



ON THE GROWTH AND STABILITY OF RISK SHARING BASED ISLAMIC FINANCE

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*The study is an expansion of the base papers by Abbas Mirakhor and Mughees Shaukat (2012, 2013) and by Mughees Shaukat, Abbas Mirakhor and Nouredine Krichene (2012, 2013).

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Abstract

Evidence has been mounting that the interest-based debt financing regime is under increasing distress. Evidence also suggests that the financial crises, whatever title they carried - exchange rate crisis or banking crisis – have been debt related crises in essence. At present, data suggest that the debt-to-GDP ratio of the richest members of the G-20 is expected to reach 120% mark by 2014. There is also evidence that out of securities worth US\$ 200 trillion in the global economy, no less than three-fourth represent interest-based debt. It is difficult to see how this massive debt volume can be validated by the underlying productive capacity of the global economy. This picture becomes more alarming considering the anemic state of global economic growth. There is great uncertainty with regard to interest rates. Although policy-driven interest rates are near-zero level, there is no assurance that they will not rise as the risk and inflation premia become significant. Hence, a more serious financial crisis may be in the offing and a general collapse of asset prices may occur. This paper argues that the survival of the interest-based debt regime is becoming less tenable, as is the process of financialization that has accompanied the growth of global finance over the last four decades. The above has

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resulted in an unprecedented increase in economic risks; generating (adverse) non-linearities in system's behavior. Such a behavior is nothing but a demonstration of the verse, "Allah obliterates riba" of the Quran. As a result, the search is on for a paradigm shift towards a less volatile and more resilient financing regime. The paper proposes risk sharing based Islamic financing as suitable alternative and also demonstrates empirically its better growth and stability characteristics by using advanced dynamic heterogeneous panel techniques.

Keywords: Financial fragility, Financialization, Black Swans, Islamic finance, Risk-Sharing, Institutional and incentive structure, Dynamic Heterogeneous Panel Techniques.

INTRODUCTION

At a time when the global economy is suffering from a crisis of confidence, structural imbalances, large fiscal deficits, too easy money policies, high inflation and unemployment, and subdued growth prospects, a growing sense of uncertainty prevailing world over is palpable. Evidence has been mounting that the interest based debt financing regime is under ever increasing distress. It has been shown that crises whatever label they carried— exchange rate crisis or banking crisis — have been debt-related crises (Reinhart and Rogoff, 2009). Empirical research suggests that debt-to-GDP ratio of the richest members of the G-20 will reach 120% mark by 2014 while by 2020 the U.S. and other major European centers would amass a ratio of at least 150%, with Japan and U.K. going to 300% and 200% respectively. Even more disconcerting is the projected interest rate paths on their debts which would increase from 5% to 10% in all cases, and as high as 27% in U.K (BIS, 2010). Moreover, there is also evidence that out of securities worth \$200 trillion in the global economy, no less than three-fourth represent interest based debt (Rogoff, 2011). This picture becomes more alarming when it is realized that the growth of the global economy is anemic at best while the interest rate on debt is sure to exceed the rate of growth of global GDP for the foreseeable future. According to the World Bank, global GDP is projected to increase 2.5% in 2012, with growth accelerating to 3% and 3.3% in 2013 and 2014 (World Bank, 2012).

Fiscal austerity measures taken as remedial response are further weakening growth and employment prospects, making fiscal adjustment and the repair of financial sector balance sheets all the more challenging. With still rapidly

building debt, excessive fiscal deficits, massive unemployment, and falling real-incomes uncertainty has increased regarding how economies, capital markets, and international trade and finance will evolve. Likely scenarios of hyperinflation or prolonged stagflation cannot be discarded easily. Policies appear to be locked into the same regimes of near-zero interest rates, negative real interest rates, and rapidly rising public and private debt that led to the economic and financial collapse earlier. Stock markets and housing markets are going through renewed bubbles fuelled only by credit multiplication and near zero interest rates.¹ Exchange rates are highly unpredictable. In Europe, concerns and uncertainty about the institutional integrity of the eurozone – key to the architecture of modern Europe – continue to mount.

The World Bank in its latest report on Global Economic Prospects, 2012 suggests that Banking-sector deleveraging is cutting into growth and developing country capital flows, faced with rising funding costs, increased counter-party risk assessments, deteriorating bank-asset-quality, and growing concerns over the adequacy of capitalization. Even if the threat of a full-blown crisis is somehow averted, elevated fiscal deficits and debts and the very loose monetary policies being pursued in the high-income world, proposes that for the next several years the external environment for both developed and developing economies is likely to remain characterized by volatile capital flows and unsettled business sentiment. As a result, it is becoming harder to gauge the impact of the constant surge in financial market

¹ The U.S. Federal Reserve has been implementing most unorthodox money policy in the U.S. history of money printing and credit creation at near-zero interest rate under the so-called quantitative easing programs.

turmoil on the real sector of the economy, but it is almost certain to be negative. How negative is extremely uncertain. This uncertainty extends to the stability and sustainability of the international economic and financial system, based on interest bearing debt financing. As a result, the search is on for a paradigm shift towards a less volatile and more resilient financing regime¹. The main objective of the study is to propose that Islamic finance, based on its chief characteristics of “Risk Sharing” and “no Riba” provides such an alternative to the present crises-ridden conventional finance.

To achieve the given objective, the first two sections of the study aims at providing an understanding of the underlying causes that make the present system inherently unstable and susceptible to recurring crises. It will be argued that the cardinal cause that necessarily directs the system towards disorder and chaos via increased uncertainty is its interest-based debt financing mechanism. The result is an intensification of the process of ‘financialization’: causing a decoupling of the financial and the real sectors where the former appears to have taken an independent identity. The risks to global economy has increased so much that the system has become extremely fragile and sensitive to ‘black swan’ events. It will be argued that such outcomes are a clear demonstration of part of the verse 276 of chapter 2 of Al-Quran. Section three then puts forward the idea of risk sharing based financing, as the Islamic finance alternative.

¹For further evidence on the ongoing search for a more stable economic alternative, see Richard Heinberg, Transition Networks, The Centre for the Advancement of a Steady State Economy, Positive Money, Breakthrough Capitalism, and the New Economics Foundation, among many other international organizations, all exploring ways to create more understanding and strategies for necessary and urgent change.

While analytically advocating the proposed regime, the study empirically demonstrates its better growth and stability characteristics in section four. Section five concludes the study.

To start the discussion, we begin section II by first briefly exploring what ‘financial instability’ is and consequently connoting interest bearing debt as the chief culprit in generating instability.

2. Financial Instability

Of the major policy goals in economics, maintaining overall stability in the system is second to none in importance. Maintaining financial stability is all the more crucial because of the dominant position the sector occupies in modern economies. However, economies across the globe have witnessed periods of financial instability much more than spans of stability especially after the 1970s. The 2007-2008 financial turmoil has added much to the urgency of the issue as explained in section I. Today dealing with instability has become the top concern for economic policy makers. However, what stability is and when instability replaces it is a ticklish question to answer. Perhaps it is easier to depict the notion of stability by pointing out what is instability?

Riksbank (2012) has chosen to define financial instability as the inability of the financial system to maintain its basic functions¹ and the lack of strength to resist disruptions that

¹Among the chief fundamental functions of the financial system are mediating payments, converting savings into funding, and managing risk.

threaten these functions¹. A good example is a credit crunch, where access to credit shrinks relative to demand, because the banks are, for example, unable to fund their lending. To the Reserve Bank of Australia–RBA (2012), financial instability simply is the lack of ability of a business to meet its debts as they fall due. In support of this explanation, Mirakhor and Krichene (2008) too associate financial instability with notions of default, arrears, or insolvency. The result is a material disruption of the intermediation process with potentially damaging implications for the real economy. In line with the above, Belouafi (2012: 5) suggests that among the indicators of instability in the financial system, the main ones are as follows:

The shocks that hit the financial sector have serious consequences in the functioning of the real sector and the financial system as a whole.

The financial system is unable to perform its basic roles of allocating resources and risks, mobilization of savings, and facilitating wealth accumulation, development, and growth.

The ability of the financial system to limit, contain, and deal with the emergence of imbalances is either absent or constrained. “In a well-functioning and stable financial system, the above could be served in part through self-

¹The definition of resilience varies with regard to the different parts of the financial system. Furthermore, what constitutes resilience against disruptions threatening the functioning of the system (e.g. that the economy is suddenly weaker than expected or a large bank suffers losses that threaten its survival) is a question of judgment that has many dimensions. This can involve, for instance, how much capital there is in the banks, and how good their liquidity is, as well as how vulnerable the financial payment infrastructure is.

corrective, market-disciplining mechanisms that create resilience and prevent problems from festering and growing into system-wide risks and economic downturns”.

It appears however, that the dynamics of present financial system, with its (inherent) ability to create worrisome economic turbulence, has made the task of overcoming financial instability increasingly difficult if not impossible. According to Chapra (2007) the arguments of efficiency and stability in favor of the interest based system, as opposed to an interest free system, seems to have been substantially weakened by the crises it constantly experience. According to one estimate, there have been more than 100 crises over the last four decades (Stiglitz, 2010: 54, see also IMF, 2008). Consequently, the system calls for scrutinizing the reason(s) which necessitate such (recurring) instability.

2.1. Interest-Based Debt as the Underlying Cause

Over the past few decades, a consensus had emerged suggesting that expansion of credit and debt is detrimental to the stability of developed as well as developing economies (Mirakhor and Krichene, 2008). Mirakhor and Bacha (2012) argue that regardless of where these crises originate from, whether developed or developing country, they all seem to have a single root cause, (interest bearing) debt. With high debts interest payments also increase, thus increasing both the burden and servicing of debt. Evidence surveyed in many studies showed that every economic and financial crisis was preceded by an expansion of credit (e.g. Fisher, 1933). Askari et al. (2012: 3) argue that the financial system is inherently unstable, often shaken by periodic crisis and require massive bailouts for essentially two

reasons: (i) it is a Debt and interest-based system; and (ii) it creates excessive debt and leveraging through credit multiplier (see also Hasan, 2011b) while being backed by some form of government guarantee to reduce liquidity crisis and bank failures. Debt— that is the transfer of risk— and fixed interest rate they argue is at the foundation of financial crisis in the past and will likely continue to do so in the future, unless a radical change in the financial structure is introduced.

In the modern banking system, a bank can simply create credit ex-nihilo by simply crediting the account of its customer for the amount of credit. An often sighted cause is the implication of credit and the ability of banks to create an inverted debt pyramid—through credit multiplier a ‘house of cards’, to such a degree that it becomes vulnerable to even small shocks, such as changes in expectations of entrepreneurs or the collapse of a speculative bubble in a stock or housing market. In fact the banks have a great ability to multiply credit and attain excessive leverage in relation to their capital or reserve basis, since credit is created by a stroke of pen. Theoretically, credit may expand in relation to created deposits according to the reserve requirements ratio. If a bank creates a credit of US\$ 1,000 and if the reserve requirement ratio is five percent, then total money creation is equal to US\$ 20,000 – a multiple of 201

¹The credit ratio has varied from country to country, demonstrating the ability for banks to create multiple loans. Before the recent crisis, the credit to GDP ratio stood at 254 percent for Japan, 223 percent for US, 164 percent in UK, 108 percent in Norway and 128percent and 122percent in Thailand and Korea (Askari et al. 2010 ; Mauldin and Tepper, 2011 and IMF, 2010). The higher the ratio of credit in comparison to the underlying capital and income levels, the higher the probability of default.

