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Risk sharing, public policy and the contribution of Islamic finance

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1. Introduction

Beginning in 1985, it was shown (in a series of IMF working papers) that an economy where the rate of return to finance is derived directly from the rate of return to the real sector and where assets represent equity positions, i.e. a risk-sharing economy, produces a stable equilibrium (Khan and Mirakhor, 1987). Furthermore, Mirakhor and Zaidi (1988) confirmed the growth path of such an economy and Mirakhor (1993) demonstrated the adjustment process and the stability of an open economy with the same characteristics when subjected to shocks. More recently, in an issue of this journal, Askari and Krichene (2014) provided a review of the arguments in support of risk sharing as being the essence of Islamic finance and the major reason for its stability. Askari *et al*. (2014), again in an issue of this journal, have shown that when subjected to even more numerous shocks, such an economy remains stable and growing.

In an economy where the primary role of capital is to finance real sector activities, the rate of return to financial assets is derived from the rate of return to the real sector. By necessity, assets and liabilities of the financial sector are synchronised closely with those of the real sector. The implication is that in such an economy the question of maturity and value mismatches between assets and liabilities does not arise (Askari *et al*., 2010). These mismatches are the well-known characteristics of interest rate-based debt finance and are in turn the prime cause of financial stress

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and debt deflation crises. In a risk-sharing economy, as prices fluctuate in the real sector so do the value of financial assets; assets and liabilities of economic agents vary in the same direction. It has been argued (Askari *et al*., 2012) that a major reason for the recurrent episodes of financial instability is the predominance of interest-based debt and that financial stability is achievable through risk sharing finance instead of the risk transfer or risk shifting that characterises contemporary finance. A risk sharing system, they explain, will serve the true function of finance as facilitator of real sector activities. It would avoid the emergence of what James Tobin called a "paper economy" (Tobin, 1984) in which there is a gradual decoupling of finance from the real sector of the economy. In such an economy, capital is not fictitious as it is in a paper economy because financial transactions would not involve money today for more money tomorrow without facilitating (and without facilitatingwould not but would rather facilitate) value added in the real sector of the economy (Bogle, 2012). In this sense, the risks of adding value to the economy are shared between finance and production. Each unit of financial assets represents the sharing of risks and rewards of real sector activities.

The concept of risk has evolved dramatically over time. The etymology of 'risk' can be traced to the maritime trades of the 14th century Italian city-states in search of profit opportunities from adventurous trade with the Middle East and Asia. These ventures were financed by 'sea loans' and *commenda*. Historians have traced the development of *commenda* to borrowing from the concept of *mudharabah* used by the Muslims (Udovitch, 1962; 1967; 1970; Mirakhor, 2003). While the 'sea loans' were basically a contingent debt contract, traders transitioned to *commenda* as soon as the state was able to develop ways and means of verifying the outcome of contracts. It is generally understood that one reason for the existence of debt contracts is costly verification and if the state were able to verify contract information at no cost to traders, optimal contracts would be risk sharing ones. The Italian city-states, such as Venice in the late medieval period, were able to enhance their ability to verify information regarding the outcome of ventures financed by contracts of risk sharing (*commenda*) contingent on verifiable information. The state played the role of information

transmitter as well as enforcer (of contracts). This development allowed finance to progress from loan contracts (sea loans) to first-best risk allocation: risk sharing via *commenda*. Historians have also recorded how crucially important this transition was not only to the growth of maritime trade but also to the economic, social and political progress of the region at that time (Lopez, 1976). Recently, Brouwer (2005) has traced risk-sharing contracts utilised in venture capital contracts in Silicon Valley back to medieval Italian city-states and the use of *commenda*.

The perception of risk and its fallout has also progressed, from one of resignation to fate to one of assessing, managing and mastering it. The change in perception of risk from a danger to be avoided to more calculated behaviour that conceives risk in terms of its accompanying opportunities for gains is considered a characteristic of modernisation (Bernstein, 1996; Schmidt, 2005). Over the last few decades, views concerning risk have evolved further from a perception that risk is mostly an individual responsibility to those that envision risk management also as a collective, social and moral opportunity to strengthen social solidarity. The number and intensity of crises in the last two decades have sharpened focus on 'social risk management', emphasising that social solidarity requires heightened sensitivity to what each individual owes to other members of the community not only in terms of prevention and mitigation but also in terms of the sharing of risk (Ericson and Doyle, 2003; Holzmann and Jorgensen, 2000). In this perception, public policy plays a crucial role in creating an effective incentive to promote risk sharing.

In the next section, we take a broad look at risk sharing and the reasons why risk sharing is not more widespread and practiced in our time. In section 3 we discuss the role of government in risk sharing, which in turn leads us in section 4 to examine the potential for greater risk sharing and the opportunities and instruments available to governments. We then turn to the potential for Islamic finance, a financial system built on risk sharing, to promote risk sharing through government intervention because of the failure of the Islamic financial industry to provide greater risk sharing. Finally, in section 6, we conclude with observations on how risk sharing can provide not only a means of better

risk mitigation but also address the urgent risk of sovereign defaults that threaten the world economy.

2. Risk, uncertainty and ambiguity

Contemporary perceptions of risk and uncertainty invariably begin with Frank Knight (1921) who defined decision-making under uncertainty as a series of pay-offs that could be determined with known probability distributions, allowing risk to be insured. Uncertainty, on the other hand, would be faced if the decision maker has no known probability distribution that could help determine pay-offs to decisions, making outcomes uninsurable. Over the last century, developments in probability theory and in techniques of subjective probability distributions have led to a semantic alteration – uncertainty has come to mean what Knight referred to as risk, while his conception of uncertainty has become 'ambiguity'. The analytics of situations of ambiguity owes a great deal to the efforts of Daniel Ellsberg in early 1960s. The term ambiguity refers to the subjective experience of missing information. Whether this is due to a lack of sufficient data or due to what philosophers refer to as 'vagueness' (or normally thought of as 'ignorance'), ambiguity seems to be driven by the 'impossibility of cognitive completeness'. The limitations to the power of cognition have the effect of making decisions under conditions of ambiguity difficult (Mirakhor, 2009, 2010; Erbas and Mirakhor, 2013; Ellsberg, 1961; Frisch and Baron, 1988; Smithson, 1989). Two interrelated strategies of avoiding ambiguity are patience and acquiring more knowledge. Defining knowledge as "the accumulation of regularities and patterns in the physical and human environment that result in organized explanations of aspects of these environments", Douglass North (1990) argued that clearly prescribed rules (institutional framework) could attenuate ambiguity. Additional knowledge reduces ambiguity, either within the existing institutional framework or leads to alterations in the framework to make it more effective in reducing ambiguity.

