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The Design of Instruments for Government Finance in an Islamic Economy

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Abstract

This paper presents perhaps the most viable approach for the design of an instrument of government finance (and monetary management) in an Islamic economy where conventional transactions based on an *ex-ante* promise of a risk-free rate of return are forbidden. Resources to finance government infrastructural and development projects can be mobilized by issuing a national participation paper and this instrument can also serve as an instrument of monetary management. The paper discusses various conceptional issues underpinning the introduction of such an instrument and methods of calculating a corresponding rate of return. In principle, this approach has been accepted by the Islamic Republic of Iran.

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SUMMARY

The religious edict against fixed income securities limits the use of conventional treasury instruments in Islamic economies. Equity-based, floating-rate securities, which pay a rate equivalent to the observed rate of return obtained in the private sector and adjusted for risk premiums, are much needed policy instruments in these countries. The key difficulty lies in obtaining a rate of return based on profit sharing derived from observation of private sector activity. In conventional economies, such a rate is the market interest rate. In an Islamic economy, the rate must be derived from observation of private sector activity.

This paper makes a first attempt to identify alternative methodologies to estimate such a rate and derive from it the rate that prospective issues of government paper in Islamic economies could offer. It discusses several approaches, ranging from simple ratios to more complicated broad market indexes. We recommend filtering out from the private sector rate of return derived for this purpose expectations of future earnings, which is an important element of stock market prices; speculative elements that may at times grip the private sector; and seasonal variation. Additionally, to derive the rate of return on government paper, it is necessary to remove an estimate of risk premium that may relate to private defaults.

We hope that the range of measures suggested will allow countries at different stages of development in the diverse Islamic group of countries to choose a method suitable to their level of market development.

The paper also discusses trading characteristics as well as the pricing of such an instrument. In addition, practical issues of market development for such an instrument are also detailed.

I. INTRODUCTION

Since the theoretical validity and viability of Islamic Banking were established over a decade ago (Khan and Mirakhor, 1987), private banking and finance operations on non-interest basis have grown remarkably. Islamic banking operations have been established in about one hundred countries, with market size estimated at US\$160 billion and growing at 10-15 percent per year (Islamic Banker, 1997). Government financing on a non-interest basis, however, has presented a dilemma as there has been no generally acceptable method that meets the requirements of Islamic law. Simply stated, in an Islamic system all rates of return in the financial sector are determined by activities in the real sector. This requirement causes difficulties for governments used to conventional debt financing of expenditure without the need to justify financially the operations being undertaken or, as is often the case, to compete with the private sector for financial resources.

The purpose of this paper is to suggest a non-interest-based method of mobilizing resources to finance government infrastructural and development projects through issuance of a national participation paper (NPP) that can also serve as an instrument of monetary management. The plan of the paper is as follows: Sections I and II discuss various conceptual issues underpinning the introduction of such an instrument and methods of calculating a corresponding rate of return. Section III discusses issues relating to risk premium; Sections IV and V address maturity and cost and trading characteristics of the proposed paper; and Section VI outlines techniques for developing primary and secondary markets for NPPs. The paper concludes with a summary of its main findings.

II. CONCEPTUAL ISSUES

There is now a consensus view that, in the absence of a predetermined rate of interest, the economy's financial system becomes predominantly equity-based, and the stock of physical capital is valued in the market for equities. The significance of a system that operates without the central authority's intervention, as is the case in an interest-based regime, is that it allows the price system, via a market-determined rate of return driven by real sector activities, to function freely and to ensure the efficient rationing of scarce financial resources.

While in such a system private sector financing can be arranged on an equity basis, difficult issues arise when governments need to mobilize funds for their operations. Presumably, the nature of government operations do not permit equity participation by private agents. But, while current government expenditures may not allow assignment of individual equity claims, public expenditures on infrastructural and development projects—often a major element of governments' budget—can be financed via equity participation. This approach bifurcates government expenditures into asset-creating and non-asset-creating. The former is financed via equity participation. The latter is financed through taxation.