(see Askari et al., 2010, 2012). Such credit becomes deposits for the borrower, on which it may issue orders for payments. Since, every bank does the same thing, credit expansion can be very fast, and credit far exceeds real savings in the economy. The excess of credit over savings is called fictitious credit by Henry Thornton (1802). It is called counterfeiting by Allais (1999). Askari et al., (2010) suggests that “It is not the expansion of credit as such that leads to an economic bust but the expansion of credit out of thin air, since it is through un-backed credit that real savings are diverted from productive activities to non-productive activities, which in turn weakens the process of real wealth expansion”.

Excess credit creates price inflation and forces savings upon workers and fixed income households when price of staples increase considerably. Among the features relating to the ‘interest’ is its unique status and sensitivity as a ‘price’; making the maintenance of its ‘appropriate’ level¹ a very difficult, if not impossible task to attain. Stiglitz (1989) explains: “the interest rate is not like a conventional price. It is a promise to pay an amount in the future. Promises are often broken. If they were not, there would be no issue in determining credit worthiness”. He further suggests that raising the rate of interest may not increase the expected return to a loan; at higher interest rates one obtains a lower quality set of applicants (the adverse selection effect) and

¹ A level that makes the economy grow, for quite a lengthy period of time, without booms and busts. It should be noted, here, that the concern is not normal business fluctuations relating to the ups and downs of the real economy, but rather the ‘abnormal’ episodes that the economies suffer from as a result of the financial turbulences (see Belouafi, 2012).

each applicant undertakes greater risks (the adverse incentive effect). “These effects are sufficiently strong that the net return may be lowered as the bank increases the interest rate characterized by credit rationing”. Buiter (2009) went further by stating that debt, characterized by fixed financial commitments, can be a poor financing choice in a risky, uncertain world where the private and social costs of default are high.

Similar doubts about the sustainability of a system based on the interest bearing debt financing had been expressed by John Maynard Keynes and later by Maurice Allais (1999) among others. Focusing on the interest rate mechanism, Keynes in as early as 1930s in his book *The General Theory of Employment, Interest and Money* (1936) argued that market capitalism, if left to it-self, would create two major problems. These are (i) poor income and wealth distribution and (ii) the fact that this system is incapable of creating full employment. A major cause of these problems, he asserted, was the interest rate mechanism which constituted “the villain of piece” (see Mirakhor and Krichene, 2009). Keynes solution was the “euthanasia of rentier” by socializing financial resources through which financial capital would be provided for investment without the intermediation of the rent seeking class of the money lenders. Keynes’s claims of poor income and wealth distribution could be further validated by a recent study which showed how high leverage and crises can arise as a result of changes in the income distribution (Kumhof and Ranciere, 2010). The authors empirically showed that the periods 1920-1929 and 1983-2008 both exhibited a large increase in the income

share of the rich, a large increase in leverage for the remainder, and an eventual financial and real crisis.

Much earlier, Karl Marx (1867, 1885 and 1894) had already put forward his understanding of the innate fragility of capitalism. While recognizing that the system may create economic growth, Marx argued that the growth will never be sustainable and the system will collapse on its own; taking back much more than what it gave. Hayek, (1945) contented that it is the price setting of money i.e. the interest rate and the manipulation of it by the policy makers that is at the root of generating crisis.

Nevertheless, to Schumpeter though, the ensuing instability is an essential part of the creative process of capitalism, by which capitalism develops new products and new institutions. Schumpeter famously termed such instability as ‘creative destruction’. Janeway (2012) in his book ‘Doing Capitalism in the Innovation Economy’ argues that the ‘Innovation Economy’ is driven by financial speculation and this is part of the Schumpeterian creative process of capitalism. “Occasionally, decisively, the object of speculation is the financial representation of one of those fundamental technological innovations – canals, railroads, electrification, automobiles, airplanes, computers, the internet – the deployment of which at scale transforms the market economy and indeed creates a ‘new economy’ from the wreckage of the financial bubble that attended its birth” (see also Keen, 2012). While Schumpeter was fond of role of technology in driving capitalism, Minsky (1986, 1992) considered the financial instability to be endogenous to a conventional financial system. An adherent of Keynes, Minsky was influenced by Keynes’ notion of the fundamental instability

of market expectation as well as Schumpeter's notion that capitalism renews itself through competition and innovation—"Creative destruction". While putting forward his 'Financial Instability Hypothesis' (FIH), Minsky (1992), focused upon the tendency for the instability to lead to excessive debt and, ultimately, a Depression. Minsky hence concluded that the destructive instability was endemic to capitalism, as much as the creative instability was, because finance necessarily had to be destabilizing. "Finance's destructive tendencies arise because we let the banks finance Ponzi schemes -- bubbles in real estate and shares -- that add to debt without adding to the capacity of society to finance that debt" (Keen, 2012).

The result is an increasing trend of 'financialization' in the global economy; leading to increased non-linearity and fragility of the financial system.

2.3. Financialization of the Global Economy

Scholarship has argued that the ensuing credit expansion has contributed to the financialization of the economy¹ (Shaukat et al., 2013). To Askari et al., (2012: xii), "when risk transfer is combined with high leverage, the growth of interest-based debt contracts and their pure financial derivatives—those with little or no connection to real assets—outpace the growth of the real sector leaving the liabilities in the economy a large multiple of real assets needed to validate them. This phenomenon has been coined as "financial decoupling" or "financialization", whereby

¹ See also Epstein (2002), Askari et al., (2011, 2012), Hasan (2008, 2010a, b, 2011a, b) and Mirakhor (2010, 2011a).

finance is no longer anchored to the real sector”. Argitis (2010) has termed it as a wave of ‘Neo-liberalism’; suggesting that policy structure has increased the share of national income and profits going to rentiers, bankers and other groups of financial capitalists. Consequently, it has become more a ‘rentier economy’ than ‘value addition economy’ (Bogle, 2012).

A crucial feature of financialization has been an increase in the volume of debt via proliferation of unregulated intermediaries and rapid expansion in trading of derivatives (Askari et al 2012; Hasan 2010b). With very low interest rates, speculators, in search of yield, engineer structured products to increase monetary returns and play games against each other. As a result, trading in derivatives has also soared. According to Bogle (2012: 6), “trading in S&P 500-linked futures totaled more than \$60 trillion in 2011, five times the S&P 500 index total market capitalization of \$12.5 trillion. The credit default swaps alone had a notional value of \$33 trillion. Add to this total a slew of other derivatives, whose notional value as 2012 began totaled a cool \$708 trillion. All this in comparison to \$150 trillion: the aggregate capitalization of the world’s stock and bond markets”. The loss of J P Morgan of about US\$ 5.8 billion in July 2012 is a gain of hedge funds who bought its structured products.

The above developments validate the presence of what the noble laureate James Tobin (1984) termed as ‘paper economy’. Tobin (1984) suggests “we are throwing more and more of our resources into financial activities remote from the production of goods and services, into activities that generate high private rewards disproportionate to their

social productivity: a ‘paper economy’, facilitating speculation which is short-sighted and inefficient” (see also Mirakhor and Bacha, 2013). Bogle (2012: 4-5), in his latest book titled “The Clash of Cultures: Investment v/s Speculation”, has described this unprecedented surge in financialization and speculation as Capitalism’s ‘mission aborted’.

“The general mission of the markets was/is capital formation, involving allocation of investment capital to most promising industries and companies, both existing and upcoming. However, out of \$33 trillion stock trading in financial markets, only 0.8% or \$250 billion of the financial activities fulfill the original mission and the rest 99.2% or \$32.73 trillion, some 130 times the volume of equity capital, aborts it”.

Bogle (2012) further argues that the increased financialization has made the world of investment move from a culture of long term to shorttermism. There is hence a further blurring of the difference between investment and speculation. Hans Tietmier, the former President of Bundesbank, warned in international fora that “financial decoupling” was increasing the risks in global finance, (Menkoff and Tolksorf, 2001). These warnings were not attended to and consequences followed (Epstein, 2006). According to Turner (2012), both economic history and theory make it close to certain that we could not have achieved the economic transformations of the last 200 years without the development of modern financial systems. It is hence argued that financial deepening has an important role to play in the economic development process. However, the fact that ‘financial deepening’, is beneficial across some range of increasing financial intensity, does not mean that it is limitlessly good.

The above can be supported by a recent study, (Cecchetti and Kharroubi, 2012) that investigated ‘if finance really good for growth’, regardless of the size and growth of the financial sector? For an answer, the authors came to two important conclusions. First, with finance you can have too much of a good thing. At low levels, an increase in the size of the financial sector accelerates growth of productivity. But “there comes a point - one that many advanced economies passed long ago - where more banking and more credit are associated with lower growth.” Second that when the financial sector accounted for more than 3.5% of total employment, further development of finance tended to damage economic growth¹. Consequently, the study stressed to a pressing need to reassess the relationship of finance and real growth in modern economic systems. Already, financialization has oriented the economies from a saving-investment-production-export to a borrowing-debt-consumption-import orientation (Askari et al., 2012). To Rajan (2005), such dynamics have indeed made the world more risky and the system in turn has become highly sensitive to register events that can be termed as the ‘black swan’ events (Taleb, 2007/2012a).

2.4. The Black Swans and the Non-Linear² destructive Debt Dynamics

¹The study also contended that finance, literally bids rocket scientists away from the satellite industry”. It competes for people with high qualifications as well as for buildings and equipment. “The result is that people who might have become scientists, who in another age dreamt of curing cancer or flying to Mars, today dream of becoming hedge fund managers”. See also Sheng (2009) and Caldentey and Vernengo (2010) for similar conclusions as well as for the effects of such developments.

²In ‘Nonlinear dynamics’, the systems that depict non-linearity may be thought of as any collection of parts whose interactions and connections are described by

When risks become high, so does the lack of ability to understand, control and mitigate the risks. This is a situation where risks get transformed into their stronger cases of ‘uncertainty’ and ‘ambiguity’. Frank Knight explained that, at times, decisions are made based on available probability distribution of expected events. This is decision making under risk. Unlike risk however, uncertainty describes a situation where a known probability distribution is not available but it is still possible to make decisions with some subjective estimates of probability of outcomes of actions or decisions (Knight, 1921). In the 1960s this view was modified to cover circumstances under which human cognitive ability and information availability are so constrained that even subjective assessment of outcomes was not possible. Ambiguity arises under such circumstances where the intensity of “ignorance” can create paralysis in the decision making (Ellsberg, 1961; Erbas and Mirakhor, 2007 and Mirakhor and Shaukat, 2012). The result is an ideal recipe for the occurrence of those events which were deemed as highly improbable or never occurring. As a result an important concept has been added to the economic vernacular; termed as ‘Black Swan’ events. Taleb (2007/2010) the inventor of the term refers to them as those events which (i) usually lie outside the realm of regular

nonlinear rules or equations. That is to say, the equations' variables may be multiplied together, raised to powers, and so on. As a consequence the system's parts are not necessarily linked in a proportional manner as they are, for example, in a bathroom scale or a thermometer; doubling the magnitude of one part will not double that of another—nor will outputs be proportional to inputs. Not surprisingly, trying to predict the precise long-term behavior of such systems is often futile (see Paulos, 2003: 172-174).

expectations, because nothing in the past can convincingly point to its possibility. As a result, the probability of the occurrence of such events is extremely low (ii) even though they have a low probability of occurrence, however, when they do occur, the events carry an extreme impact (iii) lastly, in spite of its outlier status, human nature makes us concoct explanations for its occurrence after the fact, making it explainable and predictable.

