The Islamic Commodity Trust

With Application to Crude Oil Forward Sales

Rudy Yaksick[*]

ABSTRACT

This paper addresses the following dilemma confronting a consumer and supplier of a commodity who wish to execute an Islamically acceptable forward sale of a commodity. The consumer wants to receive the commodity over several time periods and wants to make installment payments beginning only after all the desired quantity is received. In contrast, the supplier wants to receive the entire payment before delivering any shipments to the consumer. This dilemma can be solved with a financing mechanism called an Islamic commodity trust. The trust has three key components: 1) a *mudāraba* partnership; 2) a *salam* contract; and 3) a *murābaha* with an order-to-purchase contract. The paper concludes by discussing the practical relevance of the trust mechanism (applied to forward sales of crude oil) for financing upstream oil facilities in the Persian Gulf region.

I. INTRODUCTION

This paper addresses the following dilemma confronting a consumer and supplier of a commodity who wish to execute an Islamically acceptable forward sale of a commodity. The consumer wants to receive the commodity in the future—with the price "locked-in" today—and begin making installment payments, only after the desired quantity is received. In contrast, the supplier wants to receive the entire (single) payment before delivering the commodity to the consumer. In other words, the financing problem is that the consumer and the producer cannot agree on either the timing ("before" versus "after" delivery) or the frequency (single versus installment basis) of the payment(s). Hence, they cannot consummate an otherwise mutually agreeable deal for forward delivery of a commodity at a price agreed upon today.

The solution to this dilemma involves the provision of credit to the buyer and, simultaneously, the provision of debt financing to the seller. Hence, the forward sale dilemma can be solved via a financing mechanism called an Islamic commodity trust. The trust has three key components: 1) a *murābaha* with an order-to-purchase contract that provides credit financing to the buyer; 2) a *Salam* contract that provides debt financing to the seller; and 3) a *mudāraba* partnership that provides both credit and debt financing as well as structures the "deal."

The structure of the mechanism is described in part II. Then, part III addresses the issue of whether the trust-financing mechanism is consistent with Islamic legal principles. This legal analysis is complemented by a financial-risk analysis in part IV. Part V concludes by discussing the contemporary relevance of the trust mechanism, which lies in its ability to harness local (as opposed to foreign) savings to provide financing for "upstream" oil facilities on the Arabian Peninsula.

II. STRUCTURE OF A COMMODITY TRUST

The preceding financing problem—disagreement over timing and frequency of payment—can be efficiently solved by an Islamic commodity trust (ICT). In particular, the ICT provides a single payment to the commodity producer before delivery as well as enables the consumer to pay a fixed price on an installment basis for the commodity after it is delivered.

A. Three Key Components

This solution is achieved by linking two basic Islamic contracts—*Salam* and *murābaha* with order-to-purchase—with a *mudāraba* partnership serving as the linchpin. In particular, the commodity producer's need for immediate payment of future delivery of the commodity is satisfied by a *Salam* contract. The customer's need for future delivery and deferred payment is met by the *murābaha* with order-to-purchase contract. Financing and

commodity brokering services for this pair of transactions are provided by the *muḏāraba* partnership. In sum, the ICT mechanism has three key components:

1. a *muḏāraba* partnership whose investors provide the capital to purchase the commodity from the commodity producer;
2. a *Salam* contract between the *muḏāraba* and the commodity producer that provides for the forward delivery of the commodity with a single payment made to the commodity producer, prior to the delivery of the commodity; and
3. a *murābaḥa* with order-to-purchase contract, in which the consumer orders the *muḏāraba* to purchase the commodity for future delivery and the *muḏāraba*, in turn, agrees to accept installment payments from the consumer after the commodity is delivered.
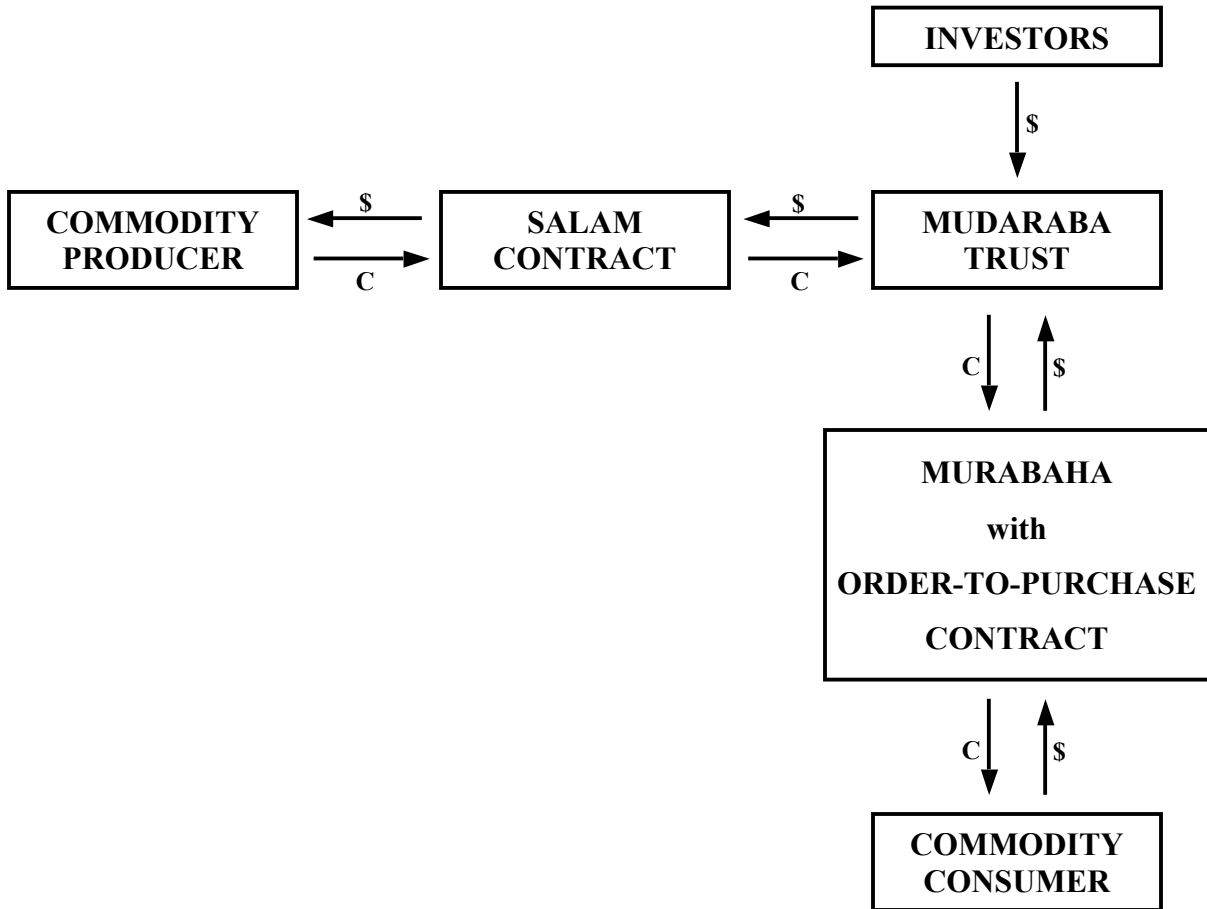
The relationship among the key components of the ICT mechanism is illustrated in Figure 1. Briefly, the *Salam* contract links the commodity producer and the *muḏāraba* partnership; the *murābaḥa* with order-to-purchase contract links the *muḏāraba* partnership and the consumer of the commodity.

