"Islamic home finance: legality, pricing, and profit - Models compared"

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Abstract

The Musharakah Mutanaqisah Partnership model or the MMP is fast gaining popularity in Islamic home financing, for jurists and the bankers both validate it as a totally interest free structure. We have exploded the myth of thatvalidation in our earlier writings and reinforce our argument here . But on a more important side, we shall show that the construct, which some now refer to as the Zubair Diminishing Balance Model or the ZDBM, is cheaper for the customer without reducing in any way the profit margin for the bankers; Instead, it provides them with a competitive edge over their mainstream rivals at zero cost. The model is more efficient: it uses fewer resources, the rate of return on investment remaining unchanged. Liquidity in the system is improved and social cause is served as the price of a basic human need is lowered. In contrast, the MMP is complicated, implies compound interest in practice, and is prune to Shari'ah frowns. ZDBM is especially fairer in the treatment of default related issues. It also does not invite the tensions which rental determination/revision or property valuation creates in the MMP programs. In this context the paper refers as illustrations to actual cases from some countries where MMP is gaining ground. The innovation of charging on diminishing balance may usher in revolution in finance.

Key words: Islam; home finance; implicit interest; MMP model; ZDBM.

INTRODUCTION

It is gratifying to note that Muslim countries have of late been turning to the importance shelter has among the basic human needs which an Islamic order is obliged to meet for promoting communal peace and harmony; efforts are on the rise to bridging the yawning demand and supply gap in this vital area of civilized living. Islamic banks too have launched a number of schemes for home financing. Among them, they initially started with the structures based on the BBA but are recently shifting fast to *Musharakah Mutanaqisah Partnership* (MMP) models as replacement due to their apparent immunity from interest.

However, Hasan (2011) demonstrated that the conventional finance and the MMP are at par with regard to interest use and that the *Diminishing Balance Model* -- henceforth called the ZDBM -- is a better alternative. The proposed model is entirely free from juridical suspicions and has in principle already won affirmation from a few industry leaders of international repute. That paper compared the consequences of three alternative structures for home financing – the conventional, the MMP and the ZDBM – keeping the details of the case unchanged. It was shown that the results were identical for the conventional and the MMP models; the ZDBM being not only cheaper for the customer but at once interest-free and law abiding. The paper was presented recently at the monthly faculty seminar at INCEIF to elicit comments. Some doubts about the efficacy of the model to match the current

Islamic finance environ demands and modus operandi were voiced. The present revision seeks to clear those doubts and brings to light a few additional merits of the ZDBM.

THE QUERIES:

The main points raised at the seminar included the following.

1. The illustration uses six-monthly installments. In most home financing cases the contracts provide for monthly payments. The results arrived at might have been different if the installments payment were kept in the illustration of the same duration.

2. The illustration does not explain why or from where it takes 8% as the rate of return to derive its results. The ZDBM is apparently cheaper because the return does not cover the cost of capital as also the risk premium.

3. If the ZDBM is cheaper for the customer by the same token it is less profitable for the banks – why should the latter accept or implement it?

4. The installments in the ZDBM are not fixed, that may confuse the customer with reference to the payment schedule. Also, the payments in the model are larger in the beginning and could be harsh on the young home buyers: the scheme is not commensurate with the life-cycle income hypothesis at the theoretical plane.

5. Banks prefer faster return of their capital and it is faster in the MMP than in the ZDBM, banks would tend to shun the latter.

6. The MMP model deployment in Malaysia is different than in other countries, a local case must have been included in the study if its claims are to carry conviction in this country.

To me, the first two of these comments hold little water. The exercise was purely illustrative meant to bring out the model differences. Using common data was a methodological imperative not an expression of ground reality and its complications[1]. Whatever benchmarking the industry is using in other cases may be used for deciding the mark-up in the ZDBM. Comment three ignores the common experience that cheaper things sell more and faster. ZDBM lends the Islamic banks a much needed competitive edge in the market: what they would lose on the swings more than that they must gain on the rounds. Whether the installment amount is fixed or continually falls as in the ZDBM makes little difference to the customer as he would have the schedule of installment known before he signs the contract. Anyway, we shall revert to this objection later in the discussion Banks

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[1] Incidentally, one may note that in MMP "the rent is calculated based on 1 year LIBOR. The floor rate (minimum rate) and the ceiling rate (maximum rate) are stated based on which the rentals rate can vary. In agreement, it is stated that if payment is made on time, the transfer of ownership will take place accordingly" (Shaikh 2011).

do prefer faster return of their capital but the claim that recovery is faster in the MMP compared with the ZDBM is, we shall see, contrary to the facts.

The demand for inclusion of the Malaysian case is doubtless weighty and genuine. We could not lay hand on a numerical illustration as to how an Islamic bank in Malaysia determines the rental or the installment amount for home financing contracts. In our search the easiest was to look for an explanation of the Malaysian MMP operations in Rosly (2010, pp.141-143) the Head of the Banking Department at INCEIF. The reference did not simply contain the needed information: the book does not explain or illustrate as to how the amount of installment is fixed in Malaysia or elsewhere. Instead, the chapter raises a number of queries without answering any. An internet search however provided scour. The available information though not sufficiently revealing did show that even as the banks use different rental rates - fixed, floating or mixed - in home financing contracts in the Malaysian usage of MMP, the *technical* procedure of rental rate adjustment to arrive at the installment payments is the same[2]. The MayBank announcement, the ISRA paper, 'Shaping Islamic Finance together - Malaysia' Home page plus the write up of Osmani & Abdullah (2010) were reassuring.

In any case, the fixed rental usage remains on the table in Malaysia as well. If the amount of investment and frequency of installments is known a redemption factor is added to the rental to so fix the periodic Installment that the future incoming money flows may be discounted back to the current value of investment. This is the standard amortization technique used by conventional interest financing. Calculators are programmed to help customers find out for themselves the installment amount by feeding the relevant data into the system. One such calculator is available at the Kuwait Finance House web page.

