



Islamic Financial Engineering vs. Architecture

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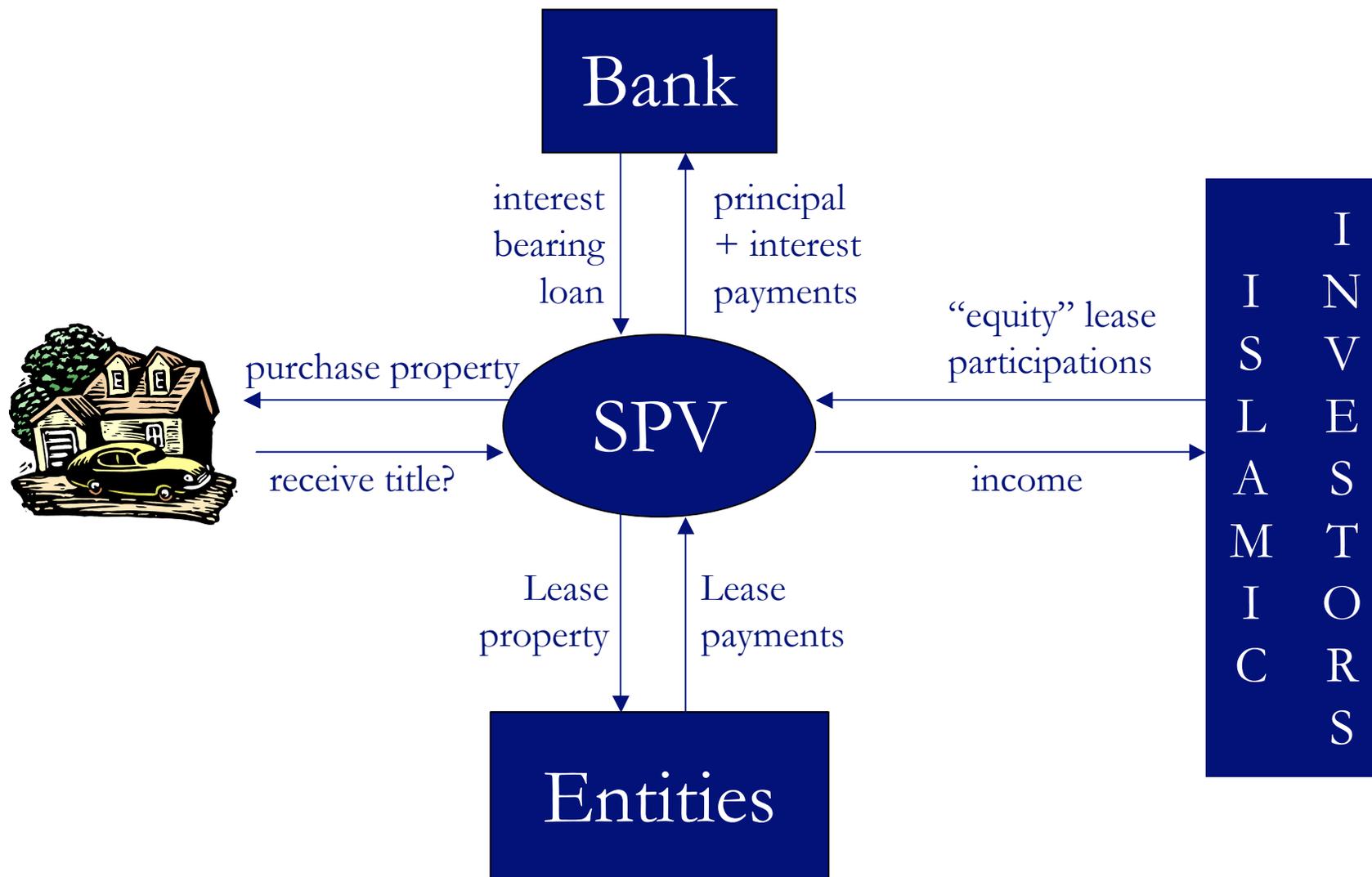
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Outline:



- Islamic finance and *Shari'ah* arbitrage:
 - Dependence on *conventional finance*
 - The *one degree of separation* principle
 - Strategic *market-segmentation*
 - Financial *engineering* approach
 - Illustrations: HSBC, Al-Ahli Secured, Al-Rajhi Aman
- **Engineering** (*Islamic alternatives to conventional tools*)
vs.
Architecture (*Islamic alternatives to financial profiles*)
 - Illustrations: Derivatives, short selling, leveraged buying, Hedge funds

Dependence on conventional finance + one degree of separation



Conventional finance + *1-degree of separation*



HSBC's indirect explanation of *Sharī'a* arbitrage through dependence on **conventional finance** and *one-degree of separation* as follows:

1. (Next slide): services may be obtained from non-Muslim sources, and other dealings of provider are irrelevant
2. (Following slide): source of funds used for financing is irrelevant
3. (Last slide): market interest rates maybe used as benchmarks (cost of funds may then include risk premia + costs of *Islamization* + *Sharī'a* arbitrage premium)

Conventional finance + *1-degree of separation*



Mon, February 03, 2003 12:31 GMT

HSBC Launches Islamic Vehicle Finance - Frequently Asked Questions

2. How can a conventional (interest-based) bank offer a Shariah compliant financial service?

Islamic law (Shariah) does not require that the seller of a product be Muslim, or that its other services be Shariah compliant as well. This is the considered opinion of our Shariah Supervisory Committee.

Conventional banks charge and pay interest, and the HSBC Group, or which we are a part, is a conventional bank. But we are also a customer-driven institution, and we provide Shariah compliant products to serve a genuine financial need among Muslims. Of course, our Shariah compliant products are available for Muslims and non-Muslims alike.

Conventional finance + *1-degree of separation*



Mon, February 03, 2003 12:31 GMT

HSBC Launches Islamic Vehicle Finance - Frequently Asked Questions

3. Since HSBC is an interest-based bank, what would be an acceptable source of funding for HSBC MEFCO? Are you going to mix conventional and Shariah compliant funds?

