سلسلة فقه المعاملات

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نموذج توزيع أرباح وخسائر شركات المضاربة الإسلامية

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A Model of Distributing Profits & Losses of Modarabah

One of the Most Important Finance Means in the Islamic Banks &
Investments Companies

Kantakji Model ©

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The Islamic economy has become a prominent guidepost in the global economy. Demand on the Islamic finance means has become clear whether they are from Islamic investment, finance houses or banks or from traditional banks (which do not have but one means to lend by interest) due to their sufficient flexibility that responds to different requirements imposed by economic changes and far reached from all kinds of usury that is forbidden legitimately.

Thus, need has started to what is called financial geometry according to the Islamic approach. A group of researchers and experts are specialized in designing and innovating financial tools that combine the legitimate credibility and practical economic efficiency.

Economic Efficiency → *Financial Geometry* ← *Legitimate Cred...*
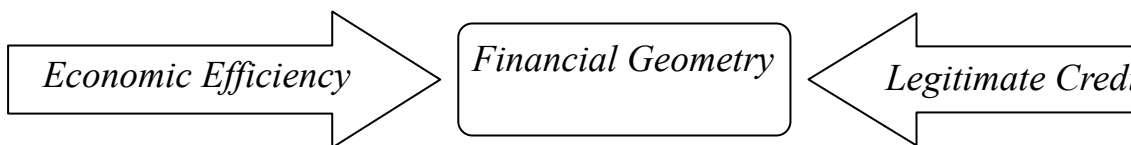
Nonetheless, the global economy is forthcoming to a peculiar and different stage. Nowadays it is looking for new substitutes and solutions and is ready to accept different models to the usual ones. Consequently, the opportunity is more ready than before to present Islamic models to alleviate the degree of global markets' disturbances and mal-distribution of wealth. In fact, some banks in Switzerland and Britain and others have begun to use the Islamic banking tools.

Because the financial environment has more readiness than before to accept the Islamic solutions and to interact with them, this research seeks to present an accounting and mathematic solutions for investments according to the Islamic approach that depends on financing by contribution in "Modarabah: speculation" style in order to serve the message of the Islamic economy.

Modarabah Companies:

"Modarabah: speculation" (lending): is a company (partnership) in profit between money and work. It is contracted between investment accounts' holders (money owner) and the bank "Modareb: speculator", profit can de divided according to the contract signed between them. While the investor is responsible for loss (except cases the bank exceeds), neglect or violation of conditions and the outcomes. "Modarabah: speculation" investments are divided into:

1. *Absolute Investments' Accounts: Their owners grant the title to the bank in investing in the possible way without limitations, whether the bank invested them by itself, for a certain goal or in a specific method. They empower the bank to mix them with its money (ownership holders' rights) or the money which the bank has the absolute right to*

behave with it (current accounts). The revenues of investing this money go to all partners of money or effort.

2. *Limited Investments' Accounts: They are accounts whose holders limit the bank to some conditions, such as investing the money in a specific project, for a specific aim or not mixing it with the bank's money. Limitation can be related to other matters as stipulating not to sell for a period or without mortgage guarantee, or stipulating to sell at a profit not less than a certain amount, or stipulating the bank investment of these accounts by the bank itself without investing them by means of another "Modarabah: speculation" with the others.*

    The capital is divided into units called "Modarabah bond", which is an investment tool depends on dividing "Modarabah: speculation" capital (Lending) by issuing a deed of ownership based on equal value units which are registered in the names of their holders. Because they own common shares in "Modarabah: speculation" capital and what it changes to at differential rates according to the ownership of each one. The following elements should be available in the:

1. *Element One:* the deed represents a common share ownership in the project for which the deeds have been issued to build or supply it. This ownership continues from the beginning of the project till its end. All legitimate rights and acts are due to the owner in his property such as selling, granting, mortgage, legacy and others taking into consideration that the deeds represent "Modarabah: speculation" capital.

2. *Element Two:* the contract in "Modarabah: speculation" deeds is based on contracting conditions determined by issuing a list.

