Risk sharing in corporate and public finance: the contribution of Islamic finance

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1. Introduction

The risk sharing principles of Islamic finance as embodied in *mudarabah* and *musharakah* contracts have been extensively used throughout history.[1] For example, the maritime trades of 14th century Italian city-states with Middle East and Asia were financed by 'sea loans' and 'commenda'. Historians have traced the development of commenda to borrowing from the concept of *mudarabah* used by Muslims (Udovitch, 1962; 1967; 1970; Mirakhor, 2003). They have also recorded how crucially important these contracts were to the growth of not only the maritime trade but also to the economic, social and political progress of European city-states. Brouwer (2005) has traced risk-sharing contracts utilised in venture capital contracts in Silicon Valley to the medieval Italian city-states and the use of commenda. However, despite the obvious success of equity, on which the building of European empires and the making of Silicon Valley were based, it has been far surpassed in popularity and usage by debt financing that is based on risk transfer.

Ironically, the apparent attraction of debt is its perceived lower relative cost. But this movement towards risk shifting finance has proven costly to society at large. The frequency, depth and fallout of financial crises have shown the system to be detrimental to sustained economic growth. A study by Reinhart and Rogoff (2009) revealed that crises of the

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[1] *Mudarabah* (a contract between capital owner and investment manager) and *musharakah* (a partnership with both partners as managers).

past have been, at their core, debt crises, regardless of whether they were labelled as 'currency' or 'banking' crises. In a more recent study of 44 countries over a 200-year period, Reinhart and Rogoff (2010) divided the debt-to-GDP ratio into categories of 30, 30-60, 60-90 and greater than 90 percent. They concluded that at debt ratios above 30 percent the growth of economies becomes under stress and beyond 90 percent economic growth suffers significantly. At a 100 percent debt-to-GDP ratio, an economy can grow to the extent that it can only service its debt. A high level of debt and its rapid growth undoubtedly affects financial stability. Furthermore, in their papers Reinhart and her co-authors (2010; 2012) found nonlinearity in the debt-growth relationship; namely, below the 90% debt-to-GDP ratio the correlation is not strong but strengthens as the ratio exceeds the threshold. Subsequently, these papers received support as well as criticisms of the estimation procedures and the debt-growth relationship hypothesis.

As for issues of estimation, in a much heralded paper Herndon *et al.* (2014) argued that the empirics of Reinhart and her co-authors suffered from errors committed in coding, in choosing appropriate weighting of summary statistics and in excluding data that were available at the time of the estimation. In response, Reinhart and Rogoff (2013) accepted the coding error but rejected the other criticisms. Herndon *et al.* (2014) had shown that with their suggested corrections the 90% tipping point would not hold, i.e. an increase beyond the 90% debt-to-GDP ratio does not lead to significant reduction in economic growth. In their re-estimation, correcting for the coding error, Reinhart and Rogoff (2013) showed that their findings did not change substantially as the impact of high debt on growth remained negative. The only difference was that the strength of the debt-growth non-linearity observed in the earlier study was much weaker after correction for the coding error.

Since publication of the Reinhart-Rogoff paper in 2010, there have been studies that found support for the proposition that high debt inhibits growth (for example Baum *et al.*, 2013; Caner *et al.*, 2012; Cecchetti *et al.*, 2011; Checherita-Westphal and Rother, 2012; Kumar and Woo, 2010). Other studies found no evidence that debt has a causal effect on growth and that there is no tipping point for a debt-to-GDP ratio beyond

which economic growth suffers (see for example Panizza and Presbitero, 2012; 2013; Kourtellos *et al*., 2013; Pescatori *et al*., 2014). Still others have found reverse causality; namely, instead of debt having a negative impact on growth, it is lower growth that leads to higher debt (for example Dube, 2013; Ferreira, 2014; Lof and Malinen, 2013). There are even studies that have found higher debt-to-GDP ratio leads to *higher* growth (for example Minea and Parent, 2012).

In an interesting and more recent paper, Dafermos (2015) argues that the problem with Reinhart and Rogoff (2010; 2012), as well as with all other subsequent papers, is that they focus on only 'one half' of the debt-growth relationship; that of the negative relationship between high debt and economic growth. Dafermos emphasises the importance of 'the other half', that is the adverse impact of low growth on increasing debt. Dafermos suggests that 'each half' requires a different policy. While the first half requires debt reduction – perhaps through austerity – the second half requires growth-enhancing policies. It is in this context that our suggestion becomes relevant and takes on importance. The adoption of non-debt-creating investment finance suggested in this paper would lead to higher investment, employment and economic growth without adding to debt; exactly the conditions that countries such as Greece are faced with, low growth and high debt levels.

Most recently, Mian and Sufi (2014) have argued that recessions may be triggered by a collapse in asset prices (such as housing) and access to large and unsustainable external borrowing (current account deficits) that abruptly ends in large banking sector losses with credit freezing up, but invariably severe crises are preceded by a significant running up of household debt. Household debt contracts are the root cause of severe financial crises and recessions. Debt contracts impose most of the risk on those who are least able to bear and tolerate risk, namely the poor. The imposition of risk on the poor in turn results in debt servicing defaults; these defaults and the loss of equity lead to a disproportionate fall in demand because the poor have a higher (than the rich) marginal propensity to consume from wealth; this in turn culminates in severe reductions in output and employment. Meaningful financial reforms must introduce more flexible contracts,

replacing strict debt contracts with contracts that are risk sharing, or at least allow for some risk-sharing contingencies. They argue with supporting data that neither a major economic shock (e.g. natural or political disaster), nor a general credit freeze (banking crisis) or 'animal spirits' (irrational exuberance and beliefs) provide a convincing thesis for the root cause of the recent, or historical, severe financial crises and their ensuing recessions.