Note that Figure 1 is drawn under the assumption that only one consumer and producer participate in the transaction. However, one can easily generalize Figure 1 to a situation of several consumers and producers.

B. Transactions

As illustrated in Figure 1, there are two separate transactions in the ICT mechanism. To fix ideas, the transactions are described in the context of the forward sale of crude oil. First, the *muḏāraba* party instructs its agent/manager (*muḏārib*) to enter a *Salam* contract with the oil producer. The *muḏārib* uses the *muḏāraba*'s capital to do so immediately. Evidence of the *muḏāraba*'s ownership of the crude oil is provided by both the *Salam* contract and future-dated oil storage tank receipts.

FIGURE 1. STRUCTURE OF AN ISLAMIC COMMODITY TRUST

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                                                          ┌─────────────┐
                                                          │  INVESTORS  │
                                                          └─────────────┘
                                                                │ $
                                                                ▼
┌──────────────┐      $     ┌──────────────┐     $      ┌──────────────┐
│  COMMODITY   │◄────────── │    SALAM     │◄────────── │   MUDARABA   │
│  PRODUCER    │ ─────────► │  CONTRACT    │ ─────────► │    TRUST     │
└──────────────┘      C     └──────────────┘     C      └──────────────┘
                                                          C │    ▲ $
                                                            ▼    │
                                                    ┌──────────────────────┐
                                                    │      MURABAHA        │
                                                    │        with          │
                                                    │ ORDER-TO-PURCHASE    │
                                                    │     CONTRACT         │
                                                    └──────────────────────┘
                                                          C │    ▲ $
                                                            ▼    │
                                                    ┌──────────────────┐
                                                    │    COMMODITY     │
                                                    │    CONSUMER      │
                                                    └──────────────────┘
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LEGEND:

C – denotes flow of commodity (future delivery)

$ – denotes flow of money

The second transaction is a conventional, frequently used Islamic trade (credit) financing deal. That is, the *mu<u>d</u>āraba* party enters a *murāba<u>h</u>a* and an order-to-purchase contract with the oil consumer. The sequence of events in this transaction is as follows:

1. The *mu<u>d</u>āraba* party takes delivery of its oil—at the oil company's port—at future delivery dates (specified in the order-to-purchase agreement);
2. The quantity and quality of the oil (as specified in the order-to-purchase contract) are verified by an independent, licensed surveyor;
3. After the consumer agrees to the surveyor's report, the oil is shipped via a certified, insured vessel to the port designated by the consumer;
4. After taking delivery, the consumer begins making installment payments to the *mu<u>d</u>āraba* financier(s), according to the terms specified in the *murāba<u>h</u>a* agreement; and,
5. After the final payment is made, the consumer's collateral deposit is returned and the deal is completed.

C. Why Is the Mechanism a "Trust?"

Let us briefly discuss the reasons for labeling the financing mechanism a "trust." In this paper, we assume that the *mu<u>d</u>āraba* partnership is organized in a traditional manner. That is, the *mu<u>d</u>ārib* (i.e., the agent/entrepreneur for the investors) does not invest in the partnership. Moreover, the *mu<u>d</u>ārib* is compensated by receiving a pre-agreed percentage share of the profits generated by his/her managerial or entrepreneurial activities.

In this classical form, the liability for loss (<u>d</u>amān) is assigned entirely to the investors. Thus, the *mu<u>d</u>ārib* is not held liable at all for economic loss, unless he/she is shown to be in breach of trust.[i] Consequently, the *mu<u>d</u>ārib* does not bear the risk of (financial) loss. Instead, the *mu<u>d</u>ārib* risks only his/her labor expended in managerial/entrepreneurial activities. Within this context, the *mu<u>d</u>ārib* is considered to act as a trustee (*amin*) for the investors (*rabb al-māl*). Hence our reason for labeling this financing mechanism a (commodity) trust.

III. LEGAL ANALYSIS

Is the financing mechanism consistent with Islamic legal principles? To guide our analysis, the conditions that must be satisfied for each of the contracts (and related transactions) to be deemed Islamically valid are stated. This section provides a series of checklists to assess the legal feasibility of the trust mechanism. It also constitutes within this paper a self-contained section that is aimed at readers unfamiliar with Islamic contract law and financial principles.

Of course, only a *sharī͑a* board has the authority to determine the Islamic validity of the trust mechanism. However, one may be optimistic that a *sharī͑a* board would approve of this mechanism because, as the following analysis indicates, all components of the trust mechanism comply with Islamic law. In particular, the contracts and organizational arrangements embedded in the trust have the following properties, explained in detail in the following sub-sections:

1. The *bay͑ salam* contract satisfies the conditions of ordinary sale as well as the conditions unique to the *Salam* contract;
2. The *murāba<u>h</u>a* with order-to-purchase contract satisfies the conditions of: a credit sale, a general sale, and the buyer's order-to-purchase promise; and,
3. The *mu<u>d</u>āraba* Partnership satisfies the conditions of an Islamic partnership.

A. *Bay͑ Salam* Contract

The *Bay͑ Salam* contract is a sale agreement in which advance payment is made to the seller for deferred delivery of goods (Hasanuz Zaman, p. 225). A unique feature of the *Salam* contract is that the price paid (advance payment), on the date the buyer enters the contract (denoted P^S), is lower than the price that would have been paid if the sale were a cash (spot) sale at the time of delivery (denoted P_T). According to Vogel and Hayes (p. 213), "The magnitude of the discount ($P_T - P^S$) is a function of the credit uncertainty of the debtor (buyer) and the time preference of the investor (seller)." Hence, the *Salam* contract can be viewed as providing a form of debt financing.[ii]

The *Salam* contract must satisfy the conditions of an ordinary sale as well as conditions unique to the *Salam* sale. These conditions are listed below.

1. Conditions of an "Ordinary" Sale

        The conditions of an "ordinary" sale that the *Salam* contract must satisfy are, as noted by (Ray, pp. 38-39), the following.

1. Both parties to the sale must be voluntary participants.
2. Both parties must be fully competent (in a legal sense) to transact.
3. The object of sale must be property (*māl*). The definition of this varies, but it generally means an object having a legal use (a dead dog, for instance could not ordinarily be the object of a sale, since a dog is considered unclean when alive, useless when dead).
4. The seller must own the object of sale, or he must be authorized to sell it. Such authorization without ownership could come about in several ways, including partnership, agency (*wakala*), or guardianship of a minor.
5. The seller must be able to deliver the object of sale. For instance, the sale of a lost object or an escaped animal is forbidden because the seller cannot deliver the goods.
6. The buyer (and seller) must take cognizance of the object of sale, either by examination or by an adequate description. Thus the sale of a "grab bag" of unknown contents is forbidden.
7. The price must be determined precisely and known by both parties.