Recently, the global system has experienced events that would have been thought of as low probability events not long ago. These include, inter alia, the down grading of U.S from its 'AAA' rating, the looming collapse of the much hailed Eurozone, the effort by Switzerland to convince the world that Swiss franc is not a safe haven, the Brazilian suggestion of bailout of advanced economy by emerging markets, China's contemplation of buying Italy's debt, and the Libor rate fixing. Cyprus's provocation of removing deposit guarantees on certain amounts of deposits. The list can go on. However, looming in the back ground of the present uncertainties in the global economy, there is a potential event termed as "the mother of all black swans" the effects of which may be chaotic to global economy: contagion-riddled events of sovereign default.

It can be observed that the occurrence of black swans and non-linearity of the debt dynamics is a pure demonstration of the Quranic concept of "YAMHAQ". Allah swt tells us about the debt dynamics in Verse 276 of Chapter 2 of the Quran: "Yamhaqhu Allah o arRibawaYurbiasSadaqat" (Allah swt annuls, obliterates arRiba and increases Sadaqat). The part that is most relevant here is the first part of the verse "Yamhaqhu Allah o arRiba". Reference, for example,

to Al-Mu'jam Al-Waseet, Maqayees al-Lughah and Mufradaat al-Quran reveals that “Yamhaq” that makes the ‘Mahq’ of riba meansto Decrease, to Destroy completely, to take away the blessings from a thing, to negate or cancel out the positive impact of a thing, or to erase suddenly. It is thus a state of sudden and rapid decline, with the speed of destruction picking up acceleration (Shaukat, 2013).

In order to give evidence of the adverse and non-linear debt dynamics, that is to signify the Quranic ‘Mahq’ in full operation in the global economy, the findings of Reinhart and Rogoff (2008, 2009a, b, 2010a, b, 2011, 2012) and Kaminsky and Reinhart, (1999) put forward among the most finely textured, historical, analysis of the financial crisis¹. The data covers seventy countries in across all regions. The range of variables encompasses external and domestic debt, trade, GNP, inflation, exchange rates, interest rates, and commodity prices. The coverage spans eight centuries, going back to the date of independence or well into the colonial period for some countries. The authors showed that crises whatever label they carried– exchange rate crisis or banking crisis – have been at root debt crises (Reinhart and Rogoff, 2009).

¹The authors introduced a comprehensive new historical database for studying banking crises, inflation, currency crashes and debasements –unsurprisingly, currency and inflation crisis go hand in hand. Default through inflation has been more prevalent since World War I, as fiat money became the norm and links to gold eroded. Median inflation rates before World War I were well below those of the more recent period: 0.5 percent for 1500–1799 and 0.7 percent for 1800–1913 versus about 5 percent for 1914–2009 (see Reinhart and Rogoff, 2011).

The authors refers to the non-linearity of such consequences as the “Deadly Ds”: Sharp economic ‘downturns’ follow banking crises; with government revenues dragged down, fiscal ‘deficits’ worsen; deficits lead to more ‘debt’; as debt piles up rating ‘downgrades’¹ follow and ‘defaults’ ensue; the result of a vicious ‘debt circle’ (see also Mauldin and Tepper, 2011). The studies revealed that three years after a financial crisis, central government debt increases, on average, by about 86 percent; implying that the fiscal burden of banking crisis extends far beyond the common cost of the bailouts. Moreover, real housing price declines average 35 percent, stretching out over six years. Equity price collapses on average 56 percent with the downturn spanning around 4 years.

Similarly profound are the unemployment rates which rises an average of 7 percent, lasting over four years. In some cases these unemployment levels reach as high as in the range of 20percent to over 50percent including youth unemployment. Such scenarios are presently pervasive in a number of European centers, for example, the case of PIIGS nations² (Table 2.1). Real GDP per capita falls (from peak to trough) an average of over 9 percent or more, the duration of the downturn averages at least two-three years and production levels decline exponentially.

¹For a detailed discussion –based on historical evidence– on how a debt defaults translates into increasing country risk and eventually rating downgrades see Reinhart et al., (2003).

²Eurozone as a whole has an unemployment rate of 12% (World Economic Report, 2013).

Table 2.1: Source: Author's own

Country	Youth Unemployment (Jan 2012)	Overall Unemployment (Jan 2012)
Greece	55%	26%
Spain	50%	26.5%
Italy	32%	9%
Portugal	35%	15%
Ireland	32%	15%

In another study, Reinhart et al., (2012) demonstrates the large adverse impact of debt overhang on economic growth. A study of 26 episodes of past overhangs revealed that: (i) the duration of an average overhang episode is 23 years; (ii) during the overhang period, growth declines by 1 percent over the period; and (iii) the loss of growth and the long duration of the overhang imply “that cumulative shortfall in output from debt overhang is potentially massive¹” (see also Mirakhor et al, 2012). Moreover, Arcand et al., (2012) while using different empirical approaches also showed that there can indeed be “too much” finance. In particular, similar to Reinhart and Rogoff (2011), their results suggested that finance starts having a negative effect on output growth when credit to the private sector reaches on average 60%-100% of GDP. However, Reinhart et al., (2003) while introducing the concept of ‘debt intolerance’– which manifests itself in the extreme duress many economies

¹Russia's default following the revolution holds the record, lasting 69 years. Greece's default in 1826 shut it out from international capital markets for 53 consecutive years, while Honduras's 1873 default had a comparable duration (see Reinhart and Rogoff, 2011).

experience at seemingly manageable debt— argue that "safe" external debt-to-GDP thresholds for debt intolerant countries could be as low as 15 percent.

However, as stated earlier, the present debt-to-GDP ratio of the richest members of the G-20 threatens to touch the mark of 120%-300% with interest rates on debts projected to be as high as 27% (BIS, 2010). The picture becomes more disconcerting when the ensuing disequilibrium is realized. While the global GDP is growing at 3%, the debt is increasing at 7%. It would take 24 years for the global GDP to double itself while a mere 10 years for the global debt to get twice as large. It is difficult to imagine how this massive debt volume can be validated by the underlying productive capacity of the global economy.

Thus far the search for ways and means of reducing the instability of the interest-based debt system has focused only on improving regulatory/supervisory structure and few reforms of financial system. Much less effort has been devoted to finding an alternative paradigm. Question arises as to whether there is such an alternative to the present dominant global finance system. Perhaps a more practical alternative would be to step back from targeting the interest rate mechanism and focus on the incentive structure that has rendered the interest rate based debt financing such a destabilizing force in the global system. This can be accomplished by reorienting the system from relying on risk transfer and risk shifting to risk sharing- the essence of Islamic finance.

3-Islamic Finance is Risk Sharing¹ and a Rule-Based System

Driven by the Quran and the Sunnah, the Islamic economic system is risk sharing and a rules-based system. There is network of prescribed rules that governs the socio-economic-political life of the society. Compliance with these rules renders the society a union of mutual support by requiring humans to share the risks of life (Mirakhor, 2011c). The adoption of these set of rules are expected to lead to a dynamic and growing economy, without which the higher objectives of Islam cannot be achieved (Khan and Mirakhor, 1994). The objective of Islamic finance is to promote sustained growth and full employment thus contributing positively to poverty alleviation and, ultimately, to economic and social justice. The epistemological root of risk sharing, as the organizing principle of the Islamic financial system, is discernible from chapter 2 verse 275 of the Quran. This verse, in part, decrees that all economic and financial transactions are conducted via contracts of exchange (al-bay') and not through interest-based debt contracts (al-riba). It can be argued that risk sharing – the crux of Islamic finance – serves as one of the most important desiderata of Islam i.e. the unity of mankind. Since in the Verse the contract of exchange appears first and the prohibition of riba thereafter, it can be argued that requiring contracts to be based on exchange constitutes a necessary condition and “no-riba” the sufficient condition of existence of an Islamic financial system. Together, these conditions constitute the organizing principle of that system (Mirakhor and Shaukat, 2012, 2013). The

¹ For a more detailed vision of the Islamic alternative financial system, see Askari et. al (2012).

necessary condition (al-bay') and sufficient condition (no riba) must be met for a contract to be considered Islamic. "A careful consideration of all the permissible contract modes that have reached us reveals them to be basically risk sharing contracts. The instruments designed to financially empower them must also be risk sharing instruments" (Mirakhor, 2010, 2011a, b).

Classical Arabic Lexicons of the Qur'an define contracts of exchange (al-bay') as contracts involving exchange of property rights claims in which there are expectations of gains and probability of losses (Mirakhor, 2010; 2011a, b).¹ There are no predetermined fixed ex-ante returns (Shaukat and Mirakhor, 2012, 2013). By entering into contracts of exchange, parties improve their welfare by exchanging the risks of economic undertakings, thus allowing division of labour and specialization (see Mirakhor, 2011a). The understanding of al-bay', the exchange of one set of property rights claim for another, as the necessary and "no-riba" as the sufficient condition has important implications. Exchange requires the freedom to contract for the parties involved and this implies freedom to produce, which then calls for well-protected property rights to allow and facilitate production. For exchange to take place, there is a need for markets and then for rules that govern behaviour of market participants. Rules need enforcement and regulation to keep the flow of information smooth thus reducing transaction costs.

¹ See also, for example, Al-Tahqiq Fi Kalamat Al-Quran Al-Karim; Lisan Al-Arab; Mufradat Alfaz Al Quran, Arabic Lexicon, among others. These sources define al-bay' as "mubadalati al-maali bi al-maal." In English this can be rendered as "the exchange of one set of property rights claim for another."

Over the past three decades an important field of enquiry has developed in economics, called the 'New Institutional Economics' (NIE), that has made significant contribution to understanding how economic system function. Most importantly, the NIE has focused on reasons why some economies perform strongly while others lag behind with substantial margins. The reasons, the NIE explains is the "institutional scaffolding" of the economy. NIE defines institutions as rules and norms governing economic behavior in the society. Accordingly how well the economy performs depends crucially on the rules governing economic behavior. Principles among these are: rule of law, well defined property rights, and a high degree of trust, efficient contract enforcement, and good governance. An economic expertise-dominated view of the relevant verses of the Quran reveals a comprehensive set of rules governing the structure and operations of an economy; including rules that extend well beyond what the NIE would consider needed for a well-functioning economy. The Quran makes clear that the compliance with the prescribed rules is the guarantor of: better socio economic justice and cohesion, unity and order in any human collectivity and economic growth and stability (see for example chapter 5 verse 2; chapter 3 verse 103; chapter 8 verse 46). The promise made in the verse 96 of chapter 7 of the Quran (see also chapter 65 verse 2; chapter 65 verse 3; chapter 5 verse 65-66; chapter 12 verse 90; chapter 5 verse 66; chapter 8 verse 53; chapter 10 verse 9; chapter 2 verse 25; chapter 16 verse 97; chapter 24 verse 55; chapter 40 verse 40). Conversely all prohibited behavior are

those that ultimately lead to social injustice and disintegration¹ (see Shaukat et al. 2014/15).