Islam recognizes public and joint ownership of assets as legitimate even when they are indivisible as long as ownership claims can be priced in the market so that, in the event of

dissolving partnerships, equity holders can monetize their claims. Therefore, capital expenditures can be financed via equity participation, provided that a market exists for trading shares. The issue then becomes one of determining a rate of return that compensates shareholders of assets created by the government when there are no benchmarks, such as a fixed and predetermined interest rates in reference to which market participants can make a decision, as is the case in a conventional financial system.

In an Islamic system, the rate of return to financial assets is determined by the rate of return to the real sector of the economy that serves as a benchmark for investment decisions (Khan and Mirakhor, 1988). In Mirakhor (1996), it is also shown that such a reference rate can be approximated by calculating a cost of capital using Tobin's q against which expected rates of return to private and public projects can be measured.

It can also be argued that since the expected earnings of holders of securities are derived from the expected dividends, the discounted value of stream of expected earnings at the prevailing rate of return is the market value of a security and supply price of capital. In the case of government securities, this would also constitute the demand side of the market for these instruments. Moreover, the face value of securities, the length of maturity, and the expected dividend constitute the supply side of the market for government securities.

The expectations of equity holders and government provide the necessary input for the market to determine the volume and the market-clearing price for government securities in which the social rate of return to public investment projects serves as the discount rate. At equilibrium, the social rate of return is such that the marginal social benefit from public investment projects is equal to the opportunity cost of the provision of the services from these projects. But, because of the public good nature of these projects, the marginal social benefits may not be truly measurable.

It can be argued, however, that precisely because of this characteristics of infrastructural and developmental projects, their social rate of return must be greater than, or at least equal to, the rate of return in the private sector; otherwise, there is no justification for governments to undertake these projects on financial grounds (Choudhry and Mirakhor, 1997). Based on this reasoning, the coupon on non-interest-based government securities can be issued and traded in equity markets that promise on maturity to pay a rate of return proxied by an average rate of return on the underlying assets that is equal to the rate of return in the private sector. In addition to financing new projects, this method can be used to retire government debt to the central bank that has financed previous projects since this debt can be securitized, providing the basis for floatation of a "national participation paper" (NPP) that is to be traded on the stock markets.

These government securities are considered to be in consonance with Islamic law. Indeed, a recent ruling by an eminent religious authority has permitted the Central Bank of Iran to issue securities based on a portfolio of completed infrastructural and developmental projects whose source of financing was direct central bank credit to the government. The

ruling authorizes the central bank to apply the proceeds from the sale of these securities to the write-down of government debt to the bank. These securities provide a powerful instrument of indirect monetary policy in the absence of conventional treasury bills (Choudhry and Mirakhor, 1997).

III. DERIVING A RATE OF RETURN TO NPPS

Since the rate of return to NPPs is to be proxied by the rate of return to the real sector of the economy, it is necessary to ensure that speculative behavior and other windfall gains arising from private sector financial markets do not distort the rate of return on NPPs. In view of this consideration, it is reasonable to assume that the private sector rate of return, though unknown at any given moment, is on average stable over time. In a statistical sense, we expect the rate of return to be drawn from a stationary distribution. Therefore, the rate of return quoted on such papers would be fairly stable over time and reflective of the investment climate in the country. With such a coupon rate, the instrument could be widely tradable and hence useful as a monetary policy instrument.

The natural place to look for a measure of the private sector rate of return is the stock market. However, stock market prices contain three elements that would have to be considered separately to obtain the signal of the true private sector rate of return:

- expectation of future earnings, which is an important element of stock market prices;
- speculative elements that may at times grip the market; and
- seasonal variation.

If stock prices were to be used, they would have to be appropriately filtered through statistical techniques to extract the appropriate signal of a rate of return. A search could be conducted to allow the required index to replicate closely past movement in growth of nominal GDP, given that this growth closely proxies the expected growth of private sector output. In addition, the use of stock prices and/or indexes should be based on a determination of the degree of competition and efficiency of the market. In case the market is shallow and does not allow for complete arbitrage through competition, it may be difficult to obtain information on the rate of return from stock market data since the process of price discovery may be distorted.