        Finally, Ray (p. 39) also points out, "In the event of an intrinsic defect existing in the object, the buyer has the unconditional right to rescind the sale. This right (*khiyar al'ayb*) cannot be ceded by a contractual stipulation; any such stipulation would be null and void."

2. Differences between "Ordinary" and *Salam* Sales

        In addition to the conditions of an ordinary sale, the *Salam* contract must also satisfy five additional criteria. These are (Hasanuz-Zaman, p. 226):

1. In a *salam* sale, it is necessary to precisely fix a period for the delivery of goods; in an ordinary sale this is not necessary.
2. In a *salam* sale, a commodity not in the possession of the seller can be sold; in an ordinary sale, it cannot be.
3. In a *salam* sale, only commodities that can be precisely determined in terms of quality and quantity can be sold; in an ordinary sale, everything that can be owned is saleable, unless the Qur'ān or the Sunna prohibits it.
4. A *salam* sale cannot take place between identical goods (e.g., wheat for wheat, or potato for potato); in an ordinary sale, the exchange of identical goods is permissible.
5. Payment in a *salam* sale must be made much in advance of the delivery of goods and at the time of contract; in an ordinary sale, payment may be deferred or made at the time of delivery.

3. Specific Conditions of a *Salam* Contract

        The final set of conditions that the *salam* contract must satisfy (in addition to satisfying the conditions of an ordinary sale) is: (refer to Hasanuz-Zaman, p. 227)

1. A person who is a potential grower or manufacturer of a commodity is qualified to contract a *bay^c salam* against advance payment. Thus, it is not necessary for this seller to have possessed the merchandise at the time of the contract. It is also not necessary that he should himself be growing or manufacturing it.
2. The buyer should advance the price of the commodity at the time of contract.
3. The commodity should be generally available in the market at the time of delivery; it should not be an extinct or rare commodity, out of supply, or out of season when the seller must deliver it.
4. The commodity in exchange should in itself not be in the nature of money.
5. The specifications of the commodity should particularly cover all those characteristics that are responsible for variations in price.

B. *Murābaha* with Order-to-purchase

        The *murābaha* contract permits the immediate delivery of a commodity with deferred payment, as well as a profit markup included in the selling price (Vogel and Hayes, p. 182). Note that the *murābaha* contract is a credit

sale since it provides for deferred payment. Hence, we must first consider the basic legal requirements of credit sales.

1. Credit Sale Conditions

As Ray (pp. 39-40) points out, there tends to be differences of opinion, among the four major Islamic schools of thought, regarding five key parameters of credit sale contracts:

1. Goods that can be sold via credit;
2. Contract price: immediate sale versus credit sale;
3. Forfeitable down payment;
4. Rescission of the deal; and,
5. Penalty for late payment.

a. Goods Eligible for Sale

Hanafis consider all goods, except species of *māl ribawī*, permissible for credit sale. For the Hanafis, *māl ribawī* means weighable goods—other than currency—subject to *ribā*. For Malikis, all *ard* goods can be sold for credit. They differ on the meaning of *ard* goods, however, with three (differing) opinions: 1) everything except currency; 2) everything except currency and weighable or measurable goods; and 3) everything but currency, weighable, or measurable goods, and animals. Under Shafi'I law, all goods except currencies and foodstuffs can be objects of credit sale. An exception is made for foodstuffs when they are exchanged against future payments in currency (but not in other goods). Hanbalis permit the sale on credit of all goods except those weighable and measurable and foodstuffs. However, like the Shafi'is, they permit the sale of foodstuffs for future payment of currency only.

b. Contract Price: Immediate (Spot) Sale versus Credit Sale

Can an article be sold at one price, if the buyer pays immediately, yet at another price if payment is deferred to a future date? According to Ray (p. 40), Hanafis permit the setting of two different prices. Likewise, he concludes that the Shafi'is and Hanbalis appear to permit the charging of a higher price in credit sales than in sales with immediate payment. Finally, Malikis appear to hold conflicting views, since Imam Malik forbade the charging of different prices.

c. Forfeitable Down Payment

Only the Hanbali school views the down payment to be forfeitable.

d. Rescission of the Deal

All schools allow both the buyer and seller to rescind the deal, but the rescinding party must compensate the other party.

e. Late Payment Penalty

All schools agree that the seller (creditor) cannot assign a penalty to the buyer (debtor) if the latter makes a late payment to the former.

2. General Sale Contract Issues

In addition to credit sale requirements, the *murābaha* contract must also satisfy the following conditions: (Ray, pp. 45-59)

1. All expenses incurred in relation to the object being sold may be included as part of the base cost.
2. All documents relevant to the sale object must be given to the buyer. This includes informing the buyer if the purchase price was denominated in foreign currency and, if so, whether the exchange rate has changed.
3. If the seller receives a rebate for the object sold, even after the *murābaha* sale has been consummated, the buyer is entitled to benefit from the rebate as well.
4. There is a difference of opinion regarding the time at which the seller can legally sell the object to the buyer.

According to Ray (p. 48), by the orthodox and legally correct doctrine, "Selling is postponed until the bank (seller) gets actual ownership and possession of the goods and becomes responsible for any defects therein." This

view has been adopted, for example, by the Faisal Islamic Bank of Egypt (FIBE) and the Islamic Bank for Investment and Development. However, Ray notes that not all Islamic banks follow these rules: Kuwait Finance House does not.

3. Order-to-Purchase

There is some debate surrounding the "order-to-purchase" component of the contract. According to Ray (pp. 51ff), the question, "Is the order-to-purchase binding?" leads to two differing views. He cites several *fatāwā* that treat the order-to-purchase as binding (*lazim*). For instance, FIBE—drawing upon quotations from the Sunna— issued a *fatwā* stating, "Promises were valid as long as they neither permit that which is forbidden nor forbid that which is permitted." (Ray, p. 52)

By contrast, the non-binding view (*ja'iz, ghayr lazim*) has been supported by the International Association of Islamic Banks (IAIB) and Abdul Aziz Ibn Baz (until recently, the highest legal authority in Saudi Arabia). The IAIB believes, "The person who ordered the goods is allowed the right to withdraw against payment of reasonable compensation." (Ray, p. 53) Similarly, Ibn Baz's *fatwā* interprets the promise (written or spoken) as non-binding.

In spite of this difference of opinion, Ray (p. 54) observes that most Islamic banks consider the promise to purchase binding. Further, they require collateral against the possibility that the promise will not be honored. In sum, this difference of opinion among Islamic scholars has spawned a general objection to the *murābaha* contract.[iii]

C. *Mudāraba* Partnership

This form of business organization provides for equity investment via a profit-sharing arrangement. The investing party (*rabb al-māl*) provides the capital, while another party, the *mudārib*, supplies the managerial and/or entrepreneurial effort. Note that the *mudārib* has the right to sell goods on credit (Khan, p. 218).

