An Econometric Analysis of Conventional and Islamic Bank Deposits in Malaysia

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Abstract: The objective of this study is to determine the main factors influencing Islamic and conventional deposits in Malaysia's banking system. A structural model consisting of five behavioural equations and three identities was applied to annual data for the 1983–2001 period. Ordinary least squares analysis in the log linear form was used to estimate the influences of various factors on the conventional demand deposits, conventional time deposits, Islamic demand deposits, Islamic time deposits and Islamic investment deposits. The results show that bank deposit growth was influenced by changes in real gross domestic product, interest rates on conventional deposits and the profit-share for savings and investments in Islamic banks. The Chow test values show that demand deposits and time deposits in Islamic banks are more stable than conventional demand and time deposits. Furthermore the findings indicated a stronger relationship between the monetary base and conventional deposits than between the monetary base and Islamic deposits, as shown by the *t* statistics and the values of the adjusted R^2.

I. Introduction

Large numbers of scholars writing on Islamic banking claim it is more stable than conventional banking. However, almost all these studies are theoretical. Our search of the literature shows that the studies by Darrat (1988) and Hassan (1996) attempt to empirically verify the superiority of Islamic banking in terms of deposit stability, using

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monetary aggregates (M1 and M2). In particular, Darrat (1988) claims the superiority of Islamic banking in Tunisia, a country without a real history of Islamic banking. Therefore, the purpose of this study is to provide additional empirical analysis regarding the determinants and volatility of Islamic bank deposits, using data on demand and time deposits in Malaysia.

The emergence of strong Islamic movements over the last three decades has generated a renewed interest in Islamic economics, especially in Islamic interest-free banking. Iran and Sudan have instituted Islamic banking systems, while many other countries have established a mixed or dual banking system where Islamic banks operate side by side with the conventional banks. Malaysia followed the latter course, with its first Islamic bank, beginning operations in July 1983, Bank Islam Malaysia Berhad (BIMB). The blueprint for the modern Islamic banking system came in 1983, with the introduction and enforcement of two new acts known as the Islamic Banking Act and the Government Investment Act. However, in Malaysia the demand for Islamic banking dates from the establishment of Lembaga Tabung Haji Malaysia in 1969, now known as Tabung Haji. Tabung Haji usually collects and invests the savings of those who want to perform pilgrimage to Makkah in accordance to Islamic law (*Sharīʿah*), and disburses the funds to pay for airfares and accommodation.

Following a decade of the successful functioning and performance of BIMB, the Malaysian government on March 4th 1993, introduced an interest-free banking scheme (Skim Perbankan Tanpa Faedah). Under this scheme, all conventional banks were asked to participate and offer Islamic finance by opening Islamic counters that would exist side by side with conventional counters.

Islamic banks and conventional banks with Islamic counters or branches in Malaysia, offer deposit facilities that rely on profit sharing instead of interest. The bank offers demand and savings deposits under the concept of guaranteed custody (*Al-Wadīʿah*) and investment deposits under the concepts of profit sharing (*Al-Muḍārabah*). Islamic banks are prohibited from issuing securities such as long and short-term bonds that involve interest, debentures and preference shares. At present, the Islamic banking financial instruments are based on the four main sources of funds, namely

demand, savings, investment deposits (accounts) and shareholder's funds.

(i) Demand deposits – this kind of deposit has similar functions to its counterpart in a conventional bank. It usually comes under the concept of guaranteed custody (*Al-Wadīʿah*). Under this type of account the depositors have full right to withdraw their funds at any time without prior notice. Here the reward depends upon the banks' own discretion based on the profit that they declare.

(ii) Savings deposits – these are usually for those who want to earn some income and at the same time avoid the risk of capital losses. For this type of deposit the Islamic banks do not provide any fixed return to their depositors, but instead share the profits with their customers, since these savings deposits are also usually understood as guaranteed custody (*Al-Wadīʿah*).

(iii) Investment deposits – equivalent to a fixed deposits or investment account with a conventional bank. This account usually comes under the concept of profit sharing (*Al-Muḍārabah*). However, the differences between the investment deposits in Islamic banks and fixed deposits in conventional banks is that these types of accounts are not considered as liabilities or debt, but as participatory accounts. Here the banks invest their client's money, with their general or specific consent, depending on the account contract, in different projects. After that, shares in profit are distributed between the bank and its customers according to a pre-agreed ratio.