Mian and Sufi (2014) argue that lenders (ultimately the wealthy who own financial assets, including bank shares) have contracts that impose all initial losses (the down payment equity) on the borrower. Thus, depending on the extent of the asset price collapse, the borrower may be forced to absorb most, if not all, of the losses. Moreover, the monetary and fiscal authorities invariably bail out lenders. As a result, severe financial crises and recessions exacerbate wealth inequalities by exposing borrowers (the less fortunate) and protecting lenders (the fortunate). In sum, they rightly note that debt contracts are inflexible and anti-insurance; they do not facilitate risk sharing but concentrate and impose risk and its fallout on those who are least able to bear it. They stress that the decline in housing prices was not the root cause of the financial crisis and the great recession but instead it was the big increase in household debt from 2000 to 2007 (with the amount of household debt doubling from $7 trillion to $14 trillion). Bankruptcies resulted in foreclosures that were a direct consequence of debt and resulted in housing prices going down even further and reducing the purchases (demand) of the poorer segment of society. They also add that there is fraud present in both debt and equity markets but it is more prevalent in debt markets. Moreover, lenders feel that they have a senior claim in debt contracts and thus they don't think fraud is as important. So, due diligence is compromised and the associated risk is underestimated.

Individuals face two types of risk: systematic (market risk, aggregate risk and un-diversifiable risk) and non-systematic (idiosyncratic risk, specific risk, residual risk and diversifiable risk). The first relates to risk that is posed by general economic conditions and is dependent on macroeconomic factors such as growth of the economy, fiscal and monetary policies and other elements of the macroeconomy such as

interest rates and inflation. Such risks are not diversifiable and are, therefore, uninsurable. Self-insurance can only occur through higher equity to cushion losses. However, sound macroeconomic policies that strengthen economic fundamentals, effective international policy coordination and the stability of the domestic financial system can mitigate such risks to a significant degree. Non-systematic or idiosyncratic risk, on the other hand, relates to risks that are specific to individuals or firms. Such risks are diversifiable and are, therefore, insurable. A high correlation between consumption and an individual's employment income means that sickness, accidents and layoffs all pose idiosyncratic risks that can be mitigated through risk sharing arrangements that reduce dependence on wages as the only source of income, thus weakening the correlation between income and consumption, enabling individuals to smooth out their consumption pattern.

For society, risk can be shared among its members and/or between its members and the state. In both industrial and developing economies, people find ways and means of sharing the risks to their livelihood. In particular, they use coping mechanisms to match their income and consumption patterns. In developed countries, the coping mechanism is investing in financial assets or acquiring insurance to mitigate personal risk. In developing countries, with weak financial markets, individuals rely on informal insurance, borrowing or saving, or rely on help from extended family members to cope with idiosyncratic risks. The other way of risk sharing is to spread the ownership of equity between different owners, so that losses from risk and uncertainty (unknowns) can be shared and spread with those who can afford such losses and are willing to participate in the upside gains.

At the country and societal level, 'excessive' risk taking by financial institutions has been the fuel for financial crises. Financial crises have become a recurring problem for modern economies with increasingly detrimental fallouts. Risk-sharing financial (RFS) contracts may be the best instrument for addressing the problem and its fallout (Askari, 2015). In this regard Islamic finance, a system based on risk sharing, may provide some useful ideas for both corporate and public funding.
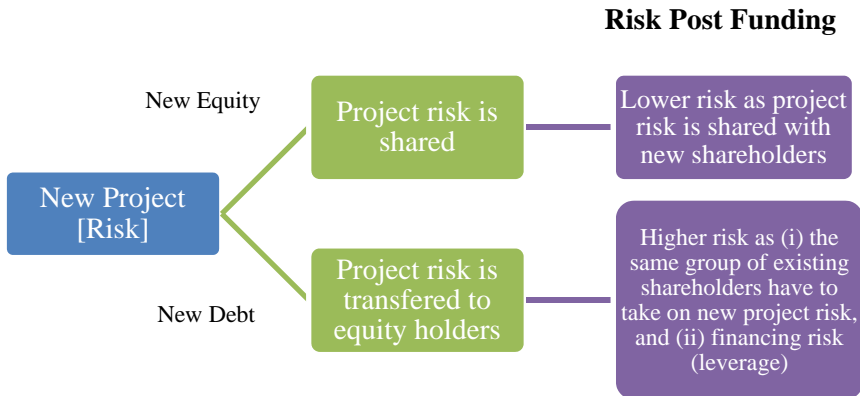
2. Funding and risk alternatives

In well-developed financial markets, there are a variety of instruments available for funding and managing risk. These can be broadly categorised as risk-sharing and risk-transferring instruments. A risk-sharing instrument requires the financier to share the underlying business risk. As such, while an expected return can be estimated, a risk sharing instrument cannot have fixed or guaranteed returns. The returns would vary with the business outcome. The returns are 'state contingent' as they depend on the success of an investment project. All equity instruments, such as common stocks and hybrids such as convertibles and some derivatives are examples of risk-sharing instruments. A risk transfer instrument, on the other hand, does not require the financier to share the underlying business risk. Instead, it enables the financier to get a 'lower' but fixed rate of return *independent* of the underlying business risk. All fixed interest-bearing debt instruments fall into this category. The return on risk-transfer instruments is usually lower than the expected return on risk-sharing instruments. This is justified on the basis that the debt holder does not share but transfers (his portion of) the risk of the business to equity holders. Thus, the lower cost of debt relative to equity *does not* constitute a funding advantage but merely reflects the fact that debt holders do not take on the business risk. In effect, the risk is underpriced.