AN ILLUSTRATION

One illustration of this sort of amortization process is available at the web page of LARIBA the Islamic finance arm of the celebrated American Finance House; The "Lease to Purchase model" or LTP of the bank is typical of the MMP deployment in the home financing area. To explain the LTP application process the AFH takes in their illustration the cost of home as $150,000. The

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[2] The MMP agreement of HSBC Amanah uses in their MMP home financing the standard mainstream formula $A = PV_m /1 - (1 + r_m)^{-n}$ for for discounting back the future stream of cash flows to their present monthly value A, given the present value of the flows PVm, r the monthly rate of return and the time frame n. Palpably the formula operates through a compounding of interest principle

client pays \$30,000 as down payment while the remaining \$120,000 is provided by the LARIBA. The property is purchased jointly by the parties. The deferred payment is to be cleared over 15 years; the transaction involves an implicit interest rate (p.3)[3]. What this rate is they do not indicate in the document. However, it is not difficult to find its magnitude from the data they provide in their Table 1 as reproduced below.

Table 1: Amortization scheme under the LARIBA LTP Model

Month	Return on capital	Return of capital	Payments	Balance
Beginning	---	---	---	\$120,000
1	\$800	\$347	\$1147	\$119653
2	\$798	\$349	\$1147	\$119304
3	\$796	\$351	\$1147	119054
---	---	---	---	---
179	\$6	\$1141	\$1147	870
180	\$7	\$1140	\$1147	\$0
Total	**86460**	**120000**	**206460**	
Rate of return =86460 /15 = 5764. (5764/120000)100 = 4.82%				

The rental being \$1000 a month, the annual return on \$150,000 will be 8% (interestingly, the same as in our example). Now, if we assume the capital redemption factor added to this rental as B, we have:

$$(0.08 + B)\ 120,000 = 1147 \times 12 \qquad (\$1147 \text{ is the monthly installment})\ldots\ldots (1)$$
This yields $9600 + 120,000B = 13764$…………………………………………..... (2)
Therefore, $B = [13764 – 9600] / 120,000 = 0.0347$ or 3.47 %..................................(3)

   Thus, 3.47% is what the AFH document refers to as the imputed or implied interest we noted above. It is easy to verify the result. Putting B = .0347 in equation (1) we get the monthly installment = \$1147, the same as in Table 1[4]. *Thus, there is riba in the home financing program of the LARIBA*. Still, the AFH claims and extensively publishes the world over that their model is at once *Shari'ah* compliant!

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[3] This disclosure had to be made in compliance with the requirements of the financial law in the US.

[4] Note that we have calculated the entire data for the Table as included in the Appendix. To do that we have derived two formulae given below---(i) $K_n = \beta K_{n-1} - I$, Where K_n = Outstanding balance at nth installment number, I = Installment amount $\beta = (1+R/A)$ where R = Monthly rent and A = initial value of the house. (ii) $r = [I - (R/A)K_n]$ where r = capital return component in the nth installment.

They nicely rap up interest in a rather foxy language as to how the return on capital is determined. Conventional banks straight away tell the customer that the quoted interest rate is not sufficient to fix the installment amount that would redeem his liability to the bank on the stipulated date unless an appropriate redemption factor is added to the rate[5]. But the LARIBA document states that the *total* monthly charge containing return of capital plus the return on it would be a fixed amount depending on the payment plan data – the agreed rental, number of installments and the initial contribution of the parties to acquire joint ownership of the house. The implicit addition of a redemption factor is not mentioned. This is happening even as AFH has the cream of world jurists at their advisory let by Sheikh Taqi Usmani who append their signatures to the document. Possibly the learned Jurists could not look into the mathematics of the model. In substance the position is presumably no different in Malaysia.

Of course, there usually is a provision in the MMP to review the rental rates for a change with mutual consent of the contracting parties especially if it is a long duration deal. But that does not alter the underlying amortization principle used with an in-built interest factor. The contract can be having time tranches using different rentals but the amortization process used for fixation of installments for a tranche remains unchanged. Meera and Razak (2009 Sections 3.1 and 3.2) have candidly demonstrated the fact using both (a) flexible rentals and (b) flexible property prices. Banks in Malaysia tend to tie the rental with movements in the BLR/BFR to impart what they call *flexibility* to the rental under the MMP.

Let us now explain the *Diminishing Balance Model* (ZDBM) and show its working using the same LARIBA illustration. Assume that the bank proposes to the client as follows. You have already paid $ 30000 to the seller as earnest money. The remaining $ 120000 the bank shall pay for acquiring the co- ownership in the house, you acting as our agent. For getting back the amount in 180 monthly installments over a period of 15 year, we shall put a yearly mark-up of 8% on our share in the cost of the house. However, the mark-up amount will be reduced proportionate to the return of our money. That would help reduce your liability to the bank. The registration of the house in the court will be in your name but you will have to sign a mortgage deed pledging the property with the bank as security until installments as per Table 2 have all been cleared in full. The Table provides the calculation for your monthly installments.

The return on capital portion in the installment is calculated at an agreed annual mark-up of 8% per annum operating on the diminishing balance. Thus, the installment would have a fixed

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[5] In fact conventional banks add an appropriate redemption factor to the interest rate to ensure that the discounted income stream that installment payments generate equals to the present value (PV) of the loan. The jurists have to clarify the reason of allowing it in the MMP contracts as it imparts an interest element to the agreed upon rental rate

component of capital return amounting $ 666.67. The return on capital will be calculated on the capital remaining outstanding at the beginning of each month at .08 /12 = 0.00667 or 0.667%. The return on capital RoC for any installment n can easily be found using the following formula

$$RoC_{(n)} = [A - (n-1) C] r$$

Where n is the required installment number

A is the initial payable amount

C is the fixed capital component of the installment and

r is the monthly mark-up

= $ 13.32 the same as in Table 2.