Profit is shared between the passive investor and the entrepreneur according to a pre-determined percentage rather than a fixed amount. According to Khan (p. 213), "Profit is any increment in the original capital." However, he also points out (p. 214), "So far no law has been able to define this concept (profit) clearly and precisely. Most of what is being believed depends on court rulings." Finally, if past losses have occurred, Khan (p. 216) indicates, "It has been clearly provided that profit will be determined after all past losses have been written off and the original capital brought intact."

If losses occur (i.e., the original capital is depleted), the investors incur the loss. The *mudārib* only loses his/her time and effort allocated to the partnership. In particular, the investors share any loss (except credit-related loss) in proportion to their capital contribution. However, if the business has obtained credit (with the unanimous consent of all partners) and cannot repay the credit with the assets of the business, then the loan will be repaid equally by all investors and the *mudārib*.[iv]

IV. FINANCIAL RISK ANALYSIS

The objective of this section is to analyze the price risk faced by the *mudāraba* partnership from both the *Salam* and *murābaha* contracts.[v] By price risk it is meant the lack of equality between the *mudāraba*'s markup and the total economic value of the *Salam* and *murābaha* contracts, where this potential lack of equality is due to unexpected (random) changes in the spot commodity price at the delivery date. For example, the *mudāraba* is said to face no price risk, if, on the delivery date, the *mudāraba*'s markup equals the total economic value of the two contracts. In other words, the *mudāraba* partnership, after entering the *Salam* and *murābaha* contracts, will not experience an "opportunity" gain (or loss) that differs from the markup—i.e., experience no risk—regardless of the level of the spot commodity price on the delivery date. When this equality occurs, the two contracts create a perfect hedge: the contracts' combined economic value will, with probability one, equal the *mudāraba*'s markup. Finally, note that we focus on the *mudāraba*'s risk because this paper is written from the perspective of an Islamic financial institution that might wish to serve as the *mudāraba* partnership.

A. *Salam* Price Risk

Two steps are required to estimate the price risk of the *Salam* contract: 1) specify the economic value of the contract; and 2) estimate the relationship between changes in the economic value of the contract and changes in the spot commodity price that prevails on the delivery date.

1. Contract Value

When the *mudāraba* partnership enters the *Salam* contract, it agrees to buy the commodity at the delivery date (T) and pay the agreed price (P^S), even though the spot commodity price on the delivery date (P_T) may differ

from the agreed price. Thus, at the delivery date the economic value of the contract equals the economic payoff (gain or loss) that the contract generates for the *mudāraba* partnership. More precisely, the value of a *Salam* contract at the delivery date (V_T^S) is the spot price at the delivery date minus the price initially agreed to:

$$V_T^S = P_T - P^S \qquad\qquad ...... (1)$$

The reasoning underlying this value equation is as follows. Economic ("opportunity") gains accrue to the partnership when the spot market price on the delivery date (P_T) exceeds the buying price specified in the *Salam* contract (P^S), for the partnership can purchase the commodity for the lower (contractually stipulated) unit price P^S and avoid the higher spot price P_T. This avoidance of the higher unit price is an economic or "opportunity" gain. In this case, V_T^S has a positive value, since $P_T > P^S$.

The partnership incurs economic losses when the spot price (P_T) is less than the agreed buying price (P^S). In this situation, the partnership is forced to pay more for a unit of the commodity than the commodity is currently selling for on the spot market (at the delivery date). In this situation, the partnership incurs an economic loss; the terms of the *Salam* contract prevent the partnership from taking advantage of the lower unit (spot) price (P_T). Hence, V_T^S has a negative value, since $P_T < P^S$.[vi]

Consider the following numerical example. Suppose that the partnership agreed to buy the commodity at a unit price of $15 ($P^S = \$15$); and that the spot commodity price on the delivery date is $17 ($P_T = \$17$). From the partnership's perspective, the value of the *Salam* contract (V_T^S) is $2 ($V_T^S = \$17 - \$15 = \$2$). That is, the partnership experiences a $2 economic gain per unit of the commodity purchased. In contrast, if $P_T = \$10$, then $V_T^S = \$10 - \$15 = -\$5$. The partnership incurs an economic loss of $5 per unit.

2. Contract Value/Spot Price Relationship

The magnitude of the price risk is illustrated by graphing the relationship between the *Salam* contract value (payoff) and spot commodity price changes. Since the *Salam* contract obligates the *mudāraba* partnership to take future delivery of the commodity, the *Salam* contract's payoff (gain/loss) profile is identical to the standard payoff profile for a "long" position in a conventional (non-Islamic) forward contract.

As illustrated in Figure 2, the profile line is the positively sloped 45-degree line, intersecting the horizontal axis at the agreed purchase price (P^S). The horizontal axis measures the unit spot commodity price at the future delivery date. The vertical axis measures the *Salam* contract's economic value (payoff per unit of commodity purchased) at the future delivery date.

Economic gains are represented by the portion of the profile that lies above the horizontal axis; economic gains, below. The slope of the profile is 45° degrees, since the buyer experiences an additional $1 of gain (loss) for every $1 increase (decrease) in the spot price relative to the agreed buying price (P^S).

B. *Murābaḥa* Price Risk

The price risk of the *murābaḥa* contract is also estimated via the two-step methodology used above.

1. Contract Value

The *murābaḥa* contract requires the *mudāraba* partnership to deliver the commodity to the consumer at the delivery date. Moreover, the *murābaḥa* contract permits the *mudāraba* partnership to charge a fixed markup over the price that the partnership paid for the commodity. The relationship between the *mudāraba*'s buying and selling prices is expressed algebraically as:

$$P^M = P^S + Markup \qquad\qquad ...... (2)$$

P^M denotes the *mudāraba*'s selling price;
P^S denotes the *mudāraba*'s buying price (here, equal to the price paid the *Salam* seller); and
Markup denotes the additional money that the *mudāraba* receives for providing broker and customer services and covering storage costs, damage costs, payment default risk, and delivery risk (i.e., the buyer's refusal to accept delivery).