In efficient capital markets, the difference between the cost of equity and debt should reflect the difference in risk profile. Furthermore, debt financing or leveraging has a direct and positive correlation with risk. Thus, on balance, a risk neutral firm should derive no advantage in replacing equity with debt (putting aside the issue of taxes). Yet, we know that this is not true. As the many crises have shown, there is a clear preference, if not an outright bias, for debt.

3. RSF and the debt-equity choice

Modigliani and Miller (1958), Jensen and Meckling (1976) and others have shown that the debt-equity choice is complicated by several

Figure 1 – *Impact of funding alternatives on project risk*

Risk Post Funding

New Equity

New Project [Risk]

Project risk is shared

Lower risk as project risk is shared with new shareholders

Project risk is transfered to equity holders

Higher risk as (i) the same group of existing shareholders have to take on new project risk, and (ii) financing risk (leverage)

New Debt

factors other than relative cost. The first and biggest advantage of debt financing, relative to equity, is the fact that it leads to no dilution in ownership and therefore in future earnings. Firms with concentrated ownership tend to have higher financial leverage for precisely this reason. It is also for this reason that companies tend to finance low-risk, high-return projects with debt and high-risk projects with equity. The problem with equity is that since it is perpetual, the dilution in ownership is also perpetual. By contrast, debt is terminal.

The second big advantage of debt is that the tax system in a number of important countries favours it. As we saw earlier, debt is cheaper precisely because debt does not take on the underlying business risk. So, the initial lower cost of debt is not really an advantage. Where it does become advantageous to use debt is when taxes come into the equation. The tax code in most countries provides a tax shelter to interest expense but not to other expenses or for dividends paid out for equity. On an after tax basis, the difference in costs of debt and equity diverge. Debt

becomes cheaper as a result of the tax shelter. Taking on debt to gain from the tax shelter is essentially tax arbitrage. The government effectively reimburses part of the interest cost to the borrowing firm. The logic and necessity for this subsidy is difficult to understand. As Modigliani and Miller (1958) showed, it is this tax shelter that causes firms' value to increase with the use of debt; the difference in a firm's value with and without leverage is attributed to the present value of future tax shelters.

The third incentive for using debt is the fact that leverage increases the return to shareholders (ROE). This is because shareholders have a share in the earnings/profits of *all* assets of the firm, even those funded with debt. The ROE of a leveraged firm is, therefore, higher than that of an equivalent firm without debt. Once again, this higher expected return to equity comes at a cost. The leveraged firm is always riskier than its unleveraged counterpart. While levered equity holders share the earnings of all assets including those that are debt financed, as residual claimants they are also obliged to support all the liabilities including those arising from debt finance. In other words, the equity holder is not only obliged to service the debt arising from funding a project/asset but has obligations arising from operation of the project. So, the higher earning potential comes with increased risk exposure.

Fourth, leveraged equity essentially constitutes a call option on the firm. This is especially true for highly leveraged firms. As the contribution of equity to capital is reduced, the downside for equity holders becomes smaller and is limited, whereas the upside (less interest) is entirely theirs. It is this skewed risk profile that encourages risk taking with the resulting moral hazard. To equity holders of leveraged firms, piling on more and more debt increases their profit potential without any additional increase in their exposure to losses.

If levered firms have the incentive to borrow more, shareholders of firms with very little or no debt may have the incentive to take on debt. This, according to Jensen and Meckling (1976), is due to the need to control the agency costs of equity. They argue that for firms with large

free cash flows,[2] shareholders can prevent managerial waste by taking on debt. Since debt has fixed servicing requirements, management is forced to use the cash to first service debt before using the balance to meet other needs. With less free cash flow, wasteful behaviour is checked. Furthermore, the incumbent shareholders do not dilute or lose control of the company through the issue of debt rather than equity. Family-based companies are often more reluctant to dilute majority control of companies through enlarging the equity base.

The fifth advantage of debt over equity is that the transaction cost of raising debt is far cheaper than raising equity. Initial Public Offerings (IPOs) on US exchanges can cost as much as 7% of the funds raised, plus high levels of disclosure and legal and accounting fees, which may not even be tax deductible. Debt can be raised through bank loans, trade credit or bonds much more speedily, with minimal legal fees and other costs.

These are reasons why firms are attracted to debt financing. On the side of the financier, there is a preference for debt over equity because: (i) he does not have to share in the risk of the business; (ii) though he does not shoulder any of the business risk, he has a claim on it; (iii) he is 'assured' of a fixed return regardless of the borrower's performance; and (iv) unlike equity, which is residual in claim and perpetual in time, debt is fixed in claim and time.

In an environment with implicit and explicit guarantees and incentives for debt financing from both the demand and supply side, there is a tendency for a build-up in debt, which then nudges the economy towards excessive leverage and imbalance. Rational players driven by their individual profit maximisation goal, operating within an environment that encourages debt while also providing implicit/explicit guarantees, behave in ways that may be rational individually but lead to irrational outcomes collectively. This is a key lesson from the recent US subprime led crisis of 2007-2008.

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[2] Free cash flow refers to cash flow that is unencumbered.

