An Alternative Mechanism to Interest Proposed to Achieve Efficient Monetary Capital Allocation in the Islamic Economy

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Abstract:
Economic systems aim to achieve efficiency in allocating resources, and this requires setting prices that reflect the true scarcity of these resources. Among these resources is monetary capital, and the question arises about how to achieve the efficiency of monetary capital in the Islamic economic system in which interest is not supposed to exist as it is a form of usury that is forbidden in this system. This research proposes an alternative to interest that is consistent with the value provisions of the Islamic system and can be used to achieve an efficient allocation of monetary capital in this system. The result of the search was the Islamic economic system can achieve an efficient allocation of monetary capital without the need for an interest rate by developing allocation mechanisms that are compatible with its value provisions.

Keywords: Efficiency, Interest rate, The expected rate of return of financing.

Introduction
Wealth, including monetary wealth, is, from an Islamic perspective, created by God Almighty for all people. Islam is concerned with achieving resource allocation efficiency in the framework of justice, as one of the five purposes of Islamic Sharia, and using money to fulfill the needs of people to help them worship God. Justice in Islam as we see is a concept based on rights regulated by Islam giving everyone his right as stated in this law and requiring that monetary capital participate in profits and losses. Our study aims to introduce an alternative tool for interest mechanism that plays its role in achieving efficient allocation of monetary capital compatible with Sharia.

Our study provides one hypothesis and uses a descriptive approach to test it: that the Islamic economic system can develop an alternative allocation mechanism compatible with its value provisions to efficiently allocate monetary capital. The study provides a theory of how to build this mechanism, discusses its nature, and how to use it to achieve the efficient allocation of monetary capital.

Materials and Methods
Hypothesis Development

There is a need to develop an alternative tool for the interest rate to be used to achieve an efficient allocation of monetary capital in the Islamic economy. We see gaps in the previous studies, some of the tools presented by these previous studies are insufficient and inaccurate. Some of them suffer from ambiguity, besides they do not explain how to use these tools to allocate monetary capital in the Islamic economy efficiently. therefore this study we present assumes one hypothesis:
"Islamic economic system, it is possible to develop an alternative allocation mechanism compatible with its value provisions that can achieve an efficient allocation of monetary capital without the need for the interest rate mechanism."

Our analysis assumes that two mechanisms direct the economic behavior in the Islamic economic system: maximizing the return of commitment to Sharia and then maximizing the financial return.

**Methods**

Our study uses a descriptive approach to test its hypothesis and to discuss it. The research discusses the cost of monetary capital in the Islamic economic system and presents a proposed mechanism that replaces interest in calculating this cost. The research provides a theory of how to build this mechanism, discusses its nature, and how to use it to achieve the efficient allocation of monetary capital.

**Results and Discussion**

**Is There an Alternative Mechanism for Interest to Calculate the Cost of Monetary Capital in the Islamic Economic System**

Does excluding interest mean that cash capital in the Islamic economy becomes a productive factor that has no cost? If the answer to this question is negative, then how can this cost be calculated in a way that enables the rational allocation of cash capital?

To provide an answer to these two questions, we will begin with an analysis of the most important legitimate methods of investing cash capital, then we will move to an analysis of the demand and supply of cash capital to reach its cost.

**The legitimate methods of investing cash capital in the Islamic economy**

We will limit ourselves to providing a brief presentation of the main known methods of investment, namely direct investment, "Mudarabah", and "Mushararakah", i.e., participatory investment.

Concerning direct investment, the owner of the cash capital can use it in the practice of all legitimate economic activities, and obtains a profit or loss; he may also obtain a specific return agreed upon in advance as the case if he converted his cash capital into an in-kind one, such as its investment in buying a plowing machine, for example, and lease it to others in return for a predetermined return. It is not permissible in the Islamic Fiqh to rent the capital in its monetary form, because the lease is for the benefit and not for the in-kind of property, and it is not possible to benefit from the capital without spending it.

Concerning "Al-Mudarabah": it is defined as a contract between two parties if one of them pays cash to the other to be traded in and the profit between them is according to what they agree on. Also, It is required in "Al-Mudarabah" that the capital be a known amount of money and that the profit-sharing between the worker and the owner of the cash capital is determined as a ratio, the half, the third, and the quarter, and so on. In the event of the loss, the owner of the cash capital bears it, without the worker who has lost his work in "Mudarabah", unless the worker is a waster or violator.