(iv) Shareholders funds – the main source for Islamic banks to raise equity by offering common shares to the general public. Islamic banks and financial institutions are not allowed to issue preference shares, as these involve a fixed dividend corresponding to interest, which is prohibited by Islamic law.

Islamic banks also grant working capital financing that mainly involves five financial instruments. These are:

(i) *Al-Baiʿ bi-thaman ājil* – usually a contract that refers to the sale of goods on a deferred payment basis. Equipment or goods requested by the client are bought by the bank, which subsequently sells the goods to the client at an agreed price (the sale price) that

includes the bank mark-up (profit). The client may be allowed to settle payments by instalments within a pre-agreed period or through a lump sum payment.

(ii) *Al-Muḍārabah* a contract between the bank and its client for the sale of goods at a price that includes a profit margin agreed by both parties. As a financing technique, it involves the purchase of goods by the bank as requested by its client. The goods are sold to the client at cost – plus profit margin agreed between them at the time of contract. Repayment terms, usually in instalments, are specified in the contract.

(iii) *Al-Ijārah* (Leasing) – A customer who wishes to engage the services or the rights to the services of an asset may seek financing under on *ijārah* (leasing) arrangement, the bank will purchase the asset and subsequently lease it for a fixed period. In return, the customer (the lessee) is obliged to pay for the lease rental and fulfil any other terms and conditions as agreed by both parties.

(iv) *Al-Musharakah* (profit and loss sharing) – this is usually for project financing, which involves a partnership on a joint venture basis between the contracting parties. The parties share profits on a pre-agreed ratio, but losses are shared on the basis of equity participation. The management of the project may be carried out by all the parties or by just one party. This is a very flexible partnership arrangement where the sharing of the profits and management can be negotiated and pre-agreed by all parties.

(v) *Al-Muḍārabah* basically an agreement between two parties, one providing 100 per cent of the capital for the project, and the other (*muḍārib*) managing the project through entrepreneurial skills. Profits arising from the project are distributed according to a predetermined ratio. Any losses accruing are borne by the provider of capital provided these are beyond the control of the entrepreneur.

As already indicated, this study uses the ordinary least square (OLS) econometric method of regression to estimate the main factors influencing Islamic and conventional bank deposits. Three types of tests are used:

(i) The Chow test for the structural change;

(ii) The t test where the value of t is the coefficient of the monetary base and the value of R^2 is used to measure the correlation of the variables;
(iii) The statistic of variances to measure the velocity of deposits.

The paper is organized as follows: section 2 reviews briefly past studies on the comparative stability of Islamic and conventional bank deposits. Section 3 discusses the research methodology and model framework used here. In section 4, the results of the OLS estimation are reported and discussed. Section 5 provides a summary and concluding remarks.

II. Literature Survey

Since the establishment of Islamic banking a considerable amount of theoretical literature has been published on its operations and methods pf financing (Khan, 1985; Haron, 1995). However, only a few empirical studies have been undertaken of the modelling of monetary stability under an Islamic financial system (Khan and Khan, 1990; Yousafi *et al.*, 1997). All these studies have attempted to prove that Islamic monetary instruments are as stable as interest-based instruments.

The most comprehensive study of monetary stability under an Islamic banking system was that undertaken by Hassan (1996); already been referred to. He studied the behaviour of the demand for money in 15 Islamic countries and concluded that interest-free money demand deposits are more stable than interest-bearing deposits. The only previous work in this field in Malaysia was a study by Kaleem (2000), who developed a model to test the monetary stability under the country's dual banking system. However this used monetary variables rather than bank deposit data, and the data run was more limited than for this present study.

This empirical study is the first to analyse the relative stability of the Islamic and conventional bank deposits in Malaysia. Previous studies such as that by Kaleem have attempted to provide proof of the relative stability of the banking systems, but this could not be determined by a comparison between the performance of M1 and M2 definitions of money supply.

The model specification in this study follows the model used by Darrat (1988) and Hassan (1996). As mentioned above Hassan concluded that interest-free money [*MNI* (*M1*)] is more stable than interest-bearing money [*MI* (*M2*)]. In addition, according to Darrat, interest-free money (*MNI*) is stable; however, interest-based money (*MI*) is not.

