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Rastin partnership accounting part III: Instalment Financial Sharing (IFS)

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Abstract

Purpose: This paper aims to explain a new system of accounting for partnership financing that applies in Rastin Profit and Loss Sharing Banking. In this system, the interest rate is not used in calculations and accounting; and instead, the "time value" of capital based on the amount and duration of the partnership is used. In this part, we will go to the details of removing Riba in instalment payments accounting details.

Design: Rastin Partnership Accounting principles have been founded on off-balance-sheet items and on the basis of the institutions' obligations to the depositors and receivers of financial resources, and they are in compliance with the nature of the intermediary financial activity (a partnership of depositor in the yields of the fund receiver via the bank).

Findings: The distribution of profit among stakeholders (including workforce and capital owners) is accomplished according to the share of each beneficiary in the created value added. In this regard,Euler's theorem, as the best mathematical-economic innovation for the distribution of income, is applied.

Research limitations: This system is novel, and it is required to be more elaborated for further practical development and adjustment.

Practical implications: In this accounting system, the return of the partnership is distributed among sharers based on the amount and duration of their partnership. The penalty for delay in payment is calculated from the amount of the incurred loss due to negligence or blameworthy of the undertaker and not upon a penalty interest rate.

Social implications: Interest rate as an essential factor in conventional accounting is not usable in Islamic banking and other similar institutions that work based on partnership, such as mutual funds and saving and loan associations. The proposed system removes this shortage and is fairer than conventional accounting.

Originality/value: The approach of this accounting system is fully different from conventional accounting because of the intrinsic characteristics of the intermediary role of financial partnership institutions and Islamic banks.

Keywords: Rastin Banking, Profit and Loss Sharing (PLS), Partnership, Profit Distribution, Accounting, Islamic Banking, Musharakah.

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1. Introduction

In the first and second parts of the paper, we discussed Profit and Loss Sharing (PLS) accounting[1] experiences, and we introduced the Rastin Partnership Accounting principles and operations.[2] We also showed how this new accounting system[3] could be used for the "Funds with Variable Capital".[4] It was also addressed how this accounting system deals with changes in timing due to non-performance[5] of the commitments. The accounting details of Mudarabah Financial Sharing (MFS) accounting were also discussed in the previous part.[6] Here we will go to explain the Instalment Financial Sharing (IFS) accounting in detail. [7,8,9,10]

2. Removing Interest Rate in Instalment Payments

In the Instalment Financial Sharing (IFS)3 subsystem of Rastin Banking, the interest rate of instalments and rents are in accordance with investment real return,[11,12,13,14] and the bank is the intermediary of funds and receives a commission as an attorney or agent and provides financial and capital management services for his clients. In IFS, the return of principal capital and yield of conducting activities are paid to depositors periodically, and the ownership of the investment project will be transferred to the entrepreneur after the payment of the last instalment. Accordingly, the bank allocates the capital (deposit) of the depositor in IFS[15,16,17,18,19,20] projects based on the will of the depositor and finally divides the profit among depositors and entrepreneur and pays back the principal and profit of investment to the depositors by instalment and transfers the ownership of the project

to entrepreneur. [21,22,23,24]

Profit and loss will be divided among them according to their agreement in the contract based on the Rastin PLS banking instructions, after deduction of bank commission. [25,26,27,28]

Bank deals with depositor through Joalah contract and goes through three new contracts of "Mughasatah"4, "Rental Mughasatah",5 and "Musharakah Mughasatah"6 with entrepreneur and according to depositor desire, will provide the conditions for his financial participation within the entrepreneur's project through three new Rastin Certificates namely, "Mughasatah Certificate"7,[29]

"Rental Mughasatah Certificate" 8 and "Musharakah Mughasatah Certificate" 9. All Mughasatah certificates are kinds of Rastin Certificates and obtain rent or yield plus instalment until the end of the contract, and after the settlement of the contract, the entrepreneur becomes the owner of the project. [30]

The settlement of the project differs from finitude and endless (productive) projects. The settlement is after the payout of the last instalment for the "Mughasatah Certificate". In the "Rental Mughasatah Certificate", after the payment of the last instalment and rent, the contract is settled. In "Musharakah Mughasatah Certificate", when the last payment of instalments and profit or loss (yield) is paid, the settlement takes place. [31,32,33,34,35]

According to the written instructions and related formulas, the amount of instalments, rent or periodic yield and commission share of the bank will be calculated by auditing and calculation unit10. The share of the entrepreneur and depositor will be defined by considering the kind of IFS financing and the method of instalment payment and rent (profit or loss). In the case of discontinuance of the project, the occurred losses will be calculated according to the compiled instructions. The structure and organisation of Rastin PLS banking are also applied to the subsystem of IFS. [36,37,38]

3. Dividing the Value of Project at the End of the Construction Period

Allotment of profit of the project between moghsits (depositors) and ghasit (entrepreneur) is one of the important issues of Mughasatah. Traditionally, this type of apportionment bases on mutual agreement, but in Instalment Financial Sharing (IFS), this apportionment cannot be left to the bank; therefore, it was necessary to compile necessary rules for carrying it out accordingly. But, when instalment enters the process of apportionment, conventionally, it involves an interest rate which is not acceptable because of Reba. Hence, we should find a rational usury-free solution for it. Here we should answer two questions: first, how much are the values of work and capital in this project? [39,40]

Second, what rate of yield should be applied for the instalment of the share of the depositor to be nonusury?