3.1. Islamic finance and Equity financing

Considering the aspects of an Islamic financial system based on risk sharing, where there is no room for any return that is determined ex-ante to the contractual outcomes, independent of any profit or loss, the system becomes one that is based on no risk free assets, where all the financial assets are contingent claims (Mirakhor and Krichene, 2009). It can be stated that shares or equity issues of corporations appear to best fit the criteria. In a typical risk sharing arrangement such as equity finance, parties share the risk as well as the rewards of a contract. Assets are invested in remunerative trade and production activities. The return to assets are not known at the instant assets are invested, and is therefore a random variable making equities risky. In equity investment, the income is random and depends on the performance of the equity investment. To Mirakhor and Krichene (2008), unlike a debt contract, shares of common stock of open corporations are not redeemable and the payoffs are contingent upon a certain state of occurrence; Akin to Arrow-Debreu securities. They are “proportionate claims on the pay offs of all future states” (Fama and Jense, 1983). “The notion of Arrow-Debreu securities is built on Adam Smith’s idea of a decentralized market economy, supporting optimal risk sharing” Mirkahor (2010, 2011a, b). Thus, contingent payoff, non-redeemability, and risk

¹ For a detailed discussion on the Quranic rules for an Economy see, for example, Shaukat et al. (2014/2015).

sharing are characteristics that distinguish a sharing contract from a debt contract.

Risk sharing via equity financing is not novel to economic endeavors¹. Historical accounts suggest that equity financing has been a centuries old phenomenon in the Muslim world as well as in Europe of the Middle Ages. Enterprises were established with share ownership and were recorded as share owned or anonymous enterprise. Among the most used instruments were the ‘mudaraba’ and ‘musharaka’ partnership contracts. Borrowed from the Muslims and later came to be known as ‘Commenda’ and ‘Maona’, such financing modes were commonly used for financing long-term trade and investment in Western Europe (Brouwer 2005; Udovitch, 1970 and 1967). Further historical research submit that Commenda’s contribution to industrial development of Ruhr Valley in Germany and in building railroads in Europe were particularly pronounced” (Mirkahor, 2010: 13). Mirakhor (2003) while sighting the Goitein (1954, 1955, 1962, 1964, 1967) examination of Geniza records suggest that (i) trade in Middle Ages was both extensive and intensive, financed by risk sharing partnerships; (ii) partnerships were used in industrial, commercial and public administrative projects; (iii) trade were largely not based on cash benefits or legal guarantees, but on the human qualities, mutual trust and friendship. Given the recent times, venture capital firms in the Silicon

¹ For a detailed Historical account of risk sharing based financing, see Askari et al., (2012) “ Risk sharing in Finance: The Islamic finance alternative”. John Wiley & sons.

Valley of the U.S are reaping enormous benefits from risk sharing/equity based financing¹.

It is often argued from those who favour debt financing that the unprecedented development particularly in the last fifty years is essentially an outcome of the capitalistic system, based on interest bearing debt financing. “To them the reduction, let alone elimination, of debt financing and bank money creation would reduce economic growth” (Askari et al., 2012). The latter is an empirical issue that needs careful estimation alongside considering the social cost and benefits under such a regime. However, while not denying the development and overlooking the aspect of sustainable development, question arises as to how much of the ensuing development has only been through debt financing. It can be safely argued that most of the advances that seemed to have changed the dynamics of the world—particularly in the technological arena—have been through risk sharing modes than debt financing (see Shaukat, 2013 and Taleb, 2012). To Askari et al., (2012), “much of the assumed contributions of finance over the last 30 or so years, and thus debt financing and leverage, have only been a mirage”, given also the pro tax and legal support. In Quran, Allah has ordained the believers, not to get

¹ According to Cybercities (2008), in 2008, Silicon Valley was the third largest high-tech centre (cyber-city) in the United States, behind the New York metropolitan area and Washington metropolitan area, with 225,300 high-tech jobs. The Bay Area as a whole however, of which Silicon Valley is a part, ranked first with 387,000 high-tech jobs. Silicon Valley has the highest concentration of high-tech workers of any metropolitan area, with 285.9 out of every 1,000 private-sector workers. Silicon Valley has the highest average high-tech salary at \$144,800. [Cybercities 2008: An Overview of the High-Technology Industry in the Nation's Top 60 Cities].

discouraged by the apparent well-being of the non-believers (see chapter 43 verse 33-35).

While highlighting the growth benefits of a system predominantly based on equity financing, Toutouchian (2002) asserts that the world could have indeed seen much more growth and development had it resorted more on equity financing. Einaudi (2006) and Turner (2012) suggest “A modern market economy needs financial contracts. In theory these could all take equity form, and if they did economies would suffer less macroeconomic instability”. Taleb (2012) argues that for a financial system to avoid fragility and the occurrence of black swans, the system needs to get rid of debt financing and resort to equity financing instead. With equity financing all stake holders will have more skin in the game. This would necessarily constrain and even diminish moral hazards and agency problems; aspects that will always be pervasive in a debt based system (see also Hellwig, 1998). Mirakhor and Krichene, (2009) argue that “equity based finance is stable as assets and liabilities adjust to shocks; making the system immune to banking crisis and disruptions in payments mechanism”.

3.2. Islamic Finance a Two Tired System

Based on the above discussions—with risk sharing and no-riba based financing as its chief tenants¹, an Islamic

¹ Although interest-free lending, called ‘qard hassan’, is permitted (see Askari et al., 2010; Mirakhor, 2010, 2011a, b, Askari et al., 2012; Mirakhor et al., 2012 and Mirakhor and Shaukat, 2012, 2013 among others).

financial system can be envisioned as a two-tier financial system¹:

A 100 percent reserve depository and safekeeping banking system for domestic and international payments.

Equity based risk-sharing investment banking that places real saving directly in private or public projects or indirectly via the stock market. Investors are shareholders.

The first sub-system keeps money deposits in trust and settles payments via clearing, withdrawals and other forms of payments. The second part of the system receives savings, which it invests in productive projects or in more liquid investment such as mutual funds or stocks. Depositors receive transferable or marketable shares that enable them to liquidate their investment if they chose to do so. Returns from the funds invested are ex-post and are distributed to the depositors as to the shareholders of equity capital. As a result, they share in profits and losses as well as in capital gains and losses. Islamic capital markets intermediate between saving units and investing units through risk sharing. They would include investment banking, stock markets, mutual funds, exchange-traded funds and other forms of intermediary risk-sharing institutions.

A number of influential scholars², in the past, proposed reforms that would abolish the credit system and replace it by an equity-based investment system. For instance, Walker (1873); von Mises (1953); Carrol (1965), Simons (1948);

¹ For a detailed discussion and demonstration of how the system would operate, see Askari et al., (2010).

² See also Haque and Mirakhor, (1987); Khan and Mirakhor, (1989, 1994); Mirakhor et al., (2012, 2013); Mirakhor and Krichene, (2013) among others.

Friedman (1969) and Rothbard, (1994), opposed fictitious credit creation by banks and favoured the creation of joint stock companies which use savings to buy equities. Among the most celebrated proposals along these lines was the plan formulated in the University of Chicago, 'Chicago Memorandum' in 1933 which called for 100% reserve money and for an equity-based investment system. Irving Fisher (1936) claimed the following advantages for this plan: (i) Much better control of a major source of business cycle fluctuations, sudden increases and contractions of bank credit and of the supply of bank-created money (ii) Complete elimination of bank runs. (iii) Dramatic reduction of the (net) public debt (iv) Dramatic reduction of private debt, as money creation no longer requires simultaneous debt creation. A recent IMF paper titled "the Chicago Plan Revisited", studied the claims made by Fisher and others in favour of the Chicago Plan'. By embedding a comprehensive and carefully calibrated model of the banking system in a DSGE model of the U.S. economy. They found robust support for all of claims made in support of the proposed plan (Benes and Kumhof, 2012). Moreover, Kotlikoff (2010) also made a proposal on similar lines suggesting "Limited Purpose Banking". LBP would essentially transform all financial intermediaries with limited liability into mutual fund companies, with a single regulatory agency the "Federal Financial Authority" taking care of the regulatory and supervisory roles. LBP would maintain a close link between the real and the financial sector where the former will drive the later.

Askari et al. (2012: 11) in their book titled “Risk Sharing in Finance” suggest that:

One way to ensure the stability of the financial system is to eliminate the type of asset-liability risk that threatens the solvency of all the financial institutions, including commercial banks. This requires commercial banks to restrict their activities to two: (i) cash safe keeping; and (ii) investing clients’ money as in mutual fund. Banks would accept deposits for safe keeping only (as, for example, in a system with a 100 percent reserve requirement) and charge a fee for providing this service and for check writing privileges. In their intermediation capacity, banks would identify and analyze investment opportunities and offer them to clients; they would charge a fee for this service much like a traditional investment bank. In this way the bank would not be assuming any asset-liability exposure, just a potential loss of some (but not all) of its capital, which would not endanger the bank’s solvency. In other words, in such a financial system, there would be no debt financing by institutions, only equity financing; and there would be no risk transfer or risk shifting, only risk sharing.

A pivotal feature of the above dynamics is that the Islamic financial system is protected from un-backed credit expansion since banks do not contract interest bearing loans and do not create and destroy money¹. It is thus assumed that in an Islamic bank there will be a maturity match

¹There is no credit creation out of thin air in Islamic finance. However, under conventional fractional reserve banking, deposits at one bank can be instantaneously loaned out or used to purchase a financial asset and become reserves and a basis for a new loan at a second bank. The credit multiplier is determined by the reserve requirement and could be high. In case of securitization and over-leverage, the credit multiplier is theoretically infinite, leading to violent asset and product price fluctuations.

between deposits and investment (with no need for asset and liability management). “Short-term deposits may finance short-term trade operations, with bank purchasing merchandise or raw materials and selling to others companies; liquidity is replenished as proceeds from sales operation are generated. For longer-term investment, longer-term deposits are used” (Askari et al., 2010). There is hence greater interdependence and close relationship between investment and deposit yields, since banks primarily accept investments on the basis of profit-loss sharing. The funds to the enterprise are also provided on the same basis (Khan and Mirakhor, 1994). An Islamic bank is a direct owner of the investment process. It identifies investments opportunities based on due diligence process and evaluates them to minimize risks; participates directly in the management, monitoring and execution of the trade and investment operation (see also Kazem, 1999). The funds are further released for the purchase of goods and services as required for the completion of these operations.

The above dynamics would in turn not only translate into a coordinated asset/liability maturity structure, but the real values of assets and liabilities –of financial institution– would be equal at all points in time such that the value of both sides of the balance sheet move simultaneously and in the same direction in response to changes in asset prices. In addition the prospect of instantaneous equilibrium between the asset and liability sides of the banking system, there would also be asset/liability risk matching. While the individual financial institutions engaged in investment activities face the given risks, in and of themselves, these are not systemic and do not impact the overall stability of the financial system, as this system is immune to speculative

mania, liquidity expansion, and instability of returns. The latter is due to the fact that there is no value or maturity mismatching between assets and liabilities of the institutions. If asset prices decline, so will the liabilities, unlike what happens in a system dominated by interest-based debt contracts¹. “Due to the fact that the returns to liabilities will be a direct function of the asset portfolios and also assets are created in response to investment opportunities in the real sector, the return to financing is removed from the cost side and relegated to the profit side, thus allowing the rate of return to financing to be determined by productivity of the real sector²” (Khan and Mirakhor, 1994). Immediately, the system renders a tight coupling between the financial and the real sectors and the financial sector is found fulfilling its real aim i.e. serving the real sector. It will hence be the rate of return to the real sector drives the economic outcomes.

Given the importance of credit in the Western financial and economic model, if credit supply is constrained by increasing its price i.e. increasing interest rates, then a reverse of the above dynamics is achieved. High interest rates lower investments which in turn lower consumption leading to a build-up in inventories and lowering growth in national output. Fallout is an increase in unemployment. If the decline in employment is more pronounced, consumption and investment decline further which further affects the national output. “In case this decline continues for more than two

¹ It is also to note that since interest rates are an economy-wide variable and therefore systematic, their risk does not get diversified away like other idiosyncratic risks of a stock would. This would also translate into a higher portfolio beta (see Bacha and Mirakhor, 2012).