The Shariah (Islamic law) does not require that the seller of a product be Muslim or that his/her own income be halal (permitted). **We will therefore, initially use funds from conventional sources to finance Amanah Vehicle Finance.**

Muslims may be understandably concerned about mixing conventional funds with Shariah compliant funds. It is important, however, to understand where the two can and cannot meet according to Islamic law (Shariah). To open an account or invest money, funds must be segregated from interest-based funds so that returns are halal (permitted). **To buy something or obtain financing, however, funds do not have to be from a halal source. The relationship with the seller must be in line with the Shariah-the seller's relationship with other parties, however, is not the purchaser's responsibility.** This is the opinion of HSBC's Shariah Supervisory Committee.

Conventional finance + *1-degree of separation*



Mon, February 03, 2003 12:31 GMT

HSBC Launches Islamic Vehicle Finance - Frequently Asked Questions

4. How do you calculate the price of Amanah Vehicle Finance? Are the payments similar to a conventional vehicle loan? If so, is this acceptable under the Shariah (Islamic law)?

HSBC MEFCO determines the rates on Amanah Vehicle Finance using a fixed payment scheme that is competitive with conventional vehicle loans available in the market. **As determined by our Shariah Supervisory Committee, Shariah permits using the conventional market as a benchmark.**

According to the Shariah, the profit rate in a Murabahah transaction can be set at any value agreed between the buyer and seller. Also under Murabahah financing, HSBC MEFCO is acting as a vehicle seller and not a moneylender. **There is no particular reason why a vehicle financed Islamically should be any more or less expensive than a vehicle financed using a conventional vehicle loan.** The criterion for acceptability by the Shariah is that the transaction be compliant with Shariah, regardless of the price of the good or how that price is determined.

One degree of separation



- **OCC #867, 1999:** “... lending takes many forms ... Murabaha financing proposals are functionally equivalent to, or a logical outgrowth of secured real estate lending and inventory and equipment financing, activities that are part of the business of banking.”
- **OCC #806, 1997:** “Today, banks structure leases so that they are equivalent to lending secured by private property... a lease that has the economic attributes of a loan is within the business of banking. ...Here it is clear that UBK’s net lease is functionally equivalent to a financing transaction in which the Branch occupies the position of a secured lender...”

Al-Ahli Secured Fund – Marketing 0



Al-Ahli International Equity Secured Fund

Introduction

To provide a high level of protection to the Investor's Net Investment and generate capital gains equal to 37.5% (the Participation Rate) of the percentage rise, if any, in a weighted global basket of 25 Islamic Shariah-Compliant global equities under a customized index (Al-Ahli International Equity Index) from each Subscription Day to its closing level as measured on the following Subscription Day. Capital gains for the Fund are capped at 12% with no "lock-in" feature in the Fund.

Information from:

<http://www.alahli.com/pb/investing/islamicfunds/securedfunds/iesf.jsp>

Al-Ahli Secured Fund – Marketing 1



- Goal: Provide a high level of protection of investor net investment less management fees
- Benchmark: Al-Ahli International Index – a customized index of “Sharī^ca compliant” stocks (usual screens + total-debt/market-cap ≤ 0.2)
- Secured investing: Two year process –fixed return *Murābaha* *مرابحة* fund the first year, Al-Ahli index participation in the second
- different participation rates depending on subscription date + cap rate for fund returns

Al-Ahli Secured Fund – Marketing 2



- **Jurisprudence concept:** In second year, bank keeps roughly 95% of investors' original capital in *Murābaha* fund (as silent partners in *Mudārabā* مضاربة) uses the other $(5+r)\%$ to buy call options on the index – the options are legitimized under the title of *‘Urbūn* (down-payment sale; عربون)
- **Jurisprudence problems:**
 - This use of *‘Urbūn* to legitimize options is difficult to justify. Options have been disapproved by the OIC Fiqh Academy and other juristic councils
 - The cap on investor-returns is controversial, as is index trading and index participation

Al-Ahli Secured Fund – Parameters 1



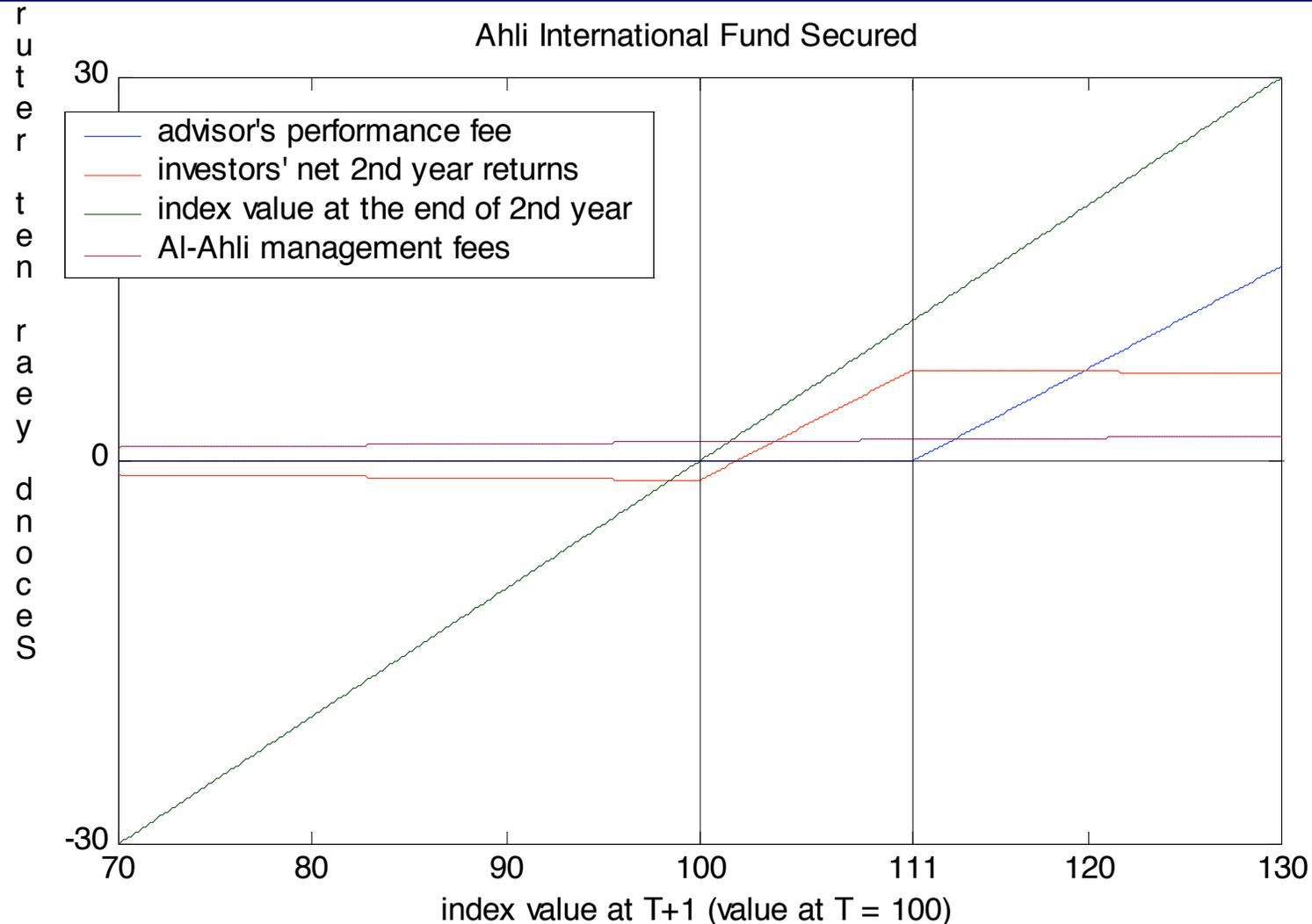
- Investors' gross returns rate = max (declared participation rate \times index performance; cap rate)
- Management fee = 1.5% of market value
- The fund does not pay dividends or make distributions
- An “advisor” structures the product, selects Sharīʿa compliant stocks, etc. The advisor receives a “performance fee” = (actual returns - cap rate) \times market value