Before entering this discussion, we should pay attention that Mughasatah activity is economically a production process that creates value-added and therefore, we can answer the above questions from this viewpoint. In simple words, according to Neoclassical theory11, a firm is a unit in which products are produced by using factors of production (labour and capital). Mathematically, the production function of the firm is a relation of the labour and capital in the process of production. Now consider the process of a Mughasatah in which ghasit uses the factors of production of depositor as capital (K) and contributed capital of the entrepreneur (B) from one hand, and his factor of production (entrepreneur's labour work (L)) for the production of the project. The value of production function (Q) mathematically is a function of factors of production and can be described as follows:

$$Q = f(K + B, L) \quad (1)$$

The above function does not have a fixed production factor, and the amount of production is defined by variable factors of production (labour and capital). The production structure is defined in such a period that investment does not change, and fixed cost does not enter the calculations. The applied technology and know-how of entrepreneur in applying capital and labour in Mughasatah is defined as in the above function. Usually, the production function is defined as a single-valued continuous increasing function for non-negative values within the regarded domain and is usually regularly strictly quasi-concave.[39,40,41] The contribution of depositor and entrepreneur are defined within a period. In this period, factors and the defined amount of production have three constraints: First, it should be short enough so that the ghasit cannot change the production factors. Second, it should be short enough that the production function cannot be changed due to the improvement in technology. Third, it should be long enough to cover all the processes of Mughasatah. The marginal productivity of capital (K of moghsit plus B of ghasit) and ghasit's labour work (L) are noted as MPK+B and MPL, and can be defined as fol

$$MP_{K+B} = \frac{\partial Q}{\partial (K+B)} = f_{K+B}(K+B, L) = f_{K+B}$$
$$MP_L = \frac{\partial Q}{\partial L} = f_L(K+B, L) = f_L \quad (2)$$

The law of marginal decreasing return explains that by increasing one factor of production, marginal production increases at first, but after a while, marginal production starts to decrease. That is to say, the more we use one of the production factors, after a while, the less will be marginal production12. [42]

This law has distinct effects on the apportionment of the yields of Mughasatah that can be understood from the dividing profit relationship that we will explain.

Economies of scale show the way of increasing production through the proportional increase of all factors of production. If Mughasatah's value increases commensurate with the increase of labour and capital (deposit plus contributed capital of the entrepreneur),

the return to scale in the domain of the related factors of production is constant. The return to scale is positive if the proportional increase of labour, capital would increase the production more, and it is negative if the proportional increase of labour, capital results in less increase in production. Return to scale is defined by the concept of homogeneity of the production function. A production function is homogeneous of degree j if:

$$f(t(K+B), tL) = t^j . f(K+B, L) \quad (3)$$

In which by an increase of t times of labour and capital (sum of deposits and paid-in capital) for amounts of $0<j<1$, $j=1$, $j>1$, the return to scale will be (tj) increasing, constant and decreasing respectively. A linear production function can result from several linear production activities simultaneously13. Linear production functions are homogeneous of degree one and, therefore, have a constant return to scale. Homogeneity in production function means that if we increase/decrease all factors of production proportionally, production will also increase/decrease proportionally. If production increases/decreases proportionally as the increase/decrease of factors of production, the production function is homogeneous of degree one. If the ratio of the production increase is less than the increase of factors of production, homogeneity has a less than one degree and otherwise has a degree of more than one. In these three cases, the return to scale is constant, increasing and decreasing, respectively. This condition mathematically is understandable from relation (3).

The degree of one homogeneity condition in the Mughasatah function is quite meaningful; therefore, according to the Euler theorem of the income distribution14, we can use this state to divide the yields of the Mughasatah contract between depositors and entrepreneur. In other words, in homogeneity condition, if all factors of production increase/decrease proportionally, production will also increase/decrease proportionally. In this case, since the average productivities of factors of production are unchanged, production productivity will not change. Euler theorem explains that in a homogeneous function of degree j, the following relation exists:

$$L.f_L+(K+B).f_{K+B}= j.f(K+B,L) \quad (4)$$

Where, fL and fK+B are marginal productivities of labour (work of entrepreneur) and capital (deposit + paid-in capital) respectively. By replacing (1) in relation (4), with the assumption of homogeneity of degree one (j=1) we obtain the following relation:

$$L.f+(K+B).f_{K+B}= Q \quad (5)$$

By this theorem, we can understand that the total value of Mughasatah is equal to the sum of the multiplication of marginal productivities of labour (fL) by L and the multiplication of marginal productivity of total capital of depositor and entrepreneur (fK+B) by total capital of moghsit and ghasit (K+B). In other words, if we want to divide the result of Mughasatah based on marginal productivities of labour work of the entrepreneur and his contributed capital plus the capital of the depositor, the total value of Mughasatah is distributed. Euler theorem has a basic role in the marginal productivity theory of distribution, and accordingly, each part of the Mughasatah will receive its share of the results of Mughasatah. It should be mentioned that homogeneity of degree one causes the profit function of Mughasatah to be also homogeneous of degree one. In other words, if we consider π as Mughasatah profit, we will have:

$$t.\pi=f(t(K+B),tL) -t(K+B) -tL \quad (6)$$

That is to say, if the labour-work of the entrepreneur and the capital of the depositor plus the contributed capital of the entrepreneur increase proportionally (by t), Mughasatah profit will also increase proportionally (by t). By applying the above analysis, we can distribute the benefits of each part of Mughasatah based on the productivity ratio of capital (including the capital of depositor and the contributed capital of entrepreneur) and labour work of entrepreneur from the value added of Mughasatah activity according to the following formula. In the following formula, the capital value means the deposit of the depositor; contributed capital is the total fund and asset (cash and noncash) brought by the entrepreneur into the project; and value added is the total profit or value added obtained by the work of entrepreneur, through financial participation; and total value added is the value created by using all factors of production in Mughasatah activity, and the project value is the assessed (valuated) value of Mughasatah project. In other words, we have:

$$K + B + L = Q = C + V \quad (7)$$

which means that sum of value added (V) and cost (C) is equal to the Mughasatah value (Q) and is equal to the total value of labour work (L) and deposit (K) and contributed capital (B). This is because:

$$\pi = V \quad (8)$$

That is value added is equal to the profit of Mughasatah activity. Moreover, the assessed value of the project is equal to the total value added plus cost:

$$C + V = Q \quad (9)$$

Accordingly, the value added emanated by the labour work of the entrepreneur in Mughasatah will be equal to the assessed value of the project minus the value of the deposit minus contributed capital of the entrepreneur

$$L = Q - K - B \quad (10)$$

Therefore, the profit share ratios of moghsit from the created value added (RK) plus the profit share ratio of ghasit from the value added (RB) will be equal to the ratio of the value of moghsit capital plus the contributed capital of ghasit to the total value of the project (Q); and also, the profit share ratio of ghasit emanated from his labour work in the created value added will be equal to the ratio of assessed value added of the project to the total value of the project. In other words:

$$R_K+R_B= (K + B)/Q$$

$$R_L=V/Q \quad (12)$$

The profit shares of moghsit and ghasit are calculated by multiplying their profit share ratios by the

assessed value added of the project. Or

$$\pi_K = R_K \times V \quad (13)$$

$$\pi_B = R_K \times V \quad (14)$$

$$\pi_L = R_L \times V \quad (15)$$

Accordingly, each part of the Mughasatah (moghsit and ghasit) will share the created value added based on their productivity ratios. In other words, if we add up the above relations, we will reach the following relation in which the value added is equal to the labour work yield, plus capital yield, plus the value added of contributed capital:

$$\pi_K + \pi_S + \pi_L \quad (16)$$

This distribution is in accordance with the Euler theorem of marginal income distribution into capital and labour in which each party (labour work, deposit and contributed capital) receives according to his productivity. Therefore, the amount of ownership of moghsit in principal and profit will be:

$$P_K = \pi_L + K \quad (17)$$

which means that the dividend of moghsit (PK) at the time of assessing the project (at the end of the construction period) is equal to the moghsit's capital value (deposit) and his profit. The dividends of ghasit (PL) at the end of the construction period will be equal to the total profit of ghasit plus the value of his contributed capital:

$$P_L = \pi_L + B \quad (18)$$

Adding these two relations show that after the end of the construction period, the dividend of ghasit plus the dividend of moghsit is equal to the total value of the deposit plus contributed capital of the entrepreneur, plus profits of ghasit and moghsit:

$$P_X + P_L = \pi_X + \pi_L + K + B \quad (19)$$

In other words, the total payments to ghasit and moghsit are equal to the total deposit and contributed capital of entrepreneur and Mughasatah profit:

$$P_X + P_L = \pi + K + B \quad (20)$$

4. Accounting Procedure for Apportionment

In simpler words, ratios of the dividends of each part of the project from the value added of the Mughasatah activity at the end of the construction period is calculated on the basis of the yield of capital (deposit) and contributed capital (of the entrepreneur) and labour work (of the entrepreneur) on the basis of following formulas. In the following relations, capital value is the amount of the depositor's deposit and contributed capital is the contribution of the entrepreneur, and labour value is the labour work of the entrepreneur resulting from his activity. On the other hand, value-added is the produced value in excess of the original capital of the depositor plus the contributed capital of the entrepreneur, which is cleared by assessing the project value. In other words, the market value of the project at the end of the construction period minus the depositor's capital and contributed capital of the entrepreneur is the project value added at the end of the construction period.

Therefore, the markup cost of the project is equal to the capital value of the depositor plus contributed capital of the entrepreneur:

$$C = K + B \quad (21)$$

Value added plus markup cost is equal to the value of labour work plus the value of the contributed capital plus the value of the depositor's capital:

$$K + B + L = C + V \quad (22)$$

The assessed value of the project is equal to the value added plus markup production cost:

$$C + V = Q \quad (23)$$

Alternatively, the assessed value of the project is equal to the value of labour work productivity plus the value of paid-in capital plus depositor's capital (deposit) value:

$$K + B + L = Q \quad (24)$$

Accordingly, the yield of the depositor of the created value added will be equal to the ratio of depositor capital to the assessed value of the project at the end of the construction period. The ratio of the yield of the entrepreneur from the project from the created value added will be equal to the total of the ratios of his contribution (paid-in capital and work) to the assessed (valuated) value added:

$$RK = K / Q \quad (25)$$

$$RB = B / Q \quad (26)$$

$$RL = V / Q \quad (27)$$

The dividends of depositor and entrepreneur from value added are calculated by multiplying their yield ratios by the project value added at the end of the construction period. In other words, the dividend of the depositor from value added is equal to the depositor yield ratio multiplied by created value added:

$$\pi_K = R_K \times V \quad (28)$$

The entrepreneur's contributed capital dividend from value added is equal to his contributed capital yield ratio multiplied by value added:

$$\pi_B = R_B \times V \quad (29)$$

The entrepreneur's labour work dividend from value added is equal to his labour work yield ratio multiplied by value added:

$$\pi_L = R_L \times V \quad (30)$$

In other words, the depositor's dividend from value added is equal to his capital yield from value added. And Entrepreneur's contributed capital dividend from value added is equal to his paid-in capital yield from value added. And Entrepreneur's labour work dividend from value added is equal to his labour work yield from value added.

The share of the depositor from the assessed value of the project is calculated by adding his share from the value added and his deposit. The share of the entrepreneur from the assessed value of the project is calculated by adding up his contributed capital share from value added and his labour work contribution from value-added, plus his contributed capital. In other words:

$$P_K = \pi_K + K \quad (31)$$

$$P_{B+L} = \pi_B + \pi_L + B \quad (32)$$

The Sum of the last two relations shows that after

distribution: The share of the depositor from the project plus the share of the entrepreneur from the project is equal to the value added plus the deposit of the depositor plus the entrepreneur's contributed capital.

$$P_K + P_{B+L} = V + K + B \quad (33)$$

If we add up the above relations, we reach the following relation in which: depositor's capital yield + entrepreneur's capital yield + entrepreneur's labour yield is equal to the value added of Mughasatah.

This economically is adapted to Euler's income distribution of value added to labour and capital according to their productivity (yield).

5.Calculation of Mughasatah Instalment for Finitude Projects

In this process, the depositor provides funds, and the entrepreneur mixes it with his own contributed capital and executes the project. At the end of the construction period, the bank evaluates the project and based on the duration and amortisation date15 of the depositor's sources, the instalment method to pay the depositor back is defined. "Mughasatah Certificate" is issued for finitude projects through the Mughasatah contract. In this case, the calculation of instalments includes two parts. One is the instalments for paying back the principal capital of the depositor, and the other is the return or yield of his capital.

Parameters used to calculate the instalments for finitude projects contracts are the amount of deposit (K), the entrepreneur's contributed capital (B), construction period (M), and operational life of the project after construction (T).