Since 1980, the US public debt/GDP ratio has risen from 30% to over 100%,[3] and is a direct result of the Federal Reserve's policy to repress interest rates. In 1981 when Paul Volcker, the then Chairman of the Fed, was slaying the 'dragon of inflation', 10-year US treasuries yielded 15.32% and yields have steadily declined from then on. The Greenspan years saw rate cuts in the name of growth, while his successor Bernanke fought 'deflationary tendencies' with even more rate cuts. By July 2012, 10-year US treasuries were yielding 1.5%, a 90% reduction in the coupon rate from 30 years earlier. As the US Federal Reserve cut rates, other central banks had little choice but to follow. Hot money capital flows have an arbitrating effect on rates. The smaller open economies have had to take their cue from the bigger players and cut rates or be faced with massive inflows that could be destabilising. The result has been historically low interest rates with short-term rates near zero and a world flush with liquidity. John Exter, an American economist, put forth the idea of an 'inverted pyramid'. In 2007, before the financial crisis, at the bottom of the inverted pyramid lay the world GDP of about $55 trillion. Every layer above it represented financial claims on real sector output. The financial assets representing these claims easily added up to more than 10 times world GDP. Thus, it is evident that rate cuts and financial sector growth did not go into funding real physical projects but into a feeding frenzy of financial assets.

4. Potential RSF instruments for corporate finance

There is a trade-off between debt and equity financing. Debt is cheaper but riskier. Equity, while safer, is more expensive; the main factor is ownership dilution. Given this trade-off, companies are attracted to debt financing. We will now examine the potential for RSF instruments to neutralise some of the factors that make debt attractive. By definition these instruments must provide the advantages of debt without the associated leverage, be cost-effective and be attractive to both

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[3] Federal Reserve Bank of St. Louis: https://research.stlouisfed.org/fred2/series/ GFDEGDQ188S/.

potential borrowers and financiers. They must also be functional and fairly simple. Ordinary investors should be able to easily understand the instrument and its pricing. If these proposed instruments can have features of existing market traded instruments, it would make market acceptance that much easier. To be acceptable to Muslims these instruments must comply with the requirements of shariah law.

At a basic level, the shariah requires that financial contracts and instruments must be free of the following five items: (i) *riba*; (ii) *gharar*; (iii) *maysir*; (iv) *rishwah* and (v) *jahl*.[4] In addition to these prohibitions, there are other requirements such as ensuring fairness and equity, that there be a balance in the rights and obligations of both parties, that society at large is not harmed in any way but benefits from the transaction and finally that returns are not fixed and predetermined. Two generic situations are considered; first, to fund a revenue generating project and second, to fund a non-revenue-generating project.

4.1. Funding revenue generating projects

Where a RSF instrument is used to fund a revenue-generating asset, risk sharing should be based on the revenue generated by the asset. In other words, the returns to the financier will be linked directly to the earnings of the project. In this sense, it is like an equity instrument. However, unlike a new issue of common stock, which would have a claim on all existing assets including the new project, this RSF instrument would have a claim only on the earnings of the new project. Given the asset specificity and the complex nature of the cost allocation in accounting, there will have to be agreement on revenue recognition and on identifying and measuring the relevant/allowable costs attributable to determining the earnings to be shared. Aside from avoiding *gharar*, such clarity will also help with estimating cash flows.

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[4] *Riba* (interest), *gharar* (excessive risk), *maysir* (gambling), *rishwah* (bribery) and *jahl* (ambiguity).

The underlying contract can be a modified *mudarabah* or *musharakah* combined with a *wakalah*.[5] The instrument will be terminal and have a fixed term. The term will depend on a number of factors: (i) the economic life of the project or underlying asset; (ii) the cash flows/earnings generated; (iii) the profit-sharing ratio (PSR); and (iv) the required return given the riskiness of the project. The term should be set such that for a given PSR and required return, the financier can expect to get back his initial investment plus his required profit. This funding instrument is intended to be listed and traded on secondary markets. Secondary trading brings numerous benefits, including enhanced liquidity, which would attract a wider range of investors. Small denominations would attract small retail players and their attraction would be furthered if the buying and selling of these instruments could also be handled through banks and institutions such as the post office. This would enable rural investors to participate with their small savings. A rural investor who wants to buy can do so at current prices and sell through his local bank or post office with the sale being affected at the day's closing price much like mutual funds.

To enhance trading, pricing of the instrument should be clear. Pricing should follow the logic of valuation in finance. That is value should equal the present-value of future expected cash flows from the investment. Generically:

$$Price = \sum_{t=1}^{n} \frac{\hat{e} \cdot PSR}{(1+k)^t} \tag{1}$$

where $\hat{e}_t$ are the expected net earnings in year t, *PSR* is the profit sharing ratio, and k is the required return/profit rate. The expected net earnings can be determined given the parameters agreed to and the forecasted revenue/earnings. Alternatively, one could also use after-tax net cash flows in place of $\hat{e}_t$. After-tax net cash flows begin with net profit and adjust for non-cash expenses such as depreciation, amortisations, provisions etc., changes in net working capital, capital outlays and other cash flows. The adjustment for non-cash expenses effectively neutralises

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[5] *Mudarabah* (contract between capital owner and investment manager), *musharakah* (partnership with both parters as managers), *wakalah* (contract of agency).

accounting related biases. The profit-sharing ratio should be set such that the initial investment (I) is recoverable given the required profit rate and term. *PSR*, therefore, is a function of the term, average expected earnings, initial investment and the required profit rate:

$$PSR = f\ (I,\ T,\ \bar{e},\ k) \tag{2}$$

where $\bar{e}$ is the average of expected annual earnings. The appropriate term should differ according to the project being financed. Generically, the term can be determined as:

$$Term = \left[\frac{I(1+k)}{\bar{e}_t \cdot PSR}\right] \le economic\ life \tag{3}$$