Analyzing the supply and demand of cash capital

It is well known that analysis of supply and demand can be linked to what is called the opportunity cost, i.e. the best possible alternative return for the subject of demand or supply.

In our attempt to analyze the opportunity cost of using the cash capital, we will, God willing, conduct our analysis in the "Mudarabah" market. Our selection of the "Mudarabah" market, not the participation market, aims to facilitate the analysis process, as it is easy in this market to analyze the supply of cash capital independently (as it is not accompanied by a supply of work from the owner of the cash capital) and also facilitates the analysis of the demand for cash capital independently (since it is not accompanied by participation in cash capital by the "Mudarib", i.e. the capital demander.)
To organize the analysis process, we will start with the supply side analysis and then follow it with analyzing the demand side of the cash capital, to get to the analysis of the point of the intersection of supply and demand in the "Mudarabah" market.

Regarding the supply side, we begin by asking: What are the sources of the supply of money capital in the "Mudarabah" market? And what are the factors that affect the amount of money capital supply in this market?

In our answer to the first question, we will find that the money capital, assuming a closed economy, will come from savings, whether private or public, as well as from the money supply. We will assume, for simplicity, that public savings and money supply remain unchanged during the analysis, so that remains for us the private savings (individual savings and business sector savings), as a source of money capital supply.

The "Mudarabah" is not the only use to which savings can be directed, the individual or the project can invest their savings also in a range of alternative uses, such as direct investment or participation or other forms of legitimate investment, such as the "Mudarabah" and others. The choosing process among these investment alternatives entails calculating the return of the opportunity to invest, to be used as a guide in distributing the supply of cash capital among alternative uses.

In this regard, we can calculate the opportunity return, by the expected rate of return of financing in the "Mudarabah" market; if the prevailing rate of the "Mudarabah" is, for example, 60% for the cash capital and 40% for the work (i.e. the Mudarib), and the expected rate of return in investment. In trade, in average 20%, hence the potential return of capital, which is what we call "the expected rate of return of financing" (Z) will be 12%; It is 60% (the ratio of the share of the capital from the expected profit) multiplied by 20% (average rate of return expected for investment in trade).

According to analysis assumptions, the owner of the cash capital will work at first, to maximize his return of commitment to Sharia, and then work to achieve the maximum possible material return from the investment of his capital by allocating it among the various investment alternatives in a way that maximizes this return. So it can be said that, with other things remaining the same, the higher (Z) in the "Mudarabah" market, the greater the amount of money that the owner of cash capital supplies to invest in this market, and vice versa.

Regarding the demand side the pre-determined return from leasing the work to others can be considered as a minimum for the opportunity cost in supplying the work in the "Mudarabah" market (i.e. the demand for cash capital in this market), so that in the other activities that the work enters based on participation in the outcome of the activity (including the "Mudarabah"), the probable return of work from these activities must be at least equal to the available return from leasing his work to others, in addition to an allowance, he estimates it, in return for bearing the possibility of loss if it happens.

The expected rate of return of financing

In light of the previous analysis, it is possible to build individual tables of demand and supply of funds in the "Mudarabah" market, and from the aggregation of these tables, we can obtain the tables of the total demand and supply of funds in this market. The point at which the demand and supply of money-capital intersect in the "Mudarabah" market, determines the expected rate of return of financing, which we see it could represent a minimum of the probable opportunity cost of using cash capital in the Islamic economy. It can be formulated algebraically as follows:

\[ Z = M_r x \]  \hspace{1cm} (1)

Where \( Z \), is the expected rate of return of financing. \( M_r \), the "Mudarabah" ratio (the ratio that the owner of the cash capital gets from the expected return of investment).
R: expected rate of return of investment in the "Mudarabah" market.

If this probable rate is not available for an investment, the owner of the cash capital can obtain it by investing his money in the "Mudarabah" market.

The nature of the expected rate of return of financing

Although \((Z)\) appears in the form of a proportion of the cash capital, similar in form to the interest rate, they are two tools that differ in form and essence.