Considering figure 1, the entrepreneur together with his contributed capital (B) receives the deposit of depositor (K) at the beginning of the construction period and starts construction according to the contract. The construction period is M. At the end of the construction period, and start of the utilisation of the project, the bank assesses (valuate) the value of the project (Q) at market price. If the project were sold at this time, the shares of depositor and entrepreneur would be calculated by the following relations:

$$P_K = \pi_K + K \quad (34)$$

$$P_{B+L} = \pi_B + \pi_L + B \quad (35)$$

That is the claims of depositors and entrepreneur from the project are obtained by the above relations.

Now, the entrepreneur buys the share of the depositor in instalment and becomes the owner of parts of the project gradually, and finally, by paying back all instalments, becomes the owner of the whole project. Now suppose that the useful lifetime of the project from the beginning of exploitation is T periods (years). If we want to show the shares of depositor and entrepreneur through figure 1, it means that from time T_1=M to T_2=M+N the ownership belongs to depositors and from T_2=M+N to T_3=T+M the entrepreneur will be the owner of the project. T_2 is the time that participation concludes. If the entrepreneur pays back the share of the depositor until T_2, he will gain the total ownership from T_2 to T_3.

Now suppose the entrepreneur obtains the possession of the project from time T_1=M and pays back the depositor's share by instalment. In this case, we need to calculate the amount of his instalments.

Here, we should consider a few issues. First, when the final date of amortisation of the depositor's share is? Second, what the preferential rate or capital time-yield of the depositor's deposit (which is in possession of the entrepreneur) is?

To calculate the amortisation period (N), we use the following relation:

$$N = \frac{PK}{PK+PB+L} \quad (36)$$

To obtain the time-yield rate (r) of the depositor's deposit, we use the ratio of the total yield of the project, which is equal to the value added (V) of the project to the total capital resources used (deposit and contributed capital of entrepreneur). The time-yield rate of the project at the beginning and during the construction period is indefinite and will be assessed afterwards at the end of the construction period by evaluating the value of the project; and therefore, it is not Riba (usury) to be prefixed at the beginning. That is:

$$r = \pi_K / (K \times M) \quad (37)$$

And r is the time-yield rate of the depositor's deposit. Considering the fact that the construction period might be longer than one period (year), inserting M in the denominator will estimate the time-yield rate of capital for each period (such as year). This return rate (r) is calculated only for the deposit of the depositor that is obtained practically in the process of construction, and it is not an interest rate and is capital return rate. This rate suggests that if the depositor and entrepreneur want to invest in a similar project by using the depositor's deposits, the entrepreneur should pay depositor at a capital rate of return (r). Therefore, the capital yield rate of the depositor in the next periods will be calculated by this rate of return (r).

If the entrepreneur had to pay back all the share of the depositor at time T2, he should pay the amount of PK (1+N×r). If the entrepreneur wants to reimburse the depositor's principal and profit by equal instalments, his monthly payments would be equal to:

$$I_t = P_K (1 + 0.5 \times N \times r) / N \; t = 1,\ldots,N \quad (38)$$

In which, t shows periods of 1 to N. It is clear that:

$$\Sigma^N_{i=1} I_t = P_K (1 + 0.5 \times N \times r) \quad (39)$$

The 0.5 multiplier in the above relations is because the instalment payment starts from the beginning.

Entrepreneur and depositors can unambiguously agree to change the schedule of the instalment from equal payments via the bank.

Calculation of Rental Mughasatah Instalment for Finitude Projects In this process, the depositor provides funds for the entrepreneur, and he mixes the depositor's deposit with his own contributed capital and carries out the project. Bank assesses the project at the end of the construction period, and according to the preliminary agreement, the project will be in possession of the entrepreneur as a rented property until the amortisation

date of the depositor's share. According to the evaluated value of the project and the amortisation date, the bank calculates the amount of rent and instalment. Bank (on behalf of the depositor) and entrepreneur will agree upon the rent. The defined instalment consists of two parts: one for the principal deposit, and the other for the periodic rent, which the entrepreneur should pay to the depositor. The difference between Mughasatah and

Rental Mughasatah is fixing the rent from the beginning in Rental Mughasatah. "Rental Mughasatah Certificate" is issued for finitude projects by Rental Mughasatah contract.

Effective parameters in calculations of Rental Mughasatah are the amount of deposit of depositors (K), contributed capital of entrepreneur (B), construction period (M), and operating lifetime of the project after construction (T), the agreed rent according to the signed contract (S).

Consider the previous diagram of figure 1. The entrepreneur, with his own contributed capital (B) and deposits of depositors (K), starts the construction of the project. Construction takes M periods. At the end of construction, when the project becomes operational, the bank assesses (valuates) the market value of the project (Q). As in the previous case, if the project were to sell, the share of entrepreneur and depositor would be as (34) and (35), which means their claims at the end of the construction period would be defined according to these relations. Now, the entrepreneur buys the depositor's share in instalments, and by paying each instalment, his own share increases until he becomes the owner of the entire project. During this period, in addition to paying instalment for principal, the entrepreneur has to pay rent to depositors according to the pre-agreed contract. The forecasted operating lifetime of the project after the construction period is (T) (e.g. years). If we want to show the time ownership of depositor and entrepreneur in the graph, it means that from time T_1=M until T_2=M+N, ownership belongs to depositors, and from time T_2=M+N until T_3=T+M, the entrepreneur will be the owner. T_2 is the expiration date of the contract with the depositor. If the entrepreneur pays back the depositor's shares at this time, he will become the owner of the project from then after.

Now consider a case in which the entrepreneur takes possession of the project from the beginning and starts to pay back the principal capital of the depositor and its rent for using the property. Then, we have to calculate his instalment and rent. First, we have to define T_2, which is the amortisation date for the depositor's claim. To obtain amortisation date (N), we use the previous relation of (36), which means that the entrepreneur should pay back the depositor's claim on the assessed value of the project in N periods (years). Since the value of the project is not defined at the beginning of the project and can be assessed at the end of the construction date of the project, the share of depositors cannot be calculated at the beginning.

If they had agreed to pay back the share of the depositor at time T_2, he had to pay P . Since he wants to pay this amount in N equal instalments, his periodic instalment will be PK /N. His instalment plus his rent is extracted as in the following relation:

$$I_t = S_t + P_K / N \qquad t = 1 ,..., N \tag{40}$$

In which, S_t is the amount of rent for periods of t=1,...,N. Rent instalments can be unequal for all these periods according to the agreed contract.