An important contribution to our understanding of behaviour under risk in the last two decades has been the 'theory of intuitive judgments and choice' (Kahneman and Tversky, 2000; Erbas and Mirakhor, 2007). The basic idea behind this is that people's behaviour facing risk, uncertainty and ambiguity is determined by the way they respond to two mechanisms: framing and prospect, both of which can cause asymmetries in risk perception leading to behaviour different from that expected from rational theory. The former refers to the fact that people's response to a risky situation depends on how they form their perception of a given situation and that depends on how an event is formulated. People react differently to the same situation when it is framed differently. Prospect refers to perception of gains or losses attached to decisions. The prospect of a given decision depends on the choice of a reference point. People tend to assign gains and losses, more often than not, in reference to the status quo to which they assign a higher value. This is called an 'endowment effect' according to which people find it easier to divert from the status quo if there is the prospect of gaining rather than losing something in reference to the status quo. The endowment effect, i.e. the past or present being given intuitively higher value, sometimes leads to myopic behaviour that tends to violate the rationality rule of utility maximisation. The way prospects are framed can lead to inconsistent behaviour; if the same objective outcome is framed differently, people respond differently. If the outcome is framed either as a gain or loss, people prefer to choose gain. This is because, intuitively, losses are given greater weight than corresponding gains, as people are generally loss averse.

The findings of prospect and framing theory, and the large body of experiments that followed the work of its founders, provide guidelines for the formulation of public policy relating to risk sharing and the way policies are formulated, framed and presented to the public. These guidelines suggest that (i) when it comes to a choice between certain and uncertain gains, people generally prefer certainty even if the prospect of uncertain gains is objectively much larger than certain gains; (ii) in choosing between certain and uncertain losses, people generally prefer uncertain alternatives even if the prospective loss is larger than the certainty case; and (iii) people generally overestimate small short-term

risks and underestimate long-term risks (see Kahneman, 2003 for interesting observations on the progress of prospect theory, and Erbas and Mirakhor, 2013). These hypotheses suggest that it is possible to promote risk sharing if prospective gains are framed and formulated with sensitivity to the public's perception of formation.

3. Risk sharing

Humans face two types of risk: systematic (market risk, aggregate risk, or un-diversifiable risk) and unsystematic (idiosyncratic risk, specific risk, residual risk, diversifiable risk). The first relates to risk that is posed by general economic conditions dependent on macroeconomic factors such as growth of the economy, fiscal and monetary policies, and other elements of the macro-economy such as interest rates and inflation. Such risks are un-diversifiable, therefore, uninsurable. 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. Unsystematic or idiosyncratic risk, on the other hand, relates to risks that are specific to individuals or firms. Such risks are diversifiable, therefore, insurable. High correlation between consumption and an individual's employment income means that sickness, accidents and lay offs 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. In other words, through risk sharing individuals 'smooth' their consumption pattern.

Risk can be shared among the members of society. In both the industrial and developing economies, people find ways and means of sharing risks to their livelihood. In particular, they use coping mechanisms to increase the variability of their income relative to their consumption. In more developed financial systems, the coping mechanism is investing in financial assets or in acquiring insurance to mitigate personal risk. In developing countries, with weak financial

markets, people rely on informal insurance, borrowing or saving to cope with idiosyncratic risks. In such societies, theory suggests that perfect informal insurance is possible if communities fully pool their incomes to share risks. Then, each member of the community could be assigned a level of consumption dependent on the aggregate level of income and not on that of the member. This arrangement would assure perfect risk sharing (Morduch, 1999a) to mitigate idiosyncratic risk so that household income would not affect consumption. However, empirical studies in India (Townsend, 1994; Ligon *et al.*, 1997; Ravallion and Chaudhuri, 1997), Thailand (Townsend, 1995), China (Jalan and Ravallion, 1997), Indonesia (Gertler and Gruber, 1997), Ivory Coast (Deaton, 1997a; 1997b), the Philippines (Fafchamps and Lund, 2003) and elsewhere indicate that perfect risk sharing through income pooling is not supported fully by data, although in a number of countries it plays a crucially important role. Empirical studies broadly suggest that in low-income countries, saving, borrowing, the use of buffer stock, working longer hours or taking a second job, gift exchange and the private transfer of cash and clothing are mechanisms used in risk sharing (Kipnis, 1997; Cox and Jimenez, 1997; 1998; Lim and Townsend, 1998; Deaton, 1997a; 1997b; Kochar, 1999).

Analysts suggest that sound public policy and a strengthened institutional framework in developing countries can go a long way to reducing risk. Examples of policy improvements include better governance to reduce the fallout from mismanagement by households and adoption of policies to achieve and sustain economic and political stability and encourage financial sector development. In terms of institutional framework, clear and secure property rights, contract enforcement, trust among people and between governments and their people, and between other institutions can reduce risk, uncertainty and ambiguity, strengthen social solidarity, bring private and public interests into closer harmony and ensure coordination to achieve risk sharing (North, 2005; Mirakhor 2009; 2010). Public policy could also help mobilise savings of poor households and thus reduce vulnerability to income shocks. Policies of Bank Rakyat Indonesia, the Safe Save Program implemented among poor households in the slums of Dhaka,

Bangladesh and microfinance programs in Asia, Africa and Latin America are seen as successful programs that have mobilised savings among poor households (Morduch, 1999b; Rutherford, 1999). Bencivenga and Smith (1991) suggest a strong relationship between deposit mobilisation, efficiency enhancement and economic growth. Public policies to forge integration and support savings mobilisation in developing countries reduce risk and build resilience to shocks.