FIGURE 2. *MUDĀRABA* PAYOFF PROFILE—*SALAM* CONTRACT

Payoff (at T)

GAIN
$2

10

0

17

$P^S = 15$

$\widetilde{P_T}$

45°

-$5
LOSS
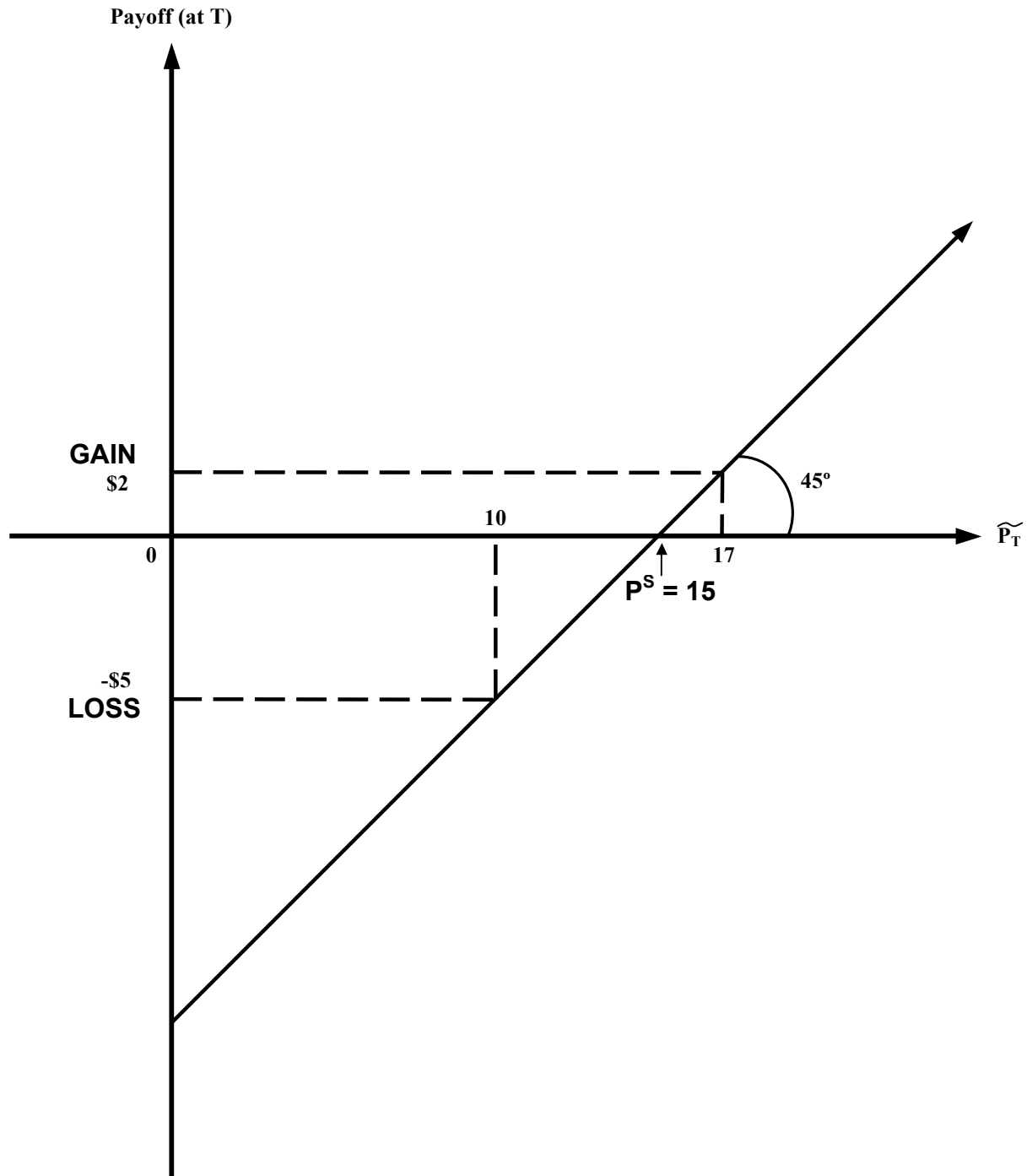
LEGEND:

P^S – *mudāraba* purchase price (*salam* contract)

$\widetilde{P_T}$ – spot commodity price at delivery date (T)

Note that the *mudāraba* partnership agrees to receive the contractually stipulated selling price (P^M), even though the spot commodity price on the delivery date (P_T) may be different than P^M. Thus, at the delivery date the economic value of the *murābaha* contract equals the economic payoff (gain or loss) that the contract generates for the partnership. More precisely, the value of a *murābaha* contract at the delivery date (V_T^M) is the markup price minus the spot price, i.e.,

$$V_T^M = P^M - P_T \qquad\qquad\qquad ...... \ (3)$$

The reasoning underlying this value equation is as follows. Economic ("opportunity") gains accrue to the partnership when the selling price specified in the *murābaha* contract (P^M) exceeds the delivery-date spot market price (P_T). The reason is that the partnership can sell the commodity for the higher (contractually stipulated) unit price P^M than the current (delivery date) spot price P_T. This contractual right to charge a higher unit price is an economic or "opportunity" gain. In this case, V_T^M has a positive value, since $P^M > P_T$.

Conversely, the partnership incurs economic losses when the spot price (P_T) is greater than the agreed selling price (P^M). In this situation, the partnership is contractually obligated to charge less for a unit of the commodity than the price the commodity currently commands on the spot market (at delivery date). In this situation, the partnership incurs an economic loss because it is selling the good below the market price. The terms of the *murābaha* contract prevent the partnership from taking advantage of the higher unit (spot) price (P_T). Hence, V_T^M has a negative value, since $P^M < P_T$.

Consider the following numerical example. Suppose that the partnership agreed to sell the commodity at a unit price of $17 ($P^M$ = $17) and that the spot commodity price on the delivery date is $10 ($P_T$ = $10). Then, from the partnership's perspective, the value of the *murābaha* contract (V_T^M) is $7 ($V_T^M$ = $17 – $10 = $7). That is, the partnership experiences a $7 economic gain per unit of the commodity purchased. In contrast, if P_T = $22, then V_T^M = $17 – $22 = -$5; an economic loss of $5.

In conclusion, note that the partnership can incur economic losses even though it will (with probability one) receive its markup (accounting "profit").[vii] The point of the analysis is that economic value (gains/losses) does not necessarily equal accounting value (profits/losses). In other words, the *murābaha* contract forces the partnership to forgo opportunities (alternative deals) that generate larger profits than those implied by the markup specified in the contract.

2. Contract Value-Spot Price Relationship

The magnitude of the price risk is illustrated by graphing the relationship between the *murābaha* contract value (payoff) and changes in the spot commodity price. Since the *murābaha* contract obligates the *mudāraba* partnership to make future delivery of the commodity, the *murābaha* contract payoff (gain/loss) profile is identical to the standard payoff profile for a "short" position in a conventional (non-Islamic) forward contract.

As illustrated in Figure 3, the payoff profile line is the negatively sloped 45-degree line, intersecting the horizontal axis at the agreed selling price (P^M). The horizontal axis measures the unit spot commodity price at the future delivery date. The vertical axis measures the *murābaha* contract's economic value (payoff per unit of commodity sold) at the future delivery date.

Economic gains are represented by the portion of the profile that lies above the horizontal axis; losses by the portion of the profile that lies beneath the horizontal axis. Note that the profile has a slope of negative 45°: the buyer reaps an additional $1 of gain (loss) for every $1 decrease (increase) in the spot price, relative to the agreed selling price (P^M).