The required profit rate k is the other unknown. With trading, k should be a market-derived rate, much like the required return for stocks or the YTM of bonds. Given the profit/risk sharing and terminal nature of this instrument, its 'cost' or required return should be lower than the costs of the issuing firm's equity but higher than cost of debt. Since the claims of the instrument are directly on the earnings of the specific asset/or project, uncluttered by the firm's other obligations, the required return will be largely dependent on the volatility of the asset's earnings. Furthermore, as a market-traded instrument, the required return is essentially market determined. For a given set of expected future earnings, term and *PSR*, the required return will be implied in its market price:

$$\%\ K = \left[\frac{\bar{e}_t \cdot PSR}{Price}\right] \cdot 100 \tag{4}$$

percentage k, or holding period return, would constitute both the returns from profits received and capital gains; k therefore would be dependent on the volatility of expected earnings ($\hat{e}$), *PSR* and market factors. Indicative k can be derived from the ROA (return on assets) of similar projects/industries. In fact, the returns of a firm in the same industry as that of the project can be unlevered to estimate k.

Previous experience with *mudarabah* financing by Islamic banks has not been impressive. Most Islamic banks have moved away from *mudarabah* financing, even though it is at the heart of profit/loss

financing. As pointed out by Obiyathulla (1997), *mudarabah* financing in its original form has serious agency problems. It requires honesty and trustworthiness to function properly. In essence, *mudarabah* lacks the 'binding' effect that debt has on borrowers. Recall that the proposed design is a modified *mudarabah* in the sense that the enumeration of revenues and the allowable costs in determining profit is already agreed to. This already brings in elements of control; if despite this, shortfalls happen, it is important to have a built-in mechanism that can protect the investor.

Aside from investor protection, instrument design should provide the right incentives and avoid perverse behaviour on the part of the borrower. One of the most effective ways would be to borrow an idea from venture capital financing, namely 'equity kickers'. Equity holders give up a portion of their equity to the financier (investors) to meet the shortfall. To prevent a 'guarantee' of the investor's capital, which would render the philosophy of risk-sharing meaningless, the amount of the reimbursement can be capped to the proportion of funding relative to equity at the beginning of the investment.[6] An alternative to equity kickers could be an adjusted PSR, increasing the investor's share of profits to make-up for the shortfall. Whether an equity kicker is used or an adjusted PSR, the idea is to hold existing management/equity holders accountable for the investment decision.[7]

Holding the agent (company or management) responsible can be achieved in two ways. Debt contracts allow for collateral, which can be realised if the borrower reneges on the contract, or for management control through receivership or bankruptcy proceedings. Equity contracts can take over the management of the company or project if the present managers fail, but only if there is majority control. Clearly, the current enforcement function of equity contracts is weaker than those of debt contracts. It remains to be seen whether shariah courts are willing to impose more discipline on RSF contracts where there are lapses of morality or behaviour on the part of the investee companies or management.

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[6] For a further discussion, see Obiyathulla (1997).
[7] This is important especially when viewed in the context of the signalling hypothesis.

4.2. Funding non-revenue-generating projects

Profit sharing cannot work where a project does not generate any revenue or profit. Where a project or asset is a cost centre an alternative arrangement could be used, such as the highly popular *ijarah* (leasing) contract. To avoid fixity the *ijarah* payments, which would be amortising, can include an amount benchmarked on industry performance. This benchmark could be, for example, the average industry ROA or the average ROA of the top 5 players in the given industry. The *ijarah* payment could be derived as:

Ijarah payment = I_{jt} = [amortisation amount for principal + rent + (0.3 · industry ROA)] (5)

All three items would be determined such that given the tenor and required profit rate, the investor can expect to recover the investment. As an *ijarah*-based instrument, the advantage to the 'borrowing' firm over an outright debt-based bond funding would be that the firm may be able to miss payments in bad times, but with the proviso that either the term is increased or 'missed' payments are made cumulative. Notice that there is no fixity. There is no telling what exact amount the investor will receive either in any one year or over the duration. Still, the expected cash-flows in the form of *ijarah* payments from the investment can be determined. Given these expected cash flows, the price of the instrument and the required return can be:

$$Price = \sum_{n=1}^{t} \frac{I_{jt}}{(1+k)^t} \tag{6}$$

$$\% \ k = \left[\frac{\sum_{n=1}^{t} I_{jt}}{Price}\right] \cdot 100 \tag{7}$$

The equilibrium 'price' would be where the NPV is zero, or:

Price – Initial investment = 0 (8)

In any given year, the holding period return would be:

$$\% \ k = \left[\frac{I_{jt}}{Price}\right] \cdot 100 + \left(\frac{p_1 - p_0}{p_0}\right) \cdot 100 \tag{9}$$

As in the case of the earlier modified *mudarabah* instrument, market trading would imply that total returns will be a combination of *ijarah* payments received and capital gains/losses. Thus, there are two elements that ensure fixity is avoided. First is the benchmark within the industry ROA and, second, the capital gains/losses. In addition to avoiding fixity, the benchmark portion of the *ijarah* payment has the advantage of keeping the 'borrowing' firm's management benchmarked to the best in the industry.

5. Potential RSF instruments for public finance

In this section, two potential RSF instruments that governments could use to fund development projects are considered. As in the case of corporates, there are two scenarios: first, the funding of revenue generating projects and second, the funding of projects that do not generate revenue. Much of the logic here follows that of the RSF instruments proposed earlier for corporate funding.