Although microfinance has been touted in the literature, there is now empirical evidence suggesting that while these contracts help reduce poverty in low income countries by providing small un-collateralised loans to poor borrowers, there is no evidence to suggest that microfinance contracts allow businesses to grow beyond subsistence. Aside from high interest rates that reduce available resources, it is thought that the structure of typical microfinance contracts have features, such as peer monitoring and joint liability designed to reduce the risk of moral hazard, which create tension between risk taking and risk pooling. The latter allows greater opportunity for informal risk sharing because of repeated interaction among the borrowers. Although joint liability and peer monitoring help repayment of loans, they do not reward successful borrowers and thus discourage risk taking and entrepreneurial development (Chowdhury, 2005; Armendáriz and Morduch, 2005; Fischer, 2010). In addition to savings mobilisation and encouraging microfinance, better financial access through microcredit and insurance markets in rural and poverty-stricken regions are promising avenues for public policy to develop risk sharing and allow households to cope with risk.

Turning to systematic or aggregate risk, such as exposure to financial crises, fiscal or commodity price shocks, the nature of shocks, availability of institutions that shape risk sharing within or outside each economy and the resilience of the domestic economy determine how well the economy copes with shocks. The serious dissatisfaction with and the subsequent public protests driven by a strong perception of the response to recent shocks, which appear to have privatised benefits of financial excesses and socialized subsequent losses, highlight the response to the fundamental question of how risk should be shared or allocated across society ex-ante and what criteria should determine the outcome. Arrow

(1971) demonstrated that in a competitive market economy, with complete markets and Arrow securities (whose pay offs are state-contingent), it would be Pareto optimal if participants shared risk according to their ability for risk bearing (Mirakhor, 2010). In the absence of complete markets, which include all possible future contingencies, the efficiency of risk-sharing mechanisms will depend on the institutional structure, the degree and intensity of informational problems and policies designed to render the economy resilient to shocks (Mirakhor, 2010). Since in Western thought risk-sharing procedures and objectives are perceived to involve trade-offs between efficiency and fairness, the distributional impact of ways and means of risk sharing are considered important. These trade-offs are thought particularly acute in the case of policies that allocate the burden of adverse macroeconomic shocks within society and its institutional structure. For example, a society can ex ante decide, on the basis of equity, efficiency, or both, to allocate the burden of a shock to those who either benefit the most from, or exacerbate, the shocks by their behaviour. Shocks may be so large and their consequences so serious that even if such a policy were accepted ex ante, institutional consideration (e.g. limited liability) and political economy forces (powerful lobby) may not only prevent a fair and efficient distribution of costs ex post but also the assignment of residual costs after the initial costs of the shocks have been socialised. It is difficult to conceive of any known criterion of fairness and/or efficiency in Western thought that could be satisfied by the resolution (and non-resolution) of the consequences of the 2007/2008 global financial crises.

The degrees to which any economy can absorb shock and cope with its consequences depend on available domestic and international risk-sharing mechanisms. An important argument in favour of globalisation was improved risk sharing that would bring people across the world closer to create a ‘global village’. On theoretical grounds, expecting a much greater degree of risk sharing between and among economies – resulting from greater freedom of movement of resources, the advent of technological advances like the information superhighway and advances in financial innovation – was realistic. After all, these advances would have meant progress toward market completion, a condition of optimal

risk sharing posited in Arrow's conception. Or, at least, progress could be expected toward design and widespread use of Arrow securities, i.e., those whose pay-offs were contingent on the performance of the underlying asset, for example, equity-based securities with close links to the real sector. Much of the progress in information technology and economic liberalisation, however, led to the development and innovation of risk-shifting and risk-transfer financial instruments with increasingly more tenuous relations to the real sector and the near full decoupling of financial and real sector developments (Menkhoff and Tolksdorf, 2001; Epstein, 2006; Mirakhor, 2010).

The perception that globalisation has not improved international risk sharing, despite considerable potential welfare gains, is supported by research (Baxter and Jermann, 1997; Tesar, 1995; Van Wincoop, 1999; Lee and Shin, 2008; Imbs, 2006). This literature examines the relationship between each country's volatility in income or consumption with that of corresponding variables in the rest of the world (or the rest of a region). By and large, the empirical research concludes that there is very limited international risk sharing and that globalisation has not contributed much to enhance risk sharing. Indeed even in one of the most economically vibrant regions of the world, the Asia Pacific Rim, risk sharing among and between countries has not been significant (Kim *et al.*, 2003; 2006; Hall *et al.*, 1998; Kim and Sheen, 2004; Lee and Shin, 2008; Gaston and Khalid, 2010). Given the poor state of development of international risk sharing, Shiller has long suggested that much progress could be made in exploiting the considerable potential for international risk sharing through macro-market instruments (Shiller, 1993a; 1993b; 2003; 2004; 2005; Mirakhor, 2010). These instruments can be developed within each country, to be traded on the international capital markets to diversify each country's exposure to macroeconomic and income shocks, and to promote consumption smoothing (see also Borensztein and Mauro, 2002; 2004). Reasons given for failure of adoption of sovereign risk-sharing instruments are informational problems, policy commitment and credibility, governance, international contract enforcement issues and, in general, moral hazard. In the absence of macro-market securities that could improve international risk sharing, it would be expected that

international institutions mandated to help ensure global financial stability through risk sharing would have developed effective mechanisms to protect countries against severe shocks. Such has not been the case thus far, although the recent development of the IMF's Flexible Credit Line (FCL), with qualifying restrictions, is a promising start for promoting further progress in international risk sharing. Perhaps improvements in governance and improved representations in these international institutions could accelerate the strengthening of international risk sharing.