² As discussed earlier such a notion was also backed by Keynes in the absence of interest rate mechanism.

consecutive quarters, then an economic recession is upon us” (Askari et al., 2010). It can be observed how the dynamics of the economy would change for better if it is driven by the rate of return to the real sector. The economic functioning will be in complete contrast to the present system. As suggested, there would be one to one mapping of both the real and financial sector where the increase in investments, consumption, employment and hence economic growth would be in direct proportion with the increase in the rate of return to the real sector. An ensuing feedback process further adds impetus to the growth cycle.

In consideration of the given growth and stability characteristics of risk sharing based financing, recently, a group of elite Shariah scholars as well as economic experts has passed two ‘Declarations’ (namely the Kuala Lumpur and the Jeddah Declarations) asserting that risk sharing based financing is the only way forward and that financing must move away from debt and rely more and more on equity financing. The declarations further suggested governments (particularly Islamic governments) to essentially adopt risk sharing modes when devising the monetary and fiscal policies. Similar conclusions were reached in IFFS (2013), asserting the adoption of risk sharing and equity financing and less reliance on interest bearing debt.

4.Economic Growth and Stability: Risk sharing based financing: An Empirical Support

In order to seek empirical support for the hypothesis that risk sharing finance promotes better growth and stability better, than interest-based finance, we use production function the tool so frequently used in order to assess the efficacy of

factors claimed as contributing to economic growth. The present study adopts the augmented production function approach as put forward by Cowen and Tabarrok (2011). The basic growth model¹ takes growth in GDP “Y” as a function of capital ‘K’ and labour ‘L’, with ideas/technological shifts ‘A’ as exogenous to the model (see, for example, Solow 1957).

Although the model could explain the differences in economic development based on capital investment and the saving rates, while keeping labour growth constant, nevertheless it failed to fully explain the large magnitudes in the difference of income levels of individual countries. A study by Mankiw et al., (1992) tried to further enhance the explanations for the large differences by introducing the notion of ‘human capital’ in the production function². The

¹The basic growth model takes growth in GDP “Y” as a function of capital ‘K’ and labour ‘L’, with ideas/technological shifts ‘A’ as exogenous to the model (see, for example, Solow 1957). The model is also presented in the Cobb-Douglas formation. The basic model in essence remains the same as in the Solow’s version i.e. $Y = f(K, L)$. However, the main difference between the two is that for the former’s version, there is an addition of ‘ α ’ on both ‘K’ and ‘L’ suggesting the proportion of each variable’s contribution to economic growth (the notion of diminishing return). The given model would then be $Y = A K^{\alpha} L^{1-\alpha}$. Moreover, assuming the labour as constant in an economy, the Cobb-Douglas model has further evolved to its reduced form of $y = A k^{\alpha}$. Nevertheless, Hicks-neutrality’ is the assumption often used by economists to neutralize the effect of ‘ α ’ for each variable (see later).

²“The paper examined whether the Solow growth model is consistent with the international variation in the standard of economic growth and living. It showed that an augmented Solow model that includes accumulation of human as well as physical capital provides an excellent description of cross-country data. The paper also examines the implications of the Solow model for convergence in economic growth and living standards, that is, for whether poor countries tend to grow faster than rich countries. The evidence indicates that, holding population growth and capital accumulation constant, countries converge at about the rate augmented Solow model predicts”. However, while presenting their latest augmented version of the growth model, Cowan and Tabarrok (2011) has argued that the contribution of Mankiw et.

authors suggested that labour's share is not all about payments or return to pure labour, it also represent the payments or return to human capital i.e. the labour which through education takes time to produce. Therefore human capital is ought to be considered a type of capital. Given the assertion, this increases the share of capital in the model and could explain the large differences in incomes. With empirical support, it was emphasized that the saving rates and abundance or lack of capital, which includes the human capital, are at root of explaining the comparative growths. The more capital intensive the economy is, the more the capital accumulation, leading to more savings and hence investments and growth.

As a result, it was argued that the economies with lesser capital stock and human capital can match up to the growth of more developed provided the rate of savings can go up, since the return to capital and human capital is excessive — the notion of convergence hypotheses¹. In theory the process

al., (1992) fall short in fully explaining the reasons necessitating the divergence from the convergence hypotheses. As explained, to Cowan and Tabarrok (2011) more than the lack or abundance of capital and human capital, what importantly derives the best utilization of these basic factors, is the institutional and incentive structure present in an economy. Among these is the financing mechanism in built in an economy. We are grateful to Prof. Dr. Zubair Hasan, for his deduction and perseverance on the relevance of Cowan and Tabarrok's augmented growth model.

¹ Simply put, the idea of convergence in economics (also sometimes known as the catch-up effect) is the hypothesis that poorer economies' per capita incomes will tend to grow at faster rates than richer economies. As a result, all economies should eventually converge in terms of per capita income. Developing countries have the potential to grow at a faster rate than developed countries because diminishing returns (in particular, to capital) are not as strong as in capital-rich countries. Furthermore, poorer countries can replicate the production methods, technologies, and institutions of developed countries. However, It does not explain why in general nations have failed to converge and even had zero growth for many decades (e.g. in Sub-Saharan Africa).

should start naturally as higher rates of return should attract more savings as well as the flow of global capital, increasing capital stock and economic growth. However, evidence fails to fully support the convergence. For instance, the Soviet Union under Stalin saved a higher percentage of national income than the US. Given the higher savings rate as well as a lower level of capital, the Soviet was expected to have caught up very rapidly. However, it did not. The dynamics are found true on most less developed countries. It appears that, in general, the less developed are struggling to catch up to the developed. Indeed, in many cases, the gap is increasing. Moreover, the flow of global capital, on the contrary, is constantly directed towards wealthier nations—even the richer individuals of the poorer regions tend to invest outside. Additionally, there is also a relentless ‘brain drain’ severely tilted towards the more developed parts.

Given these facts, the growth models hence fail to properly explain the reasons necessitating the dynamics. However, a crucial contribution by Cowen and Tabarrok (2011), akin to the findings of NIE, essentially held institutional arrangements and the incentive structures in an economy as the most vital in explaining the above. The authors argued that the convergence hypothesis is a ‘conditional convergence hypotheses’¹: conditioned crucially on the most suitable and efficient institutional and the ensuing incentive structure in the economy. As a result, the theoretical

¹Given the fact that the convergence hypotheses cannot explain as to why economies fail to converge, the notion of ‘conditional convergence’ then identifies the variability in the structural (institutional) characteristics of economies as the key determinant.

perceptions can only be put right provided the right kind of institutional/structural arrangement is assured. This in turn would best determine the way in which the capital and human capital are utilized to the best of economic productivity and growth.

So given the technology as exogenous and available to everyone, it is hence the institutional arrangement and the ensuing incentive structure that lies at the root of explaining comparative growths. The augmented model then stands as below.

$$Y = F(XK, L) \quad (1)$$

Where 'Y' is the output (measured as annual growth in GDP), 'K' is the physical capital and 'L' represents the human capital portion of capital. However, 'X' the authors referred to as the 'productivity' which solely derives the most efficient combination of the factors of production. This, as argued, essentially depends on the right nexus of the institutional and incentive structure provided in an economy¹. Thus

$$\text{Output} = \text{Productivity} \times \text{Factors of production} \quad (2)$$

If such is the importance of having the right institutional arrangement for economic growth, the financing mechanism can then be considered as among the most crucial components

¹ The more suitable the institutional and incentive structure, the higher the effect of 'X', resulting in a more efficient combination of labour and capital.

in the configuration of the required arrangement¹. As a result, this provides justification for the inclusion of financing arrangement as among the variables explaining economic growth in the production function. In the present economic framework, the financing mechanism is governed by interest bearing debt finance. It has been asserted that (nation's) debt plays a significant role in influencing the productivity of labour and capital, hence the economy. However, as can be inferred from the findings of previous sections, debt does not remain a blessing after it gets accumulated beyond a certain limit. In fact, too much of debt can and has dampened growth by hampering investment and productivity. This apparent paradox is the result of what is called as debt overhang (Krugman, 1992). Basically, it implies that if the accumulated debt of a country exceeds or is expected to surpass its repayment ability, expected default will lead to lower domestic and foreign investment with adverse implications for its economic growth.

More specifically, when the debt overhang is such that future increases in output are drained away in the form of

¹ In the earlier sections, the study has already discussed in some detail the whole architecture of institutional arrangement and the ensuing incentive structure provided in an Islamic economic system. However, for the present section, as per the objective of the study, the financing mechanism is the only center of focus. Nevertheless, it is realized that other institutional/structural factors may also have an effect. (Particularly in a pure Islamic economy, see Shaukat et al. 2014/15). However, the measurement of such factors e.g. the institution of sanctity of contracts, the institution of trust in an economy, the protection of property rights and other similar variables, is beyond the scope and objective of the study. The study hence renders the effects of these variables as constant and applicable in the same way in every economy. Perhaps future research can contribute further by the inclusion of the other institutional variables.

higher debt repayments; debt acts like a tax on output. So, larger the debts stock the lower the probability of debt repayment by the borrowing country. The obvious reason is that when greater percentages of any return on investments as well as reserves (foreign currency) are consumed in meeting debt service, creditworthiness erodes causing reduction in economic growth and further access to financial resources. It is further pointed out that when a nation suffers from heavy debt burden, the need to service that debt determines the manner in which labour and capital are exploited in the production process (Hameed et al., 2008).

As a result, debt service can thus be regarded as 'I' in the above function¹. The model² would then suggests economic production as a function of debt burden 'DB', measuring debt service, physical capital 'K' and human capital 'L'.

$$Y = f (DB, K, L) \quad (3)$$

As per the objective of the study, as well as from the evidence presented in earlier sections, it is asserted that unlike interest bearing debt financing, the financing through risk sharing arrangement has all the ingredients to better

¹ Similar framework has been used by Cunningham (1993); Hook (2004); Kappler (2004); Hameed et al., (2008); Loganathan et al., (2010); Haider and Ali (2012) and Umaru et al., (2013) among others. A range of econometrics techniques have been used in the above studies; from multiple regression analysis to times series based Johansen (VECM) co-integration techniques. All the studies support a significant negative relationship between the country's debt burden and economic growth.

² In order to make the production function linear, it is a standard assumption (also used in the given studies) that any technical change is Hicks-neutral i.e. "a change which with given factors proportions, raised the marginal product of labour in the same proportion as the marginal product of capital" (Kennedy and Thriwall, 1972: 20).

influence the growth and productivity of an economy. There are no servicing commitments in form of interest payments which serve as cost to the system. The inclusion of risk sharing based financing in the production function could be best proxied by stock market.

4.1.2. Empirical Tests and Findings

Since it is both a temporal and a cross sectional assessment, with the aim of assessing contribution to growth and stability, the study considers the application of the latest dynamic heterogeneous panel technique as the most appropriate¹. The present study apparently is at the forefront to apply such techniques in assessing the impact of debt burden as well as risk sharing financing via stock market on the economic growth of the selected countries. The results are expected to not only yield the long-term relationship between intended variables viz-a-viz economic growth, but we can also derive an error correction term (ECT) that allows us to study the short run dynamics towards long run equilibrium. The stability of the systems could be judged by observing the speed of adjustments of any short run deviations, back to the long run equilibrium.