This model has been chosen because the relevant data are available for both conventional and Islamic banks deposits in Malaysia. Moreover, this model matches the objectives of this study, and allows for the testing of the hypotheses. Some modification has been made, however, so as to allow for and to conform to the Malaysian economic situation.

III. Research Hypothesis

Islamic monetary instruments work side by side with conventional monetary instruments in Malaysia. For this reason, it is important to test whether the Islamic monetary instruments can produce more stability than conventional monetary instruments. Therefore, this study attempts to test the following hypotheses:

(i) That Islamic bank deposits (profit sharing) are more stable than conventional deposits (interest-based);
(ii) That the correlation between Islamic bank deposits and the monetary based demand function is stronger than that between conventional deposits and the monetary based demand function; and
(iii) That the velocity of the Islamic bank deposits is more stable than the velocity of conventional deposits.

IV. Research Methodology

An econometric model is developed to explain the relationship between the variables in the model. The equations include the Islamic bank profit sharing deposits equation, the conventional interest-based deposits equation, the equation to test the correlation between profit sharing and interest-based deposits and monetary base, and the equation of the velocity of the profit sharing and interest-based deposits.

The model consists of five behavioural equations and three identities. The deposit model for the Islamic bank deposits explains

the behavioural and other important determinants of money deposits in the Malaysian Islamic banking system, and the model for the conventional deposits explains the behavioural and other important determinants of the money deposits in the conventional Malaysian banking system.

The correlation between the profit – shares and the monetary base is used as well as the correlation between interest-based deposits and the monetary base. The velocities of the profit sharing deposits and the interest-based money deposits are used to test which money deposits are more stable by a comparison of both velocities of money.

The framework that has been used for the study includes an interest-based deposits model, a profit sharing deposits model, correlation between interest-based deposits with the monetary base, correlation between profit-sharing money deposits with monetary base, a velocity of interest-based deposits model, and a velocity of profit-sharing deposits model as endogenous variables. For the interest-based and profit sharing money deposits the explanatory variables used include the real gross domestic product, the nominal interest rate on demand, and time deposits (RD_t and RT_t) for the conventional banks and the profit sharing ratio ($SPSD_t$, $SPST_t$ and IPS_t) for the Islamic banks, the consumer price index, and the dependent variables lagged by one year. For the estimations the parameters include interest-based money deposits and profit sharing (interest-free) money deposits, that are estimated using the ordinary least square (OLS) econometric method.

V. Model Framework

This section develops the quantitative relationship for money demand between different Islamic and conventional monetary instruments. Like any other demand function, the typical money demand function contains real income to represent a budget constraint, existing inflation and the interest rates prevalent in the economy. The money demand function may be defined as:

$$M_t=L(GDP_t,R_t,P_t,P_t^e) \qquad (1)$$

where

M_t denotes is the nominal money demand at time *t*.
L is a function relating money demand to real income, the nominal interest rate and the general price level.
GDP_t stands for is the gross domestic product at time *t*.
R_t denotes is the nominal interest rate at time *t*.
P_t is the general price level at time *t*.
P_t^e is the expected rate of inflation at time *t*.

5.1. The model structure for the conventional deposits model
From the above explanation and discussion, the model structures for the conventional demand deposits and conventional time deposits of the money demand model in this study are as follows:

$$DDC_t = a_o\ GDRL_t^{a_1}\ RD_t^{a_2}\ CPI_t^{a_3}\ DDC_{t-1}^{a_4}\ \mu^{u_{1t}} \qquad (2)$$

$$TDC_t = b_o\ GDRL_t^{b_1}\ RT_t^{b_2}\ CPI_t^{b_3}\ TDC_{t-1}^{b_4}\ \mu^{u_{2t}} \qquad (3)$$

The conventional identity equation:

$$MDC_t = DDC_t + TDC_t \qquad (4)$$

5.2. The model structure for the Islamic deposits model
The model structures for the Islamic demand deposits, Islamic time deposits, and Islamic investment deposits of money demand model in this study are as follows:

$$DDI_t = c_o\ GDRL_t^{c_1}\ SPSD_t^{c_2}\ CPI_t^{c_3}\ DDI_{t-1}^{c_4}\ \mu^{u_{3t}} \qquad (5)$$

$$TDI_t = d_o\ GDRL_t^{d_1}\ SPST_t^{d_2}\ CPI_t^{d_3}\ TDI_{t-1}^{d_4}\ \mu^{u_{4t}} \qquad (6)$$

$$IID_t = e_o\ GDRL_t^{e_1}\ IPS_t^{e_2}\ CPI_t^{e_3}\ IID_{t-1}^{e_4}\ \mu^{u_{5t}} \qquad (7)$$