A. Difficulties of Nascent Financial Markets

Given the relatively limited state of development of financial markets in Muslim countries, the average rate of return in the private sector is difficult to determine. It is still harder to obtain the sort of return that is required for NPPs, given the likelihood of distortions and speculative behavior in nascent markets.

Ideally, such a rate of return should be obtained on two markets—the stock market and the participation paper market—as and when they begin to function at a reasonably

advanced stage. Although the **stock market** has been functioning in many Muslim countries, preliminary tests suggest that the hypothesis of market efficiency is not confirmed.² Moreover, there is little or no development of the corporate paper market along Islamic lines. Basing the index on domestic stock market **prices** alone will have the following disadvantages:

- both government paper and the stock market will have closely related rates of return;³
- the stock market is too small to infer a market rate of return;
- the government, the central bank, and commercial banks will have an incentive to intervene in the stock market for consideration relating to the NPP market; and
- speculators will have the incentive to use the stock market for manipulating returns on the NPPs.

To compensate for these factors, the inclusion of an international index could be considered as it has the clear advantage of being exogenous to the economy, easily monitorable, and representing external financial environment. Therefore, an appropriately chosen index could enhance the credibility of the NPP and make it more desirable. Moreover, given the globalization and convergence in international capital markets, it is reasonable to assume that rates prevailing in Muslim countries must reflect the scarcity price of capital worldwide. However, inclusion of an international index in calculation of a rate of return on NPPs may have the disadvantage of not being fully representative of domestic market conditions. But, if the choice of the index is such that it is stable and somewhat representative of local conditions, the discount on the secondary market will establish the rate of return that is more representative of domestic considerations.⁴ Unfortunately, until now, there is no adequate regional index available for the Middle East that could be used. The available ones are broader in regional coverage: the International Finance Corporation's Emerging Markets Index and Morgan Stanley's World Index.

A search for indexes should be made and their properties should be examined for the choice of the most suitable. In conducting this search and investigation, the applicable criteria are to find an index that is (a) easily monitorable and available; (b) relatively stable; and (c) broadly in line with the domestic economy.⁵ Rates of return in the private sector need not only be inferred from the index of broader market performance. Many Muslim countries may have

² See El-Erian and Kumar (1995)

³ Strictly speaking the two rates of return will differ by a factor since the NPP will be discounted given that government paper is risk free while private investment is not.

⁴ To the extent possible, the World or regional index and the domestic stock index should include dividends for the stocks that pay dividends.

⁵ The last of these is likely to be quite difficult and hence perhaps not something that should delay the development of the instrument.

markets that are not developed enough to derive an appropriate estimate. At least three different rates of return that guide investment decisions can be used to obtain an estimate more readily usable even in situations of limited market developments: (a) earnings per share; (b) the price earning ratio; and (c) the return on shareholders' equity (ROE).

Earnings per share

The earnings per share is typically used to compare an individual company's financial performance over time. It is of little relevance for inter-company comparisons or for aggregative indexes comprising different companies. For example, individual companies of the same capital base can issue any number of shares, each with a different par value. This means that two companies with the same financial performance can have very different earnings per share. At the same time, earnings per share can be affected by stock splits and mergers in ways that have little relevance to underlying performance.

Price-earnings ratio and dividend yields

The price-earnings ratio relates a company's net revenues per share to the market price of its shares. As such, the price-earnings ratio provides a measure of the return that investors receive from the company's equity at current stock market prices. This ratio also provides a useful measure of appropriateness of current stock prices, but is limited as a measure of the current underlying economic return. For example, price-earnings on the stock market are forward looking as they incorporate the evaluation of a company's ability to earn returns. Moreover, what is required for NPPs is a measure of return that focuses on the present. The price-earnings ratio can also be very volatile and can deviate from its underlying value in a market environment where trading is thin as is the case in many Muslim countries. Concerns similar to those relating to price-earnings argue against the use of dividend yields.