4.1.3. Data and Sources of Data

Stock market data from a sample of 18 Islamic countries² is used to assess its role in determining a better and a more

¹ Our Thanks to Prof. Mansor Ibrahim and Prof. Mansur Masih of INCEIF for their positive feedbacks on the results.

² The sample includes: Bahrain, Bangladesh, Egypt, Indonesia, Iran, Jordan, Kuwait, Lebanon, Malaysia, Morocco, Oman, Pakistan, Qatar, Saudi Arabia, Sudan, Tunisia, Turkey, UAE. The given sample was chosen on the argument that if Islamic finance based on risk sharing and no riba can render the economies more growth oriented

stable economic growth. The sample includes countries in which the proportion of population professing Muslim faith exceeded 50% and for which stock market data, as well as data for other intended variables, were available¹. The data is obtained from World Bank, IMF, central bank of each country and Datastream. The data on population and religious fractionalization was sourced from the World Development Report (2012), Central Intelligence Agency (CIA)'s World Fact book (2011). However, data on countries for which the above sources did not record the exact proportion of Muslims in the society was extracted from the Association of Religion Data Archives. The sample comprising of 18 countries is inhabited by nearly a billion people. The yearly data used will cover the time span from 1990 to 2010. Using our sample and given the models, the study will first try and assess the impact of debt burden on the overall economic growth. This would lend more tenable support to our claims of better growth and stability in a risk sharing environment.

4.1.4. Panel Models

The basic framework for panel models is:

$$Y_{it} = \alpha b + \beta_{it} + e_{it}$$

Where $b = 1 \dots 18$ and $t = 1990 \dots 2010$

The models used for the purpose of the study are as below.

and stable, the first best demonstration should be assessed on the group of Islamic countries. The above group represents more than 70% of growth engine of the whole OIC countries.

¹ Effort was made to cover all those countries, given in the latest list of "Stock Exchanges of the OIC member states" (see 'Final report of the sixth meeting of the OIC member states' stock exchange forum", 2012).

MODEL 1

$$\text{LNY}_{it} = \beta_0 + \beta_1 \text{LNS}_{it} + \beta_2 \text{LNN}_{it} + \beta_3 \text{LNXDB}_{it} + \varepsilon_{it}$$

Where ‘LNY’, represents the natural log of GDP per Capita on annual basis, ‘LNS’ is the ratio of GFCF (gross fixed capital formation) to real GDP¹, ‘LNN’ is the annual population growth and ‘LNXDB’ is the above case is the ratio of total debt burden/service on public and publically guaranteed debt to real GDP. ‘ε’ stands for the error term that satisfies the classical regression assumption. The ‘suffix ‘it’ given with each variable stands for the respective country and the given year. For example, LNXDB_{it} represents the total public debt burden for country ‘i’ in year ‘t’.

Independent Variables	Expected relationship
LNS	+ve
LNN	-ve
LNXDB	+/-ve
LNXsm	+/-ve
LNDTM	+/-ve (if positive, an insignificant or lower than 1 coefficient would serve the purpose)

¹Given at steady state, savings equals investments, the study uses GFCF. It is a flow value. Statistically it measures the value of acquisitions of new or existing fixed assets by the business sector, governments and households (excluding their unincorporated enterprises) less disposals of fixed assets. GFCF is a component of the expenditure on GDP, and thus shows something about how much of the new value added in the economy is invested rather than consumed.

As mentioned earlier, since the main objective of the section is to empirically suffice that risk sharing based financing can deliver a more stable and resilient economic order, the above model is then adjusted for introducing stock market as represented by the natural log of the ‘market capitalization to real GDP–LNXsm. To counter for the argument that performance of stock markets is influenced by debt financing—which generates speculation—via the use of debt, for example, through direct bank lending, the study introduces variable ‘LNDTM’– defined as percentage change in the ratio of bank credit to private sector to market capitalization¹. The variable assesses any impact of debt/speculation on stock market dynamics. A coefficient of less than 1 or a negative or insignificant relation would suggest minimum influence of debt financing and vice versa.

MODEL 2

$$\text{LNYit} = \beta_0 + \beta_1 \text{LNSit} + \beta_2 \text{LNNit} + \beta_3 \text{LNXsmit} + \beta_4 \text{LNDTMit} + \varepsilon_{it}$$

The empirical tests will be performed in three steps. First, we test for the order of integration in the time series data. Since the time span of the individual series is relatively short, recently developed panel unit root techniques will be

¹ Assuming that it is only through these channels that debt can influence stock market performance and that all private credit is rendered to stock market. Our thanks to Prof. Dr. Zubair Hasan of INCEIF for introducing the variable ‘LNDTM’. Moreover, to check for the presence of any co-linearity between the variables of model 2 i.e. ‘LNXSM’ and ‘LNDTM’, the study ran the correlation check between them. The correlation was found to be -0.48212.

utilized in order to increase the power of such tests. Second, having established the order of integration in the series, we use heterogeneous panel co-integration test for the long run relationships between the variables in question. Since it is a macro (unbalanced) panel data, to assess the long-run dynamics and the speed of adjustments back to long-run equilibrium, ‘Pool Mean Group’—PMG (Pesaran and Smith, 1995) and ‘Mean Group’—MG (Pesaran, Shin and Smith, 1999) estimators are used for the purpose.

4.2. Heterogeneous Panel Unit Root Test

Panel unit root tests are traditionally used to test for the order of integration (stationarity) in the variables of the data set. It has become well-known that the traditional Augmented Dickey-Fuller (ADF)-type to tests of unit root suffer from the problem of low power in rejecting the null of stationarity of the series, especially for short-spanned data. Recent literature suggests that panel-based unit root tests have higher power than unit root tests based on individual time series. A number of such tests have appeared in the literature. Recent developments in the panel unit root tests include: Levin, Lin and Chu (LLC) (2002), Im, Pesaran and Shin (IPS) (2003), as well as ADF and PP tests proposed by Maddala and Wu (1999) and Choi (2001).

4.2.1. Panel unit root results

The results from the panel unit root test are presented in table 4.1. Given the study is using an unbalanced panel data, the unit root tests that could suffice the purpose best are the ADF and PP as unit root testing. As it can be inferred from table 4.1, the unit-root hypothesis cannot be rejected when

the variables are taken in levels. However, when first differences are used the hypothesis of unit root non-stationary can be rejected safely—mostly at 1% significance level. These results lead us to conclude that our series are characterized as an I (1) process. As a result, we can proceed to the next step and implement the test for panel co-integration.

Table 4.1: Panel Unit Root test

Variables	ADF		PP	
	Level	Diff	Level	Diff
LN _Y	-3.15	-5.56*	-5.33	-6.64*
LN _{XDB}	-2.27	-8.86*	-3.19	-5.33*
LN _{XSM}	-2.16	-2.23*	-6.01	-9.14*
LN _S	-2.79	-5.39*	-4.12	-6.70*
LN _N	-2.77	-3.47*	2.22	-6.33*
LN _{DTM}	-0.017	- 4.39*	-5.00	-7.13*

* Significant at 1% and **, *** significant at 5% and 10% level

4.3. Heterogeneous Panel Co-integration

The study utilizes two types of the heterogeneous panel co-integration test developed by Pedroni (1997, 1999). In addition to using panel and overcoming the problem of relatively small samples, the test permits different individual cross-section effects by allowing for heterogeneity in the intercepts and slopes of the co-integrating equation. Pedroni’s method includes a number of different statistics for the test of

the null of no co-integration in heterogeneous panels¹. The first group of tests is termed “within- dimension”. It includes the panel-v, panel rho(r), which is similar to the Phillips and Perron (1988) test, panel non-parametric (pp) and panel parametric (adf) statistics. The panel non-parametric statistic and the panel parametric statistic are analogous to the single-equation ADF-test. The other group of tests is called “between dimension”. It is comparable to the group mean panel tests of Im et al. (1997). The “between-dimension” tests include three tests: group-rho, group-pp, and group-adf statistics.

The seven of Pedroni’s tests are based on the estimated residuals from the following long run model:

$$y_{it} = \alpha_i + \sum_{j=1}^m \beta_{ji} x_{jit} + \varepsilon_{it} \quad (4)$$

Where $\varepsilon_{it} = \rho_i \varepsilon_{i(t-1)} + w_{it}$ are the estimated residuals from the panel regression. The results in table 4.2 reveal that null hypothesis of absence of co-integration is rejected in both the models.

¹ See Pedroni (2004) for details and mathematical representations of the tests.

Table 4.2: Pedroni’s Heterogeneous Panel Co-integration Test Results
MODEL I

Test Statistics	Value
panel v-stat	-1.58***
panel rho-stat	-5.89*
panel pp-stat	-8.50*
panel adf-stat	-5.56*
group rho-stat	-2.81*
group pp-stat	-6.47*
group adf-stat	-6.31*
*Significant at 1% level and ** , ***Significant at 5% and 10% level	

MODEL II

Test Statistics	Value
panel v-stat	7.86*
panel rho-stat	1.10*
panel pp-stat	3.56**
panel adf-stat	-1.49*
group rho-stat	-4.24**
group pp-stat	9.16*
group adf-stat	3.65*
*Significant at 1% level and **Significant at 5% level	

Although Pedroni’s co-integration methodology allows us to test the presence of the long run relationships, it could not

provide estimation by error correction model. As suggested earlier, to estimate a long-run relationship between the variables in panel framework in presence of co-integration, Pooled Mean Group (PMG) and Mean Group (MG) estimates are applied. STATA 10.0 is used to obtain these estimates.

4.3.1. Pool Mean Group

It allows the intercepts, short-run coefficients and error variances to differ freely across groups, but constrains the long-run coefficients to be similar across groups. It has advantages to determine the long-run and short-run dynamic relationships. Based on a combination of pooling and averaging of coefficients; if the data allows, it estimates the model as a system. The PMG method of estimation occupies an intermediate position between the MG method—both slope and intercepts are allowed to differ across countries—and the fixed effects method where slopes are fixed and the intercepts are allowed to vary. The unrestricted specification for the ARDL system of equations for $t = 1, 2, \dots, T$, time periods and $i = 1, 2, \dots, N$ countries for the dependent variable Y is:

$$y_{it} = \sum_{j=1}^p \lambda_{ij} y_{i,t-j} + \sum_{j=1}^q \gamma'_{ij} x_{i,t-j} + \mu_i + \varepsilon_{it} \quad (5)$$

Where $x_{i,t-j}$ is the $(k \times 1)$ vector of explanatory variables for group i and μ_i represents fixed effect. The model can be re-parametrized as a VECM system:

$$\Delta y_{it} = \theta_i (y_{i,t-1} - \beta'_i x_{i,t-1}) + \sum_{j=1}^{p-1} \gamma_{ij} \Delta y_{i,t-j} + \sum_{j=1}^{q-1} \gamma'_{ij} \Delta x_{i,t-j} + \mu_i + \varepsilon_{it} \quad (6)$$

Where the β_i are the long-run parameters and θ_i are the equilibrium (or error)-correction parameters. The PMG restriction is that the elements of β are common across countries:

$$\Delta y_{it} = \theta_i (y_{i,t-1} - \beta' x_{i,t-1}) + \sum_{j=1}^{p-1} \gamma_{ij} \Delta y_{i,t-j} + \sum_{j=1}^{q-1} \gamma'_{ij} \Delta x_{i,t-j} + \mu_i + \varepsilon_{it} \quad (7)$$

The group-specific short-run coefficients and the common long-run coefficients are computed by the pooled maximum likelihood estimation.