In terms of the form, \((Z)\) is calculated directly as a percentage of the expected rate on the investment in which the capital is involved and then is indirectly attributed to the cash capital, because the expected rate on the investment is originally attributed to the cash capital. While the interest is calculated directly as a percentage of the capital.

Concerning the essence, \((Z)\) differs from the interest in terms of the nature of each, the philosophy on which it is based, the role it plays in the allocation process, and its ability to achieve efficiency in this process.

Interest is characterized by being, on the one hand, a cost component that is predetermined and which the entrepreneur takes into account in the activity costs when calculating the profits, on the other hand, it expresses a conditional return for the financier, and is defined as a percentage of the cash capital, regardless of the outcome of the activity. This is at a time when we find that \((Z)\) is only a tool for calculating the potential cost (not certain) of cash capital and that it does not constitute a predetermined price. If \((Z)\) is not a price, can we say that it is a counterpart for giving up liquidity? To answer this question, we ask another question: What is the possibility of maintaining liquid funds in the Islamic economy? In our opinion the demand for liquidity, as well as the demand for goods and services, must be for legitimate purposes, and within the limits of moderation, and therefore the funds held to conduct transactions, and the precaution against emergencies will, mainly, be in the range of what meets the need for it in moderation, and not depend on the expected rate of return of financing. Likewise, retaining some funds liquid in anticipation of an investment opportunity more profitable, and if that includes retaining liquidity, however, that does not mean that \((Z)\) is in exchange for giving up liquidity, otherwise, the owner of the cash capital deserves a fixed predetermined return because when he gives up the liquidity, he provided the specified service and hence deserves a predetermined instant compensation. This is in addition to the fact that the demand for liquidity pending an opportunity more profitable, in our opinion, is not an essential element in the structure of liquidity demand in an Islamic economy for several reasons, including:
The money which its owner holds liquid and reaches a "Nisab" and a Hijri year passes for it, subjects to Zakat a quarter of ten, and that does not represent all of the cost of keeping the money liquid, but it is added to it the expected rate of return of financing that could be obtained during the period of keeping the money liquid. Also, waiting for an investment opportunity that is more profitable in an Islamic economy is linked to the possibilities of an objective change in the economic conditions in the economy in question (It is not a matter of mere speculation on the price differences in the traditional sense) hence, it may be necessary to hold the liquid funds for a long time for this potential opportunity to be realized, the matter which accumulates the costs of holding funds liquid, as well as the possibility that no such hoped expectation will occur. This is in addition to the possibility of a decrease in the real value of these liquid funds because of inflation, as well. Likewise, the funds to be held in liquid form could take their way to short-term investments, that can be liquidated upon request, in line with Islam’s urge to continue investing the funds.

If (Z) is not a price for cash capital or in exchange for giving up liquidity, can it be considered a return of waiting? The saving decision in the Islamic economy, as the author analyzed it (Abul Fotouh, Ngah, 2022), is not the result of a decision to wait but rather is the result of establishing an equilibrium in meeting the needs moderately and according to its priorities across time. Also saving in this economy does not constitute a sacrifice, but is a requirement for maximizing the return of the commitment with the Islamic Sharia. If we had said that (Z) is in exchange for sacrifice, it should have been a fixed positive amount determined in advance because when the sacrifice is made it is worth the price.

Finally, if (Z) was not due in exchange for waiting, is it in exchange for the return or the productivity of cash capital? It is known that the marginal productivity theory, which is adopted, in this respect, crystallizes the contribution of the factor of production in the production process and the achievement of product. However, analysis can prove that this theory may not accurately reflect the true contribution of cash capital in the production process and that the cost of capital used for the allocation process at the beginning of the period is a probabilistic cost, calculated as a percentage of the expected net return. The actual return of the cash capital is a probabilistic return that is also determined only at the end of the period, after achieving the result of the economic activity in question by multiplying the specified percentage for the cash capital from the expected return (x) by the net profit actually achieved, and not the expected. Also, this return is a common return with the entrepreneur's efforts (Abul Fotouh, Nagah: 2023). This is while the cash capital return (and its cost) that is calculated based on its marginal productivity is a fixed and predetermined return (and cost).