Affirmation is expressed by subscribing in these deeds, while accepting is expressed as the approval of the issuing side. The issuance list must contain all the required data legitimately in "Modarabah: speculation" conditions "Kirad: Lending" regarding clarifying the capital information, profits' distribution and special terms in that issuance, if available. These terms should not be contradictory to the legitimate rules.

3. *Element Three:* Deeds of "Modarabah: speculation "lending" remains able to be circulated after the expiry of the limited period of subscription taking into consideration that it is possible by "Modareb: speculator" when issuing the bonds.

Formulation a Distributing of L&P Model:

The problem lies in how the "Modareb: speculator" (the bank for example) will calculate the profits and losses of the partners including his share. The "Modareb: speculator" often speculates himself as a partner of his own money. The problem gets more complicated when the freedom of going or out is available to the speculators (such as long term "Modarabah: speculations"), also when the investments, the subject of "Modarabah: speculation" are unlimited i.e. absolute investments. Thus, it is possible to intersect the investors' going in and out with the investments.

As the "Modareb: speculator" has many accounts and different activities, a problem in distributing the mutual expenses may arise between his own activities and other various investments. Formulating a model to distribute losses and profits of "Modarabah: speculation" companies aims at

finding mathematic solutions to overcome the distribution problems in order to facilitate the application of this financing because of its role in securing the necessary liquidation.

What helps the application to be possible and accurate is the availability of software. So the process of applying integrates because the solutions are connected with automated accountancy systems. This accountancy software supported with a kind of classification helps in identifying and specifying the related account balances – for the specified accountancy period – including. The calculation of depreciation without extra costs as this process occurs in an automated way.

The related account balances and the accountancy period results represent the approach to solve the model equations, so the share of any partner can be specified at any moment on the condition that his date of going in and out known.

Model Determiners:

1. The "Modareb: speculator" is the worker of "Modarabah: speculation", i.e. the bank or the investment company. The investor is the owner of the money, or the holder of the bonds of the "Mokaradah: Lending"; and the capital is the total of sums of the bonds of "Mokaradah: Lending".

2. The "Modareb: speculator" partner (the bank in our case) does not stand the loss in case of happening because he is the "Modareb: speculator" worker. But if he participates in "Modarabah: speculation" as a finance provider, he is similar to the other holders of the capitals in loss and profits, according to the juristic rule "Alghonum-Bel-Ghurom: i.e. standing profit is

side to side to loss" unless it results from neglecting or transgress.

3. The subscription contract must mention the term of forgiveness among partners. There must be special and simple arithmetic differences in the indirect costs' factors.

4. "Modarabah: speculation" companies' profits and losses are regarding what is agreed upon of all the profits between the "Modareb: speculator" (the bank) and holder of the capital (the investors); and known to both sides and fixed during the period of "Modarabah: speculation". This must be declared in the "Modarabah: speculation" contract at its beginning and renewal. In case of adjusting profit rate in the future; a note must be given for a specific period whose passing means the investor agreement without objecting.

5. The separation of any partner before the expiry of the investment - "Modarabah: speculation" - means that he is a non-partner in the investment's profits. Because the "Modarabah: speculation" profits and losses are determined after the monetary evaluation (liquidation) of the partnership.

6. Deducting the provisions in "Modarabah: speculation" companies, if the deducted provision of "Modarabah: speculation" companies' profits is to protect the capital (Assets' protection), it is deducted from the capitalists' shares of profits only without the participation of the "Modareb: speculator", because its deduction from the total profits leads to the participation of the "Modareb:

speculator" in standing the loss of the capital; this is forbidden legitimately.

7. Partners' payments are considered as a group, as if it was a contribution of a number of partners (but in fact it belongs to the very person); however, each payment represents a partner share.

General Formula:

While the profit is the differential between costs and sales, so the profit formula can be written as the following:

$$F = S - T \qquad (1)$$

Where the symbol F means profits, S means sales, and T means costs.

Because there is for each "Modarabah: speculation" its related direct costs and it because makes use of the general speculative costs such as managerial expenses and advertising campaign expenses and others, the total costs T consists of direct costs t and indirect costs v. Then the formula one can be written as the following:

$$F = S - (t + v) \qquad (2)$$

Accounts' Classifications:

The accountancy systems and software depend on classifying their accounts as assets, liabilities, expenses and resources. They provide the accounts' general and detailed codes. The accounts tree may branch to many levels depending on demand. The account balance can be determined by aggravating its balances automatically, where there is adding or subtracting operations of the transactions' amounts that are applied to the detailed accounts affecting the related general accounts automatically.