Given the slow pace of giving consideration to risk-sharing macro-market instruments, states are left to develop institutions that mitigate or spread risk. These include developing policy credibility, reputation for fiscal prudence, low debt-to-GDP ratios, low fiscal deficits, monetary policy that leaves room for flexibility while being highly credible with anchoring inflation expectations, macro-prudential regulations, as well as structural policies that allow rapid adjustment in wages and prices. All these measures afford countries a strong degree of resilience and the capacity to absorb and cope with, at least, temporary shocks. This was demonstrated in the response of the emerging markets – after the lessons of the 1997-1999 crises – to the 2007/2008 global financial crises (Sheng, 2009). Countries can also attempt to spread their exposure to shocks by developing strong equity markets open to foreign investors, limiting external borrowing to that denominated in domestic currency, accumulating substantial foreign reserves and developing ways and means of investing them in foreign asset markets via active institutions such as sovereign wealth funds to allow diversification of sources of income, trade openness, encouraging long-term foreign direct investment and maintaining exchange rate flexibility. Countries, especially small open economies, can also form monetary unions. Membership in such unions can help strengthen resilience to a number of shocks. However, such gains come with an accompanying loss of flexibility in policy making (particularly monetary policy). This constraint may at times be unhelpful to countries facing shocks, as has been demonstrated lately by the dire circumstances faced by a number of members of the Eurozone.

4. Government policy and risk sharing

Government is the ultimate risk manager in society. It could be even argued that in contemporary societies, risk management is a central role of government. The span of this function covers risks to international and domestic security to the risk of contagion from communicable diseases. This spectrum of government risk management policy could be considered as a series of responses to shortcomings on the part of the market and non-governmental sector to correct risk-related failures. If one considers a catalogue of government risk management responsibilities, a great many would be in response to the kind of failures pervasive in contemporary 'free-market' economies. As noted above, neoclassical theory suggests that in well-functioning free market economies, with complete contingent markets or with complete Arrow securities, risk would be optimally shared among market participants according to their risk-bearing ability. Such an economy would develop markets where all kinds of risks would be traded. In a society with such a well-functioning economy, government would play a minimal role. In the absence of such attributes, however, risk-related failures can render economic relations and transactions dysfunctional. In contemporary 'free market' economies, even in some of the richest, complete markets for risk do not exist. For example, while a homeowner can buy insurance against the risk of fire damage to a residential dwelling, there is no market for trading the risk of decline in home prices. Nor is there a market to trade risk to allow the purchase of protection against unforeseen shocks to citizens' livelihood. The fact that well-functioning markets for these risks, and a wide array of others, are unavailable signals that the collective wellbeing of many societies may be at much less than full potential.

Appreciation of the distinction between risks that are specific to an individual consumer, household, or firm (idiosyncratic risks) and those that are highly correlated across all participants in the economy (systematic risk, aggregate risk) is crucial for risk management. Sometimes what is an idiosyncratic risk for one individual or firm may be systematic for another. What would be an idiosyncratic risk to a major internationally active bank may become systematic for a small bank in a

given locality in the same country. For a firm operating in a local community as the only monopoly employer, its idiosyncratic risk will be systematic for the community. Various types of market failure make the private market for risk bearing less than optimal. In principle, government interventions could potentially increase market efficiency. In practice, however, there are cases where intervention in the form of insurance against risk raises the possibility of government (on behalf of the public) assuming risk of losses and the private sector capturing the gains. Such is the case, for example, with deposit guarantees in a fractional reserve banking system. It is thought that aside from the famous moral hazard problem and the 'too big to fail' issue, there is also the distributional impact of such interventions. Deposit insurance, intended to reduce the risk of bank runs and protect the payment system, raises more questions about redistribution than its efficiency implications. It is argued that it is "the managers and stockholders of high-flying deposit institutions that force deposit insurers into funding their plays at subsidized interest rates, and politicians and government officials whose jobs are made more comfortable" (Kane, 1989, p. 177 and quoted in Wright, 1993). In addition, deposit insurance, it is argued,

> "favors large depositors (the old and/or the rich) over taxpayers to the extent that it increases yield on insured deposits. To the extent that it lowers the costs of loans, deposit insurance is presumably capitalized in the value of fixed and quasi-fixed assets financed, such as existing houses, land, other real estate, and other capital. Persons who own such assets, generally citizens who are older and richer and have more political clout than the average taxpayer, profit when government policies become more generous. The government should be active in protecting the public. Governments set and enforce fire codes, teach fire safety, and prosecute arson. They should perform similar functions in banking" (Wright, 1993).

However by providing deposit insurance, "government has accomplished the equivalent of relaxing the fire codes by subsidizing insurance and encouraging people to play with matches" (Wright, 1993), words that were written 15 years before the onslaught of the global financial crisis.

In most economies, governments play a major role in bearing risk on behalf of their citizens. For example, governments have provided social

safety nets, measures and insurance for a variety of financial transactions. The justification for government intervention spans more than a century, as economists attempted to explain the role as necessitated by the divergence between public and private interests. Some six decades ago Arrow and Debreu (1954) focused on finding precise conditions under which public and private interests would converge as envisioned in a conception of Adam Smith's invisible-hand conjecture. The result was an elegant proof that competitive markets would indeed have a stable equilibrium provided some stringent conditions were met. It was clear, however, that even under the best of prevailing conditions, markets did not perform as envisioned either by Smith or Arrow-Debreu. Consideration of violations of the underlying conditions spawned voluminous literature on the theory and empirics of market failure. This concept became the starting point of analytic reasoning that justifies government's intervention in the economy to protect the public interest (Stiglitz, 1993). The reason that contemporary societies implement social safety nets, such as social security, health care and public unemployment insurance programs, is that individual households face substantial risk over their lifetimes, which includes mortality risk, wage and other income-related risks, and health risks. Because private insurance markets do not provide perfect insurance against all risks, there is said to be a market failure and government intervention is called for to correct it. What has become clear in the wake of the global financial crisis is that even in the most advanced industrial economies, existing social safety nets are incapable of coping with the adverse consequences of the crisis. Not only has the crisis shaken previous levels of confidence in markets, but also nearly all analyses attribute it to market failure in one dimension or another. This has intensified calls for government interventions to counter the adverse effects of the crisis on income and employment, to strengthen social safety nets and to reform the financial sector. The most important lesson of the crisis has been that people carry too large a risk of exposure to massive shocks originating in events that are beyond their influence and control. Hence, attention has been focused on ways and means of expanding collective risk sharing.