FIGURE 3. *MUD̲ĀRABA* PAYOFF PROFILE—*MURĀBA̲HA* CONTRACT
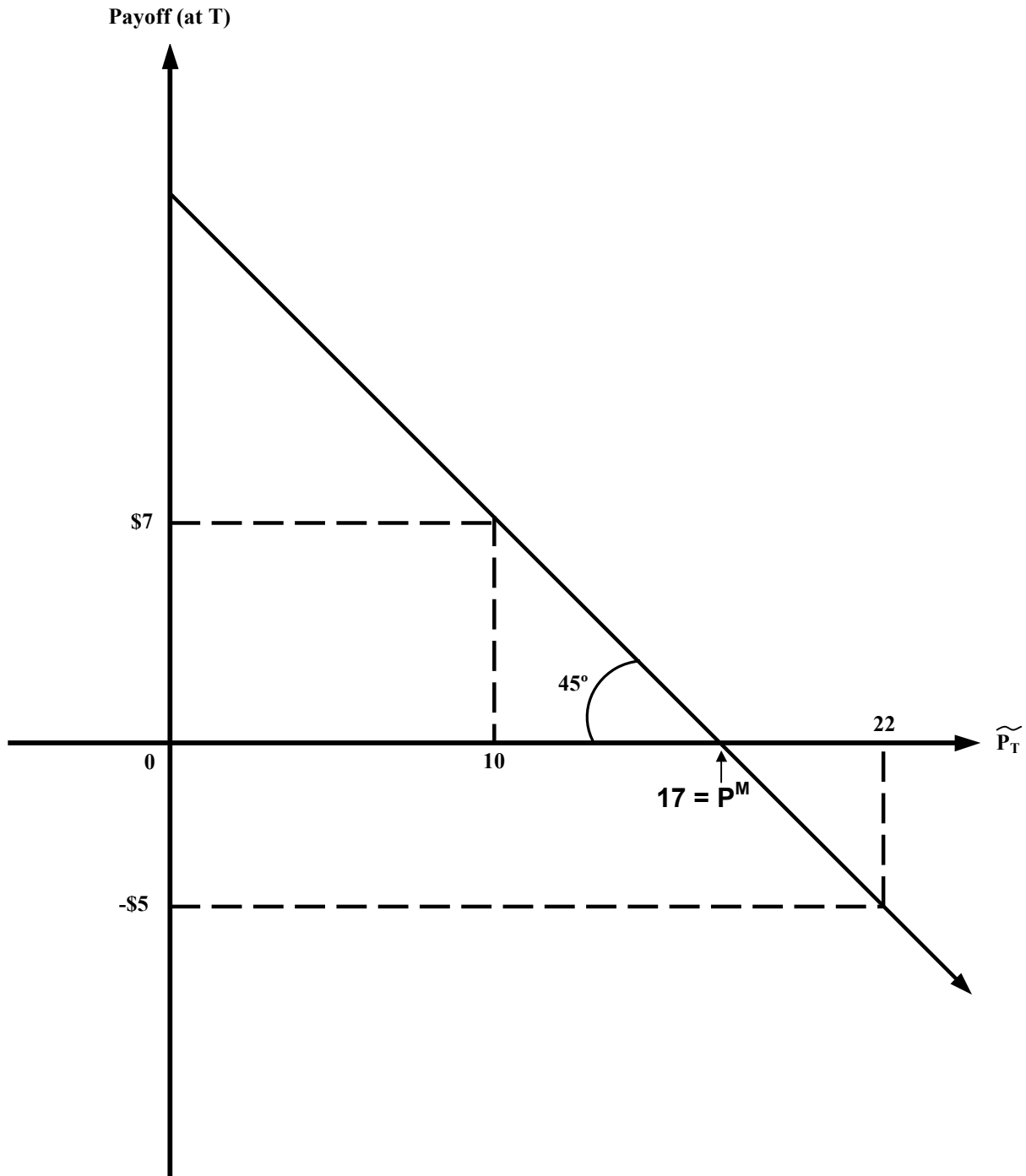
LEGEND:

P^M – *mud̲āraba* selling price (*murābaha* contract)

$\widetilde{P}_T$ – spot commodity price at delivery date (T)

C. Price Risk of Both Contracts

      The combined payoff from both contracts is illustrated in Figure 4. This horizontal payoff profile (labeled Markup) is created by overlapping Figures 2 and 3 and then vertically (and algebraically) summing (at each commodity price) the payoff from each contract.