Al-Ahli Secured Fund – Parameters 2



- Minimum initial subscription: \$25,000
- Minimum subscription increments: \$10,000
- Open-ended fund, unredeemed funds are rolled over to following year
- After first year, investors must maintain a minimum investment of \$15,000 in the fund
- Minimum redemption \$10,000
- Fixed annual subscription and redemption dates
- Participation rates, index composition and cap rate are announced for each subscription date

Al-Ahli Secured Fund – Analysis 1



Participation rate = 80%, cap rate=11%, fees=1.5% of gross investment (= index value)

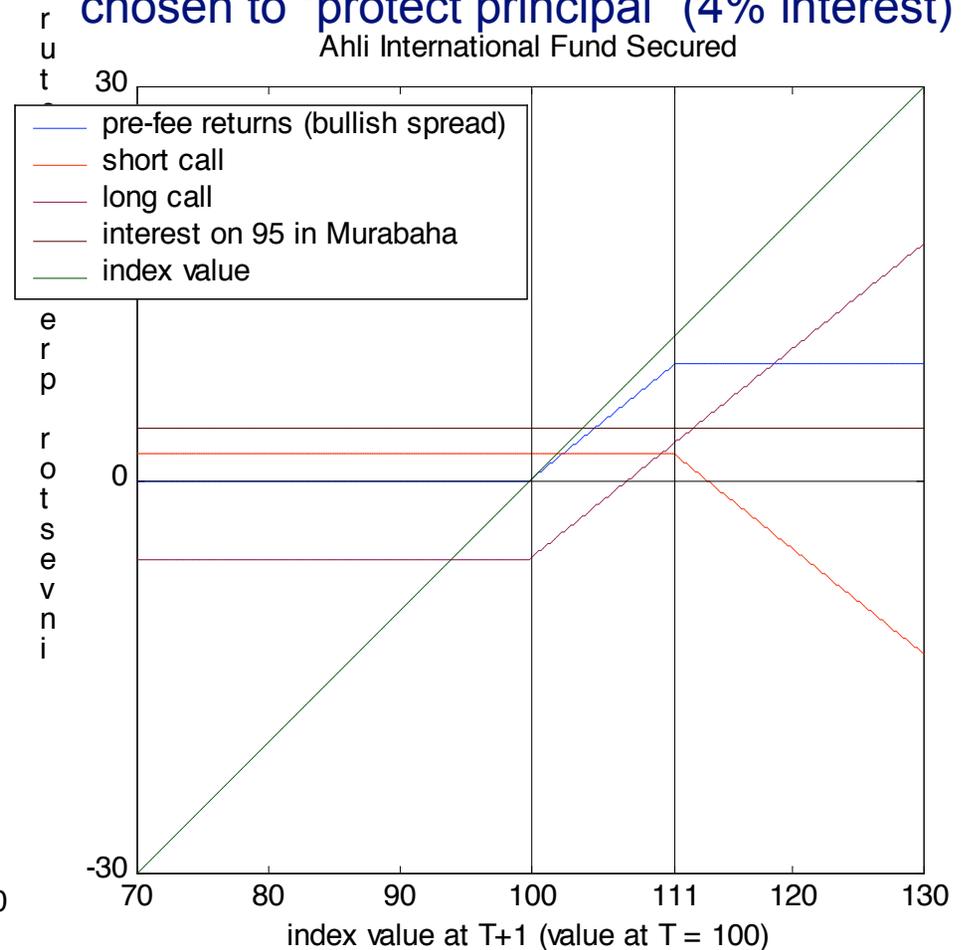
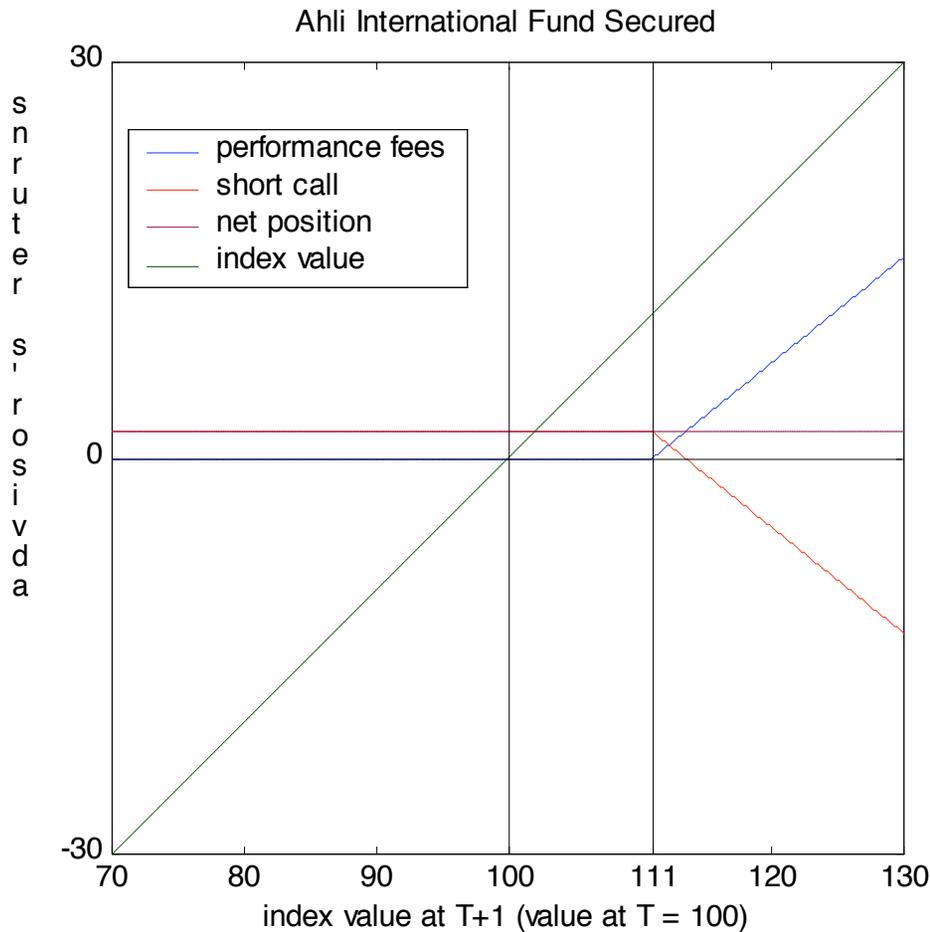
Note: investors' first year net returns are fixed, say around 5%