We now proceed to analyze the justified real causes of the expected rate of return of financing. These reasons, according to the author, are related to a theory of value from an Islamic perspective. According to this theory, for the cash capital to realize, and deserve a return, it must participate in legitimate work in carrying out an economic activity, and share in the return of this activity, a profit or loss. Money capital is nothing but a previously stored work, and when it participates in "Mudarabah" it is mixed with a live (present) work, and both types of work participate together in achieving the result of the "Mudarabah", either profit or loss. It is an outcome that consists, on the analytical level, of a functional return for both capital and work, in exchange for their work (stored and present), and a risk-return for both capital and work as well, in exchange for each of them bearing a portion of the potential loss in the result of the activity. Accordingly, the reason for the owner of cash capital to deserve a percentage of the profits lies in the depreciation of a part of his stored work, in the economic activity, and his participation in bearing the possibility of loss as the activity in question. The agreed ratio of the owner of the money-capital is multiplied by the expected return on investment so that we obtain the opportunity cost of investment, for allocating purposes, at the period's beginning. This percentage is multiplied, for distribution
purposes, by the actual net profit at the end of the period, to obtain the actual return of the cash capital, after the actual result of the activity is achieved.

**The relationship between the expected rates of return of financing in the different periods**

In capitalist economics, there are three theories to explain the relationship between interest rates in the short, medium, and long terms (Mayor, Thomas, 1968), namely the theory of prospects, Hick's theory, and Market independence theory. These three theories participate in explaining the relationship between interest rates in different markets. There is no doubt that financiers will make a comparison among the returns of using their money in the varying markets, and there is no doubt that the liquidity advantage provided by short-term bonds will be one of the elements of this comparison, but it is not expected that the interest rate in the medium or long term will be exactly equal to the average short-term interest rates during the medium or long period plus compensation for giving up liquidity; This is due to the lack of complete flexibility in the transition between the short-term and medium and long-term markets.

The author sees that the elements of the disparity mentioned by these theories can be used to explain the relationship between the expected rates of returns of financing in the various periods in the Islamic economy, with the awareness that we are in this economy regarding a potential return on Musharrakah and Mudarabah and, we are not regarding a steady return on loans and credit. Also, there is zakat due on the funds, when the Hijri year passes and it reaches a "Nisab" (and the rest of the conditions for the obligation of zakat in the money have been met), and this can add to the mentioned elements of inequality two other elements represented in the disparity of the degree of potential loss due to the length of the investment period, and zakat that may be due, because of the length of this period.

**Achieving Efficiency in Determining the Size of Investment in the Absence of Interest**

The excluding of interest means using an alternative tool may have different value judgments. In the context of this, we find that in the Islamic system in the first stage, the investor is obliged not to make any investments in activities that are prohibited by Islamic Sharia, and also determines for himself (as a collective duty) an amount of collective investment that he allocates to produce necessities, in a manner that maximizes his return of commitment. At the second stage, the investor seeks to maximize his profits in other areas of investment. In this last stage, the issue of the effect of direct financial return (as well as the cost) on the investment decision arises.

While some theories in the traditional economy, such as the accelerator theory and the theory of internal funds, marginalize the role of the interest as a determinant of investment decisions, some other theories highlight the role and the importance of the interest rate in this regard, and from these theories is the classic theory where the individual investment is a function of the interest rate, also that Keynes' theory makes interest rates one of two variables that determine the investment demand. The role of the cost of the cash capital can be clarified, too, by using the present value approach, and etcetera (Edgmand, 1979).

These theories can highlight the role of the cost of financing in the investment decision regardless of the nature of this cost.

If,

$$R = (Z + Br)$$

Where, the expected rate of return on investment $R = \text{the expected rate of return on financing } (Z) \text{ plus the expected rate of return of entrepreneurship } (Br)$. If $(R)$ was given, hence the value of $(Br)$, or the expected rate of return of entrepreneurship, will be inversely proportional to the value of $(Z)$. If the individual investment demand is positively correlated with
the expected rate of the return of entrepreneurship (the net profit accrues to the entrepreneur), then it can be said, assuming other factors remain the same, that there is an inverse relationship between the changes in (Z), as an independent variable, and the changes in individual demand of Investment.