The total amount of payment to depositors for principal and rent will be equal to:

$$\sum^{N}_{i=1} It = PK + \sum^{N}_{i=1} St \tag{41}$$

By the agreement of the entrepreneur and bank on behalf of the depositor, N can be defined without using the above method. Rent can be set as a percent of the value of the project at the time of signing the contract. In other words, the entrepreneur and bank (on behalf of the depositor), can define the rent as a percent of the value of the project when it is constructed and becomes operational. In this case, periodic (annual) rent is calculated by the following relation:

$$S_t = s \times (P_K / N) \tag{42}$$

S_t is periodic rent, and s is the ratio of the share of total rent from the assessed value of the project. "s" is a condition of the contract. In this case, rent has an exact legal justification for using the benefits of a rental property. The depositor leaves rental property to be in possession of the entrepreneur, and he is legally the one who has rented the object. The amount of rent can be variable, and this is not against Civil Law. It is necessary to mention that the assessed value of the project at the beginning of the project is unknown and will be determined (valuated) by the bank at the end of the construction period at market prices.

6.Calculation of Rental Mughasatah Instalment for Infinitude Projects

If the project is endless, the calculation of the shares of depositor and entrepreneur at the end of the construction period is the same as for finitude projects. Now, if the project is defined as an endless (productive) project in the contract, the depositor will also have a periodic share in the productivity of the project during the exploitation period plus periodic instalment. In this case, the depositor is not just a lessors, but he participates in the profit and loss of the project.

"Musharakah Mughasatah Certificate" is issued for the endless project through the "Musharakah Mughasatah" contract. In this process, the depositor provides funds, and the entrepreneur mixes them with his own resources and starts constructing the project. At the end of the construction period, the bank assesses the project and according to the amortisation period duration calculates the instalments and adds it to depositor's share from the value added for every period according to the entrepreneur's

financial reports. According to the signed contract, the project will be monitored by bank's trustee until the depositor's claim is amortised. In addition, in this case, payments to the depositor by the entrepreneur consist of two parts: instalment concerning the return of the principal deposit of the depositor, and his share from periodic value added of the project. The difference between "Musharakah Mughasatah" and the previous case of "Rental Mughasatah", is that in "Musharakah Mughasatah", periodic value added is calculated, and depositor's share is added to the assessed depositor's share value of the project.

Effective parameters used in fixing contract and calculations are the amount of depositor's deposit (K), contributed capital of entrepreneur (B), construction period (M), and operational lifetime of the project after construction period (T).

In this case, the amount of instalment for the principal deposit of the depositor is similar to the case of the finitude project contract. The amortisation period for depositor's share is similarly obtained as in the previous case by (36). To calculate the amount of each instalment, if the entrepreneur had to pay back the whole share of the depositor at the time T2, he had to pay the amount of PK. In this case, the amount of periodic instalment for the assessed value of the project (PK) will be PK/N. The productivity of the project is as the share of depositor from the value added by the project from the end of construction period T1=M up to the date of amortisation of depositors' claim T2=M+N, which should be paid to him annually. The total share of the depositor from his principal deposit plus the assessed value of the project and his value added (due to project productivity) share will be paid by the entrepreneur. At every time period (t=1,…,N), the depositor receives his value added share in that period (V K) in addition to the instalment for his principal deposit plus his share from the assessed value of the project. Therefore, the total amount of year on year instalment will be:

$$I_t = V^K{}_t + P_K / N \qquad t = 1,\ldots,N \tag{43}$$

In which, t shows the periods from 1 to N. It is clear that:

$$\sum^N{}_{i=1} = It = PK + \sum^N{}_{i=1} V^K{}_t \tag{44}$$

Keep in mind that the capital time-yield rate for the deposit (r) is not considered for endless projects. But instead, the entrepreneur has to pay his periodic share value added up to the end of the amortisation period.

If we name the periodic value added of the project for periods of t=1,…,N as Vt, which can be positive, negative, or zero, it should be divided proportionally according to the shares of depositors and entrepreneur. The dividend is paid to the "Musharakah Mughasatah Certificate" holder at the end of each period. Therefore, at the end of each financial period and calculating profit and loss, the share of the "Musharakah Mughasatah Certificate" holder from the project yield (VK) will be calculated, and plus the instalment for the principal deposit will be computed by the entrepreneur and paid to the certificate holder via bank. Arithmetically we have:

$$VK = \frac{PK}{PK + PB + L} \quad V_t \tag{45}$$

Considering the above explanation, the total shares of the depositor for his instalment and periodic value added will be equal to $V_t{}^K + P_K$ /N. P_K/N is the depositor's share for his capital contribution from the assessed value of the project, and V K is his share from the periodic value added of the project, which will be paid to the depositor ("Musharakah Mughasatah Certificate" holders).

7. Instalment Financial Sharing (IFS) Accounting

The executive steps of Instalment (Muqasatah) Financial Sharing (IFS)16 are as follows. At first, the entrepreneur will present his/her proposal and contribution to the bank in order to utilise the depositors' resources for the partnership in the project. If the entrepreneur's technical capabilities and qualifications, as well as the proposal, are verified, the bank will receive the resources from the depositors and, based on the type of the project, will issue one of the three types of Instalment (Muqasatah) Certificates. At the end of the construction period, the bank will evaluate the project and appraise its monetary value according to the market price and regulations. At this time, the bank will determine the shares of the entrepreneur (qasit) and the depositor (muqsit), and will proceed to split the depositor's partnership share of the project's real value (after appraisal) and its incomes (such as the project rent or return), without any interest rate.

In "conventional muqasatah", the instalments are calculated based on the return rate resulting from the project construction. In "rental muqasatah", the instalments for the original partnership share of the depositor of the project's real value (after appraisal), added to the amount of periodic rents, will determine the amount of the periodic payments to the depositor. In "partnership muqasatah", the instalments for the original partnership share of the depositor of the project real value (after appraisal), added to the periodic return of the project, proportionate to the depositor's partnership share of the project appraised value, will determine the periodic payments to the depositor. Instalment of the depositors' shares is not for the entire life cycle of the project and must be terminated at the predefined date; i.e., "the depreciation time of the muqsit's (depositor's) share". At that time, the qasit (entrepreneur) will become the owner of the whole project.