Al-Ahli Secured Fund – Analysis 2



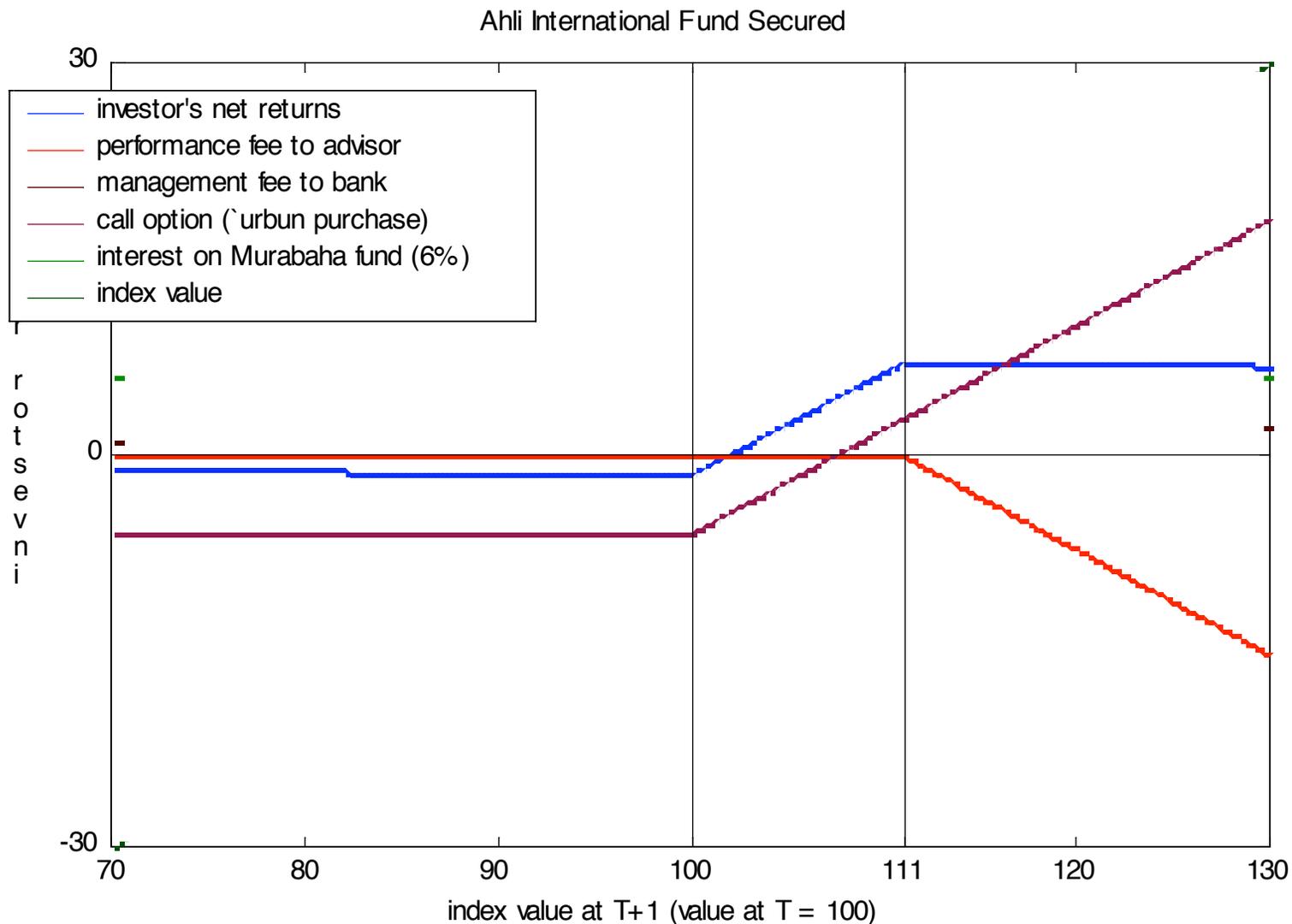
Trivially, advisor was paid with a call option, which he sells/shorts to hedge