Return on shareholders equity

Return on shareholders equity (ROE) is a premier measure of current financial performance that relates a company's current after-tax and after-interest earnings to current shareholders' equity. Shareholders' equity is the initial capital provided to the company through the initial offering, plus additional equity issues, plus accumulated retained earnings. Essentially, ROE measures the value extracted by management from the capital that owners have invested. As such, ROE is fungible and suitable for intertemporal, inter-company, and inter-sectoral comparisons.

B. A General Index

In its most general form, the rate of return on the private sector may be written as follows:

$$I = w_1 WI + w_2 PPI + w_3 LSI + w_4 ROG$$

Where,

I = the index growth of which will determine the uncertain (or the non-guaranteed) rate of return on the NPP;

WI = an international stock market index like the IFC emerging market index or the Morgan Stanley World index;

LSI = a measure of market performance index in the country in which paper is being issued (Stock index, or EPS or dividends or ROE or average q for the economy);

PPI = a weighted average of returns in commercial participation paper market as it develops;

ROG = measure of the rate of return on government investments that underlie the NPP;

EPS = Earnings per share;

ROE = Return on equity.

w_1, \dots, w_4 = weights that need to be determined.

Using this general formulation, the following suggestions should be considered and investigated:

ROG only ($w_1, \dots, w_3 = 0, w_4 = 1$). If the ROG could be estimated and reported by the central bank, this would be a simple solution.

LSI only (stock index based) ($w_1, w_2, w_4 = 0, w_3 = 1$). Here, it should be borne in mind that the stock market is subject to speculative and other pressures. These should be excluded from the rate of return applied to the NPP.

LSI only (EPS, dividend or ROE based) ($w_1, w_2, w_4 = 0, w_3 = 1$). Given the difficulties with the stock market development, proxies of economy wide rates of return can be derived from estimates of EPS, dividend yields, and ROEs.

PPI only ($w_1, w_3, w_4 = 0, w_2 = 1$). A weighted average of NPP returns could be a useful indicator for the future when the NPP market develops.

A more general index. Weights can be derived for any and all w_i ($i = 1, \dots, 4$). However, this will require considerable investigation and maintenance work. If desired, investigative efforts should be exerted to derive and maintain the appropriate index.

Experimentation with weights and variables mentioned in the expression for “I” above will allow a stable and realistic indicator to be developed for the rate of return.

The choice of weights

The choice of weights should be dictated to a large extent by the need to derive a stable measure of the rate of return for the private sector. When the local markets—the stock market and the participation paper market—are developed adequately, they should be given due weight in the index. Until then, their weight should be limited. The appropriate determination weights should be determined through empirical investigation, and then kept under constant review, although the weights should be changed only at discreet preannounced intervals. A preannounced formula for weights is as follows:

$$w_1 = f(\text{turnover, number of new issues, market capitalization/GDP}); i = 2, 3, 4^6.$$

This means that some formulae are adopted that allow the share of the stock market index and the weighted average to increase as these markets expand. Growth in turnover in secondary trading, rapid expansion in new issues, and an increase in market capitalization are indicators of market development.

C. Institutional Requirements for Developing a More General Index

Since floatation of the NPP will represent a longer-term government intention to develop this market, we suggest that the concerned authorities keep the index under review and development. The index, in its most general form, will require considerable research to foster its development and quotation on a market basis, which, in turn, will promote expansion of the market for commercial and government paper in Muslim countries.

IV. RETURN ON GOVERNMENT PAPER: THE ELIMINATION OF RISK PREMIUM

Because of market volatility, asymmetric information, and the possibility of speculative behavior, stock prices as well as market indexes include a risk premium that risk-averse investors require to hold risky assets. In most markets, government paper represents the most secured asset (often considered as the “risk free asset”) and its rate of return is used as a benchmark for comparing all investments.⁷ In equilibrium, the rate of return on government domestic paper would be equal to the rate of return on the stock market after adjustment for

⁶ $i=1$ is excluded as it will be determined by the constraint $\sum_{i=1}^4 w_i = 1$.