5.1. Funding revenue generating projects

Currently, in numerous developing countries most infrastructure projects, highways, power generation plants, mass-transit systems etc. are typically financed using foreign currency denominated debt. This creates two problems, first, there is a currency mismatch and second, given the usual delays in completion, the projects come on-stream burdened with a huge amount of debt. If the foreign currency appreciated, the debt burden becomes that much more onerous. Many such projects have had to be nationalised or rescued in one way or another, at huge expense to taxpayers. RSF would allow governments to avoid the leverage and currency exposure while also enhancing the domestic capital markets. Most revenue-generating infrastructure projects have very stable cash flows over extended periods. Being natural monopolies, there is little competition. Governments are unable to take advantage of the benefits associated with these projects. Moreover, external borrowing exposes the

country to sudden stops and internal borrowing has adverse consequences for income and wealth distribution.

We propose a funding structure that would overcome these disadvantages. To better elucidate the structure, a simple example is provided. Assume that a developing country intends to build an intra-city mass rapid transit system (MRT). Construction will take five years and will cost $550 million. The government will provide the land and supporting infrastructure valued at $140 million. In addition, the contractor and concessionaire will bring in expertise valued at $10 million. The total project cost is, therefore, $700 million. For simplicity, we assume all the funds are raised in a single offering.

The proposed instrument for this is a 10-year *musharakah*-based *sukuk* (Islamic bond). The *sukuk* pays minimal or no dividend during the 5-year construction period, pays dividends from year 6 to 10 based on the earnings of the MRT and at the end of year 10 is listed as equity through an IPO. *Sukuk* holders get to convert their *sukuk* to equity at a predetermined conversion ratio. The convertible feature of the *sukuk* is important as it provides all parties, the government, the contractor/concessionaire and especially *sukuk* holders the potential upside benefit. The conversion feature, aside from making it profitable for *sukuk* holders, lowers the funding cost to the government. The government itself being a *sukuk* holder can also convert and be a shareholder, potentially a majority shareholder. The minimal or absence of dividends in the construction period becomes acceptable given the profit potential in the conversion feature. The IPO being in the tenth year enables all to see steady earnings of the project for the 5 years post construction. The premium over cost that will be realised at IPO will be shared by all three parties, with *sukuk* holders getting the largest portion. Voting rights, proportionate to the holding of shares would kick in with stock issuance. In prelisting, we do not see much need for decision making by the various parties. Construction technicalities and post-construction operational issues would clearly be laid out in the initial prospectus with parties mandated to execute them. The figures below show the structure of the *sukuk* at the three stages.
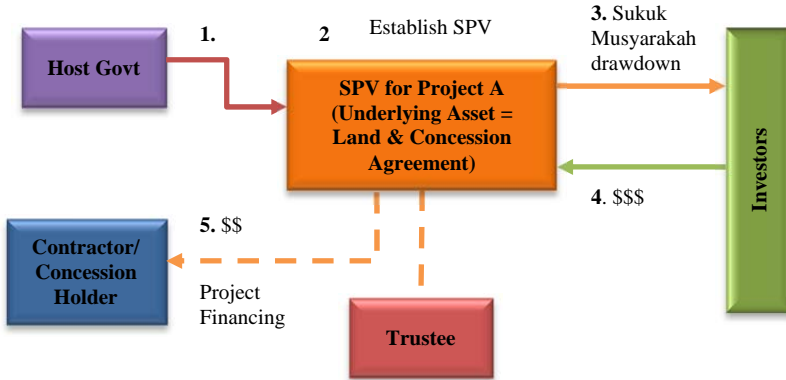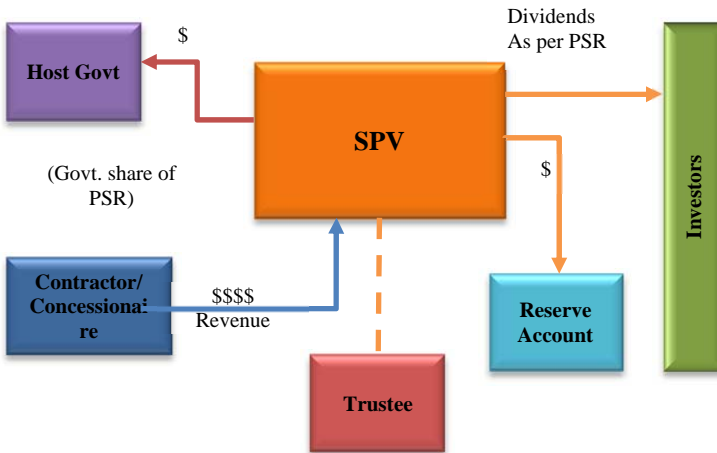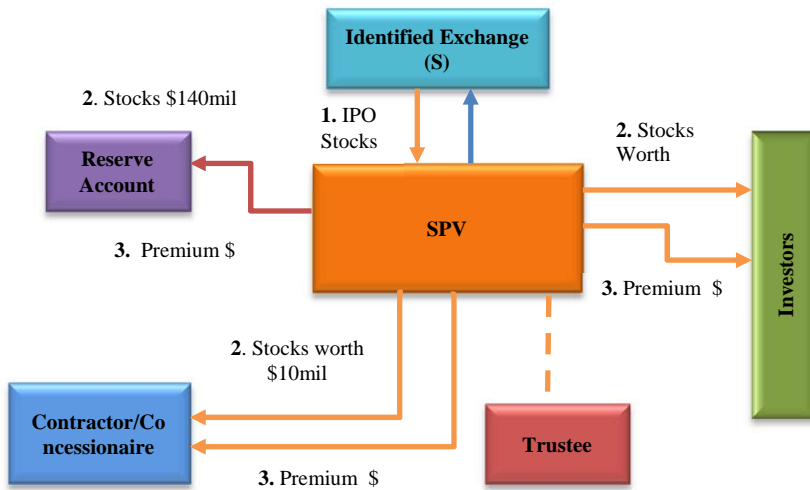
Figure 2 – *Stage I*, *years 1-5*

Figure 3 – *Stage II*, *years 6-10*

Note: Reserve Account is to meet all contingencies including costs at end year 10.