The bank will provide capital management services to depositors in the form of muqasatah in

return for receiving the bank's commission; with the depositors' requests, the bank will invest their resources in one of the first or the second types of the Rastin Profit and Loss Sharing (PLS) banking products, in relation to Instalment Financial Sharing (IFS), and in return, will surrender the Conventional, Rental, or Partnership Muqasatah Certificates to depositors. The characteristics of instalments in Instalment Financial Sharing (IFS) are as follows:

1. For finitude projects, where the depositor receives the (conventional) Muqasatah Certificate, s/he will have a share of the project appraised value, at the end of the construction period and after project appraisal, and until the depreciation time of muqsit's share, s/he will receive two main receivable flows from the qasit. One flow is the periodic instalments, resulted from repayment of the depositor's original share of the project appraised value (at the end of the construction period). The other flow results from the time value of his/her capital, which is available to the entrepreneur, with the time return rate, which is equal to the return rate resulting from the project appraisal, in comparison to the project nominal capital, proportionate to his/her partnership share.
2. For finitude projects, where the depositor receives the Rental Muqasatah Certificate, s/he will have a share of the project appraised value, at the end of the construction period and after project appraisal, and until the depreciation time of the muqsit's share, s/he will have two receivable flows from the muqsit. One flow is the periodic instalments, resulted from repayment of the depositor's original share of the project's appraised value (appraised at the end of the construction period). The other flow results from the rent of capital, which is available to the entrepreneur.
3. In infinitude projects, where the depositor receives the Partnership Muqasatah Certificate, s/he will have a share of the project appraised value at the end of the construction period and after project appraisal, and until the depreciation time of the muqsit's share, s/he will have two receivable flows from the qasit. One flow is the periodic instalments, resulted from repayment of the depositor's original share of the project appraised value (appraised at the end of the construction period) and the other one results from the project return, proportionate to his/her partnership share.
4. The instalment repayment will be started after the end of the construction period and at the start of the project utilisation.
5. The entrepreneur is obliged to specify the instalment repayment dates with equal durations, and the assessment unit is bound to verify the appropriateness of the periods and the amounts.
6. The periods of receiving the instalments by the depositor will start at the end of the construction period and will continue until the depreciation time of the muqsit's share.

The profit share of each party in the project, at the end of the construction period, will be calculated based on the return rate of the deposit, contribution, and labour, of the value added of the muqasatah operation, according to the provisions of Rastin Banking regulations (Rastin Partnership Accounting), Rastin Partnership Accounting, and the following formulas. The appraised (market) value of the project, at the end of the construction period, minus the total amount of the deposit and the contribution, is, in fact, the value added of the project, at the end of the construction period

Project total cost = Deposit value + Contributed capital value

Deposit value + Contributed capital value + Labour return value = Project total cost + Value added

Project total cost + Value added = Project appraised value

Capital value + Contributed capital value + Labour return value = Project appraised value

Therefore, the ratio of the depositor's share of the value added will be equal to the depositor's deposit, divided by the project appraised value, at the end of the construction period. Moreover, the ratio of the entrepreneur's share of the value added will be equal to the sum of the entrepreneur's contributed capital divided by the project appraised value, and the return rate of the value added divided by the project appraised value:

Ratio of the share of the depositor's deposit = Depositor's deposit amount ÷ Project appraised value

Ratio of the share of the entrepreneur's contributed capital = Entrepreneur's contributed capital ÷ Project appraised value

Return ratio of the entrepreneur's labour = Project value added ÷ Project appraised value

The depositor's and the entrepreneur's shares of the value added will be calculated via multiplying the above-mentioned ratios by the value added to the project, at the end of the construction period:

Depositor's share of the value added = Ratio of the share of the depositor's deposit × Value added

Share of the entrepreneur's contributed capital to the value added = Ratio of the share of the entrepreneur's contributed capital × Value added

Share of the entrepreneur's labour of the value added = Return ratio of the entrepreneur's labour × Value added

The depositor's share of the project appraised value will be obtained as the sum of the depositor's share of the value added, plus his/her deposit. Moreover, the entrepreneur's share of the project appraised value will be obtained as the share of the entrepreneur's contributed capital to the value added, plus the share of the entrepreneur's labour work of the value added, added to the entrepreneur's contributed capital. In the other words:

Depositor's share of the project appraised value

= Depositor's share of the value added + Depositor's deposit

Entrepreneur's total share of the project appraised value = Share of the entrepreneur's contributed capital to the value added + Share of the entrepreneur's labour of the value added + Entrepreneur's contributed capital value

By adding the two later relations, after distribution, we have:

Depositor's share of the project + Entrepreneur's share of the project = Value added + Depositor's deposit + Entrepreneur's contributed capital

The depreciation time of the muqsit's share will be calculated, according to the project life cycle after the end of the construction period, the partnership shares of the muqsit (considering the partnership duration), the qasit's contribution and the project value added after the end of the construction period (and in case required, prediction of the salvage value of the project, for the end of the project life cycle):

$$\text{Depreciation time of the muqsit's share} = \frac{\text{Depositor's share of the project appraised value}}{\text{Project appraised value}} \times \text{Project life cycle}$$

The depreciation time of the muqsit's share in various muqasatah projects will be calculated similarly. On behalf of the depositors and at the date of signing the contract with the entrepreneur, the bank can specify the depreciation time of the muqsit's share in accordance with the agreement with the entrepreneur. In this way, the assessment unit must evaluate and verify the prediction of the financial flow of the project and the entrepreneur, in order to make sure that all the instalments will be re-payed during the repayment periods.

In order to calculate the payments of the conventional muqasatah for finitude projects, the bank will appraise the project at the end of the construction period and will specify the amount and number of needed instalment payments for repayment of the depositor's share according to the depreciation time of the muqsit's share. In this case, the calculation of the instalment payments comprises two parts: the instalments for the original deposit of the depositor and the instalments for the time return of the depositor's deposit.