Heretofore, it has been assumed that government intervention, in the form of activities such as providing social safety nets, public goods and deposit insurance, was solely for the purpose of addressing various kinds of market failure. While this is a crucial justification for intervention, there is an important dimension of government's role that has not attracted much attention. Much of these activities in provision of a social safety net, from a minimal amount in some countries to substantial amounts in welfare states, are also about collective risk sharing. This dimension has been particularly neglected in the analysis of government provision of social insurance and services, with the focus on the trade-off between equity and efficiency – the debate at the heart of state intervention. In this debate the focus on distortions caused by taxation to finance these activities neglect to consider what taxes are financing in a particular society. One important risk-sharing use of taxes is in the area of transfer payments or automatic stabilisers intended to provide a cushion to citizens' consumption should they be affected by the adverse consequences of shocks. Automatic stabilisers work without any discretionary government decisions. For this reason alone, there is no automatic way these safety net measures can differentiate between temporary or persistent (permanent) shocks. While the former tends to help stabilise the economy, the latter can create fragility in the fiscal positions of government in the medium or long term. This places an emphasis on the appropriate design, eligibility criteria and on the alternative ways and means of addressing consequences of more permanent shocks.

Some have argued that government risk-sharing schemes to mitigate the adverse effects of shocks to income are akin to insurance and as such they raise the issue of moral hazard. Additionally, it is argued, they have adverse incentive effect in that they reduce labour supply. The standard argument is that while more equity can be achieved through redistribution, using taxes and transfers, it comes at the cost of reduced efficiency because it will adversely affect the incentive to work. A number of studies (Andersen, 2008; 2010; 2011; Sinn, 1995; 1996; Hoynes and Luttmer, 2010) argue that this is too simplistic. Consider a simple example where the tax system imposes a proportional tax on

income. The tax is then used to provide a lump-sum transfer. In this example, those earning a high income are taxed to finance lump-sum transfers to low-income earners. This is an ex post redistributive system but is an ex ante income-risk reduction device to the potential recipients. This implies that a tax-redistribution risk-sharing scheme has an insurance effect that runs counter to the incentive effect, raising the possibility that such a scheme may lead to a larger, rather than smaller, labour supply effect as the former may dominate the latter (Andersen, 2011). One of the strongest risk-sharing programs is investment in human capital through free education financed by taxes. These programs allow society as a whole to share the risk involved in educating its younger members. Investment in human capital through education is known to have two important characteristics. First, since human capital is an important driver of growth, there is a substantial pay-off to society in the medium to long term in terms of tax payment and higher productivity. Second, it is also known that this pay-off is at least as large as, if not larger than, investment in equity markets (Judd, 2000). Since in the absence of free education some households, if not most, will be resource constrained to finance higher education, private financing may mean that society's potential human capital is not utilised efficiently, leading to lower productivity, thus, lower average income.

The theoretical literature suggests that in most economies the potential for risk sharing within, between and among countries remains under exploited, leading to substantial loss of welfare. Much of the financial activities are interest rate-based, thus forcing financial transactions into a credit-debtor relationship with its own peculiarities, requirements and constraints. Hence, a large portion of productive activities remains finance constrained; examples are small and medium size firms, the rural poor and non-banked communities everywhere, as well as individuals and very small firms in the informal economy. Largely due to the non-existence or incomplete availability of insurance, these segments of the economy are exposed to idiosyncratic and systematic risks. In the case of SMEs (microfinance discussed earlier), finance constraint is one among a number of other regulations, such as access to markets, which for the most part are designed for incorporated

businesses that have access to a capital market, and taxation codes. However, so long as the financial constraint is binding, resolving other issues, while important, would be of little help. The major source of finance for SMEs is the banking system that provides external funding for these firms (Levitsky, 1986; World Bank, 2010). Banks, however, prefer to deal with large transactions because of the high costs of risk appraisal, processing and monitoring. It is also argued that because SMEs do not provide sufficient information and their operations tend to be opaque, there is a risk of moral hazard due to information asymmetry, which leads banks to charge a high-risk premium (Beck, 2007). On the other hand, substantial benefits are claimed for encouraging relaxation of finance constraints for these firms. These include social benefits that accrue due to growth, entrepreneurship, private sector development, job creation and improved income and wealth distribution (Levy, 1993; Beck, 2007). A number of government policies and instruments have been used to create improved risk-sharing environments for SMEs. These measures have been targeted to the supply and demand side of the market as well as to the financial sector (Levy, 1993; Helmsing and Kolstee, 1993; Tan, 2009; World Bank, 2008; Beck *et al*., 2008; World Bank, 2010; Duan *et al*., 2009).

In the course of the last three decades, there has been increasing concern as to the ability of governments to cope with severe fiscal constraints. Concerns have also been expressed regarding the relative efficiency of governments in providing public services. Thus governments have been pressured to find alternative ways and means of delivering public services through partnerships with the private sector. Outsourcing is one example where government's traditional functions of procurement, provision of public goods and provision of services have been relegated to the private sector. A risk-sharing instrument that has been popular with many governments over the last two decades has been public-private partnerships (PPPs). This concept refers to a cooperative venture between governments and the private sector in which risks and returns are shared through a long-term contract whereby "the private sector becomes involved in financing, designing, constructing, owning or operating public facilities or services" (Hodge, 2004). In every one of

these functions there are risks (Hambros Bank Ltd., 1995). The effectiveness of a given PPP depends much on the degree to which risks are shared. Case studies have demonstrated that in a number of projects throughout the world, risks have been shifted to one side, mostly to governments, or transferred rather than shared (Ball *et al*., 2003; Greve, 2003; Hodge, 2002; Osborne, 2001; Perrot and Chatelus, 2000; Berg *et al*., 2000; Canadian Council for PPPs, 1997; Collin, 1998; Ishigami, 1995; Jacobson, 1998; Savoie, 1999; Lawson, 1997; Bracey and Moldovan, 2006). When there is no risk sharing and there are losses, the government bears the costs but the gains accrue to the private sector. Provided that risk-sharing contracts are designed such that risks are allocated consistent with both the market conditions and expectations, and are transparent and flexible enough to allow both the government and private sector partners to deal with external shocks, PPPs have the potential to benefit the parties involved as well as society at large. These benefits may well include efficiency gains, improved value for money and greater government fiscal sustainability.