The Islamic identity equation:

$$MDI_t = DDI_t + TDI_t + IID_t \quad (8)$$

Closing identity, hence, is:

$$MD_t = MDC_t + MDI_t \quad (9)$$

Equation 9 is the closing identity equation, where the total deposits of money (MD_t) is equal to conventional deposits of money (MDC_t) plus Islamic deposits of money (MDI_t). It should be noted that u_{1t}, u_{2t}, u_{3t}, u_{4t}, u_{5t} are the structural disturbance terms at time t, and μ are the error terms.

VI. Empirical Results

The selection of the variables in the equation and the model specification is based on the theory, statistical, and econometric statistics that are the right cohesion marks, the significant informative variables being R^2, the F value and the *Durbin h* statistics. The results of regression for the conventional deposits and Islamic deposits are shown in Tables 1 and 2 (Appendix A).

The results show that the real gross domestic product, the interest rate, the consumer price index, and the one-year lagged conventional demand deposits and conventional time deposits can explain the conventional demand deposits and the conventional time deposits. The results also show that the real gross domestic product is significant at the 10% and 1% levels for the conventional demand deposits and conventional time deposits respectively. This means, *ceteris paribus*, for every 1% increase in the real gross domestic product the conventional demand deposits and conventional time deposits will increase by 1.1753 and 1.7276 respectively. This result also shows that the real gross domestic product plays an important role in determining the increase in demand and time deposits in conventional bank accounts. This also means that people have more surplus money or income, which enables them to deposit their money in banks.

The interest rate is significant at the 10% and 1% levels to explain the conventional demand deposits and conventional time deposits. The responsiveness of demand deposits and time deposits

with respect to interest rate is 0.2731 and 0.3498 respectively. This means, *ceteris paribus*, that for every 1% increase in the interest rate, conventional demand deposits and conventional time deposits will increase by only 0.2731 and 0.3498% respectively.

Consequently, we can see that the real gross domestic product and interest rates, also significant at the 1% level, explain the conventional time deposits. The elasticity of the conventional time deposits to the real gross domestic product and interest rate are 1.7276 and 0.3418 respectively. This result also shows that the real gross domestic product plays an important role in determining the increase of the time deposits in conventional banks. This is because people have extra income enabling them to deposit their surplus in the banking system.

The above results also show that the real gross domestic product, the profit sharing rates, ($SPSD_t$, $SPST_t$ and IPS_t), the consumer price index, and the one-year lagged dependent variables are important in explaining the Islamic demand deposits, Islamic time deposits, and Islamic investment deposits. The profit sharing rates are significant in explaining the Islamic demand deposits, Islamic time deposits and Islamic investment deposits at the 1%, 10% and 5% levels respectively, whereas, the one-year lagged dependent variables are significant at the 5% level in explaining both the Islamic demand and time deposits.

In addition, the results show that the estimated responsiveness of Islamic demand deposits, Islamic time deposits and Islamic investment deposits to real gross domestic product are 0.6895, 0.6885 and 0.2426 respectively, which means, *ceteris paribus*, that Islamic demand deposits, Islamic time deposits and Islamic investment deposits will increase by only 0.6895, 0.6885 and 0.2426% for every 1% increase in real gross domestic product. The weakness in the responsiveness of Islamic demand deposits, Islamic time deposits and Islamic investment deposits to real gross domestic product appears to confirm the observation made by Wilson (1997) regarding Bank Islam Malaysia's deposit growth, namely that:

> "Between 1987 and 1991, Malaysian gross domestic product growth actually accelerated from 5.4 per cent to 9.7 per cent. The years of economic stagnation had been the mid-1980s, with GDP falling by 1 per cent in 1985 and growing by a mere

> 1 per cent in 1986. Yet these were the years when Islamic Bank deposits grew rapidly. It seems there is no correlation between macroeconomic performance and that of the Islamic Bank".