The time return rate of the depositor's deposit is obtained from the time return rate of the whole project (equal to the project value added at the end of the construction period), based on the capital resources used in the project (the total deposits of the depositors, plus the entrepreneur's contributed capital).

$$\text{Time return rate of the depositor's deposit} = \frac{\text{Project value added, at the end of the construction period}}{\text{(Entrepreneur's contributed capital + Depositors' total deposits)} \times \text{(Construction period)}}$$

The time return rate of capital, at the beginning of the construction period and also, on the date of contract signing, is unknown and will be determined at the end of the construction period and after project appraisal and, therefore, must not be identified and termed at the time of contract signing.

The amount of instalments, in addition to the project rents in each period, will be obtained by the

$$\text{Each instalment} = \text{Rent} + \frac{\text{Share of the depositor's deposit of the project appraised value}}{\text{Depreciation time of the muqsit's share}}$$

The amount of (equal) instalments for the original part and the return of the depositor's deposit in each period, until the depreciation time of the muqsit's share, will be calculated via the following formula and paid by the entrepreneur to the depositor:

If the rent amount has been termed at the time of contract signing as a portion of the depositor's share of the project appraised value (rent ratio), the amount of instalment and the project rent in each period will be calculated as follows:

$$\text{Each instalment} = (1 + \text{Rent ratio}) \times \left(\frac{\text{Share of the depositor's deposit of the project appraised value}}{\text{Depreciation time of the muqsit's share}} \right)$$

The rent ratio can be different for each period. Thus, the rent ratio in each period must be agreed upon and termed at the time of contract signing.

In order to calculate the partnership muqasatah payments in infinitude projects, if, according to the contract, the project is regarded as a production project (i.e., it creates the periodic value added) and it is agreed that the depositors must also take a share of the project return, the depositors will receive a share of the value added of each period in addition to the periodic instalments. In this way, the depositor will have a share in the periodic profit and loss of the project. Therefore, the amount of instalment payment in each period will be equal to the sum of the original deposit and the return (loss or profit) on the share of

$$\text{Each instalment} = \text{Depositor's share of the project periodic value added (profit or loss) in each period} + \frac{\text{Depositor's share of the project appraised value}}{\text{Depreciation time of the settlement seller's share}}$$

In muqasatah, considering the fact that the qasit (entrepreneur) invests on behalf of the muqsit (depositor) and in partnership with the muqsit's capital, the qasit's (entrepreneur's) rights are shared with the rights of the muqsit in the muqsatah (muqasatah subject); in order to compensate the potential losses to the project properties, the qasit is obliged to insure the properties of the muqasatah, equal to the partnership share of the muqsit, according to the provisions of Rastin Banking regulations (Insurance), in the name and in favour of the bank, and at the project cost. Moreover, on behalf

of the muqsit, the bank is obliged to receive appropriate guarantees and collaterals, according to the provisions of Rastin Banking regulations (Guarantees, collaterals, and contributed capital), and the qasit is also required to insure the collateral in the name and in favour of the bank at his/her own expense.

In order to cover the potential losses, resulting from the decrease in the project appraised value at the end of the construction period, the insurance of construction limited loss will be used. The entrepreneur is obliged to insure the muqsatah by the insurance of construction limited loss, in the name and in favour of the bank and at the project cost. This type of insurance is necessary for Instalment Financial Sharing (in the conventional, rental, and partnership muqasatahs).

If at the end of the construction period, the project appraised value is lower than its final cost, the loss and damage, resulted from the decrease in price (which led to the decline in the project value), will be compensated by the insurance of construction limited loss. In these cases, the muqsatah (muqasatah subject) will be sold under the supervision of the bank, and the settlement will be made with the parties, according to the previously agreed provisions in the contract. In this way, the mentioned commission for the bank will not be paid to the bank. This procedure is only performed in conventional muqasatah, and not in rental and partnership muqasatahs. The bank and the entrepreneur can mention in the mutual contract that if the difference between the project appraised value and the final cost becomes lower than a certain threshold, the muqsatah will be sold under the supervision of the bank, and the settlement will be accordingly made with the parties.

The steps required for the final settlement in the Instalment Financial Sharing (IFS) are as follows. At the depreciation time of the muqsit's share (i.e., at the end of the contract duration), the entrepreneur, after paying the last instalment, will become the owner of the muqasatah subject (muqsatah) according to the contract, and the bank will finish the steps of complete ownership transfer. The ownership transfer costs are among the depositor's and the entrepreneur's costs, which have been predicted in the contract, considered in the muqasatah financial flow. They will be taken from the entrepreneur along with his/her instalment payments, based on his/her ownership share. Also, they will be deducted from the payable instalments to the depositor, equal to the depositor's share, and will be stored in a given account at the bank. The costs for the final ownership transfer will be paid from this source. If the transfer costs are increased unpredictably, the increased part for the entrepreneur will be obtained from himself/herself, and the bank will be responsible for managing the increased part for the depositor. The bank is obliged to calculate and consider its commission in the periodic instalment payments for the muqasatah subject. The bank's commission in each stage will be deducted from the paid instalments.

8. Summary and Conclusions

The foundation of profit and Loss Sharing (PLS) baking is based on the participation of depositors in investment returns of the real economy sector in each investment project. The dissimilarity of the PLS banking accounting system and conventional banking accounting system needs to define a new specific skeleton for PLS banking to fulfil a particular accounting system for this kind of banking method. The PLS banking accounting system must be designed in such a way that the PLS bank becomes empowered to trace and recognise the money resources of depositors on different investment projects. In other words, in PLS banking financial statements, particularly in the balance sheet, the monetary resources of depositors on the debt side must be recognised and traceable at the asset side of the PLS bank. The reason for this capability is to create the ability to allocate the real profit of capital among depositors based on the investment duration.

In case of coming up some specific risks, namely unreliable forecast of required resources for project financing, increasing inflation rate, cunctation or fault of entrepreneur and increasing required capital for project financing and recapitalization of the project financing, if a project needs more resources, should be solved according to a set of compiled instructions and standards in PLS banking, because the interest rate is not legally usable in Islamic financing. Separation of financial flows for accounts of each investment project for calculating the profit or loss of each project or basket of projects is necessary and inevitable.