Thus, it is very easy to know the balance of any account at any moment in order to calculate the profit of each investment, this assists to realize the responsibility accountancy that rationalize the future decisions.

- <u>Classifying the investments in special accounts as a cost center within the general account: (5)</u>

  5   Investments

       51   *Absolute Investments*

           5101 Investments 1

           5102 Investments 2

           5103 and so on.

       52   *Limited Investments*

           5201 Investments 1

           5202   Investments 2

           5203   and so on..

- <u>Classifying the direct costs' accounts of the investments:</u>

  35   Direct costs of investments

      351 Direct costs' of absolute investments

         35101 Investment 1

            351011 Materials

            351012 Wages

            351013 Sundries

         35102 Investment 2

            351021 Materials

            351022 Wages

            351023 Sundries

            352 Direct costs' of limited investments

         35201 Investment 1

            352011 Materials

            352012 Wages

352013 Sundries
35202 Investment 2
352021 Materials
352022 Wages
352023 Sundries

- <u>Classifying sales' accounts of investments:</u>
  45 Investments sales
  451 *Absolute investments' sales*
  45101 Investment 1
  45102 Investment 2
  45103 and son on..
  452 *Limited investments' sales*
  45201 Investment 1
  45202 Investment 2
  45203 and son on..

- <u>Classifying related mutual costs accounts</u>: as classifying the account of sales expenditure, distribution expenses, transportation expanses, storage expanses and managerial expenditures within their special account under the general account: "expenses". A part of them forms the indirect costs of the investments.

Direct costs' accounts are closed in the related investment account as the following double entry:

xxx From Absolute Investments A/C (52) Investment1 A/C (5201)	
	xxx To direct costs investments A/C (35)
	Direct costs' of absolute investments A/C (352)
	Investment1 A/C (352011)

Also, the investments sales account is closed in the related investment account as the following:

xxx From Investments' sales A/C (45)
  Absolute Investments sales A/C (451)
  Investment1 sales A/C (45101)	

	xxx To absolute investments A/C (52)
	Investment1 A/C(5201)

Therefore, the investments' account is shown as:

<div align="center">Investment 1 (5201) A/C</div>

Sales (45101)	xxx	Direct costs (352011)	xxx
		Profit without indirect costs	xxx
	xxx		xxx

The direct costs entries in absolute investments are prepared in similar way to the above example.

N.B. The entries' closure happens in the investment' accounts after the "Modarabah: speculation" has finished during the accountancy period, or by the end of the accountancy period when the "Modarabah: speculation" evaluation or liquidity processes happen in order to prepare the final accounts. The closure during the accountancy period is considered as a possibility of distributing the finished "Modarabah: speculation" profits and losses.

The Indirect Costs:

The rule of special expenditure of investment "Modarabah: speculation" operations is that each operation stands the necessary costs to carry it out., regarding the necessary general managerial costs for the "Modareb: speculator" (the bank for instance) to practice his different activities, there are two legitimate views:

1. Either the bank stands them alone because these expenditures are covered by a part of his share in profit, which he receives as the "Modareb: speculator", where the bank stands the works that the "Modareb: speculator" should carry them out. But the expenditures resulting from works that should not be carried out by the "Modareb: speculator", the investment accounts' accounts according to what the jurists have decided regarding the "Modarabah: speculation" rules. When there is a doubt in the sort of the accounts which require the "Modareb: speculator" stands them or the investment stands them, the accountant turns to what the experts see according to the decisions of the legitimate control board in the related Islamic bank.

2. Or the "Modareb: speculator" and the "Modarabah: speculation" stand them in general.

However, the only measurement case in the model lies in distributing the indirect costs and which will be calculated by means of controlling the related account balances for the whole period and calculating the pound/cost share. As the "Modareb: speculator" has other works besides the "Modarabah: speculation" investments, we will resort to distributing the indirect costs according to the total of direct costs of all "Modarabah: speculations" to specify the relative share for each. A share of them represents the special bank works. This mean it is similar to any other "Modarabah: speculation".