4.3.2. Mean Group.

Mean group is the least restrictive procedure and it allows for heterogeneity of all the parameters (imposes no cross-country restriction). It derives the long-run parameters for the panel from an average of the long-run parameters from autoregressive distribution lag (ARDL) models for individual countries. The MG estimator estimates separate regressions for each country and computing averages of the country-specific coefficients (see for example Evans, 1997; Lee et al., 1997), which will provide consistent estimates of the long-run coefficients. For example if the ARDL is the following:

$$Y_{it} = a_i + \gamma_i Y_{i,t-1} + \beta_i X_{it} + u_{it} \quad (8)$$

For country i , where $i = 1, 2, \dots, N$. The long-run parameter θ_i for country i is:

$$\theta_i = \frac{\beta_i}{1 - \gamma_i} \quad (9)$$

And the MG estimators for the whole panel will be given by:

$$\hat{\theta} = \frac{1}{N} \sum_{i=1}^N \theta_i \quad \hat{a} = \frac{1}{N} \sum_{i=1}^N a_i \quad (10)$$

The assumptions are quite strong – require that the group-specific parameters are distributed independently of the regressors, and the regressors are strictly exogenous. The MG estimates does not take account of the fact that certain parameters may be the same across groups. The MG estimators are consistent and have asymptotic normal distributions for N and T sufficiently large.

4.3.3. Hausman Test

Recall that the PMG estimator constrains the long-run elasticities to be equal across all panels. This pooling across countries yields efficient and consistent estimates when the restrictions are true. Often, however, the hypothesis of slope homogeneity is rejected empirically. If the true model is heterogeneous, the PMG estimates are inconsistent; the MG estimates are consistent in either case. The test of difference in these models is performed with the familiar Hausman test (Hausman, 1978). With respect to the Hausman test, under the null hypothesis of homogeneity, if the parameters are in fact homogenous, the PMG estimates are more efficient than MG. Given the results from the Hausman tests, it concludes to PMG as the true estimator for both the models.

4.3.4. The Error correction term

Consider for example Model (1) of the study:

$$\text{LNY}_{it} = \beta_0 + \beta_1 \text{LNS}_{it} + \beta_2 \text{LNN}_{it} + \beta_3 \text{LNXDB}_{it} + \varepsilon_{it}$$

If the variables are $I(1)$ and co-integrated, then the error term is $I(0)$ for all i . A principal feature of co-integrated variables is their responsiveness to any deviation from long-run equilibrium. This feature implies an error correction model in which the short-run dynamics of the variables in the system are influenced by the deviation from equilibrium. Thus it is common to re-parameterize for example in our case model (1) into the error correction equation, by modifying the equation such that¹:

$$\theta_{0i} = \frac{\mu_i}{1-\lambda_i} \quad (11)$$

$$\theta_{1i} = \frac{\beta_{10i} + \beta_{11i}}{1-\lambda_i} \quad (12)$$

$$\theta_{2i} = \frac{\beta_{20i} + \beta_{21i}}{1-\lambda_i} \quad (13)$$

$$\theta_{3i} = \frac{\beta_{30i} + \beta_{31i}}{1-\lambda_i} \quad (14)$$

Where θ_{1i}, θ_{2i} and θ_{3i} are the long-run coefficients of LNXDB_{it} and LNS_{it} and LNN_{it} for the i th cross-sectional unit. Then, we can rewrite the equation (1) as:

$$\begin{aligned} \Delta \text{LNY}_{it} = & - (1 - \lambda_i) (\text{LNY}_{i,t-1} - \theta_{0i} - \theta_{1i} \text{LNXDB}_{it} - \\ & \theta_{2i} \text{LNS}_{it} - \theta_{3i} \text{LNN}_{it}) + \beta_{11i} \Delta \text{LNXDB}_{it} + \beta_{21i} \Delta \text{LNS}_{it} + \beta_{31i} \Delta \text{LNN}_{it} + \varepsilon_{it} \end{aligned} \quad (15)$$

¹ Similar treatment is applicable in case of model 2.

We then substitute $-(1 - \lambda_i)$ with Φ_i :

(16)

$$\Delta \text{LNY}_{it} = \Phi_i (\text{LNY}_{i,t-1} - \theta_{0i} - \theta_{1i} \text{LN XDB}_{it} - \theta_{2i} \text{LNS}_{it} - \theta_{3i} \text{LNN}) + \beta_{11i} \Delta \text{LN XDB}_{it} + \beta_{21i} \Delta \text{LN K}_{it} + \beta_{31i} \Delta \text{LN L}_{it} + \varepsilon_{it}$$

Then, the mean of Mean Group estimate of error correction coefficient is:

$$\hat{\phi} = N^{-1} \sum_{i=1}^N \hat{\phi}_i \quad (17)$$

With the variance:

$$\hat{\Delta}_{\hat{\phi}} = \frac{1}{N(N-1)} \sum_{i=1}^N \left(\hat{\phi}_i - \hat{\phi} \right) \quad (18)$$

and the long-run coefficient, θ_{1i}, θ_{2i} and θ_{3i} are of primary interest, as in relation to Model 1. With the inclusion of θ_{0i} , a non-zero mean of the co-integrating relationship is allowed. The parameter Φ_i is the error-correcting speed of adjustment term. If $\Phi_i = 0$, then there would be no evidence for a long-run relationship. Similar would be the case if the coefficient turns out to be insignificant. Of particular importance are the vector θ_{1i}, θ_{2i} and θ_{3i} , which contain the long-run relationships between the variables. Table 4.3 presents the results for PMG estimates, giving the long-run coefficients as well as the average speed of adjustment for the whole sample.

Table 4.3: PMG & MG ESTIMATES WITH ‘LNY’ AS DEPENDENT VARIABLE

INDEPENDENT VARIABLES	MODEL 1 PMG	MODEL 2 PMG	MODEL 1 MG	MODEL 2 MG
LNxDB0i1	0.066**	----	0.061*	---
LNxSM0i1	----	1.709*	----	1.801**
LNK 0i2	0.522**	1.411*	0.657**	1.500*
LNN 0i3	-0.356*	-0.098*	-0.212**	-0.081*
LNDTM 0i4	----	0.672**	----	0.539**
Average speed of Adjustment Φ_i	-0.180*	-0.281*	-0.179**	-0.266*
Constant	0.609	0.883	0.777	0.663
Hausman test (P, values)	0.757	0.900	----	----
No of countries	18	18	18	18
Number of observations	360	355	360	355

*Significant at 1% level and **, ***Significant at the level of 5%

Table 4.4¹

	% CHANGE IN REAL GDP GROWTH FOR WHOLE SAMPLE	% CHANGE IN REAL GDP GROWTH FOR LOWER PVT DEBT TO MARKETCAP RATIO (after bifurcation) SAMPLE1	% CHANGE IN REAL GDP GROWTH FOR HIGHER PVT DEBT TO MARKETCAP RATIO (after bifurcation) SAMPLE2
MEAN	5.333534	5.791072	5.126552
STDEV	2.368992	2.204501	2.914857
COEFFICIENT OF VARIATION	44.4169	38.0672	56.8581
T-VALUES FOR SAMPLE 1 & SAMPLE 2	-----	2.042464 For mean's difference	-----

¹ Out of 18 countries, 11 were lower than the average sample ratio of ‘DM’ and rest were with a higher ratio than average. T-value calculated as $t = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}} = 2.04$.

The Critical value of ‘t*’ at $\alpha = 5\%$ for the two populations was calculated as follows:

$$\frac{t_1 s_1^2 / n_1 + t_2 s_2^2 / n_2}{s_1^2 / n_1 + s_2^2 / n_2} = 1.99$$

Table 4.5:PMG Estimates for Bifurcated Groups on Debt/Mkt cap for Model 2

INDEPENDENT VARIABLES	PMG For Whole Sample (as in table 4.2)	PMG for Lower Debt to market cap Group	PMG for Higher Debt to market cap Group
LNxSM	1.709*	1.401*	0.824*
LNK	1.411*	1.596*	0.693*
LNN	-0.098*	-0.079**	-1.098*
LNDTM	0.672**	0.446***	0.898**
Average speed of Adjustment Φ_i	-0.281*	-0.320*	-0.169*
Constant	0.883	0.533	0.699
Hausman test (P, values)	0.900	0.510	0.702
No of countries	18	11	7
*Significant at 1% level and **, ***Significant at the level of 5% and 10%			

Table 4.6:PMG Estimates for Bifurcated Groups on Income levels for Model 2

INDEPENDENT VARIABLES	PMG For Whole Sample (as in table 4.2)	PMG for higher income countries group	PMG for lower income countries group
LNxSM	1.709*	1.383*	1.294*
LNK	1.411*	1.233*	0.889*
LNN	-0.098*	-0.080**	-1.015*
LNDTM	0.672**	0.601**	0.788*
Average speed of Adjustment Φ_i	-0.281*	-0.266*	-0.218*
Constant	0.883	0.821	0.593
Hausman test (P, values)	0.900	0.113	0.702
No of countries	18	10	8
*Significant at 1% level and **, ***Significant at the level of 5%			

4.4. Discussion of Results

From the above findings it can be observed that in both the models, the study found a long-term relationship of the specified variables with economic growth. However, as per the PMG estimates, decided by the Husaman test, these relationships varied. As additional support, table 4.3 also provides the MG estimates to make the results more robust. Judging from the long-term coefficients in the PMG and MG for a sample of 18 Islamic countries, it is shown that in case of model 1, the debt dynamics although shows a positive impact on the growth of the economy, however, this influence is a lot less viz-a-viz the stock market dynamics in model 2.

As can be seen, the long-term contribution of stock market to economic growth is much stronger in both cases of PMG and MG with coefficients of 1.709 and 1.801. The influence on the contribution of labour and capital in both models also varies. It is shown that debt financing has a lower impact on growth, detrimentally affecting the productivity of capital as well as labour. This can be observed by a weak coefficient for both the capital and labour contribution to the economic productivity in long run. In contrast, the influence on capital productivity in model 2 is much more pronounced and effect of population growth is less negative; suggesting that in risk sharing finance, the two factors of production are utilized much better to the benefits of the economic growth. To the argument that debt financing through direct bank lending may influence equity performance, the results clearly show that the expected debt effect as measured by coefficient of 'DM' although positively significant, but lower than 1. A coefficient

of 1 or above would have sufficed the claims of any meaningful debt influence in the stock market performance¹.

The findings are in line with the assertion made particularly in the first few sections of the study. In, as much as, a nation has significant debt burden, the need to service its debt i.e. the interest payments, will affect how the labour and capital will be employed in the production function. More specifically, if the gains of the productivity increase are transferred to creditors—foreign or domestic, little incentive will be left to increase the productivity of capital or labour (Hameed et al., 2008; Qureshi and Ali, 2010 and Haider and Ali, 2012). It implies that the need to service the debt will determine the manner in which labour and capital are exploited in the production process. From the above results, this exploitation is clearly on the depressing trend. As a result, with an increase in debt, the investment and productivity are hampered in the economy; dampening economic growth. Looking at the average ECT coefficient given as ‘ Φ_i ’, the speed of adjustment for model I is -0.180 for PMG and -0.179 in MG which means that if there is any shock to the system, it will be a lengthy progress for a system to get back to the long-term equilibrium relation; taking a minimum of 5 years and more.