Table 2: Working of the Diminishing Balance Model

Installments Number n	Return of capital B	Diminishing balance C	Mark-up amount D	Installment Payments E = B + D
0	---	120000	---	---
1	666.67	119333.33	799.20	1465.87
2	666.67	1118666.66	794.76	1461.43
3	666.67	1117999.99	790.32	1456.99
---	---	---	---	---
178	666.67	1999.41	13.32	679.99
179	666.67	1332.74	8.88	675.55
180	666.67	666.07	4.44	671.11
Total	**120000**	**---**	**72395**	**192328**

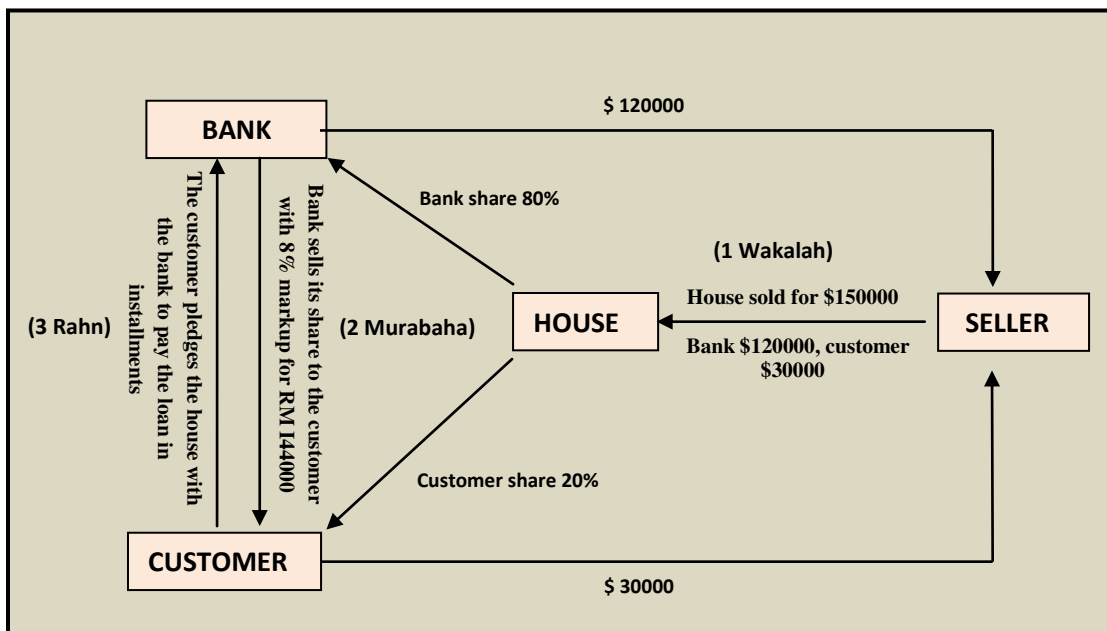**Rate of return =(72395/15 = 4826. (4826/120000)100 = 4.02%**

Figure 1: Diminishing Balance Model in operation: Three independent contracts

For example the return on capital for installment number 178, we can get it as under.

$$RoC_{(178)} = [\ 120{,}000 - (178 - 1)\ 666.67\ ]\ .00667 = 13.32$$

If we add to this amount the capital component 666.67 we get Installment 178 = $ 679.99.

Notice that three separate contracts are involved in completing the sale-payment process under the ZDBM program.

1. First is a contract of sale for joint ownership of the house involving three parties: the bank, the customer and the seller. The customer agrees to treat the earnest money as paid for both the partners. The seller sells the property to the co-ownership of the bank and the customer after the former pays the balance of $ 120000 to him to acquire an 80% share in the house.

2. Second is the contract between the customer and the bank, the latter selling his share in the property to him with an agreed mark-up spread at 8% a year on the outstanding amount.

3. Third is the contract whereby the customer mortgages the house with the bank until the payments are all cleared in accordance with the terms of the mortgage.

The three contracts are to be executed consecutively. The house is to be registered in the name of the customer. The customer would have to pay as return *on* capital (RonC) to the bank in both MMP and the ZDBM additional to the return *of* capital (RofC) component in the installments. The calculation of the de facto rate of return on capital is shown in the Tables above. In each case the total return is first divided by 15 the number of years involved. The result is then used to calculate the rate of return on capital $120000. It can be seen that in the MMP structure the customer has to pay a higher rate (4.8%) than under the ZDBM (4.02%). The gain of 0.8% a year i.e. $80 each month in substantial payments will be welcome to anyone – a cool $14400 saving over the contract period. This gain would increase with shortening of period or converting monthly installments to yearly ones, other things remaining unchanged.

CAPITAL COST RISK COVERAGE AND RELATED ISSUES

Critics argue that the ZDBM is cheaper because it ignores capital costs and risk premium which elements are taken care of in the MMP model by adding a redemption factor to the base rental. Let us not raise here the ticklish issue as to how this component is measured and how logical is its basis. Granted for the moment that its determination is not arbitrary and quantum unfair, it is interesting to note that the ZDBM without in any way reducing the margin of profit for the bank.

It is cheaper because it reduces the funding deposits of the bank proportionate to the reduction in profit thus leaving the margin unchanged.

Price = cost of funds + risk factor + hurdle costs + overhead costs

Cost of funds includes deposit cost, statuary reserve ratio (SRR) and liquidity requirement (LAR) cost. Risk factor includes cost of capital charge to absorb market, credit and operational risk. Hurdle rate is the return the bank expects to earn.