If we refer to the indirect costs whose value is specified from costs by V, the account balance A/C (35) expresses the total cost of "Modarabah: speculations". The first "Modarabah: speculation" cost is referred to as $Cost_1$ "the account A/C (351) balance represents it", and the second "Modarabah: speculation" cost is referred to as $Cost_2$ "the account A/C (352) and "Modarabah: speculation" cost (n) is referred to as $Cost_n$. The other bank investments are referred to in the same way. Then, we can calculate the value of "the pound/costs" share from the indirect costs, "referred to as $v_{\cos t}$, according to the following equation:

$$v_{\cos t} = \frac{V}{\sum_{n}^{k=1} Cost_k}$$

(3)

Where n represents the number of "Modarabah: speculations".

Then, the share of "Modarabah: speculations" $v_{\cos t}$ is distributed from the indirect costs among them by multiplying this factor by the cost of any investment to obtain its share from the indirect costs according to the following equation:

$$v_i = v_{\cos t} . Cost_k \qquad (4)$$

The Two Cases of Models:

1. A Limited Model (Limited Investments): where the investment is limited, the number of partners is limited and the investment partners are known before beginning the investment, there is no possibility to get rid of the investment but by its liquidation.

2. A Probable Model (Absolute Investments): a case of an investment or many limited investments with unlimited partners besides the freedom of partners to go in and out at any time.

We will deal with these two models in details:

1- A limited Model (Limited Investments):

Supposing C is the capital, C_i is the capital at the time i, the time unit is the day, and P_1 is the paid cash payment to increase the capital in the time 1, P_i is the cash payment in the time i. So, the total paid capital in the time i in the following formula:

$$C_i = p_1 + p_2 + ... + p_i \qquad (5)$$

Supposing S_i is the sales at the time i, the direct costs of the investment account is $Cost_i$ and the indirect costs which represent a ratio of the managerial cost of the project is v. Therefore, formula two, which calculate, F_i can be written at the time i, as the following:

$$F_i = S_i - (T_i + v_i) \qquad (6)$$

As a result, the partner share of profits and losses is R_i who owns the capital C_i at the time i, which is expressed in the following formula:

$$R = F_i \cdot \frac{C_i}{\sum\limits_{k}^{i=1} C_i} \qquad (7)$$

Where k is the quantity of the "Modarabah: speculations" partners.

2- A Probable Model (Absolute Investments):

In this model each settlement will be considered as a capital belongs to a dummy partner. Then, each share will be calculated alone $Share_i$ on this base. Then, we add all what is belongs to the specified partner $\sum Share_i$.

Supposing the weighted capital is the payment at the time i, multiplied by days' number p_{Days} which means the days of investing and equals the differential between the current date $p_{CurrentDate}$ and paying date p_{Start}, so the distribution of "Modarabah: speculation" profit as formula six, F_i for all partners' payments. In this case we consider each payment as an independent partner, then gather the payments profits' shares to get his net share of the whole profits. As the following formulas:

$$p_{Days} = p_{CurrentDate} - p_{Start} \qquad (8)$$

$$WeightedCapital = \sum\limits_{k}^{m=1} p_m \cdot p_{Days} \qquad (9)$$

Where k is the number of the contributing partners in the whole "Modarabah: speculations" capital.

The payment profit is calculated as the following formula:

$$Share_i = \frac{p_i \cdot p_{Days}}{WeightedCapital} \cdot R \quad (10)$$

Therefore, to know the holder share is by gathering his dummy shares resulting from his payments as the following:

$$R_i = \sum_{k}^{i=1} Share_i \quad (11)$$

Where k is the number of the payments of each partner.

