih cekap dari bank tempatan dalam pengurusan kos. Walaupun kedua-dua nilai tersebut berada didalam zon yang berbeza tetapi nilainya hampir satu, iaitu pulangan malar.

Analisa skel ekonomi secara tahunan menunjukkan bahawa bank perdagangan setiap tahun beroperasi di ruang skel ekonomi, dimana keputusan ini sejajar dengan penemuan bagi semua bank berkenaan dari 1988 hingga 1998. Walau bagaimanapun, hasil kajian menunjukkan bahawa wujud hubungan antara nilai skel ekonomi dengan peritiswa-peritiswa tertentu yang terjadi dalam tempoh kajian tersebut.

Kewujudan keadaan kos pelengkap antara dua output, iaitu pelaburan dan pinjaman, telah disahkan dalam penemuan kajian ini. Megenai skop ekonomi keputusannya menunjukkan terdapat ketidak selarasan dengan tiori. Nilai koefisien bagi skop ekonomi biasanya dijangka akan meningkat mengikut saiz bank berkenaan tetapi keputusan-keputusan yang di perolehi adalah sebaliknya. Di samping itu, keputusan tersebut menunjukkan skop ekonomi yang sangat bererti bagi bank tempatan berbanding dengan bank asing yang tidak mempunyai skop

ekonomi. Keadaan ini mungkin kerana bank asing lebih menumpukan pengeluarannya kepada satu atau sedikit output berbanding dengan bank tempatan yang menumpukan pengeluarannya kepada pelbagai/banyak output.

Pengembangan laluan pertambahan (expansion path subadditivity) menunjukkan ia wujud didalam bank perdagangan yang mengeluarkan pelbagai output. Ini membawa erti bahawa jika bank-bank besar distruktur kepada bank-bank bersaiz kecil maka ini akan menyebabkan kos operasi meningkat.

Kemungkinan mencantumkan bank-bank kecil supaya menghampiri saiz bank yang optima iaitu antara RM5 billion hingga RM10 billion dijangka akan menjana skel ekonomi and meningkatkan kecekapan pengurusan kos. Walau bagaimana pun, kewujudan pengaruh oligopoly dan monopoly hasil dari pengstruktur semula bank boleh menyebabkan bertambah sukar serta meningkatnya halangan-halangan untuk menceburi dan keluar dari industry tersebut dalam jangka panjang.

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## CHAPTER 1

### COMMERCIAL BANK EFFICIENCY

In the light of move to establish concentrated banking in Malaysia in 1998-1999, it has become necessary to investigate and evaluate performance of commercial bank in term of established theories of scale and scope economies. The 1997 Asian Financial Crisis has provided an added urgency in pursuing this research in the hope that the findings could truly reflect on the performance of the banking entities in Malaysia.

The structure of commercial banking industry is changing rapidly with globalisation especially with Malaysia's acceptance of entry of foreign banks with effect from 2003. Factors causing structural changes relate directly to competition, efficiency, and regulatory policy in banking as well as changes in market structure. In Asia and particularly ASEAN, banking and finance industries have been rapidly changing to cope with increasing competition in recent years. With barriers to entry lessened in the 1980s, new competitors have entered the industry.

In addition, the demarcation lines between the banking and non-financial institutions have become increasingly ambiguous. Technological innovations have helped banks transcend statutory and physical barriers between countries and across institutions.



The mergers and acquisitions have posed new challenges for both banks and regulatory authorities. Consequently, the concentration in the banking industry has increased. Many of these institutions' size and capital base have become considerably larger with substantial market power. To-date most banking and other financial institutions in Asia and the ASEAN countries appear to operate under much more deregulated banking environment compared to few years earlier.

The lure of greater earnings through cost reductions generated by greater economies of scale has long fascinated management in banking as it does in other industries. Economy of scale occurs, when large firms can produce the same goods or services at a lower cost than would a smaller firms. Precisely, it suggests that as firm's operating size becomes larger, the average cost of producing each unit service decreases. But the evidence show that it is the mid-sized banks that have the lowest cost, and achieve the fruits of greatest economies of scale Berger, Hanweck and Humphrey (1987).

In theory, economists believe that a firm's long-run cost curve is U-shaped. When a small bank (or a firm) increases in size, the cost per unit of output decreases. However, as the volume of output increases, inefficiencies develop and eventually, the average cost per unit of output rises.

Economies of scale is usually attributed to mid-sized banks/firms for several possible reasons. First, such banks/firms are able to subdivide tasks.

allowing employees to specialise. Second, they are able to use highly efficient, specialised capital equipment, often too expensive for small firms to afford, given their low volume of output. This is particularly true in commercial banking, where the processing of demand deposits by computers and other mechanised processing methods allows medium-sized banks (and some large banks) to process tremendous volume of checks at low unit cost presently.

There is no documented evidence on economies of scale of commercial banks in Asia or ASEAN countries in particular Malaysia. Undoubtedly, such an analysis requires a thorough understanding of the operations of commercial banking, national monetary policy, and the complexity of measuring the economies of scale of commercial banks. Lack of transparency and insufficient data, absence of accounting standards are among the reasons cited to explain the lack of documented evidence on this issue in Asia, Latin Americas and Africa though there are few documented evidence in the USA, Canada and Europe.

In the US, for example, Benston (1982) and McNuly (1982) estimated the overall cost curves of commercial banks and found economies of scale in the banking industry for banks with asset size of at least US\$75 million. After that point, the average cost of output levels off. The scale economies of size exists in some parts of banking industry, the unit cost of bank output decreases as bank size increases. Especially in the production of business and real estate