Since objective of this brief note is restricted to showing that under the ZDBM deployment, the bank's rate of return on capital investment remains unaffected, we have assumed that deposits match with financing amortization balance. SRR is taken at 4% with zero return and LAR at 2% on 1% minimal return. Capital charge is calculated at 4% equaling half of the 8% mark-up the bank uses. Hurdle rate and overheads are ignored to keep the matters simple. For demonstration we are using the same illustrative case of LARIBA as we used in the earlier paper.

The indicated rates in column headings being annual have been divided by 12 in each case to calculate monthly figures. The excerpts from relevant Excel worksheets are produced below for both the ZDBM and MMP cases to show that the de facto rate of return in the two models are the same. The Tables also narrate the happenings on both the assets and liabilities sides of a bank's balance sheet. Notice also that the return on investment is identical at 4.82% (0.41 x 12) in the two models (Column 12). However, the *funding deposits* are much lower in the ZDBM – about 20% less than the MMP. Thus, ZDBM is more efficient than the MMP in matters of fund utilization and possibly in granting liquidity.

Table 1: ZDBM is **c**heaper for the customer without being costlier to the bank

Months	Exposure structure (Assets side)						Risk coverage (Liabilities side)				Margins		
	Funding deposits	SRR	LAR	Total deposits	Capital	Total D + C	P & L Deposits	LAR	Capital	Total	Gross Margin	**R on I %**	R on D + C
		4% on 1	2% on 1	1+2+3	8% on 1	4+5	3% of 4	1% on 3	4% 0n 5	7+8+9	5 – 10	**11/4**	11/6
	1	2	3	4	5	6	7	8	9	10	11	**12**	13
1	120000	400	200	120600	800	121400	301.5	0.1667	2.67	305.33	494.67	**0.41**	0.408
2	119333	398	199	119930	796	120725	299.8	0.1657	2.65	302.64	493.36	**0.41**	0.408
3	118666	396	198	119260	791	120051	298.2	0.1648	2.64	300.95	490.05	**0.41**	0.408
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178	1999.41	6.66	3.33	2009.40	13.33	2022.73	5.020	0.0028	0.044	5.07	8.26	**0.41**	0.408
179	1332.7	4.44.	2.22	1339.36	8.89	1348.25	3.350	0.002	0.030	3.38	5.48	**0.41**	0.408
180	666.07	2.22	1.11	669.4	4.44	673.84	1.670	0.0009	0.015	1.69	2.75	**0.41**	0.408
Total	**10881280**										**44945.71**		
Mean	**60452**												

Table 2: MMP absorbs more funds inflicting higher cost on the customer

Months	Exposure structure (Assets side)						Risk coverage (Liabilities side)				Margins		
	Funding deposits	SRR	LAR	Total deposits	Capital	Total D + C	P & L Deposits	LAR	Capital	Total	Gross Margin	**R on I %**	R on D + C
		4% on 1	2% on 1	1+2+3	8% on 1	4+5	3% 0f 4	1%	4% on 5	7+8+9	5 – 10	**11/4**	11/6
	1	2	3	4	5	6	7	8	9	10	11	**12**	13
1	120000	400	200	120600	800	121400	302.5	0.1667	2.67	305.34	494.66	**0.41**	0.4075
2	119653	399	199	120251	798	121049	301.9	0.1658	2.66	304.72	493.28	**0.41**	0.4075
3	119405	398	199	120001	796	120798	301.0	0.1658	2.65	303.82	492.18	**0.41**	0.4075
--	--	--	--	--	--	--	--	--	--	--	--	**--**	--
178	3123	10.41	5.20	3240.61	20.82	3261.41	7.9	0.017	0.069	7.986	12.83	**0.41**	0.4075
179	2003	5.66	3.33	2021.99	13.35	3356.69	5.1	0.003	0.045	5.148	8.20	**0.41**	0.4075
180	870	2.9	1.5	874.44	5.8	879.52	2.2	0.001	0.005	2.206	3.59	**0.41**	0.4075
Total	**13724502**									**56689.82**			
Mean	**76247**												

The exercise above may not be very sophisticated but I believe it does clinch the claim under discussion. The chart below makes the case clearer. One can easily see that the funds commitment curve for the MMP has a marked bulge which is both the effect and evidence of the usage of compound interest formula in the installment determination. The ZDBM follows the straight (line) path.

Figure 2
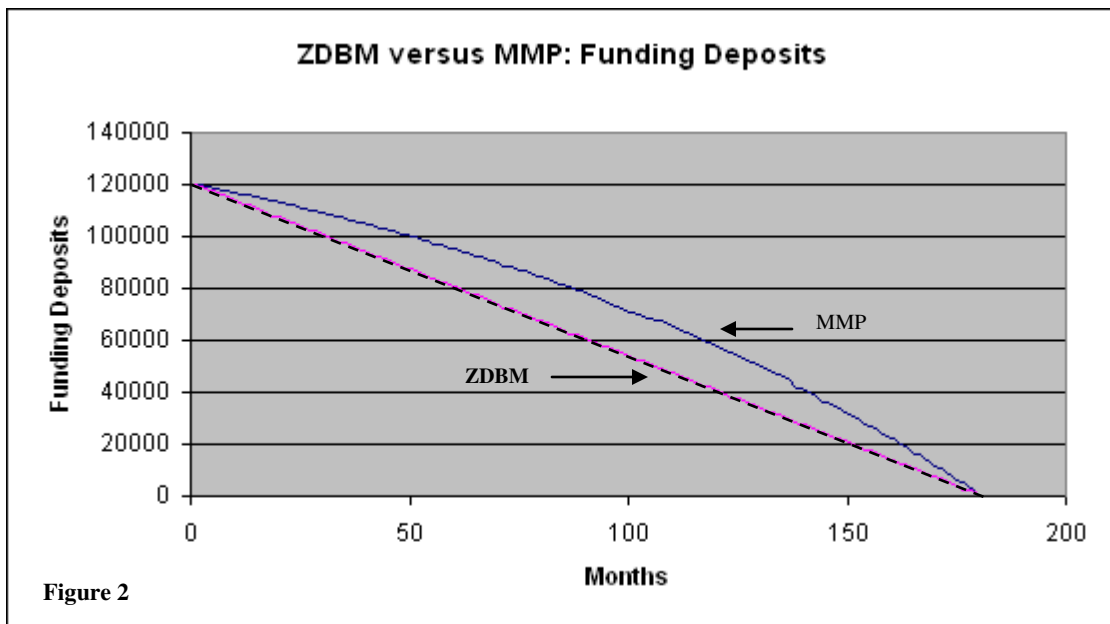
A related claim is that return of capital in MMP is faster compared with the ZDBM. This too defies facts. The rent in MMP is shared in the capital contribution ratio of the parties which remains higher for the bank for quite some time thus giving it a larger chunk of rent in the fixed