<u>1. Main Analytic Result</u>

      As the reader can see, the combined payoff is a constant amount equal to the *mudāraba* markup, regardless of the level of the spot commodity price (P_T) on the delivery date. In other words, the *mudāraba* partnership obtains a perfect hedge against uncertainty in the spot commodity price by combining the *Salam* and *murābaha* contracts: the economic value of the contracts equals the markup (accounting "profit") received by the partnership. This is the main analytical result of the paper. Moreover, to the best of the author's knowledge, this is a novel result.
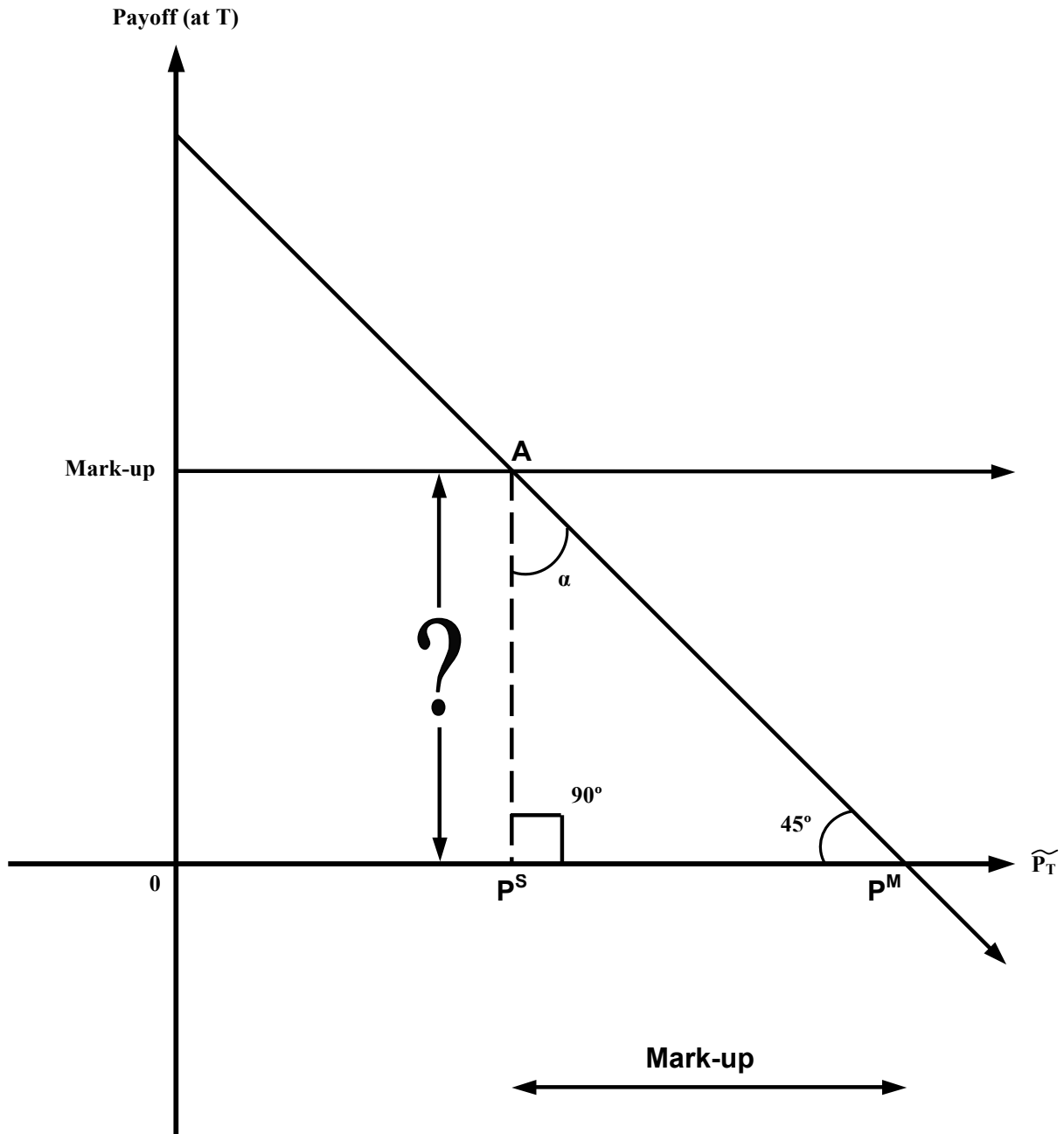
FIGURE 4. *MUDĀRABA* COMBINED PAYOFF
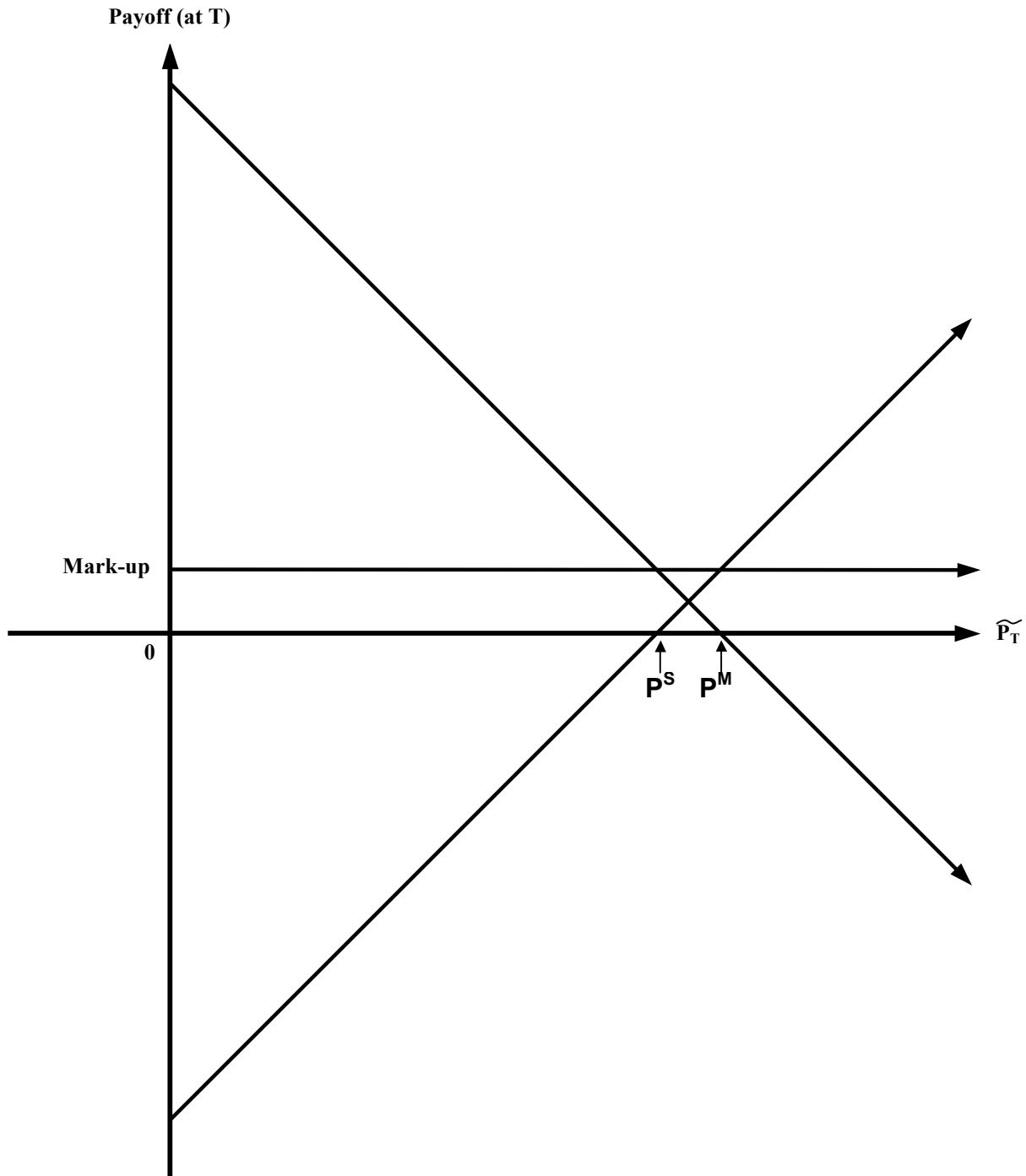
LEGEND:

P^M – *mudāraba* selling price (*murābaha* contract)

$\widetilde{P}_T$ – spot commodity price at delivery date (T)

FIGURE 5. GEOMETRIC PROOF OF PERFECT HEDGE

2. Proof of Main Result

We now prove the main result using algebra.[viii]

a. Proposition

The value of the contracts equals the *murābaha* markup. Suppose that: 1) an entrepreneur simultaneously enters a pair of *Salam* and *murābaha* contracts for forward receipt and delivery of the same commodity on the same delivery date; and 2) the entrepreneur's markup for the *murābaha* contract is defined as the difference between the selling price (P^M) and the buying price (P^S). This pair of contracts enables the entrepreneur to construct a perfect price hedge. That is, on the delivery date, the entrepreneur's total payoff (economic value) from the *Salam* and *murābaha* contracts will equal the markup (accounting "profit") agreed to in the *murābaha* contract, regardless of the level of the spot commodity price on the delivery date.

b. Proof

The combined payoff (economic value) that accrues to the *mudāraba* partnership equals the sum of the payoffs from both contracts entered into by the *mudāraba*, i.e.,

$$\begin{aligned}
\text{Combined Contract Payoff} &= Salam \text{ Payoff} + mur\bar{a}baha \text{ Payoff} \\
&= V_T^S + V_T^M \\
&= (P_T - P^S) + (P^M - P_T) \\
&= P^M - P^S \\
&= \text{Markup (by definition). QED}
\end{aligned}$$

3. Intuition of Result

The intuition underlying this result is straightforward. Recall that the *mudāraba*'s markup is fixed (non-random) since it is specified in the *murābaha* contract. In particular, the markup ($P^M - P^S$) is the pre-agreed (hence, non-random) spread between the *mudāraba*'s selling price (P^M) and the *mudāraba*'s buying price specified in the *Salam* contract (P^S). In contrast, the *mudāraba*'s payoff from either the *Salam* or the *murābaha* (forward) contract is random because the payoff for each contract varies as the spot commodity price (at the delivery date) varies around the contractually agreed forward price for each contract, i.e., P^S and P^M.