Al-Ahli replicates a bullish spread for investors, cap and participation rates chosen to “protect principal” (4% interest)



Disclaimer: option prices in figures are only for illustrative purposes

Al-Ahli Secured – Final Analysis



Disclaimer: option prices in figures are only for illustrative purposes

Al-Rajhi Amān Fund – Marketing 0



Investment Funds

Sample Al-Rajhi Profit sharing Fund (Aman-1) Agreement Department of Banking Services

Al Rajhi Banking and Investment Corporation would like to provide investment opportunities to its customers in international shares of high quality through investing in major international markets. The bank introduces the Profit Sharing Fund -1 which is expected to achieve above average returns of international stock market performance. The bank will act as the fund manager and customers are the owners thus the relationship between management and investors is governed by the Shariah principles related to Ijara. The fund will be established in accordance with the following terms and conditions:

From: <http://www.alrajhibank.com.sa/profitsharingagreement.htm>

Al-Rajhi Amān Fund – Marketing 1



- Goal: Achieve growth through investment in a low-risk portfolio, made-up mainly of U.S.-listed securities, with partial protection of the principal
- Benchmark: S&P 500
- Secured investing: A “partner” joins in the fund, with deferred payment at a known price. Profits are shared preferentially for investors, and losses are proportional to principal.

Al-Rajhi Amān Fund – Marketing 2



- **Jurisprudence concept:** property partnership (*sharikat 'amwāl*; شركة أموال)
- “Partner” owns an un-identified share (*juz' shā'i*; جزء شائع) in the portfolio, but **does not own any shares in the mutual fund**
- Profit-sharing may be conducted on any mutually agreeable terms (e.g. 70-30)
- Loss-sharing must be in proportion to capital
- **Problematic point:** *can you join a partnership with capital loaned to you by your partner?*

Al-Rajhi Aman Fund – Parameters

1



- Partner buys 85% of the assets, with a deferred price equal to the market price at inception
- **Partner does not own *shares* in the fund:**
Partner may give investment advice, is not responsible for following the Islamic Sharīʿa, and does not have the ability to liquidate the fund
- Partner is entitled to 30% of the profits, and bears 85% of losses (in proportion to capital)
- The fund portfolio is evaluated every 6 months

Al-Rajhi Amān Fund – Parameters 2

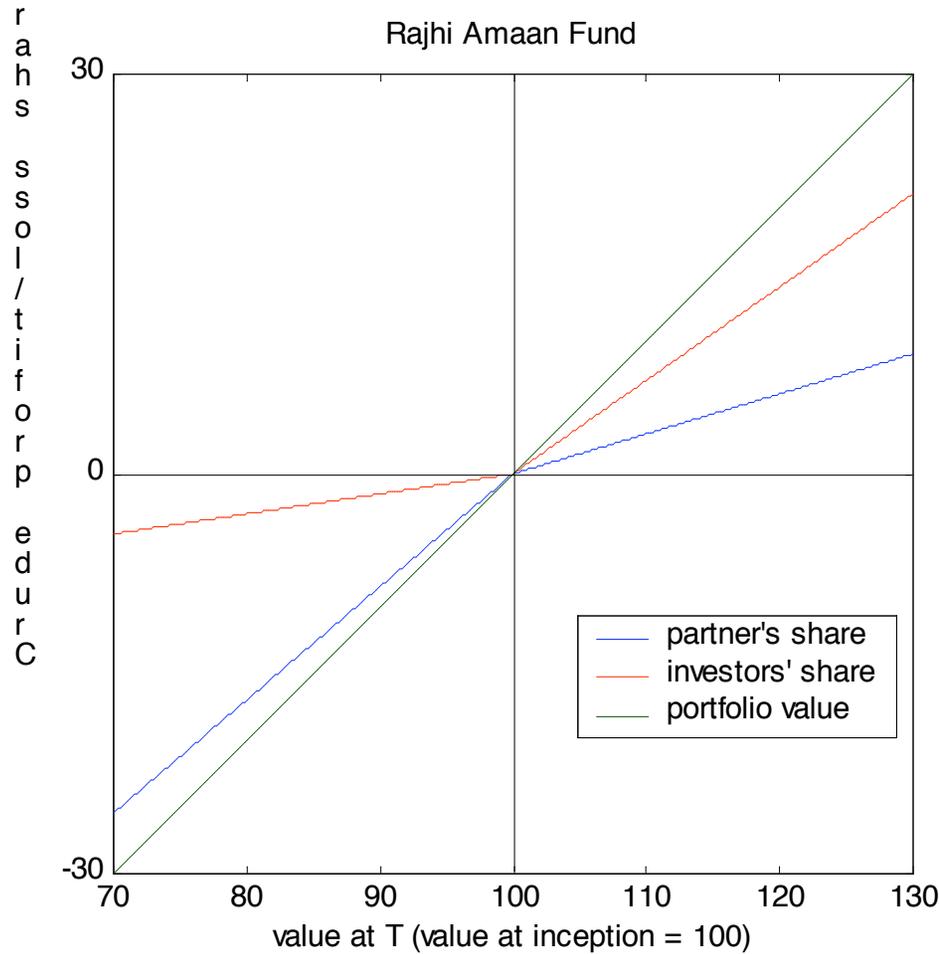


- Share units: \$100 October-November 2000
- Minimum subscription: \$2000, increment > \$1000
- New subscriptions/redemptions: every 6 months
- Investors' participation Fees: 1% of subscriptions
- Management fees: 2.5% of assets annually (collected quarterly)
- Incentive fees: 25% of net profits over 10%
- Partner receives 30% of gross profits, and pays no fees or costs of operation