installment relative to the capital return component in it. In contrast, the capital recovery component in the ZDBM is fixed; the installment tapers off due to the bank share in the rental from the high to low values. Figure 3 based on data in the Appendix helps clarify the position. It is clear that until month 93 the return of capital remains higher in the ZDBM. It is uniform through out. In the MMP recovery is much slower in the initial stages but climbs up at an increasing rate becoming higher and higher after the mid-way is crossed.
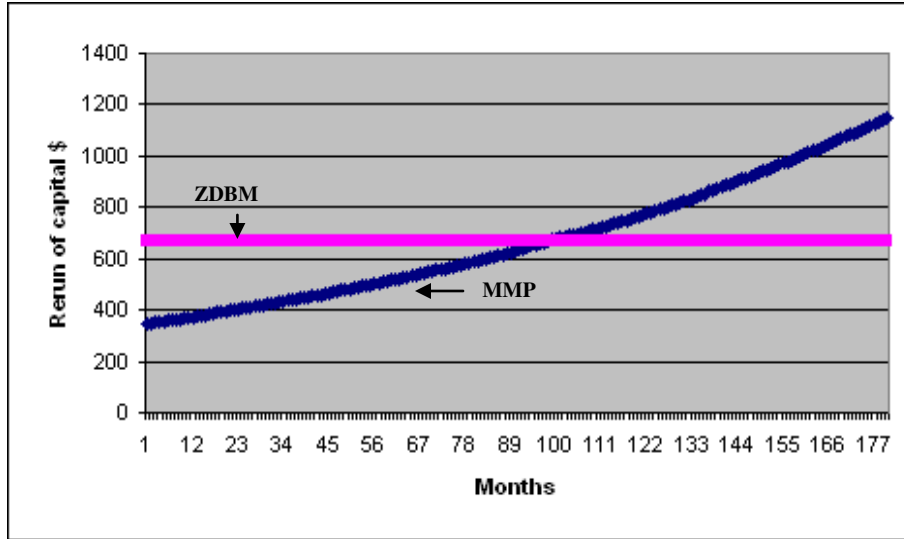

Figure 3: Return of capital is higher under the ZDBM until the 98th month

Finally, it is argued that the addition of what is called the redemption factor to the interest/rental rates in the conventional/MMP models has the advantage of keeping installments uniform over the contract period which may have some psychological value for the customer. But firstly a bank offering ZDBM can explain to the customer that installment payments will be known to him in advance from the schedule attached to the contract. Secondly, if one still insists on uniformity of

Table 3: working with uniform installments

Installments Number	Return of capital	Diminishing balance	Mark-up amount	Installment Payments
n	B	C	D	E = B + D
0	---	120000	---	---
1	269.25	119333.33	799.20	1068.45
2	273.73	1118666.66	794.76	1068.45
3	278.13	1117999.99	790.32	1068.45
---	---	---	---	---
178	1055.13	1999.41	13.32	1068.45
179	1059.57	1332.74	8.88	1068.45
180	1064.01	666.07	4.44	1068.45
Total	**120000**	**---**	**72395**	**192328**

Rate of return =(73327/15 = 4826. (4826/120000)100 = 4.02%

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installments as indeed crucial one can make them uniform under the ZDBM as well. We may divide the total payment on capital and income accounts under the ZDBM by the number of installments to obtain uniformity. From the uniform installments so obtained we deduct the monthly income to find the capital component column./ We reproduce the data of Table 2 after necessary adjustments in Table 3. The exercise of making the varying installments uniform in the DBM in fact brings to focusing on a few more merits of the structure compared to the MMP. Consider the set of diagrams in Figure 4. They help highlight some more features of the model.
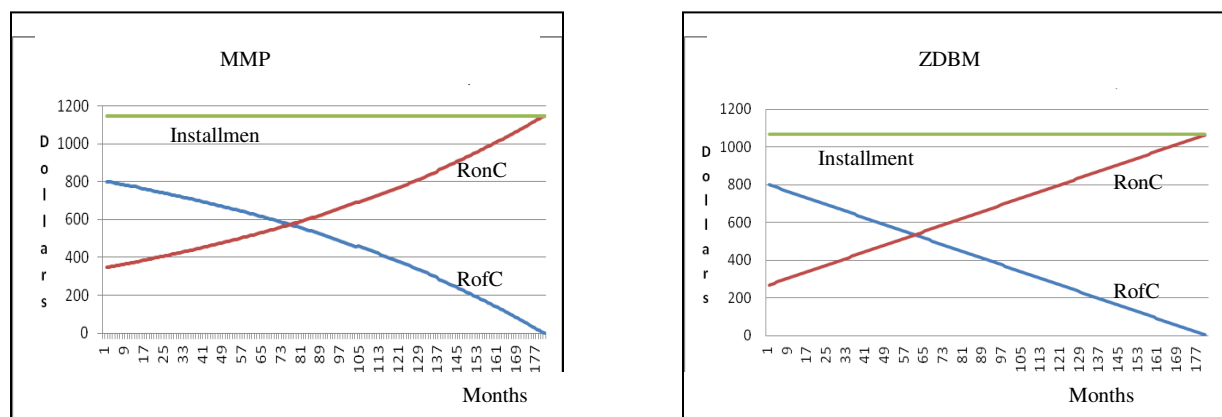
A   **Figure 4 Uniform Installments and their components**   **B**