It is a corresponding relationship of an inverse relationship between the interest rate and individual demand for investment in the capitalist economy. However, there is a difference in the fact that (Z) presents a probability cost, while the interest rate presents a fixed cost, which can have a different effect on the investment demand in terms of the response' degree of the investment demand to the changes in the cost of financing. In the context of the impact of the cost of funds on the individual investment decision in the Islamic economy, (Z) replaces the interest rate in influencing this decision. So that the optimization of the individual investment decision is taken when the marginal efficiency of the investment is equal to (Z), which achieves the goal of maximizing the profits of the individual investor after he has maximized the return of commitment in a previous stage; The matter which maximizes the overall return of the investor from his investment. Considering this, we can formulate the individual investment function as follows:

\[ I = I(Y, Z) + I_o + I_f \]  

Where (I) is the level of individual investment (Y, Z) is the real income and the expected rate of return of financing, and (I_o, I_f) is the spontaneous investment, and collective investment (including voluntary investment) respectively. The aggregate private investment function can be obtained from aggregating individual investment functions.

As the investor and the saver both aim to maximize their return on investment in the various available fields, the investor will direct his entrepreneurship efforts to the field or the fields that achieve the highest possible rates of entrepreneurship. Likewise, the saver will direct his money to the field or the fields that achieve the highest expected rates of return on financing. The equilibrium between the money supplied and demanded in the various fields of investment occurs at the highest possible point of (Z) (and at the highest possible rate of entrepreneurship). Whereas the expected rate of return on financing plus the expected rate of return on entrepreneurship is equal to the expected rate of return on investment when the demand and supply of investment funds are at equilibrium. The allocation process, and as such, is done in a manner that achieves the highest expected rate of the investment.

If we assume, the equality of the amount of investment (dependency and spontaneous), in both the Islamic and capitalist economy, then one of the components of the investment demand, which is the demand for investment in necessities, can be greater in the Islamic economy than in the capitalist economy by the amount of the collective investments. Also, the total individual investment in the Islamic economy can exceed that in the capitalist economy by the positive difference in the demand for investment resulting from the difference in the degree of uncertainty, in the light of the probabilistic cost of funds and the fixed cost.

**Research Results**

It is possible, in the Islamic economic system to develop an alternative mechanism for interest rates compatible with its values that can used to achieve an efficient allocation of monetary capital.

**Conclusions**

Our advanced analysis concludes that:

- Excluding interest on cash capital from the Islamic economy does not mean that cash capital becomes available without return (cost) and hence it is misallocated. It specifically means that the return of money-capital in the Islamic economy is determined as expected return that is used only for cash capital allocation purposes (which is an agreed-upon ratio multiplied by the expected return of the activity that funds it), while the cash capital return is calculated for distribution purposes by multiplying this ratio by
the actual return of the activity and not the expected return for it.

- The Islamic economic system can achieve an efficient allocation of monetary capital without the need for an interest rate by developing an allocation mechanisms that are compatible with its values.

**Author Contribution**

Our research offers an alternative mechanism for interest rates in the allocation of monetary capital:

1. It activates the value provisions of the Islamic system in terms of the prohibition of usury and the concept of right justice.
2. The research analyzes this proposed mechanism, its nature, and its ability to achieve an efficient allocation of monetary capital when establishing an equilibrium.
3. This mechanism is distinguished from other mechanisms proposed in this regard:
   A. The expected profit rate mechanism proposed in other research may only be used in choosing between available investment alternatives, but it is not sufficient for use in joint investment with work. Investment alternatives may agree on the expected profit rate but differ in terms of the relative share agreed upon for capital and work. Additionally, this mechanism does not consider the varying degrees of potential loss.
   B. The proposed GDP growth rate mechanism is also not sufficient for use in investment with work for the same previous reason.
   C. The mechanism of shadow prices for monetary capital proposed in evaluating public projects suffers from the well-known defects of shadow prices.
   D. The mechanism proposed in this research, which is the expected rate of return of financing, is suitable for use in different areas of allocating monetary capital, as it is determined independently of labor return and can reflect the true relative scarcity of capital and labor.