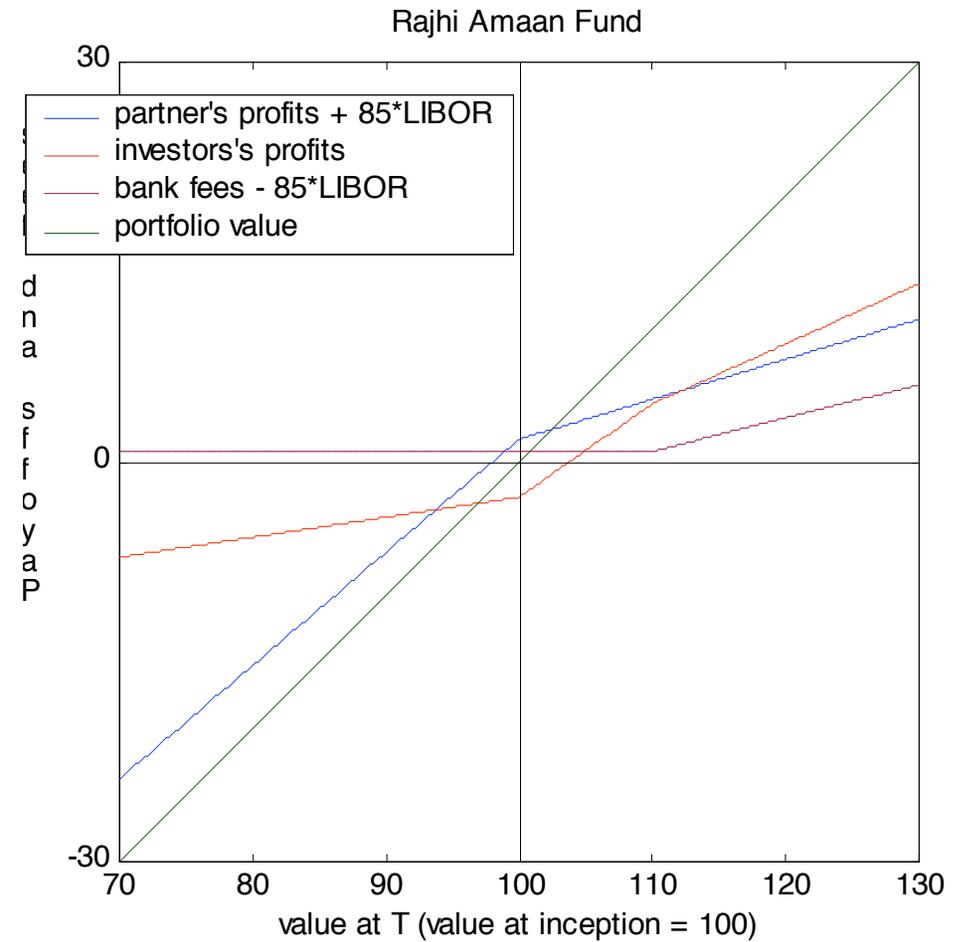
Al-Rajhi Amān Fund – Analysis 1



Without accounting for fees & time-value



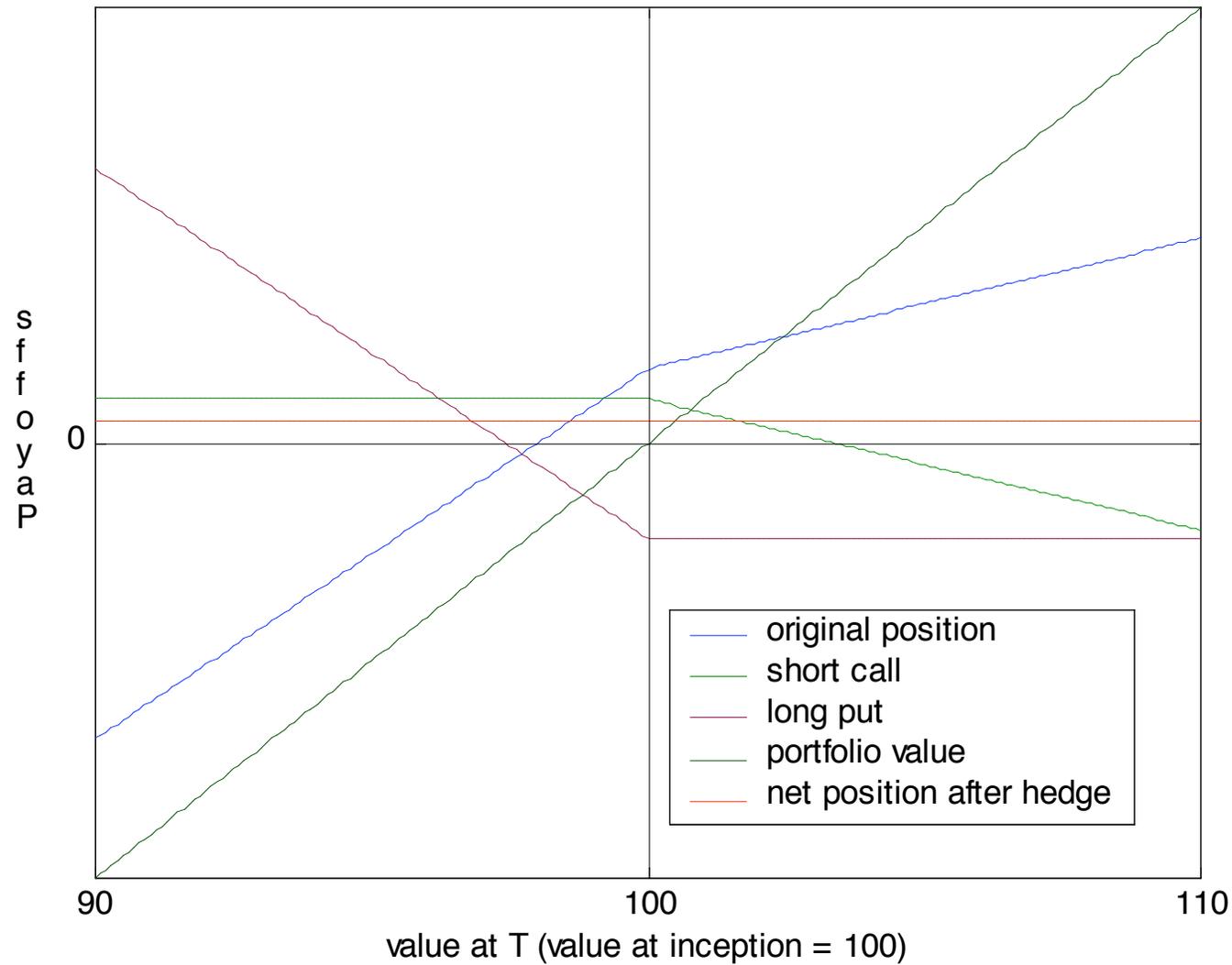
Accounting for fees, and opportunity Cost (LIBOR=2%) of interest-free loan