in addition to its relative cheapness. RonC crosses the RofC earlier in the model than in the MMP. It means that the outstanding debt on a default date after that point would be smaller n the ZDBM model. The Appendix reveals that until month 77 the bank receives $34670 as return of capital under MMP and the remaining $52802 as return on it out of the total installment payment of $ 87172. Bank preference is clear; its position strengthens in a situation of default. To illustrate, suppose the default occurs in the 77th month itself. Over 70% debt in MMP is still outstanding, while the customer has paid almost 46% of the return on capital the bank would eventually get under the contract in 42% of the time. Is this a fair and equitable situation from the individual or societal view point? On the other hand, under the ZDBM the return of capital is pro rata – 42% returned in equal time and to the advantage of the bank. Finally, the non-linearity of the curves in MMP unveils the compounding element in the variables. The linear functions in the ZDBM confirm its absence.

CONCLUDING REMARKS

This paper reinforces the argument of my earlier writings that the MMP model for Islamic home financing is no better than its conventional counterpart in *riba* usage or its consequences for the

participants in the program.[6] The amortization exercise in these contracts uses not only interest but the rates invariably follow a compounding pattern, something even more severely condemned in the Quran. How Islamic jurists could stamp such agreements as Shari'ah compliant just beats me. It may be argued that MMP uses interest rate just as a bench mark. But for that reason the result of the model should be different if rate of interest on home finance and the rental are identical. Unfortunately, that is not the case. I trust Islamic bankers would take note of the *Diminishing Balance model* - the ZDBM. It is at once Shari'ah abiding and cheaper for the customer. Also, it avoids all the complexities of the rent or property value revision that confront us in the MMP. The relatively larger installments in early stages in the ZDBM may be a boon not a bane for younger people who may not have started the family yet or may be having fewer small kids. The life cycle income hypothesis need not haunt us; it is a tiny ghost, if at all.

In fact the model enunciates a general principle and procedure, home finance taken as an illustration. Once this principle and procedure are accorded recognition by the industry, Islamic finance modes are likely to undergo some radical and gainful transformation giving a much needed competitive edge to the system over the conventional in every sphere of economic activity. Malaysia can add another shining feather to its leadership cap in Islamic finance.

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[6] The situation in Malaysia is unclear. Most banks using the MMP facility do not publish unlike LARIBA the working of their models. The agreement pro forma does not explain the juridical aspect of the contract. Explanatory worksheets are not available. On the other hand, the documents hardly miss any clause to widen the discretionary powers of the banks. Even the daily receivable profit is calculated in some cases to better inform the customer – one is prompted to ask: is profit interest? It is time that the regulators lay down the minimum what the banks must reveal and cannot insert in their standard agreement forms. At present, vagueness to the bank advantage is their hallmark.

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APPENDIX

Table A.1: MMP and ZDBM Islamic Home Finance Programs compared

Months	Installments $		Return on capital $		Return of capital $		Balance due $	
	MMP	ZDBM	MMP	ZDBM	**MMP**	ZDBM	MMP	ZDBM
n	Ins M	Ins D	Roc M	Roc D	R of c M	R of c D	Bd M	Bd D
0							120000	
1	1147	1465.87	800	799.20	347	666.67	119653	120000
2	1147	1461.43	798	794.76	349	666.67	119405	119333.33
3	1147	1456.99	798	790.32	351	666.67	119054	118666.66

4	1147	1452.55	794	785.88	353	666.67	118701	117999.99
5	1147	1448.11	791	781.44	356	666.67	118345	117333.32
6	1147	1443.67	789	777.00	358	666.67	117988	116666.65
7	1147	1439.23	786	772.56	361	666.67	117628	115999.98
8	1147	1434.79	784	768.12	363	666.67	117265	115333.31
9	1147	1430.35	782	763.68	365	666.67	116900	114666.64
10	1147	1425.91	779	759.24	368	666.67	116533	113999.97
11	1147	1421.47	777	754.80	370	666.67	116163	113333.3
12	1147	1417.03	775	750.36	372	666.67	115791	112666.63
13	1147	1412.59	773	745.92	374	666.67	115417	111999.96
14	1147	1408.15	771	741.48	376	666.67	115039	111333.29
15	1147	1403.71	766	737.04	381	666.67	114660	110666.62
16	1147	1399.27	762	732.60	385	666.67	114277	109999.95
17	1147	1394.83	760	728.16	387	666.67	113893	109333.28
18	1147	1390.39	757	723.72	390	666.67	113505	108666.61
19	1147	1385.95	754	719.28	393	666.67	113115	107999.94
20	1147	1381.51	752	714.84	395	666.67	112723	107333.27
21	1147	1377.07	749	710.40	398	666.67	112328	106666.6
22	1147	1372.63	747	705.96	400	666.67	111930	105999.93
23	1147	1368.19	744	701.52	403	666.67	111530	105333.26
24	1147	1363.75	741	697.08	406	666.67	111126	104666.59
25	1147	1359.31	739	692.64	408	666.67	110721	103999.92
26	1147	1354.87	736	688.20	411	666.67	110312	103333.25
27	1147	1350.43	733	683.76	414	666.67	109901	102666.58
28	1147	1345.99	730	679.32	417	666.67	109487	101999.91
29	1147	1341.55	727	674.88	420	666.67	109070	101333.24
30	1147	1337.11	725	670.44	422	666.67	108651	100666.57
31	1147	1332.67	722	666.00	425	666.67	108228	99999.9
32	1147	1328.23	719	661.56	428	666.67	107803	120666.67
33	1147	1323.79	716	657.12	431	666.67	107375	98666.56
34	1147	1319.35	713	652.68	434	666.67	106945	97999.89
35	1147	1314.91	710	648.24	437	666.67	106511	97333.22
36	1147	1310.47	708	643.80	439	666.67	106074	96666.55
37	1147	1306.03	705	639.36	442	666.67	105635	95999.88
38	1147	1301.59	702	634.92	445	666.67	105192	95333.21
39	1147	1297.15	699	630.48	448	666.67	104747	94666.54
40	1147	1292.71	696	626.04	451	666.67	104299	93999.87
41	1147	1288.27	693	621.60	454	666.67	103847	93333.2
42	1147	1283.83	690	617.16	457	666.67	103393	92666.53
43	1147	1279.39	687	612.72	460	666.67	102936	91999.86
44	1147	1274.95	684	608.28	463	666.67	102475	91333.19
45	1147	1270.51	680	603.84	467	666.67	102012	90666.52
46	1147	1266.07	677	599.40	470	666.67	101545	89999.85
47	1147	1261.63	674	594.96	473	666.67	101076	89333.18
48	1147	1257.19	671	590.52	476	666.67	100603	88666.51