**References**


Appendix

Research Related Concepts

Halal

It is permissible ... what God has permitted in His holy Book is halal, and what God forbids is taboo, and what is silent about it is pardoned (i.e., It is permissible to do or not to do). It can be said, in light of the Holy Qur'an and the Noble Prophet's Sunnah, that what is permissible is everything that is objectively beneficial and pure, and that what is forbidden is everything that is objectively harmful and what is objectively unbeneﬁcial, and whose harm is greater than its beneﬁt.

Priority in fulfilling needs

It is intended to classify the degree of importance of goods in terms of their entitlement to fulfill them, so they are arranged in descending order, starting with the necessary, then the quasi-necessary, and then the improvements. Goods are divided in this way based on their service for a necessary, quasi-necessary, or improvement purpose.

These priorities are based on the guidance and purposes of Islamic Sharia and do not leave entirely to the discretion of the individual without a guide from Sharia.

Moderation in spending

The broad concept of moderation in spending includes, among other things, taking care of priorities and achieving sufﬁciency in meeting needs. However, in our analysis, moderation will be limited to a narrow concept related only to the scope and amount of spending. So spending is characterized by moderation if it does not include spending on taboos, and it is within the framework of what is known about the likes of this individual, and the care of right justice between the needs of the present and the future, and finally, if this spending does not absorb all of the income unless this income is already insufﬁcient, except to achieve sufﬁciency of the necessities.

Commitment return

Commitment return is intended, in this research, an indirect return estimated by the individual, resulting from his commitment to the requirements of Islamic Sharia in his economic decisions. This return expresses the state of contentment and conscience comfort that a Muslim sense from his feeling that he has fulﬁlled what God has commanded in terms of halal and moderation in spending and caring for rights and priorities within the framework of ability.

This does not negate the material return that can result from this commitment, which may be represented, for example, in preserving health because of moderation. It also does not negate the blessings that an individual can get, as well as the reward in the hereafter, but we exclude it because it cannot be subjected to analysis.

Collective investments

An amount of investment in necessities the investor in the Islamic economy decides to make to maximize the commitment return on compliance with the requirements of Islamic law in achieving justice by taking care of priorities. What distinguishes these collective investments is that it is not aimed at maximizing profits as the main goal, and therefore the amount does not depend mainly on the rate of return on it, but the rates of return are usually low in the field of these investments so that it is not attractive to the investor looking to maximize profits.
The concept of "right justice"

Right justice is based on giving everyone who holds a right his right, as defined by Islamic Sharia, and is based on combining and reconciling different rights, as well as between moral principles and material interests. So, it does not recognize absolute rights and freedoms but rather sets controls for these freedoms and rights that will establish a balance that does not bias a party without a party.

Right justice is the characteristic of Islam in everything, not just in allocating resources (See, for example, verses Nos. 18 of Surat Al-Imran, 159 and 181 of Surat Al-A’raf, and 60 of Surat Al-Nahl). The right justice concept in resource allocation is aimed at achieving justice in meeting needs, that is, moderation in meeting needs according to priorities and within the framework of achieving sufficiency for all people (See the verse 29 from Surat Al-Baqarah).

Sufficiency level in meeting needs

The amount of this level is determined in a way that is sufficient for the moderate fulfillment of needs with its three levels of necessities, quasi-necessities, and improvements. This moderation in fulfilling the needs is determined in light of the income available to the individual, and that is for those who achieve his sufficiency by themselves or the sufficiency of the likes or (if the likes cannot be found) with the sufficiency of the middle class, and that is for those who achieve part of their sufficiency, or all of his sufficiency, from the distribution institutions In the Islamic system.

The duration of sufficiency is determined in a way that achieves the sufficiency of life for those who can achieve the sufficiency of themselves but lack a tool for work or capital for trade, for example, and in a way that achieves the sufficiency of a Hijri year for the incapable of earning such as the blind, or the one who gains what is not sufficient for him.

Equilibrium in fulfilling needs

"Equilibrium in fulfilling needs" means justice in meeting needs between the present and the future in an Islamic economy.

"Al-Nisab"

It is the amount of money that zakat is not obligatory in less than it, and it varies according to the different zakat funds.