⁷ In particular, government, unlike private firms, is considered to be free of default risk.

the risk premium. The index, derived from using the techniques discussed, represents the rate of return to the private sector. Therefore, a risk premium should be subtracted from the private sector rate of return to obtain the rate of return that should be applied to government paper that is relatively free of market-based risk. The difficulty lies in finding an appropriate measure of rate of return on assets that are similar in character to the government's to allow the system to start. Any available bank deposit or loan rate (e.g., adjusted foreign rate, exchange rate, or rate on equity-based domestic transactions) would be a candidate if it were determined on market considerations. Any other reference rate that allows the establishment of a risk-free rate could also be used. This rate could be derived from any borrowing on a government project or a rate of return that has been obtained from such a project. When the NPP system is developed, its rates of return in the immediately preceding period could be used to estimate the risk premium. In this sense, the risk premium, like the index, will be updated on a regular basis. Using this rate, we can derive the risk premium as follows.

$$RP = \mu^I - R^{\text{country}}$$

Where,

RP = risk premium;

μ^I = mean of the index I that has been derived above;

R^{country} = rate of return on bank deposits or government project.

The risk premium can be calculated by applying data from the immediately past period. This formula, as well as the risk premium itself, can be revised periodically. But, given that stability of preferences has been observed around the world and through different time periods, there is little reason to assume large changes in this variable.

Payment on the NPP coupon will be made according to the growth of the "I" during the term of the paper. This RP should be subtracted from the growth of "I" to determine the final rate of return:

$$R_f = R_s - RP$$

where R_f is the final rate of return to be paid, R_s is the rate of growth of "I" that has been suitably smoothed to correct for speculative and other behavior.

V. MATURITY AND COST

NPPs should be offered with a term-to-maturity that best meets market demand and provides an opportunity to quickly develop an environment where outstanding volumes are sufficient to be useful in the conduct of monetary policy. As a general rule, the terms-to-maturity should be one-year or less as shorter-dated instruments provide a smaller potential for realized capital loss. At the same time, focus on a limited set of maturities increases market

depth and, correspondingly, liquidity. This can be achieved by limiting issues to a relatively few terms-to-maturity and by re-opening issues on a frequent basis.

The question of who issues NPPs is also an important consideration. In most countries, such a paper is issued by the government with the central bank as its agent. More importantly, the cost is directly borne by the government for two reasons: (a) the central bank conducts monetary policy on behalf of the government, and (b) the central bank's capital has been protected. It is recommended that the generally accepted practice of the cost being borne by the government to be followed in Muslim countries as well.

VI. TRADING CHARACTERISTICS OF THE NPP

Like most financial instruments, the proposed NPP can be regarded as a composite instrument. Basically, it is a combination of two underlying instruments:

- a futures contract on the items in index "I"; and
- a zero coupon bond on the face value of the instrument.

To the extent that due diligence has been applied to derive a smooth, stable, and stationary rate of return using the index, the futures contract value should be relatively stable reflecting market sentiment regarding the performance of the underlying real assets. In this case, secondary market trading should impact on the zero coupon part of the instrument. Consequently, variation in this trading will reflect domestic market sentiment. This is exactly the way it should be for domestic monetary policy.

VII. DEVELOPING PRIMARY AND SECONDARY MARKETS FOR THE NPP

Considerable international experience is available to assist in developing new national markets for government securities. There is, however, little experience in doing so under the Islamic code. Nevertheless, if a stable and smooth path could be derived for the *ex ante* return on NPPs, the menu of practices, techniques, and trade-offs, generally available elsewhere, should largely apply to Muslim countries. However, this conclusion will require practical confirmation in an Islamic environment, and the central bank must remain ready to adjust its practices and techniques as required. At the same time, market design cannot be sketched in isolation. It must adapt its detail to fit the existing institutional, market and instrument structures unique to every country, and it must accommodate their ongoing evolution. In brief, while the government security market considered here must meet basic economic and financial criteria, there is considerable room for Muslim countries to exercise their own preferences. The following recommendations should be evaluated in this light.