49	1147	1252.75	668	586.08	479	666.67	100127	87999.84
50	1147	1248.31	665	581.64	482	666.67	99648	87333.17
51	1147	1243.87	661	577.20	486	666.67	99165	86666.5
52	1147	1239.43	658	572.76	489	666.67	98680	85999.83
53	1147	1234.99	655	568.32	492	666.67	98191	85333.16
54	1147	1230.55	652	563.88	495	666.67	97699	84666.49
55	1147	1226.11	648	559.44	499	666.67	97203	83999.82
56	1147	1221.67	645	555.00	502	666.67	**96705**	83333.15
57	1147	1217.23	642	550.56	505	666.67	96203	82666.48
58	1147	1212.79	638	546.12	509	666.67	95697	81999.81
59	1147	1208.35	635	541.68	512	666.67	95189	81333.14
60	1147	1203.91	631	537.24	516	666.67	94677	80666.47
61	1147	1199.47	628	532.80	519	666.67	94161	79999.8
62	1147	1195.03	625	528.36	522	666.67	93642	79333.13
63	1147	1190.59	621	523.92	526	666.67	93120	78666.46
64	1147	1186.15	618	519.48	529	666.67	92594	77999.79
65	1147	1181.71	614	515.04	533	666.67	92065	77333.12
66	1147	1177.27	611	510.60	536	666.67	91532	76666.45
67	1147	1172.83	607	506.16	540	666.67	90995	75999.78
68	1147	1168.39	603	501.72	544	666.67	90455	75333.11
69	1147	1163.95	600	497.28	547	666.67	89911	74666.44
70	1147	1159.51	596	492.84	551	666.67	89364	73999.77
71	1147	1155.07	592	488.40	555	666.67	88813	73333.1
72	1147	1150.63	589	483.96	558	666.67	88259	72666.43
73	1147	1146.19	585	479.52	562	666.67	877002	71999.76
74	1147	1141.75	581	475.08	566	666.67	87138	71333.09
75	1147	1137.31	577	470.64	570	666.67	86572	70666.42
76	1147	1132.87	574	466.20	573	666.67	86003	69999.75
77	1147	1128.43	570	461.76	577	666.67	85430	69333.08
78	1147	1123.99	566	457.32	581	666.67	84852	68666.41
79	1147	1119.55	562	452.88	585	666.67	84271	67999.74
80	1147	1115.11	558	448.44	589	666.67	83686	67333.07
81	1147	1110.67	554	444.00	593	666.67	83098	66666.4
82	1147	1106.23	550	439.56	597	666.67	82505	65999.73
83	1147	1101.79	546	435.12	601	666.67	81908	65333.06
84	1147	1097.35	542	430.68	605	666.67	81307	64666.39
85	1147	1092.91	538	426.24	609	666.67	80703	63999.72
86	1147	1088.47	534	421.80	613	666.67	80094	63333.05
87	1147	1084.03	530	417.36	617	666.67	79481	62666.38
88	1147	1079.59	526	412.92	621	666.67	78864	61999.71
89	1147	1075.15	522	408.48	625	666.67	78243	61333.04
90	1147	1070.71	518	404.04	629	666.67	77618	60666.37
91	1147	1066.27	511	399.60	636	666.67	76589	59999.7
92	1147	1061.83	509	395.16	638	666.67	76356	59333.03
93	1147	1057.39	505	390.72	642	666.67	75718	58666.36