However, the results reveal that the profit share rate is an important factor in explaining the Islamic demand deposits, Islamic time deposits and Islamic investment deposits. Profit sharing rates for the Islamic demand deposits, Islamic time deposits and Islamic investment deposits are significant at the 5% level. The estimated elasticity of the Islamic demand deposits, Islamic time deposits and Islamic investment deposits with respect to profit sharing are 1.3905, 1.2526 and 1.7188 respectively. This means, *ceteris paribus*, that for every 1% increase in the profit-share (rate of return) for demand deposits, time deposits and investment deposits will increase by 1.3905, 1.2526 and 1.7188% respectively. The elasticity of Islamic demand deposits, time deposits and investment deposits may be caused by the ability of the depositors to respond in a positive manner to profit sharing. Thus, in the case of Islamic demand deposits, time deposits and investment deposits, especially for Muslims, growth depends on the profit share rate that they can get for their deposits.

Furthermore the results also show that the adjustment level is quite moderate for all equations in the model, the figures being 47.1% and 85.1% for the conventional demand deposits and conventional time deposits, whereas the figures were 25.1%, 22.4%, and 24.1% respectively for Islamic demand, time and investment deposits.

VII. Hypothesis Tests

Islamic banks deposits (profit sharing) are more stable than conventional deposits (interest-based)

In order to test the hypothesis that deposits with profit sharing are more stable than deposits with interest, the stability of deposits function is tested with the aid of the Chow test. One of the more common applications of the F test is in tests of structural change. This test is called a Chow test, after Chow (1973) who invented it. This test is to see if there is a shift in the structural data for these equations. The results of the Chow test for the Islamic deposits and conventional deposits are shown in Table 3.

These results show that all the behavioural equations used in this model are stable throughout the research period, both for the conventional deposits and Islamic deposits. Therefore, all the equations should accept the null hypothesis. This means that there is no change in the parameter values at the significance level of 10%.

Although this study finds that both the conventional and the Islamic deposits are stable, the Islamic demand deposit and Islamic time deposit are more stable than the conventional demand deposit and conventional time deposit. This is measured through the value of the Chow test (F^C), which is smaller for the Islamic demand and Islamic time deposits than for the conventional demand and time deposits, as shown in Table 3. The values of the Chow test for the Islamic demand and time deposits are 1.62 and 2.17, which is smaller compared to the corresponding values for conventional deposits, namely 3.23 and 2.88.

There may be several reasons for this:

(i) The Malaysian government is relying on conventional monetary and fiscal policies in its efforts to achieve monetary and price stability, economic growth and development in financial markets rather than using Islamic financial instruments;

(ii) The excess liquidity in Bank Islam Malaysia Berhad and Bank Muamalat Malaysia Berhad. This is happening for several reasons: (a) the growth of deposits in Islamic banking far exceeded the demand for Islamic financing, especially during the period from 1983 to 1992; (b) there was an inadequate number of Islamically acceptable investment outlets, especially before 1992; (c) Bank Islam Malaysia Berhad and Bank Muamalat Malaysia Berhad remain profitable because of their low level of risk exposure and their pursuit of a conservative financing policy, despite excess liquidity;

(iii) The Islamic banks' policy of conservatism, rooted in underlying observations such as: (a) severe losses that signals the failure of the philosophy and the implementation of Islamic banking and financial instruments; and (b) the nature of Islamic contracts undertaken are mostly based on fixed return trade financing rather than on the profit and loss sharing system. This means that the banks and the government in practice guarantee the deposits and investments in the Islamic banking and financial instruments.

This finding supports those of Hassan (1996) and Kaleem (2000), but disagree with those of Darrat (1988) and Khan (1985), who found that Islamic banking is stable and is more crisis-proof than conventional banking. However, Yousefi *et al.*, (1997), in their study of monetary stability and interest-free banking, concluded that a case for the superiority of Islamic banking has, certainly in the case of Iran, not been made.

The correlation between Islamic banks' deposits and the monetary base demand function is stronger than that between conventional deposits and the monetary base demand function

The objective here is to discuss and assess the relative effectiveness of and differences between profit sharing and interest-bearing deposits in the formation of monetary policy. Darrat (1998) suggests two prerequisites for policy usefulness that may be used to check the performance of both the Islamic and the conventional financial instruments. The first is the effective control of the monetary authorities over their financial instruments. Secondly, there should be a strong and reliable relationship between the monetary instruments and the main goal of the monetary authority. The regression results are shown in Table 4 and reveal three major findings:

(i) The monetary authorities have a significantly higher level of control over conventional banks' deposits than over Islamic banks' deposits. This can be seen from the value of *t* statistics for monetary base (MB_t). The values of *t* statistics for DDC_t, and TDC_t are 14.348 and 17.093 respectively, and are higher compared to the Islamic deposits DDI_t, TDI_t, and IID_t, which are 6.826, 8.341, and 6.095 respectively.