A. Developing a Primary Market for NPPs

Auction technique

It is recommended that the central bank sell NPPs through an auction. The rationale for an auction, which is internationally a standard practice, is twofold: first, it provides information to the central bank about current market conditions and trends, and, second, it provides insurance against failure due to mispricing by the central bank;⁸ failure could be very costly to a young market.

There are two types of auction techniques, both involving sealed bids: **uniform price auctions and multiple price auctions**. For both, bid prices are arranged in order and auctioneers move down from the highest price until all offered instruments are sold. In the uniform price auction, all successful bidders pay the lowest winning price. In the multiple price auction, each successful bidder pays his own bid price. There is no clear theoretical case for preference of either method particularly when collusion, cornering, and risk aversion are considered. As a practical matter, virtually all countries use the multiple price technique. It is recommended that a multiple price auction technique be adopted for NPPs.

No redemption

Agents wishing to liquidate their holdings have to approach the secondary market. Making the NPPs redeemable at face value at any time is difficult to justify on various grounds. First, in the event of a change in market conditions, the investor has a no-cost bail-out option. Additionally, through this approach, investors lose the right to the cumulative return above the minimum yield generated by the underlying infrastructure or productive investment. In case NPPs are used as a monetary instrument, an early repurchase feature will reduce the information available from the auction and weaken the central bank's control over its own balance sheet. It is recommended that the central bank advise purchasers that the NPP will not be repurchased before maturity. However, owners will be permitted to transfer their participation bonds in the secondary market where market mechanism will allow the appropriate discount for sale or purchase for the remaining term to maturity.

⁸ In the case of the NPP, the return is *ex ante* undetermined but known as *ex post* based on independent market criteria. Accordingly, it may be argued that a price equal to the face value of the NPP is appropriate. However, the NPP's *ex post* return is based on a complex formula designed to approximate the ongoing return to investment in an Islamic country and may not accurately capture market expectations. In this case, an auction approach will be required to establish the market clearing price.

Participation

Some countries limit auction participation to banks and other financial institutions. Limited participation reduces administrative costs and fosters the development of a secondary market. At the same time, primary dealers often assume obligations, such as a commitment to participate frequently in scheduled auctions and to maintain an inventory of the auctioned instruments for secondary market trading. Open participation allows all interested investors to bid though usually subject to a minimum bid size. The advantage of open bidding is that it increases competition and narrows the spread between prices on the primary and secondary markets.

Limits on competitive bids

A few countries limit the number of bids from a single bidder, and others limit the size of any issue that can be won by any single bidder. While circumstances can easily be conceived where such limitations improve competition, the opposite is also true. These limits on competitive bids constitute a complication and should be avoided.

Non-competitive bids

Many countries allow non-competitive bids where buyers purchase the instrument at the weighted average auction price. Non-competitive bids allow investors with uncertain or unformed expectations to buy at market rates. Large investors may make competitive and non-competitive bids simultaneously as a hedging strategy. In some markets, non-competitive bids are subject to a cap to prevent large investors from using the facility and/or subject to a floor to avoid a large number of small bids.

Minimum price rule

In some countries, bids are subject to a minimum price rule for each individual auction, i.e., bids below a certain pre-announced price are not accepted. The innovative nature of NPPs as well as the opportunity provided to discover investor expectations suggest that a minimum bid price should not be imposed.

Auction announcement, schedule, and other details

Auction procedures and details should be transparent to ensure that all information is available to all investors at roughly the same time. As in most countries, the central bank in Muslim countries should announce well in advance auction dates, the amounts to be auctioned and all other terms and details and should hold auctions at regular intervals.

B. Developing a Secondary Market for NPPs

Secondary markets broaden and deepen primary markets by offering liquidity, transparency and ongoing price discovery. As emphasized above, the central bank should advise purchasers of the NPPs that no repurchase will be permitted before maturity. It is also recommended that NPPs should have a fixed term with no early repurchase, and that the private sector issuers should be encouraged to follow same practice. However, participation bonds will be transferable and the central bank should take supportive steps to encourage the formation of a corresponding secondary market.