To solve all the cited problems and more narrow subtle subjects, Rastin Partnership Accounting was developed. In this accounting system, the interest rate is not applied in registering the accounting documents, operations, accounts, and financial analyses. Calculation of the present or future values of assets through obtaining the present or future value methods, which are performed in conventional accounting by using the interest rates, are not the basis for calculating the "time value" of capital. Moreover, the basis of calculating the "time value" of capital is the amount and duration of the partnership. The accounting documents of each project and the related financial operations are booked and kept under a separate heading, and the profit or loss of each project only belongs to the same project and is booked under its respective heading, and its financial effects will be given to the entrepreneur and the depositors of the same project. The effects resulting from unjustifiable delays are not imposed on the committed person based on the conventional methods of receiving a penalty for the delayed payment (which are based on the interest rate). In order to quantify the effects of the delays of the committed person, the effects of delay on the revenue items and the project costs of the project are measured and then collected according to the net value of the effects.

Since in Rastin Profit and Loss Sharing Banking, the bank is the "mediator of funds", this causes a

difference between the booking processes of accounting documents. That is, the heading of the accounts receivable subsidiary ledger can be recorded in the liabilities section as on-balance-sheet items, or in the form of the bank's obligations as off-balance-sheet items. The entrepreneur's obligations with regard to the issuance of the Rastin Certificates, disciplinary documents of contracts, collaterals and guarantees, the obligations of the bank and other insurance companies for insuring a part of the depositors' original capital (deposit) are amongst the other off-balance-sheet items in the assets section of the balance sheet. Moreover, due to the fact that funds received from the depositor and paid to the entrepreneur are the same as the trusted funds and commitments and are recorded as off-balance-sheet items, contingency and legal reserve items, based on this accounting recording procedure, which is substantively different with conventional banking.

In the three parts of this paper, we showed how we could eliminate interest rate in Islamic banking book-keeping and accounting. The matter that all Islamic banks are engaged. In this regard, the return of a financial sharing is distributed among stakeholders based on the amount and duration of their partnership. The given solution is completely new and fully applicable, as we have installed it in Bank Melli Iran and tested it in many project financing. We could separate the benefit of every financing project and connect it to the yields of the same project to satisfy the principle of "belonging of the return of (money) capital to its owner" against the conventional procedure that pools the outcomes of all projects and uniformly distribute it among the depositors. By defining the intermediary nature of the Islamic bank, we defined a new method to book the accounting entries that is different from usual accounting procedures. We used Euler's theorem to distribute the benefits of a financial sharing project. This method satisfies the adl (justice) principle in Islamic economics. The delay penalty is a highly critical problem in Islamic banking, and it causes usury over usury problem that is completely unacceptable. We used a real procedure for this problem and designed a solution to find the total economic effect of the delay to be compensated by the blameworthy, and it is not based on interest rate penalty calculations. There are also many other delicate considerations in Rastin Banking that can satisfy Islamic economics principles and benefit from ethics. Moreover, we have adapted the best financial procedures experiences to develop Rastin Banking as an ultimate model for Islamic Banking. Islamic Banking is an open source full banking system that all the banks and financial institutions around the world can install and use it.

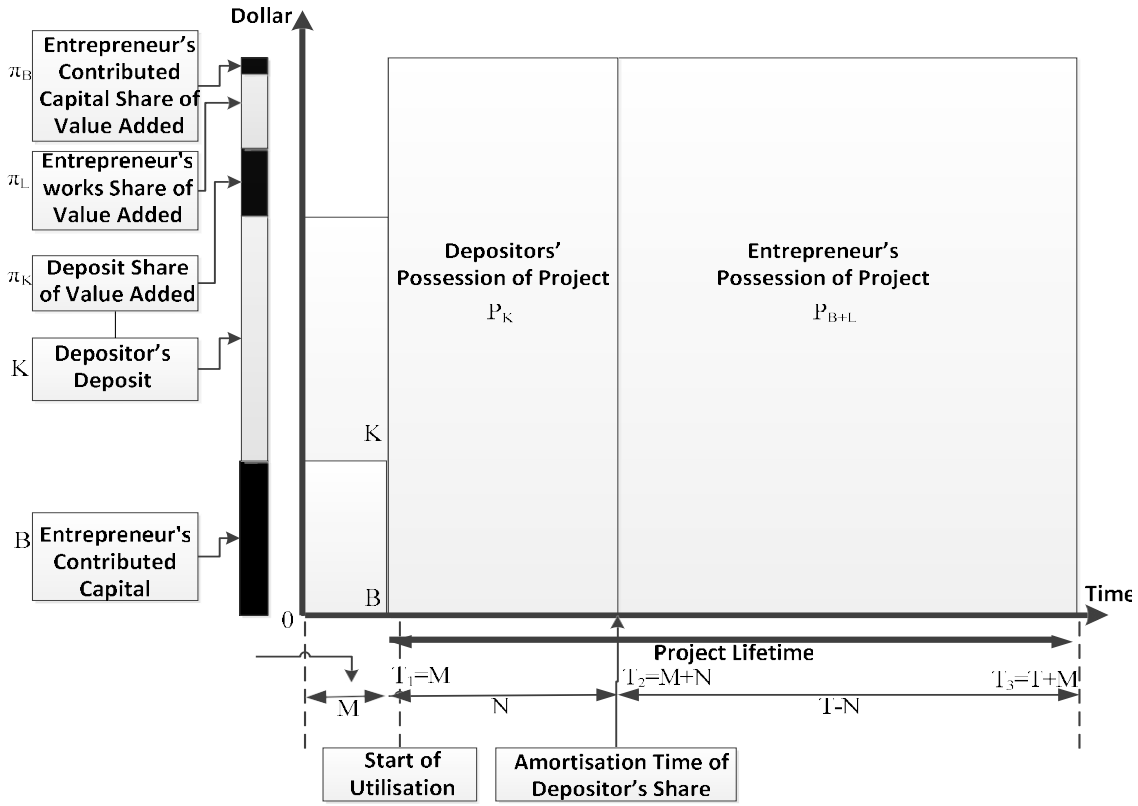

Figure 1. Instalment Financial Sharing (IFS) Scheme

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