However, when the two contracts are combined, their total payoff is constant—equal to selling price minus buying price—for each spot price scenario. Suppose that on the delivery date the spot commodity price (P_T) is equal to the buying price (P^S). Then, the partnership reaps no economic gain and suffers no loss from the *Salam* contract; $V_T^S = P_T - P_T = 0$. However, when $P_T = P^S$ the partnership incurs an economic gain on the *murābaha* contract; $V_T^M = P^M - P^S = $ Markup.

Note that for any P_T less than P^S, the *Salam* contract will incur a loss. However, the *murābaha* contract will incur a gain. Fortunately, however, a dollar's worth of loss from the *Salam* contract is exactly offset by a dollar's worth of gain from the *murābaha* contract. Moreover, the *murābaha*'s initial economic gain (Markup) at $P_T = P^S$ is maintained throughout the spot price region $0 \leq P_T \leq P^S$.

The reverse argument can be made when the (delivery date) spot commodity price is in the region $P^M \leq P_T \leq$ infinity. That is, in this region a dollar's worth of gain from the *Salam* contract is exactly offset by a dollar's worth of loss from the *murābaha* contract. Moreover, the *Salam*'s initial economic gain (equal to the Markup) at $P_T = P^M$ is maintained throughout this region.

In the intermediate spot price region, $P^S < P_T < P^M$, both contracts have an economic gain. However, as P_T increases by \$1 (from P^S), the *murābaha*'s economic gain decreases by \$1 while the *Salam*'s economic gain increases by \$1. Hence, throughout this price region, the total economic gain from both contracts remains constant and equal to the combined payoff at $P_T = P^S$, the markup. In conclusion, the total economic value (payoff) of the *Salam* and *murābaha* contracts equals the *mudāraba*'s markup, regardless of which spot price scenario is observed on the delivery date.

4. Numerical Example

To verify the main result, below the payoffs of each contract are computed for five price scenarios. The scenarios differ by the relationship between the spot commodity price on delivery date (P_T) and the *mudāraba*'s buying price (assume $P^S = \$15$) and selling price (assume $P^M = \$17$). Table 1 illustrates the individual and combined contract payoffs for each scenario. In every scenario, the combined payoff equals \$2, which, in turn, equals the markup on the *murābaha* contract (\$2 = \$17 − \$15).

TABLE 1. CONTRACT PAYOFFS OF *MUDĀRABA* (PARTNERSHIP)

Scenario	*Salam* ($P_t - P^s$)	*murābaha* ($P^m - P_t$)	Combined ($P^m - P^s$)
$22 = P_T > P^M$	$7 = 22 - 15$	$-5 = 17 - 22$	$2 = 7 + (-5)$
$17 = P_T = P^M$	$2 = 17 - 15$	$0 = 17 - 17$	$2 = 2 + 0$
$P^S < 16 = P_T < P^M$	$1 = 16 - 15$	$1 = 17 - 16$	$2 = 1 + 1$
$15 = P_T = P^S$	$0 = 15 - 15$	$2 = 17 - 15$	$2 = 0 + 2$
$10 = P_T < P^S$	$-5 = 10 - 15$	$7 = 17 - 10$	$2 = (-5) + 7$

V. CONCLUSION: CONTEMPORARY RELEVANCE

An Islamic commodity trust has a great potential to stem capital outflows from commodity-exporting developing countries that have Islamic-oriented investors possessing significant amounts of investment capital. By doing so, the trust simultaneously encourages local ownership and control of national assets. Thus, the trust-financing mechanism can help developing economies achieve both economic and political objectives.

For example, an Islamic oil trust (IOT) can resolve a very contentious political issue currently being debated in Kuwait and Saudi Arabia: should foreign oil companies be allowed to take equity (partial ownership) positions in upstream production?[ix] An IOT can eliminate the need to engage in heated, divisive debate over this issue by harnessing local capital to provide the financing for maintenance, facility upgrades, and exploration that otherwise would be provided by foreign oil companies. Also, IOT financing does not require that national oil companies surrender control over key field management and exploration decisions.

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[i] By a breach of trust is meant an act that is Islamically illegal, meaning ordinarily a breach of contract or a negligent or intentional tort. (Vogel and Hayes, 112).

[ii] From the seller's perspective, the cost of obtaining this debt financing is the internal rate of return on the discount. In other words, "the implied cost of capital to the *salam* seller is simply the difference between the present value of the future market price (P_T) and the price that one would receive today (P^S)." (Vogel and Hayes, 213)

[iii] Consult Ray (pp. 54-57) for a succinct analysis of the objections—and the reformer's counterarguments—against the *murābaha* contract.

[iv] For more details about the *mudāraba* partnership, e.g., liability of parties, dissolution, and rights of the *mudārib*, consult M.A. Khan, Ch. 11 in Shk. G. A. Abod, et al., pp. 212-223.

[v] The *mudāraba* partners also face several non-price risks when entering a *salam* contract, such as delivery risk (late delivery, damage/destruction of goods in transit, or even no delivery) and credit risk (late payment or even default). A complete risk analysis would also measure these exposures as well as evaluate alternative risk-mitigation measures. Interested readers should consult Ray (pp. 49-50) for a brief discussion of delivery and payment risk. Finally, for purposes of contrast, a detailed analysis of the benefits and risks of a conventional oil trust is contained in Al-Mazeedi and Yaksick (1995).

[vi] For additional details regarding the value of a (non-Islamic) forward contract, consult Ch. 9 in Chance (1995).

[vii] Strictly speaking, accounting profit—revenue minus costs—is not equal to the *mudāraba*'s markup. That is, the markup includes reimbursement for deal-related storage costs, risk bearing, and professional services rendered. Hence, the decision to place the word profits in quotation marks.

[viii] More formally, one can easily demonstrate, using high school plane geometry, that the vertical distance of the combined payoff profile equals the markup. A sketch of the proof follows. Begin by noting that in Figure 4 the markup equals (by definition) the length of the line segment $P^S – P^M$, via equation (2). Then, using the properties of an isosceles right triangle, one can easily show that the height of the combined payoff profile equals the size of the markup. Hence, the *mudāraba*'s combined payoff equals the markup.

[ix] Details of this debate are provided in the Financial Times (April 15, 1999), World Energy Supplement, pp. vi-vii.