Figure 4 – *Stage III*, *at end year 10*

There are a number of factors to note. First, there is no financial obligation for the government. The government initiates and coordinates the funding and project execution. Development projects are initiated without budgetary stress, while the government stands to benefit during or post IPO. The government can either sell off its stake or continue to hold it and earn dividends. In addition, with the listing of such large and stable cash-flow projects on the domestic stock exchange, local equity markets grow and develop. Finally, again by keeping the face value of the *sukuk musharakah* small, the project becomes inclusive with even small investors participating in the largest of projects, thereby promoting financial inclusion.

5.2. Funding non-revenue-generating projects

While several other combinations and permutations of the above structure may be possible for funding revenue generating projects, the

funding of non-revenue-generating projects has fewer alternatives. If risk sharing is to be used for non-revenue-generating projects, the sharing has to be based on some other benchmark/asset. The question of issuing GDP linked *sukuk* to fund non-revenue-generating projects has come under criticism. There appears to be issues related to the tangibility and the 'ownership' of the output that GDP measures. Given this, the first proposal here would be to issue *ijarah*-based *sukuk* that pay out from revenue generating assets owned by the government, with a flexible portion benchmarked on export earnings or an index price of a key commodity. As in the case of the corporate *ijarah sukuk* discussed earlier, the total return combines a fixed rental portion and variable portion. A second alternative could be a *musharakah mutanaqisah*[8] type *sukuk* in which a government 'sells' an idle or non-revenue- generating asset as the underlying asset and repurchases portions of the *sukuk* over quarterly or semi-annual periods until it is fully redeemed. Here, the government can reduce its holdings or choose not to repurchase at times when it is strapped for cash. So, while the total repurchase price is predetermined, the size of interim cash flows and tenor is not. Thus, total and interim period returns are not fixed. An alternative may be to raise funds for non-revenue-generating projects by 'securitising' future earnings of the government. These could be based on expected future tax income from a commodity that is exported. The future tax earnings are to be used to fulfil the obligations of the *sukuk*.

6. The proposed instruments and how they stack up

The proposed instruments will now be evaluated relative to conventional debt financing from the perspective of four stakeholders, namely (i) investors, (ii) the issuing company's shareholders, (iii) the

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[8] *Musharakah mutanaqisah* is a diminishing partnership contract where two or more partners combine their capital contributions in a specific business venture, and over time one partner gradually acquires the shares of the other partner. This is used in a number of countries to fund mortgages.

government, both as issuer and risk manager of the macro economy, and (iv) society at large.

(i) For investors of the proposed instruments, the first advantage is that they earn more relative to debt instruments, and in addition their returns are anchored in real returns that are much more stable. A second advantage is that the proposed instruments would form a new asset class. Given the nature of their cash flows, their returns would have little correlation with conventional portfolios. The low correlation implies strong diversification possibility when combined with conventional portfolios. Also, the low denomination and secondary market trading provides easy access, ensures pricing transparency and has minimal liquidity risk. In economic terms, the choice for an investor between the debt contract and the RSF contract is that there is an option that if the project is successful, the return on RSF is higher than a debt contract, but there are uncertainties associated with both. Unless the tax and other transactional biases for debt are removed, RSF contracts do not appear superior to debt contracts. The real benefit of RSF contracts is that they reduce systemic risks from too-high leverage. Another argument for RSF is the distributional impact. Debt contracts are inherently regressive, increasing inequality. RSF, provided it is spread amongst even the poor, can be more risk-and-benefit distributive.

(ii) For shareholders of the issuing firm, the proposed instrument provides two main advantages. These instruments provide external financing without the leverage and with minimal and temporary dilution of earnings. Earnings dilution is minimal since unlike equity, these instruments have a claim on the profit of only the asset/project financed, not all assets of the corporation. Even this specific dilution is terminal and ceases with maturity. Taken together, these two advantages effectively change the debt-equity trade off. The issuing firm's shareholders can get the advantage of debt without the riskiness and the lower risk of equity without the dilution. In addition to the increased stability of earnings and a lower stock beta,[9] shareholders have no incentive to take on risky projects as they would under debt financing. A

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[9] Stock beta is reduced when RSF instruments are used to replace debt or used in lieu of debt.

reduced beta implies reduced required returns, resulting in higher prices for outstanding stock.

Existing bondholders of the firm stand to benefit when RSF instruments are issued. Just as the issuance of new equity favours existing bondholders, the issuance of RSF instruments benefit existing bondholders in two ways. First, since RSF instrument holders have only a claim on the newly funded asset and not on existing assets, there is no 'dilution' in the claims of bondholders. Second, as argued earlier, the use of RSF does not increase a firms' leverage, but would actually reduce it as is the case with new equity. As the firm's risk profile is reduced, bondholders have a direct gain from the lower required risk premium. The price of outstanding bonds ought to be higher given lower required yields.