(ii) The results also show that conventional deposits are highly significant as compared to Islamic deposits, as their *coefficients* are 0.8286 and 0.4518 for DDC_t and TDC_t, whereas the *coefficients* for Islamic deposits are 0.0505, 0.0293 and 0.1653 respectively.

(iii) Similarly, the regression results show that conventional deposits exhibit a strong relationship between the dependent variables and the independent variables compared to Islamic deposits. This can be seen by the fact that the values of adjusted R^2 for conventional

deposits are higher than for Islamic deposits (where adjusted R^2 for DDC_t = 0.9234, TDC_t = 0.9448; while adjusted R^2 for DDI_t = 0.7284, TDI_t = 0.8013, and IID_t = 0.6801).

The regression results and findings show that there is a high level of control over conventional monetary instruments compared to Islamic monetary instruments. The above results and conclusion show the strong relationship between interest-based deposits and the monetary base, thus allowing the monetary authorities to have a more direct control over the conventional deposits, which in turn will have an impact on other macroeconomics variables. These results also indicate that the conventional monetary instruments play a more important role than Islamic monetary instruments in the Malaysian economy, in conformity with the earlier observations by Wilson (1998): "Although Islam may be a continuing factor influencing politics, as far as Malaysian development is concerned, the influences of conventional economics on Islam may be greater than the impact of Islam on economy policy".

In addition, this result is consistent with the studies by Hassan (1996) and Yousefi et al., (1997), who found that the conventional money demand has a strong relationship with, or more controllability by monetary authorities, than Islamic money demand. This finding, however, conflicts with those of previous studies by Darrat (1988) and Kaleem (2000).

To conclude: the regression analyses suggest that the interest-based deposits in Malaysia exhibit a stronger and more reliable relationship with policy instruments. These results suggest that the interest-based monetary system provides policy-makers in Malaysia with an effective monetary control tool.

The velocity of the Islamic bank deposits (profit sharing) is more stable than the velocity of conventional deposits (interest-based)

The velocity of money plays a crucial role in contemporary macroeconomic analysis and the stability of velocity represents a necessary requirement for effective monetary policy. A major objective of monetary policy is to achieve price stability and low unemployment in the economy. This can be achieved through the stability of velocity over time, because an unstable velocity will

weaken the link between monetary policy and the rest of the economy. In addition, an unstable velocity could affect overall economic and financial stability adversely, as a result of the inability accurately to predict the velocity of money, which may deepen the cycles of high unemployment and high inflation. Therefore, having a stable and smooth velocity of money is vital for prudent monetary policy-making and for the good health of the economy.

The variance of a particular type of money velocity will indicate the stability of the deposits for that type of money. The results of the analysis of variance carried out to find out whether the velocity of profit-sharing deposits is more stable than the velocity of interest-bearing deposits is shown in Table 5.

The variances of the velocity for conventional deposits were lower than the variances for the Islamic bank deposits. The variances for the velocity of the conventional demand deposits and conventional time deposits are 2.67 and 5.06 respectively; this is lower than the variances of the velocity of the Islamic demand deposits, Islamic time deposits and Islamic investment deposits, which have variance values of 93.97, 122.04 and 35.55 respectively.

These results contradict the findings of Darrat (1988) and Hassan (1996), who reported that it was the interest-free money that was more stable than the interest-bearing money. However, these results support the study by Yousefi, Abizadeh and McCormick (1997), which found that the velocity of money in conventional banking was much less volatile, the demand for money balance was stable, and that price stability prevailed compared with a less stable situation in Islamic banking in the case of Iran. Generally speaking, according to this study, it was found that for Malaysian banking deposits, the velocity of conventional deposits is more stable than that of Islamic banks' deposits.

In order to discuss these issues in more detail, we can compare the velocity of the interest-based deposits with that of the interest-free deposits, as illustrated in Figures 1 and 2 (Appendix C). From Figure 2, the velocity of the interest-free deposits for DDI_t, TDI_t and IID_t fell from highs of 828.60, 563.55 and 277.34 respectively in 1983 to lows of 28.34, 38.49 and 8.07 respectively in 2001. It is encouraging to note however that the velocity of these three interest-free deposits has fallen over the years, as the size of the Islamic deposit base has grown.