5. Islamic finance and risk sharing: the role of public policy

Up to this point, we have discussed risk sharing within the conventional environment of finance, but now we turn to the role of government in conducting public policy, particularly monetary and fiscal policy, in promoting risk sharing and, simultaneously, increasing the effectiveness of monetary policy while creating greater fiscal space and a more stable macroeconomic environment (Askari *et al*., 2011; Debrun and Kapoor, 2010; Duval *et al*., 2006). As mentioned earlier, empirical evidence suggests that the vast potential opportunities for risk-sharing existing within, between and among countries remain unexploited, suggesting a lower level of human welfare. A government can do much to improve this situation, as it has powers not available to the private sector. For one thing, in its capacity as the risk manager for society and as its agent, it can promote risk-sharing broadly by removing many of the barriers impeding it. It can reduce informational problems, such as moral

hazard and adverse selection through its potentially vast investigative, monitoring and enforcement capabilities. Through its power of implementation of 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 internalize them by imposing stiff liabilities or taxes. Using its power to tax and to control the money supply, a government has the ability to make credible commitments on current and future financing. It can use its power to tax to create an incentive structure for intergenerational risk sharing, whereby the proceeds from taxation of the current income-earning generation is redistributed to reduce risks to human capital formation of the youth of current and future generations. Without government intervention, individuals are unable to diversify the risk to their most valuable asset – their human capital. The young have significant human capital but insufficient financial capital. For the old, on the other hand, the case is the opposite. As Robert Merton (1984) suggested, trade is possible between these generations but laws prohibit trade in human capital (except through wage employment), the young cannot make credible commitment of their human capital through private contracts. There is no possibility for private contracts to commit future generations to current risk-sharing arrangements. This, in effect, represents another case of commitment failure. Using its powers of taxation and spending, unparalleled monitoring and enforcing capabilities and its control of the money supply, a government can effectively address these issues. No private entity can credibly commit not to default on an obligation as a government can.

One of the most promising instruments that would allow governments to improve risk sharing is the category of instruments called ‘macro-market’ securities that can allow people to mitigate risks to their income and countries to enhance international risk sharing (Shiller, 1993a; 1993b). While there are now ways and means available in many economies that allow protection against idiosyncratic and systematic risks, evidence suggests that much of individuals’ incomes are still exposed to considerable risk. Even in rich economies where a wide array

of instruments of risk mitigation are available, the most important instrument of risk sharing being the equity market, a significant portion (about 90 percent in the USA) of "an average person's income is sensitive to sectoral, occupational, and geographic uncertainty" (Athanasoulis *et al.*, 1999). Moreover, these macro-market instruments could be used to hedge risks of a country's economy by investing in other nations' macro-market instruments. For example, in a macro-market for a given economy, an investor could buy a long-term claim on that economy's national income. Such an instrument would represent a claim much like a share in a corporation. Prices of these instruments in the macro-markets would fluctuate as new information about national and international economic developments becomes available, similar to what happens when new information regarding corporate profits becomes available in equity markets (Athanasoulis *et al.*, 1999; Shiller, 2003). These instruments can be effective means of improving inequalities of income within and among nations and allow faster international convergence. They would also facilitate inter-generational risk sharing. Such instruments issued by governments can also have the benefit of replacing government debt instruments that, while advantageous in terms of risk sharing, have adverse impact on income distribution because they mostly benefit already wealthy bondholders (Floden, 2000).

Turning to Islamic finance, the foundation of the belief that such a system facilitates real sector activities through risk sharing has its epistemological roots firmly in the Quran, specifically, verse 275 of chapter 2 (Mirakhor, 2011a; Mirakhor and Smolo, 2011). This verse, in part, ordains that all economic and financial transactions are conducted via contracts of exchange (*al-Bay'*) and not through interest-based debt contracts (*al-Riba*). Since in this verse the contract of exchange appears first and before the reference to banning debt-based contracts, it is reasonable to argue that requiring that contracts be based on exchange constitutes a necessary condition for a permissible contract. Based on the same logic, the requirement of 'no *riba*' constitutes the sufficient condition of contracts. The necessary condition (*al-Bay'*) and sufficient condition ('no *riba*') must be met for a contract to be considered Islamic compliant. Classical Arabic lexicons of the Quran define contracts of

exchange (*al-Bay'*) as contracts involving exchange of property whereby there are expectations of gains and probability of losses (Mirakhor, 2010), implying that there are risks in the transaction. By entering into contracts of exchange, parties improve their welfare by exchanging the risks of economic activities, thus allowing division of labour and specialisation. Conceptually, there is a difference between risk taking and risk sharing. The former is antecedent to the latter. An entrepreneur has to first decide to undertake the risk associated with a real sector project before financing is sought. In non-barter exchange, it is at the point of financing where risk sharing materialises or fails to do so. The risk of the project does not change as it enters the financial sector seeking financing. Not clarifying this distinction has led to a confusion that the two concepts are one and the same. In the contemporary economy, at the point of financing, risk may be shared but it can also be transferred or shifted. The essence of financial intermediation is the ability of financial institutions to transfer risk. All institutional arrangements within the financial sector of contemporary economies are mostly geared to facilitate this function. One of the chief characteristics of the 2007/2008 global crises was the fact that many financial institutions shifted the risk of losses but internalised the gains from their operations. Hence, the concept of "privatized gains and socialized losses" (Sheng, 2009). Another related confusion is between an underlying real sector contract and the instrument that financially empowers that contract. All contracts (*'uqud*) that have reached us originate in the real sector and all are permissible risk-sharing contracts (Mirakhor, 2010). However, a given instrument designed to finance any one of these contracts may be permissible from a *fiqh* point of view, in that it meets the sufficient condition of 'no *riba*', but fails to meet the necessary condition of risk sharing.