Market structure

Secondary markets can take various forms. **Call secondary markets** bring buyers and sellers together periodically to establish a uniform market clearing price. **Continuous markets** may be either auction markets or dealer markets. Auction markets bring buyers and sellers together on an ongoing basis and affect transactions immediately whenever sellers' offered price and the purchasers' bid price come together. A dealer market consists of traders (dealers) who hold inventories and continuously post buy-sell prices and trading occurs both between dealers, and between dealers and clients.

In countries with well-developed financial markets, continuous markets predominate. However, for countries with young financial markets, a call secondary market may be the preferable approach until such time that trading volumes warrant a switch. For example, while continuous markets allow the rapid incorporation of all new economic and other information into price, they require a sufficient flow of buy-sell orders to ensure smooth price adjustments.

Call secondary markets are well-suited for securities that are thinly traded because they allow an accumulation of buy-sell orders. Call markets also provide a uniform clearing price and low cost. Call markets do not generally accommodate quick trades on the basis of immediate information. However, a continuous secondary market in many Muslim countries that do allow such trades could in likelihood be volatile. The resolution of this trade-off between timeliness and volatility is a question likely best handled through experience in the coming years of many Muslim countries' financial development. It is recommended at present that these countries adopt a call secondary market for participation bonds.

Call market procedure

Call markets are held in a single location on a periodic and regular basis. During the call auction for each instrument and maturity, the auctioneer sets an opening price. Traders acting on their own behalf or on a client's expressed interest in buying or selling at that price. The auctioneer then adjusts the price downward or upward until excess supply or demand is eliminated. All transactions are completed at this equilibrium market clearing price.

VIII. CONCLUSION

The religious edict against fixed income securities limits the use of conventional treasury instruments in Islamic economies. Equity-based, floating-rate securities, which will pay a rate equivalent to the observed rate of return obtained in the private sector and adjusted for risk premiums, is a much needed policy instrument in these countries. The key difficulty lies in obtaining a rate of return in an economy based on profit sharing. In conventional economies, such a rate is given by the market interest rate. This paper makes a first attempt at identifying alternative methodologies to estimate such a rate and derive from it the rate that prospective issues of government paper in Islamic economies could offer.

Several approaches, ranging from simple ratios to more complicated broad market indexes, are discussed. This range of measures will hopefully allow countries at different stages of development in the diverse Islamic group of countries to choose a method suited for their level of market development. While proposing this approach, we remain conscious of and emphasize the need for further study of the proposed indexes and measures. This should be done at the international as well as at the country-specific level. Even after the issue of NPP, these measures will have to remain under some form of surveillance and development. Therefore, we recommend that a country wishing to adopt this approach take the following steps to prepare for the development of the NPP market.

1. It is important that some department or institution assumes ownership of the index that is being used and to monitor it; after all, whichever index is adopted, it will have to be compiled and reported to the public on a regular basis. Wherever possible, perhaps the stock exchange could undertake this responsibility since it compiles market indexes. Furthermore, the stock exchange as well as the central bank research and banking supervision departments could be made responsible for reviewing developments in the index and for checking that speculative and other pressures do not contaminate the signal of the current rate of return in the private sector. Through experience and continuous investigation, the index will improve over time.
2. While noting the lack of adequate data for a detailed study in most of the concerned countries, we believe that ratios, such as gross profit/total assets or return on equity discussed here, could serve as the index of the rate of return in the private sector. These measures have an advantage over the price of equity as they are a pure measure of current earnings; the latter also include a component of expected developments in the private sector. Consequently, obtaining these ratios for a defined group of companies (say the ten largest companies) over the past few years, will allow the appropriate index to be constructed relatively quickly.
3. Once an index is computed, no matter how crude, further work could be initiated to widen it. Considerations, similar to the ones raised above, would argue in favor of making room in the development of such a measure for an international index, which, in combination with the domestic index, will reflect a certain weight of external market conditions facing the

country, as well as a certain element in the index that is not endogenous to domestic events. The weights can be determined as suggested in IIIB above.

4. Once the index has finally been computed, the instrument can be floated and the primary and secondary markets developed through the use of techniques outlined in Section VI above.

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