(iii) For the government and society at large there is the improvement in macroeconomic stability. Increased stability comes in two forms. First, risk-sharing finance is anti-cyclical, not pro-cyclical like debt financing. For example, companies that are debt financed have to cut back on new investments when times are bad because the reduced cash flow is needed to satisfy debt service payments first. The same effect applies to governments that are leveraged; they have to cut back precisely when they should be expansionary. When both the corporate and government sectors are forced to cut back, the shrinkage in the macroeconomy is potent. A downturn turns into a recession. In the case of the proposed instruments, the impact would be the exact opposite. When times are bad, the requirement to pay out for financing is automatically reduced, leaving most of the cash flow available for investment. At any given time the macroeconomy is more stable and over time the amplitude of the economic cycles is reduced. This reduced volatility enhances planning ability at both the corporate and governmental level and thereby improves overall efficiency. Sudden stops resulting from foreign funded debt and the attendant crises would be a non-issue. With reduced leverage in the system, banking sector vulnerability and moral hazard are minimised. Also, with reduced reliance on debt and increased use of RSF, government tax revenue increases as the tax subsidy for debt is reduced.

(iv) For society at large, crises arising from excessive debt have not only become more frequent but extremely costly. In addition to financial losses, the ensuing human misery and social unrest place a heavy burden on society. Policy makers realise that leverage at the firm/bank level has negative externalities. As with pollution, it is difficult to internalise these huge social costs. The proposed RSF instruments when used in lieu of debt would minimise, if not eliminate, these social costs. Designed especially to enable even small retail investors to participate, they promote financial inclusion. Aside from giving the small investor a stake in any national growth, capital markets get developed and most importantly, savings that would go into speculative assets or 'dead assets' such as gold can now be harnessed for development.

Finally, in the case of risk-sharing instruments the assessment threshold in evaluating projects for investment at both ends is raised. For the financier, the level of scrutiny will be higher as, unlike debt, he will be sharing in both the upside as well as the downside. For the entrepreneur, the risk-sharing financier will require 'skin in the game'. That is, the entrepreneur will be required to stake his contribution, either in the form of assets, managerial effort or some combination of both. Since both parties face potential losses, the threshold of prudence for evaluating new projects will be much higher. This improved efficiency would reduce moral hazard and lead to better allocation of resources. More importantly, since there is a one-to-one link between real sector projects and their financing, the massive build up in debt and the potential for an ensuing financial crisis is reduced.

7. Conclusion

There has been heavy criticism of Islamic banking and finance as it is currently practised. The gist of the criticisms is that Islamic finance, especially Islamic banking, is nothing but a replication of conventional banking products and services with *shariah* labels tagged on. There is much validity to and support for this criticism. Early attempts in different parts of the world to establish 'pure' Islamic finance institutions failed

miserably, largely because they were long on religion and short on economics and contemporary realities. Their later revival as government-sanctioned institutions was different. These were established to offer modern banking services in *shariah*-compliant ways, and in the absence of workable models, policymakers and bankers felt it necessary to simply replicate products in the initial years, with the hope that purer, more authentic products would be developed over time. But more than 30 years on, their hope has not been realised. Just as the failed fruition of the hope of economic development theorists for protected infant industries to grow up, Islamic banking has not developed and continues to simply replicate. As a result, risk sharing, the key *shariah* requirement, is yet to take root. In this paper and in order to put Islamic finance on a progressive trajectory, we have made a proposal on how risk sharing can be incorporated and implemented.

Risk-sharing finance has numerous benefits, especially the potential to minimise, if not avoid, the debt-induced financial crises that have plagued the world. The fact that risk-sharing finance has not taken root points to market failure. There may be two key reasons for this failure. First, entrenched special interests oppose a change in this direction, even though society stands to benefit over time. Second, and a probably more important reason for market failure, is the uneven playing field. The tax subsidy for debt accentuates a perceived advantage into a truly profitable one. For managements tasked with maximising shareholder wealth, it is rational to pile on debt while avoiding new equity issuance. One can see why Bear Stearns had a leverage ratio of 30:1 just before collapsing. Aside from entrenched interests, the market failure has more to do with tax regulation that does not allow the failure to be corrected. Even a socially conscious management cannot opt for a debt alternative without being punished first by the government with heavier tax and then by the market for not taking advantage of tax shelters. If there is no self-correcting mechanism then the market failure has to be addressed.

The first initiative for a government would be to correct the disparate tax treatment for debt and equity financing. Next, for risk sharing to succeed, disclosure requirements must be tight. The fact that Lehman Brothers had for months prior to its collapse used an accounting

technique known as "Repo 105"[10] and 'reduced' its reported liabilities by $50 billion is testimony to how even the biggest players may not be averse to tweaking disclosure requirements. Strong regulation is a necessity. Furthermore, there are powers available to a government that the private sector does not have. For one thing, in its capacity as the risk manager of society and as its agent, it can promote risk sharing broadly by removing many of the barriers to its spread. It can reduce informational problems, such as moral hazard and adverse selection through its potentially vast investigative, monitoring and enforcement capabilities. Through its power to implement civil and criminal penalties for non-compliance, a government can demand truthful disclosure of information from participants in the economy. It can force financial concerns that would attempt to appropriate gains and externalise losses (by shifting risks to others), to internalise them by imposing stiff liabilities or taxes. In the end, for RSF to survive the investor must be assured that he is sharing only the underlying business risk and nothing else.

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[10] See Allen (2012).

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