Risk sharing serves one of the most important desiderata of Islam: the unity of mankind. Islam is a rules-based system, where a network of prescribed rules governs the socio-economic-political life of society (Mirakhor *et al.*, 2009; Mirakhor and Askari, 2010). Compliance with these rules renders the society a union of mutual support by requiring humans to share the risks of life (Mirakhor, 2010). Risk sharing intensifies human interaction. This was a powerful argument in favour of

globalisation. It was asserted that trade and financial integration increase interaction among peoples resulting in a greater degree of familiarity, which facilitates risk sharing. Feedback processes triggered by integration create a virtuous cycle leading ultimately to a 'global village'. As mentioned earlier, however, empirical research provides evidence of the failure of financial integration to achieve the hoped-for degree of risk sharing. The dizzying pace of financial innovations in the several decades prior to the crisis created opportunities and instruments of risk shifting – where risks were shifted to investors, borrowers, depositors and, ultimately, to taxpayers (Sheng, 2009) – rather than risk sharing. The financial sector became increasingly decoupled from the real sector with the growth of the former outpacing that of the latter by double-digit multiples (Epstein, 2006; Mirakhor, 2010; Menkhoff and Tolksdorf, 2001). Emergence of a crisis was inevitable since it was the real sector that had to validate the mountain of debt sitting on top of a relatively small hill of real output. Ultimately, much wealth was destroyed, many people became unemployed and substantial fiscal costs were imposed on governments and taxpayers the world over. The slow progress of conventional finance to promote risk sharing provides Islamic finance with a valuable opportunity as an alternative system on the global level.

Theoretically, the operational requirements of Islamic finance are: (i) transparency, trust and faithfulness to terms and conditions of contracts; (ii) a close relationship between finance and the real sector activities such that the rate of return to the latter determines that of the former; (iii) asset/liability risk matching; (iv) a coordinated asset/liability maturity structure; (v) asset/liability value matching such that the value of both sides of the balance sheet moves simultaneously and in the same direction in response to changes in asset prices; and (vi) limitations on credit expansion and leverage. It has been demonstrated that such a system would be stable and capable of generating employment, income and growth (Askari *et al*., 2012). This implies that the litmus test of the usefulness of Islamic finance would be its ability to induce growth and reduce poverty through its chief characteristic, risk sharing. Islam ordains risk sharing through three main venues: (i) contracts of exchange; (ii) redistribution and transfer payment programs, and (iii) risk sharing with

the future generation via rules of inheritance. The full spectrum of instruments of such a financial system would be expected to run the gamut from short-term, liquid and low-risk financing of trade contracts to long-term financing of real sector investment. At the lower end, the spectrum would provide financing of sales and purchases of produced products to allow greater production, and thus, a greater employment of resources. At the higher end, it would provide financing for planned production in the future, with all financing through risk sharing contracts (Mirakhor, 2010). Such a system would leave no room for pure financial transactions, i.e., financial activities with no relations to the real sector of the economy. There would be non-interest rate-based debt contracts, such as '*duyun*' and *Qardh Hassan*, but their main purpose would be to facilitate consumption smoothing for those experiencing liquidity and other idiosyncratic shocks.

The evolution of Islamic finance thus far points to its development as a new asset class intended to remedy a market failure in conventional finance to develop instruments demanded by Muslim investors. Rooted in conventional finance, the practitioner-designers of this new asset class had to design instruments that resembled those prevalent in the host system without violating the 'no-*riba*' sufficient condition. More often than not the relationship of these instruments to the real sector has been one of a 'marriage of convenience' where out of necessity a backward linkage was created between the instrument and the 'book' purchase of a real product. A large number of conventional instruments were thus reverse-engineered, retrofitted and re-designed. Demand-driven energies of financiers and financial engineers were thus focused on the design of instruments that served the lower-end of the spectrum: low-risk, short-term and liquid instruments. These have been generally large-denomination securities placed mostly in the wholesale markets. They have not been available in the secondary retail markets to serve the risk hedging needs of ordinary households and firms. Very few are of sufficiently high quality to meet the liquidity needs of the market. Those that are of high quality are bought and held. Many of the *sukuk* with tenuous, or at best weak, relations to the real sector suffer from opacity, lack of clarity and legal certainty in their contract design, formation and

operation. Moreover, there is the problem of asset concentration in both the short-term and the medium-to-long-term maturities. In the case of the former, assets are concentrated in *murabaha*-type contracts while in the case of the latter they are concentrated in real estate. Additionally, there is the more worrisome question of uncertainty created by the lack of clarity regarding the existence of speedy resolution and workout mechanisms that are compatible with *shariah* law. Without concerted efforts aimed at the development of the high-end of the spectrum of Islamic financial instruments, there is the real possibility of the emergence and persistence of a path-dependent process whereby the industry continues churning out more – albeit in greater variety for branding purposes – of the same types of instruments. After all, finance is familiar with the theory of 'spanning', the idea that an infinite number of instruments can be 'spanned' out of one basic instrument. This theory served as the foundation of the development of the derivative market. The mushrooming of low-risk, short-term and highly liquid instruments may well be a signal that the same process is at work in the Islamic finance industry (Mirakhor, 2010).

For Islamic finance to achieve its objectives, development of medium-to-long-term risk-sharing instruments is an imperative. Given the track record of the industry thus far, it appears unlikely that the industry by itself will produce such instruments. This is a clear case of market failure justifying governments' affirmative action to motivate progress. Earlier discussion focused on the enormous and unique power of government as society's agent and risk manager. If and when convinced of the need to intervene, government action can generate enough incentives to kick-start a process of energising the private sector's progress toward adopting risk-sharing instruments. A government itself has substantial incentive to do so. As a first step, a government could design medium-to-long-term instruments of risk sharing to finance its own development budget. A typical emerging market or developing country devotes 30 to 40 percent of its budget to development expenditures financed by taxes and/or domestic and external borrowing. Domestic government debt, something that could serve risk-sharing purposes, has an adverse impact on income distribution. Externally

funded government debt represents leakages out of the economy, worsens income distribution and exposes the economy to the risk of 'sudden stop'. Issuing an equity instrument based on the portfolio of domestic development projects has none of these problems and it has the added advantage of improving domestic income distribution. Provided that these instruments are issued in low denominations sold in the retail market, these instruments can serve households and firms in their attempts to hedge their idiosyncratic risks. In essence, they would be macro-market instruments similar to those proposed by Shiller. These instruments could anchor the development of the high-end of the spectrum.