Nevertheless, statistics for the velocity of the interest-based deposits (DDC_t and TDC_t) reveal a smoother behaviour. In the case of DDC_t, velocity ranges from a peak of 7.95 in 1983 to a trough of 1.93 in 2001. Therefore, the velocity of interest-based deposits in Malaysia also shows a smoother pattern than the velocity of the interest-free deposits over the study period. In fact, the velocity of the interest-based deposits for TDC_t is better behaved, varying only between 7.45 in 1983 at the peak, to 3.33 in 2001 at the trough. In addition, the variability of the velocity of the interest-free deposits is much higher than that of the velocity of the interest-based deposits in Malaysia.

To conclude: the preceding analysis suggests that the velocity of the interest-based deposits is less volatile than that of the interest-free deposits in Malaysia. Therefore, we may say that an interest-based banking system promotes and plays an important role in financial and economic stability in Malaysia since it apparently reduces instability in the underlying velocity of money, thus providing monetary authorities in Malaysia with an environment more conducive to conducting an effective macroeconomic policy.

VIII. Summary and Conclusions

The objective of this research was to examine the main variables, and the stability and efficiency of the Islamic monetary instruments pertaining to the Malaysian dual banking system. To achieve this 1983 – 2001 annual time series data on Malaysian banking institutions was analysed using the ordinary least square (OLS) econometric technique. An empirical methodology similar to that of Darrat and Hassan was used, although Hassan's result fails to support the Darrat findings. The main aims of this study have been:

(i) To develop a conventional and Islamic bank deposits model with the same explanatory variables, with regard to the financial instruments used in the Islamic banks and conventional banks in Malaysia's dual banking system;
(ii) To analyse the demand for money with regard to the conventional and Islamic bank deposits model instruments;
(iii) To compare the effectiveness and flexibility of both financial instruments. For the analysis, we replicate and further developed Hassan's (1996) methodology.

Overall the equation for the model reflects the money deposits of the Islamic and conventional banks in Malaysia. With regard to the conventional money deposits (conventional demand and conventional time deposits), the research results show that the real gross domestic product, the interest rate, the consumer price index and the conventional demand and conventional time deposits lagged for one year are important factors in explaining the changes in the conventional demand and conventional time deposits. This implies that the total amount of conventional demand and conventional time deposits are influenced quite significantly by the real gross domestic product.

It also means people have more money to save. It seems that there is a clear correlation between macroeconomic performance (real gross domestic product growth) and the performance of the conventional banks (conventional deposits). This can be seen from the values of elasticity for the conventional demand deposits and conventional time deposits against the real gross domestic product, which were 1.1753 and 1.7267 respectively.

The research has also shown how real gross domestic product, the profit share (rate of return to depositors), the consumer price index and the dependent variables lagged for one year are important factors in explaining the Islamic demand deposits, Islamic time deposits and Islamic investment deposits. This can be seen from the values of elasticity for Islamic demand deposits, Islamic time deposits and Islamic investment deposits, which were 1.3905, 1.2525 and 1.7188 respectively in relation to the profit share (significant at the 1%, 10% and 5% level respectively).

The result of this research suggests a number of policy implications. The conventional banking institutions contribute significantly to the banking industry and help fund investment that contributes to socio-economic development. In order to ensure the survival and continued growth of the banking industry in Malaysia, several measures should be taken. This research provides empirical evidence that the real gross domestic product, the interest rate, and the profit sharing rate play an important role in the Malaysian banking industry. Therefore, sustainable development in the economic sphere will, through its positive effect on income, increase demand and time deposits from depositors in both conventional and

Islamic banks. The interest rate and the profit share rate need to be at a level that can attract depositors to place their money either in the conventional or Islamic banks. The market for each type of deposit is segmented however, and therefore an increase in interest rates may not adversely affect Islamic bank deposits even if profit sharing rates are not increased. What matters most is real gross domestic product developments and the behaviour of macroeconomic variables, not the pricing of returns by the conventional banking sector.