Al-Rajhi Amān Fund – Analysis 2



Rajhi partner exposure and hedge



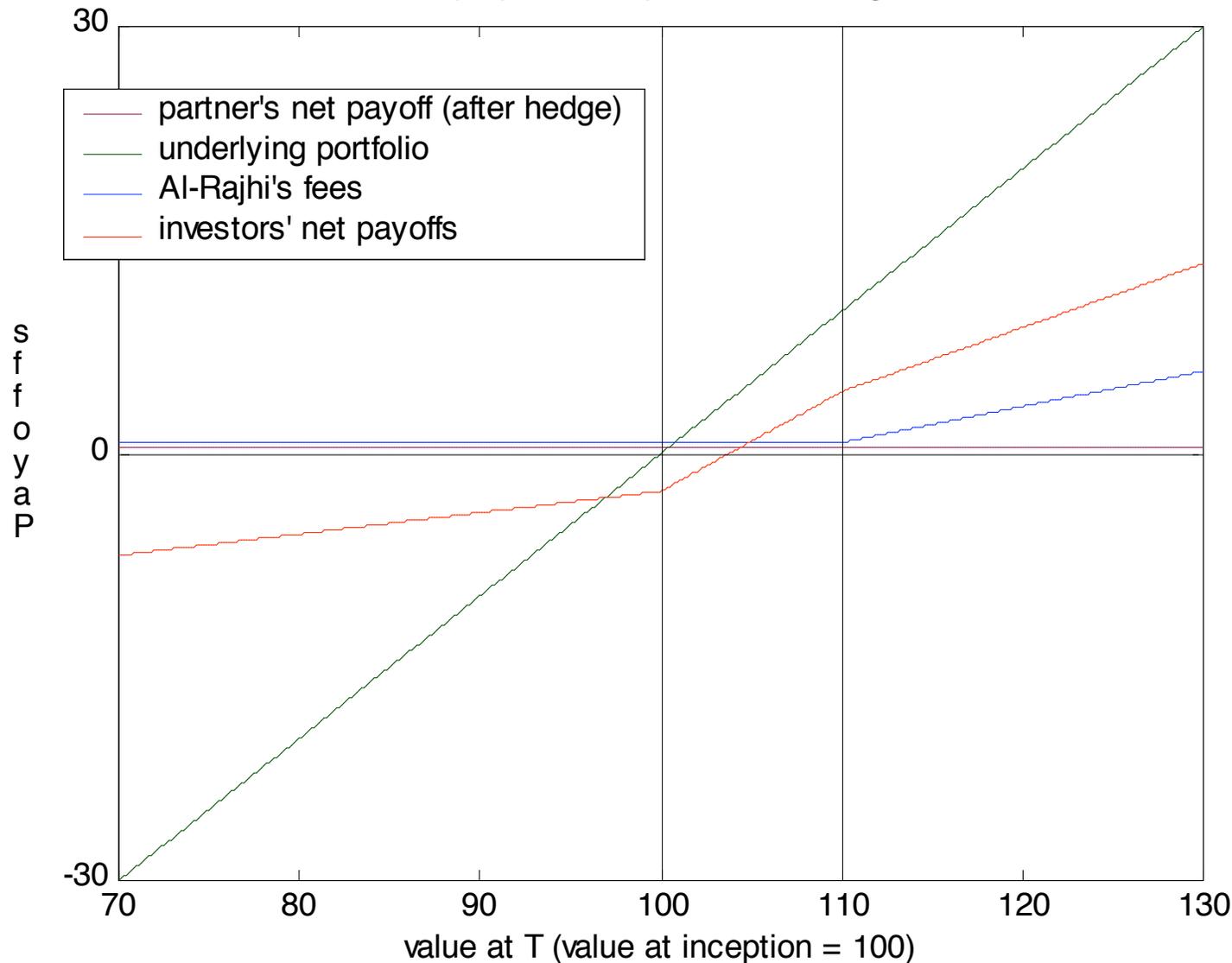
Disclaimer:

Hypothetical
option
prices for
illustration
Purposes
only

Al-Rajhi Amān Fund – Final Analysis



Rajhi partner exposure and hedge



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Islamic financial engineering & *Sharī'a* arbitrage



- Consider contracts A and B , one forbidden and the other permissible based on juristic analogy (قياس فقهي).
- If contracts A and B are shown to be economically identical (in the Arrow-Debreu sense; $A \equiv B$), do we:
 - Forbid B , through the apparent analogy (قياس الشبه)?
 - Permit B , while forbidding A → allows for the fallacy of composition; avoids iterative analogy = (قياس على قياس)?
 - Or, revoke the earlier false juristic analogy based on the economic analysis of its proof (دليل) and reasoning (عله)?
- **The fallacy of composition and Islamic Financial Engineering:**
 - If $A \equiv B+C$, and the jurists forbid A , see if they accept B and C (e.g. *sukūk al-salam*, *Murābaha lil'āmir bishsbriā*)
 - If B is forbidden, but A is permissible, and $A \equiv B+C$, try to get jurists to accept C (e.g. synthetic embedded options)
 - Search the historical books of jurisprudence for A , B or C