Governments could also develop a second risk-sharing instrument to finance the remainder of the budget. This instrument could be a perpetual security (consol) whose rate of return would be a function of the growth of the national income of the country, or tied to the rate of return in the real sector of the economy. A government, as an agent of the citizenry, could commit on their behalf to service such an instrument. They again would have the same beneficial effects provided that these securities are also in low denominations and sold in the retail market. Moreover, a government could use these securities, which would resemble equity shares in a corporation, to convert its debt into what are risk-sharing instruments, thus achieving a far greater fiscal space. Importantly, these securities could be utilised as instruments of monetary policy replacing interest rate-based government bonds. Since banks and financial institutions anchor the asset and liabilities sides of their balance sheet on the central bank's overnight rates, so long as these rates are determined by interest rates, the portfolio of the banking system, as well as the rest of the financial sector, are anchored to interest rates even if the entire banking system becomes Islamic. Elsewhere it has been argued that using the described instruments to signal the private sector can invest significant potency in monetary policy and its transmission mechanism. There are other benefits of these instruments (Mirakhor, 2010). These instruments can also be utilised in improving international risk sharing as other governments and investors buy them to diversify their own risks. Such securities will also provide greater vitality to equity markets. As

part of governance structures of issuance and use of proceeds from these instruments, strengthened legislative or parliamentary oversight could enhance the credibility of these instruments.

6. Conclusions

The financial crisis of 2007/2008 has had a serious economic impact with its fallout still reverberating around the world. The aftermath of the crisis has created events that only a few years ago would have been thought unthinkable, including the downgrading of America's triple A rating, threats to the Eurozone, Brazil's suggestion that emerging markets and developing countries should help bail out Western economies, China's reported interest in buying Italian debt, Switzerland trying to ward off financial inflows, and, most importantly, the possibility of sovereign debt default in a number of Western European economies. While analysts have suggested a number of possible causes of the crisis, the most credible seems to be the growing uncertainty regarding the regime of interest-based debt financing that has been the centrepiece of the conventional financial structure and recurring financial crises (Mirakhor *et al*., 2012).

A Reinhart and Rogoff (2009) study indicates that all crises of the past have been, at their core, debt crises, regardless of whether they were labelled as 'currency' or 'banking' crises. It is now estimated that the richest members of the G20 will have debt-to-GDP ratios of around 120 percent sometime in 2014. It is also estimated that there are about $200 trillion of paper securities in the global economy of which $150 trillion are interest rate-based debt instruments (Rogoff, 2011). In comparison, total global GDP was optimistically estimated at $65 trillion for 2011, growing at about 3 percent per annum. It is difficult to envision how the global GDP, representing the world's productive capacity, can validate this mountain of debt? This has led to regime uncertainty and the underlying belief that continued shifting and transfer of risk with interest rate-based instruments is not serving the collective welfare. The search should be on for an alternative regime, and risk sharing has been shown

to be an efficient replacement. However, it has also been demonstrated that private markets do not have a track record inspiring hope in their willingness to develop risk-sharing markets. This circumstance suggests a market failure justifying government intervention.

Over the past two decades, there has been an important call for the development of instruments, so-called 'macro-market' securities, that could promote collective and individual risk sharing (Shiller, 1993a; 1993b). Globalisation was expected to improve international and domestic risk sharing. Empirical research has demonstrated a sizeable failure in this regard. Governments have enormous potential for intervention to promote risk sharing, as they are the ultimate risk managers of their societies. Their power to tax, spend and enforce gives them not only the necessary clout but also the ability to make credible commitments on behalf of their societies as their agent. They can use this capacity to issue securities that allow households and firms to mitigate their idiosyncratic risks against which they are not insured. These instruments can also allow countries to share their risks by expanding opportunities for international risk sharing. What has become disappointingly clear is that, even in the richest societies, public policy-generated means of protecting people against the risk of shocks, over which they have no control but which affect their livelihood significantly, have been woefully inadequate. Macro-market securities can provide significant opportunity to individuals, households, firms and countries to mitigate the adverse consequences of shocks through diversification.

The foundation of Islamic finance, i.e., risk sharing, presents an alternative to the present interest rate-based debt-financing regime that has brought individual and global economies to the verge of collapse. In this paper we continue the earlier discussions in this *Review* on Islamic finance (Askari and Krichene, 2014; Askari *et al*., 2014) to extend the idea of risk sharing to fiscal and monetary policies. It argues that through risk sharing instruments, governments can reduce the fiscal burden, expand fiscal space and strengthen governance through involvement of citizens in directly financing development expenditure. The proposal is worth considering by economies under a heavy debt burden, including European countries (Mirakhor, 2011a).

The core principle of Islamic finance is risk sharing. As a young industry it has *not* managed to develop truly risk-sharing instruments that would allow individuals, households and firms, as well as whole economies, to mitigate systematic and un-systematic risks. Nor is there any sense of direction that could compel an expectation that such developments are on the horizon. We suggest that governments could issue macro-market instruments that could provide them with a significant source of non-interest rate-based financing while promoting risk sharing, provided that these securities meet three conditions: (i) they are low in denomination; (ii) sold on the retail market; and (iii) have a strong governance/oversight structure. Moreover, given the growing evidence across the world that the mechanism of monetary policy may be impaired, it is suggested that these government issued securities could impart significant potency to monetary policy. Finally, we should also consider the present problem facing Europe and the global economy. Much of the debate has been focused on 'haircuts' for the private sector banks and 'bail out' resources from the European Central Bank and the countries of Western Europe. As many have noted, this will only 'kick the can down the road' and add more debt on top of a mountain of debt. Could macro-market instruments such as those discussed in this paper help mitigate the risk of sovereign default threatening the global economy? Consider the possibility of a macro-market instrument that could be issued jointly by the IMF, with additional resources provided by some members of the G20, with its rate of return tied to the growth of global GDP. This could give immediate relief to the countries at risk of sovereign default, allow the economies of these countries fiscal and growth space and remove the threat to the global banking and financial system.

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