Example:

Weighted capital total	74,083,000	Calculated
Capital total	277,000	Calculated
Net profits	100,000	Variable
Project starting date	01/01/2001	Variable
Project ending date	31/12/2001	Variable
Project age	360	Calculated

The Table (1) Model Basis Data

Payment profit $Share_i$	Weighted capital	Days	Payment date	Payments	
24,229.58	17,950,000	359	01/01/2001	50,000	
9,664.84	7,160,000	179	01/07/2001	40,000	Partner

Payment profit $Share_i$	Weighted capital	Days	Payment date	Payments	
5,430.40	4,023,000	149	01/08/2001	27,000	...1
1,606.31	1,190,000	119	01/09/2001	10,000	
40,931.12	30,323,000			127,000	
Payment profit $Share_i$	Weighted capital	Days	Payment date	Payments	
48,459.16	35,900,000	359	01/01/2001	100,000	
6,040.52	4,475,000	179	01/07/2001	25,000	Partner 2
3,860.53	2,860,000	143	07/08/2001	20,000	
708.66	525,000	105	15/09/2001	5,000	
59,068.88	43,760,000			150,000	

74,083,000   Total of Weighted capital

The Table (2) Payment profits calculated on weighted capitals

Table (2) Calculating Of Payment Profits on the Base of Calculated Capital or the Weighted Capital

By comparing, the differences of the profits appear when the settlements are huge at the beginning of the project; while the profits are not affected when calculated on the real capital volume basis (refer to the table 4).

Shares	Shares calculated on the base of weighted capital method	Shares calculated on the base of the real capital volume method
Share1	40,931	45,848
Share 2	59,069	54,152
Total	100,000	100,000

✓

Table (3) Results of Comparisons

Weighted capital total	74,083,000	Payment profits	Weighted capital	Days	Date	Payments	
Capital total	277,000	24,229.58	17,950,000	359	01/01/2001	50,000	**P ar tn er 1**
Net profits	100,000	9,664.84	7,160,000	179	01/07/2001	40,000	
Project starting	01/01/2001	5,430.40	4,023,000	149	01/08/2001	27,000	
Project ending	31/12/2001	1,606.31	1,190,000	119	01/09/2001	10,000	
Project age	360	40,931.12	30,323,000			127,000	

Payment profits	Weighted capital	Days	Date	Payments	
48,459.16	35,900,000	359	01/01/2001	100,000	**P ar tn er 2**
6,040.52	4,475,000	179	01/07/2001	25,000	
3,860.53	2,860,000	143	07/08/2001	20,000	
708.66	525,000	105	15/09/2001	5,000	
59,068.88	43,760,000			150,000	

Table (4) Detailed Calculations

Determination of initial marketing value of the "Modarabah" bonds:

Due to the fact that the capital represents a group of "Modarabah: speculations" bonds, it is possible to divide the resulting profit by the number of bonds to determine the bond share of profits. Then, the share of "Modarabah: speculation" bond from profit is added to "Modarabah: speculations" bond value in order to know the market value of "Modarabah: speculations" bond for the initial exchange in stock exchange market.

Suppose Q is the number of bonds, q is the bond price, that the number of "Modarabah: speculation" stocks is determined by this formula:

$$Q = \frac{C_i}{q} \qquad (12)$$

Then the "Modarabah: speculations" bond share from profit f is determined by this formula:

$$f = \frac{F_i}{Q} \qquad (13)$$

The initial market "Modarabah: speculations" bond value val equals:

$$val = q + f \qquad (14)$$

If "Modarabah: speculations" bond value is 1000 pound, for instance, the number of "Modarabah: speculations" bond is 277 bonds, in the mentioned example and according to formula (12), and the bond share from "Modarabah: speculations" bond profits is 361 pound $100.000 / 277 = 361$ according to the equation (13).

Thus, the initial market value of "Modarabah: speculations" according to formula (14) equals: 1361 pound. This value is initial because many factors interfere with the market value; such as the factors of demand and offer that

increase the market value whenever demand on these bonds increases.

It is possible to follow to this value (as a service for market pricing goals as exchange market, by means of recalculating the above mentioned formulas daily or every period because of its easiness if it were computerized.

As a result, developing mathematical models to distribute profits and losses of "Modarabah" with the possibility of free going in and out for the partners in addition to limited or absolute investments that facilitates using "Mokaradeh" bonds as an Islamic legitimate financing means. What encourages on the possibility to computerize the model which make it possible for each user.

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