However, for model 2, measuring the effects of risk sharing financing, the ECT coefficient ‘ Φ_i ’ is a lot higher. The speed of adjustment is -0.281 and -0.266; suggesting that a risk sharing/equity based financing is much more resilient and stable to economic shocks with the adjustments back to

¹ Had that been the case, where the coefficient of ‘DM’ exceeded 1, it can still be asserted that risk sharing based financing proxied by stock market, is having a better influence on the utilization of factors of production and hence economic productivity/growth.

long-term equilibrium relations taking place in nearly 3.5 years. Moreover, it can be further argued that given a pure Islamic financial system where there will be no interest bearing debt avenues, it is expected that the stock markets will contribute to economic growth more effectively and efficiently since any influence via debt financing will be minimum if not completely absent.

The assertion can be empirically verified by the findings of table 4.4. Based on the average 'DM' ratio for the whole sample, the sample of the given countries was bifurcated into two group (i) countries which had lower DM ratio than the sample average and (ii) countries which accounted for a higher DM ratio than sample average. The Mean (measuring growth) and Standard Deviations (measuring volatility in that growth) of each group's real GDP growth was assessed. As can be seen from table 4.4, for the group of countries which have a less influence of debt in stock market not only have a higher GDP growth, but that growth is more stable. Moreover, the growth and stability is also higher when seen in relation to similar estimates for the whole sample.

The above can be further supported by the PMG estimates, decided by the Hausman test, for the same groups. Given the estimates in table 4.5, countries which have a lower debt ratio appear to be benefiting more from risk sharing based financing as compared to the higher debt group. Not only is the contribution to economic output/growth is higher, with the coefficient of 1.401, but the influence on the utilization of both the factors of production is much more efficient with 1.596 and -0.079 as compared to 0.693 and -1.098 in the higher debt ratio group. There is also a vast difference on the speed of adjustments. Judging by the average ECT estimates for both

samples, the lower debt countries are adjusting much faster with the adjustment, given a shock, taking place in 3 years to nearly 6 years in the other group. Note also that the given adjustment in 3 years is also faster than similar estimate for the whole sample.

A similar bifurcation of results based on income levels reveals findings in the same tune. Table 4.6 shows that though the contribution is positive for both the groups, the higher income group's contribution of stock market to growth is more pronounced. The speeds of adjustments to shocks is taking nearly 3.7 years to over 4.5 years respectively. It could be implied that risk sharing finance not only appears to render more growth but higher income levels tend to further enhance the ability of stock markets to contribute to growth. A feedback loop.

All in all, the above results are a further assertion of the analytical and theoretical claims made in the earlier sections, opposing a debt based financing regime to the one based on risk sharing finance: the essence for fostering a more prosperous and stable economic growth. The findings also lend support to the claims made by Cowen and Tabarrok (2011) that given the right kind of institutional and incentive structure (in this case risk sharing based financing), economies can grow steadily and more efficiently— potentially serving the notion of conditional convergence hypotheses. Moreover, the results could also signify the contention that a growing economy, driven by the rate of return to the real sector, will always tend to show positive returns and there would be less chances for the returns to become negative. Among the dynamics that would assure such an outcome will be the feedback loop

from an ensuing (growing) productivity of the economy. Given all the above, it can thus be claimed that the findings of the study suffice clearly as to why the Quran ordains the societies to render their efforts to risk sharing as opposed to riba based debt financing.

5. Conclusions

The aim of the present study was to argue that the present interest-based debt financing regime is inherently unstable and crisis prone. This was shown by referring to the findings of both the old as well as the current intellectual pedigree who qualitatively and quantitatively vindicate the fact that interest-based debt financing has caused more economic harm than benefit. All contend that debt and leveraging are the main sources of financial instability in the current system. These features are the prime result, of the existence of an ex-ante predetermined rate of return in the form of ‘interest’ (‘Riba’ or ‘Usury’); turning debts into unmanageable and unsustainable super cycles. The system breeds a financial society on more risk transfer and risk shifting and less on risk sharing— a favored reason for globalization. Moreover, such attributes of the system has given rise to an increased financialization of the global economy; decoupling the real and the financial sectors while amplifying both the overt and covert risks in the economy. The result is a rise in the sensitivity of the system to small shocks. Consequently, the system is obeying an increasingly non-linear behavior, evidencing a clear application of the Quranic concept of ‘YAMHAQ’ given in verse 276 of chapter 2. These developments have indeed made the system harder to understand, predict and control, translating

into an increasing sense of uncertainty regarding the survival of the system.

It was hence argued that Islamic finance, based on its tenets of sharing risks and no *riba*, can serve as an alternative to the interest-based debt financing. The study has empirically supported the assertions of better growth and stability aspects of risk sharing financing regime. Moreover, theoretical research has also shown that a non-interest-based financial system promotes financial stability (Mirakhor, 1990). Islamic finance prohibits interest-based debt contracts and therefore interest-based credit. Investors share in the risk of economic activities; they select most efficient and profitable projects, and share in profits. Return to investment is based on real capital productivity. It would be expected that in this system, the private sector would have significant potential for investment and growth. Because of one-to-one mapping of the real and financial sectors, Islamic finance would be significantly simpler than the interest-based debt financing system. Since growth in finance has to reflect growth in the real sector only, it is not likely that there would be a decoupling of finance from real sector activities in order for the financialization phenomenon to occur. Furthermore, because interest-based debt contracts are prohibited, debt cannot build up and thus debt overhang symptomatic of interest-based financing are avoided.

The other main sources of the stability in a risk sharing regime are the operational characteristics that remove major sources of volatility and instability. Among these characteristics are the following:

Transparency, trust and faithfulness to terms and conditions of contracts; Say's law applies all the time; spending (e.g., investment arises from real purchasing power and not from fictive credit; for instance, consumers spend from earned income and not from consumer loans or government transfers; similarly, enterprises invest genuine saving).

The real values of assets and liabilities –of financial institution– would be equal at all points in time. In addition the prospect of instantaneous equilibrium between the asset side of the banking system - driven mainly by the real sector of the economy - and the liability side means that there must necessarily be a close and direct relationship between investment and deposit yields. Due to the close relationship between finance and the real sector activities, the rate of return to the latter determines that of the former rather than the reverse.

Asset/liability risk matching;

A coordinated asset/liability maturity structure;

Asset/liability value matching such that the value of both sides of the balance sheet move simultaneously and in the same direction in response to changes in asset prices; and

Limitations on credit expansion and leverage, naturally arising from the need for credit growth that is tied closely to the expected rate of growth of the real economy.

One of the most vital arguments put forward in favor of globalization was that of improved risk sharing that would result from intensified human interaction across the world. On theoretical ground, this would mean expecting much greater degree of risk sharing between and among economies – resulting from greater freedom of movement of resources, and hence, providing a major source of consumption smoothing

in the world economy. These developments were expected to lead to progress toward market completion, which means increasing the number of marketable securities to meet a large number of contingencies – a condition of optimal risk sharing posited in Arrow's (1971) conception. Or, at least, progress could have been expected toward the design and use of Arrow's idea of having securities with pay-offs contingent on the performance of the underlying asset, for example, equity-based securities with close links to the real sector of the economy (Mirakhor, 2011a). Theoretical research has demonstrated sizeable potential welfare benefits of risk sharing¹. However, empirical studies have shown only marginal gains in risk sharing from globalization. For example, a study by Kim et. al. (2005) has shown that even in the fast growing East Asia-10 countries risk sharing has not been as significant as would have been expected.

It appears that the contribution of the present configuration of the Islamic finance industry to the growth of the real sector has fallen well short of expectations so far. Perhaps the main reason has been the fact that the practitioners and financial engineers of this new asset class – growing within the conventional financial system – had to design instruments that resembled those prevalent in the host system without violating the “no-riba” sufficient condition. This meant creating instruments with tenuous relationship to the real sector to weaken the risk of Islamic financial transactions borne by market players. Moreover, the instruments designed by the industry have been by and large benchmarked to the Libor

¹ See, for example, Van Wincoop (1999); Kim et. al. (2005); Lee and Shin (2008).

or closely related reference rates to make them more acceptable to large international banks and investors. Hence, the Islamic finance industry focused on portfolio behavior with strategy of asset concentration in short-term maturities and real estate in the medium-to-long-term maturities, thus replicating the vulnerabilities of the conventional system.

Aside from these problems, there is a risk of path dependency: the risk that the industry will continue following the same pattern of behavior because it has proven profitable thus far. This growing complacency and doing ‘business as usual’, runs the risk that path dependency will render deviations from the true practice of Islamic finance irreversible. This would mean continued development of debt-like instruments that are low risk but are devoid of risk-sharing elements – a vitally important element of Islamic finance. After all, finance is well aware of the theory of “spanning” – where one basic asset can span into an infinite number of derivative instruments. This theory served as the basis for the rapid development of debt-based derivative markets worldwide which eventually undermined the stability of global finance.

In general, the industry players in their defense argue that “our clients” are not interested in placing their funds at risk, thus discouraging us from risk sharing¹. Apparently, this argument is unaware that, conceptually, there is a difference between risk taking and risk sharing. The former is prior to the latter. The risk of a given project in the real sector is

¹ Such arguments are a norm and were also pervasive in, for example, International conference on Islamic Business, Islamabad, Pakistan (2012 and 2014) as well as in conference of security commission Malaysia held with the theme of Risk Sharing in finance (2011/12).

determined in that sector; and one bears such risks before entering into the financial sector to seek financing. On the other hand, it is at the point of financing where the decision regarding the modality of financing – whether it will in the form of risk sharing, transfer or shifting – is made. The nature and magnitude of risk taken remains the same and immutable as it enters the financial sector at the stage of funds seeking.

Industry players display a further dimension of inertia in resisting risk sharing. This relates to the conceptual “framing” of Islamic finance. Framing refers to the fact that people’s response to 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 in alternative formulation. Framing is closely related to the idea of “prospect” which refers to perception of gains or losses attached to decisions. The way prospects are framed can lead to inconsistent behavior; if the same objective outcome is framed differently in terms of gains and losses, people respond differently. Since losses, are given greater weight than corresponding gains, people are in general loss averse. If the outcome is framed either as a gain or loss, people prefer to choose gain. For example, the prospects of 10 percent loss and 90 percent gain can be framed focusing either on the probability of the loss or the expectation of the gain. It can be argued that a major reason for the inertia in the industry for resistance to progress toward risk sharing is due to the inability of the stakeholders and practitioners to first understand and then frame risk sharing prepositions correctly and effectively.

While the disappointment with the present performance of the Islamic finance industry is understandable, it should be noted that the industry has a short history in which it nevertheless has demonstrated remarkable growth. Perhaps it is this performance that has triggered evidence of growing interest in non-interest rate based finance. Indications are that emerging markets and developing economies are actively considering adoption of instruments of Islamic finance. Governments, particularly in Malaysia, have been major sources of support for the growth of Islamic finance. Few are leveraging the “first-mover” status of Malaysia in education, manpower training and instrument innovation in Islamic finance to introduce their own brand of risk-sharing method of financing. If these efforts succeed, perhaps even the benefits of emerging multiple growth centers in the global economy will be further enhanced with greater stability and resilience in supporting financial transactions through risk sharing (Mirakhor, 2011c). As suggested by Mirakhor, (2012), in the last three decades important strides have been made in applying the rule of no riba based contracts to create an Islamic system. Much more effort needs to focus on the risk sharing aspect of the prescribed rules of the Quran specified in the verse 275 of chapter 2. This potential move is referred to as moving Islamic finance from version 1.0 which only focused on the no-riba part of the verse to now Islamic finance version 2.0; rendered to apply risk sharing in finance-the essence of Islamic finance.

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