→ *Sharī'a* arbitrage

Hedge fund tools

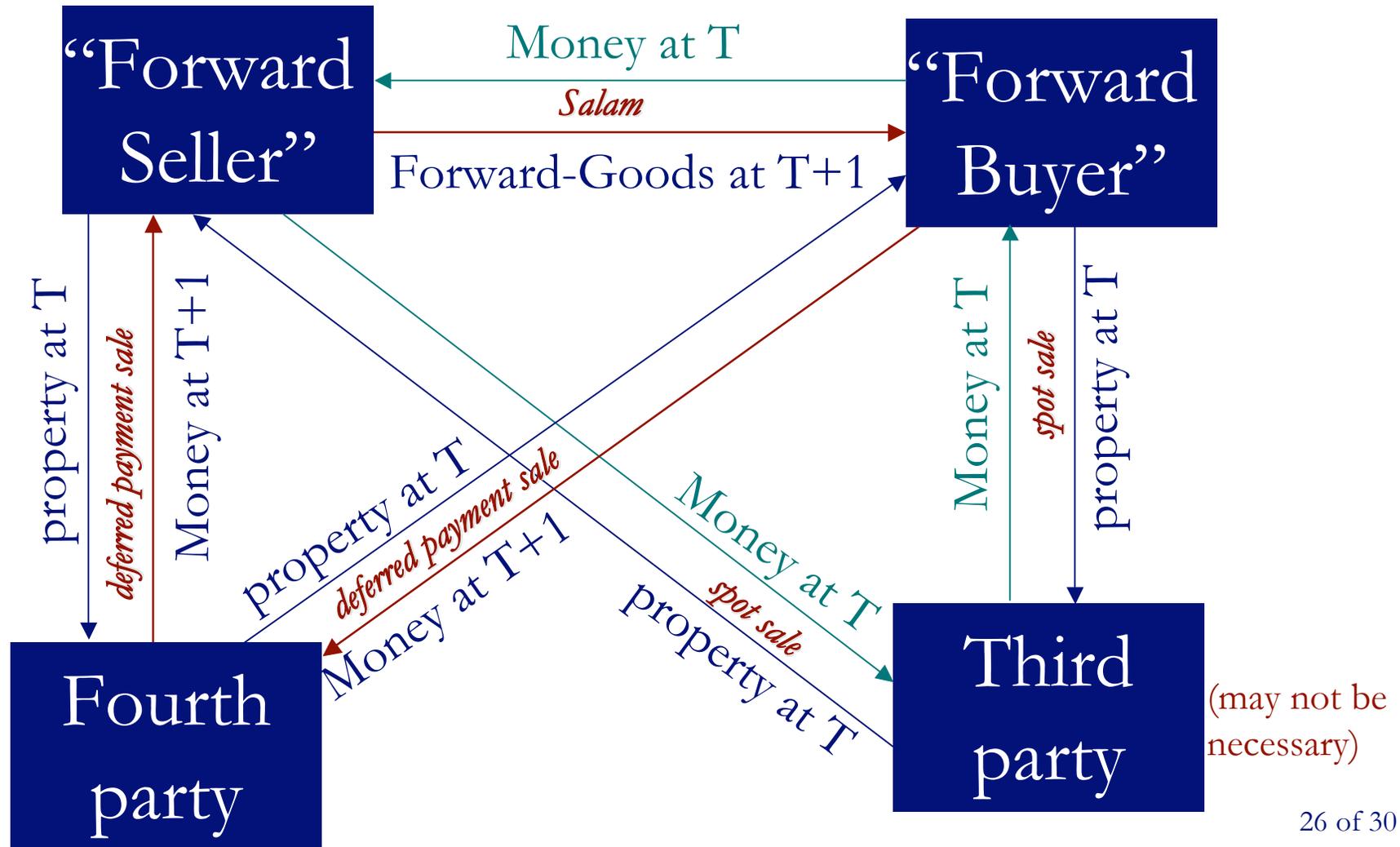


- Short-selling:
 - Borrowing assets to sell short, pay and receive interest.
 - Financial engineering approach: keep the asset-borrowing methodology, purify income
- Leveraged buying:
 - Borrow from broker to buy assets.
 - Financial engineering approach: keep the funds-borrowing methodology, limit leverage ratios, purify income
- Options:
 - Legal right to buy or sell
 - Financial engineering approach: treat down-payment/earnest money sales (*urbūn*) as call options, down-payment as premium
- Forwards/futures: try to synthesize from *salam*

Forwards with currently approved contracts



Note: no party does more than one transaction with any other party



Salam with quantity to-be determined



- Al-Rajhi's Sharī'ca board was contemplating a Salam contract in which (proposal Oct. 3, 2002):
 - Unit price is determined as $P_T/(1+r)$ (or any other multiple)
 - Total M_0 is paid up-front, quantity to be delivered is $M_0(1+r)/P_T$
 - Jurists seem to resist the idea, and its attribution to ibn Taymiyya's permission of selling "at the market price" – Al-Darīr wrote a long refutation of the argument
- If approved, the use of a separate property above may not be necessary, and the forward can be synthesized with a parallel *Salam* (already approved by jurists), third party still required.

Leveraged-buying & short-selling



- Leveraged buying:
 - You can borrow M_T to buy the target at T , then sell it at $T+1$, to make $M_{T+1} - M_T(1+r)$ – but you may not borrow at r
 - Alternatively, **buy** synthesized forward with price $M_T(1+r)$
 - Counterparty can easily hedge by borrowing and buying, hence forward price should be low (including Sharīʿa arbitrage premium)

- Short selling:
 - You can sell short at M_T then buy-back at $T+1$ at M_{T+1} to make $M_T(1+r) - M_{T+1}$ – but you may not sell short, or earn r
 - Alternatively, **sell** synthesized forward with price $M_T(1+r)$
 - Counterparty can easily hedge by selling short and earning r , hence forward price should be low (including Sharīʿa arbitrage premium)

Options



- Assuming a call-option can be synthesized either from down-payment purchase, or from synthesized forward (through *Salam*) with right of forward sale revocation
- Consider forward to buy at time T and price K , the payoff to this forward is $(K-M_T)$
- Utilize the obvious identity:
$$K-M_T = (K-M_T)^+ - (K-M_T)^- = \max(K-M_T;0) - \max(M_T-K;0)$$
- Counterparty can hedge forwards with puts & calls
- Counterparty can also synthesize puts from calls and forwards

Cleaner architecture approach



- Financial engineering: synthesize contracts (e.g. forwards, options, etc.) from medieval nominate contracts (e.g. *salam*, *urbūn*, etc.)
- Financial architecture: the same payoff profile can be replicated through dynamic trading, involving *bona fide* sales and purchases:
 - Use δ to replicate call or put option positions (short or long) through dynamic trading of the underlying asset
 - Use synthesized calls and puts to replicate forwards, synthetic short and long stock positions
- Then, jurists can be convinced that reducing transactions costs is a good thing, and allow some limited derivatives uses