94	1147	1052.95	496	386.28	651	666.67	74430	57999.69
95	1147	1048.51	492	381.84	655	666.67	73779	57333.02
96	1147	1044.07	488	377.40	659	666.67	73124	56666.35
97	1147	1039.63	483	372.96	664	666.67	72465	55999.68
98	1147	1035.19	479	368.52	668	666.67	71801	55333.01
99	1147	1030.75	474	364.08	673	666.67	71133	54666.34
100	1147	1026.31	470	359.64	677	666.67	70461	53999.67
101	1147	1021.87	465	355.20	682	666.67	69784	53333
102	1147	1017.43	461	350.76	686	666.67	69102	52666.33
103	1147	1012.99	456	346.32	691	666.67	68416	51999.66
104	1147	1008.55	458	341.88	689	666.67	68732	51332.99
105	1147	1004.11	454	337.44	693	666.67	68043	50666.32
106	1147	999.67	449	333.00	698	666.67	67350	49999.65
107	1147	995.23	445	328.56	702	666.67	66653	49332.98
108	1147	990.79	440	324.12	707	666.67	65950	48666.31
109	1147	986.35	435	319.68	712	666.67	65243	47999.64
110	1147	981.91	430	315.24	717	666.67	64531	47332.97
111	1147	977.47	426	310.80	721	666.67	63815	46666.3
112	1147	973.03	421	306.36	726	666.67	63093	45999.63
113	1147	968.59	416	301.92	731	666.67	62367	45332.96
114	1147	964.15	411	297.48	736	666.67	61636	44666.29
115	1147	959.71	406	293.04	741	666.67	60900	43999.62
116	1147	955.27	401	288.60	746	666.67	60159	43332.95
117	1147	950.83	396	284.16	751	666.67	59414	42666.28
118	1147	946.39	391	279.72	756	666.67	58663	41999.61
119	1147	941.95	386	275.28	761	666.67	57907	41332.94
120	1147	937.51	**381**	270.84	**766**	666.67	**57146**	40666.27
121	1147	933.07	376	266.40	771	666.67	56381	39999.6
122	1147	928.63	371	261.96	776	666.67	55610	39332.93
123	1147	924.19	366	257.52	781	666.67	54834	38666.26
124	1147	919.75	361	253.08	786	666.67	54052	37999.59
125	1147	915.31	355	248.64	792	666.67	53266	37332.92
126	1147	910.87	350	244.20	797	666.67	52474	36666.25
127	1147	906.43	345	239.76	802	666.67	5677	35999.58
128	1147	901.99	339	235.32	808	666.67	50875	35332.91
129	1147	897.55	334	230.88	813	666.67	50067	34666.24
130	1147	893.11	329	226.44	818	666.67	49254	33999.57
131	1147	888.67	323	222.00	824	666.67	48436	33332.9
132	1147	884.23	318	217.56	829	666.67	47612	32666.23
133	1147	879.79	312	213.12	835	666.67	46782	31999.56
134	1147	875.35	306	208.68	841	666.67	45947	31332.89
135	1147	870.91	301	204.24	846	666.67	45107	30666.22
136	1147	866.47	295	199.80	852	666.67	44261	29999.55
137	1147	862.03	284	195.36	863	666.67	42551	29332.88
138	1147	857.59	278	190.92	869	666.67	41686	28666.21

139	1147	853.15	272	186.48	875	666.67	40819	27999.54
140	1147	848.71	266	182.04	881	666.67	39945	27332.87
141	1147	844.27	261	177.60	886	666.67	39064	26666.2
142	1147	839.83	255	173.16	892	666.67	38178	25999.53
143	1147	835.39	249	168.72	898	666.67	37285	25332.86
144	1147	830.95	243	164.28	904	666.67	36387	24666.19
145	1147	826.51	237	159.84	910	666.67	35463	23999.52
146	1147	822.07	232	155.40	915	666.67	34772	23332.85
147	1147	817.63	224	150.96	923	666.67	33656	22666.18
148	1147	813.19	218	146.52	929	666.67	32733	21999.51
149	1147	808.75	212	142.08	935	666.67	31805	21332.84
150	1147	804.31	206	137.64	941	666.67	30870	20666.17
151	1147	799.87	200	133.20	947	666.67	29983	19999.5
152	1147	795.43	193	128.76	954	666.67	28981	19332.83
153	1147	790.99	187	124.32	960	666.67	28028	18666.16
154	1147	786.55	181	119.88	966	666.67	27068	17999.49
155	1147	782.11	174	115.44	973	666.67	26101	17332.82
156	1147	777.67	168	111.00	979	666.67	25128	16666.15
157	1147	773.23	161	106.56	986	666.67	24149	15999.48
158	1147	768.79	154	102.12	993	666.67	23163	15332.81
159	1147	764.35	148	97.68	999	666.67	22170	14666.14
160	1147	759.91	141	93.24	1006	666.67	21171	13999.47
161	1147	755.47	135	88.80	1012	666.67	20166	13332.8
162	1147	751.03	128	84.36	1019	666.67	19153	12666.13
163	1147	746.59	121	79.92	1026	666.67	18134	11999.46
164	1147	742.15	114	75.48	1033	666.67	17108	11332.79
165	1147	737.71	107	71.04	1040	666.67	16075	10666.12
166	1147	733.27	100	66.60	1047	666.67	15035	9999.45
167	1147	728.83	93	62.16	1054	666.67	13988	9332.78
168	1147	724.39	86	57.72	1061	666.67	12936	8666.11
169	1147	719.95	79	53.28	1068	666.67	11874	7999.44
170	1147	715.51	72	48.84	1075	666.67	10806	7332.77
171	1147	711.07	65	44.40	1082	666.67	9731	6666.1
172	1147	706.63	58	39.96	1089	666.67	8649	5999.43
173	1147	702.19	50	35.52	1097	666.67	7560	5332.76
174	1147	697.75	43	31.08	1104	666.67	6463	4666.09
175	1147	693.31	36	26.64	1111	666.67	5359	3999.42
176	1147	688.87	28	22.20	1119	666.67	4248	3332.75
177	1147	684.43	21	17.76	1126	666.67	3123	2666.08
178	1147	679.99	13	13.32	1134	666.67	2003	1999.41
179	1147	675.55	6	8.88	1141	666.67	870	1332.74
180	1147	671.11	0	4.44	1147	666.67	0	666.07
	206460	**192328**	**86460**	**73327**	**120000**	**120000**		