Therefore, the practical measures to increase total Islamic investment deposits, whether in the Islamic banking, or other financial institutions which provided Islamic counters, are more related to service quality than pricing. The optimal use of the current Islamic counters can be improved by better management and enhanced technology. In the final analysis however it is the Islamic bank or conventional provider's reputation for *Sharīʿah* compliance that matters for Muslim customers, although this does not mean that they wish to see their religious motivation for choosing *Sharīʿah* compliant deposits taken for granted, by banks that provide a poor return or poor service because of the limits to competition in a segmented market.

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Appendix: Empirical Results

Appendix A

Table 1: The Regression Analysis for the Conventional Demand Deposits and Conventional Time Deposits

Dependent variables	Independent variables					
	Intercept	$\ln GDRL_t$	$\ln RD_t$	$\ln CPI_t$	$\ln DDC_{t-1}$	R^2 Durbin h
Δ		*	*			
Ln DDC	-4.7240	1.1753	0.2731	-0.1245	0.5291	0.9861 0.63
	(-1.442)	(1.812)	(1.865)	(-0.620)	(1.353)	
	Intercept	$\ln RT_t$	$\ln TDC_{t-1}$	$\ln CPI_t$	$\ln DDC_{t-1}$	R^2 Durbin h
Δ		***	***			
Ln TDC_t	-2.9527	1.7276	0.3498	-0.1361	0.1494	0.9941 1.35
	(-1.501)	(4.349)	(4.877)	(-0.856)	(0.478)	

Table 2: The Regression Analysis for the Islamic Demand Deposits, Islamic Time Deposits, and Islamic Investment Deposits

Dependent variables	Independent variables					
	Intercept	$\ln GDRL_t$	$\ln SPSD_t$	$\ln CPI_t$	$\ln DDI_{t-1}$	R^2 Durbin h
Δ	***	**	**	**		
Ln DDI_t	-3.5217	0.6895	1.3239	-0.6359	0.7495	0.9608 0.87
	(-1.845)	(0.705)	(3.583)	(-0.632)	(2.382)	
	Intercept	$\ln SPST_t$	$\ln TDI_{t-1}$	$\ln CPI_t$	$\ln DDI_{t-1}$	R^2 Durbin h
Δ		*	**	**	**	
Ln TDI_t	-3.6729	0.6885	1.2526	-0.2623	0.7764	0.9289 0.46
	(-1.975)	(0.689)	(1.856)	(-0.246)	(2.848)	
	Intercept	$\ln IPS_t$	$\ln IID_{t-1}$	$\ln CPI_t$	$\ln DDI_{t-1}$	R^2 Durbin h
Δ	*	**	**	**		
Ln IID_t	-3.7435	0.2426	1.7188	-0.7198	0.7587	0.9436 0.67
	(-1.422)	(1.803)	(2.772)	(-0.661)	(2.775)	

Note 1: Figures in parentheses are t values.
Note 2: (*), (**), (***) denotes statistical significance at the 10%, 5%, and 1% level, respectively.

Appendix B: Stability Test Results

Table 3: The Structural Stability Test of Conventional Deposits and Islamic Deposits

Model	F^c	Adjusted R^2
Conventional demand deposits	3.23	0.9814
Conventional time deposits	2.88	0.9921
Islamic demand deposits	1.62	0.9477
Islamic time deposits	2.17	0.9052
Islamic investment deposits	3.54	0.9248

Note: F^c is the Chow test statistics. The value of the *F*-statistic at the 10% significance level for the whole equation is 4.25.

Table 4: The Relationship between Monetary Base and the Interest-Based Deposits and Profit-Sharing Deposits Dependent Variables

Dependent Variables	Constant	*t* statistics	Monetary base (MB_t)	Adjusted R^2
Conventional demand deposits	19.4783	14.348	0.8286	0.9234
Conventional time deposit	19.7129	17.093	0.4518	0.9448
Islamic demand deposit	-77.2470	6.826	0.0505	0.7284
Islamic time deposit	-76.6867	8.341	0.0293	0.8013
Islamic investment deposit	-93.3807	6.095	0.1653	0.6801

Table 5: Summary Statistics of Variances of the Velocity of Money

Variables	Variances
Velocity of conventional demand deposits	2.67
Velocity of conventional time deposits	5.06
Velocity of Islamic demand deposits	93.97
Velocity of Islamic time deposits	122.04
Velocity of Islamic investment deposits	35.55

Appendix C: Velocity Ratios