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**Innovative Financial Instruments** for scholars  
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## Abstract

This research project engaged in the examination and study of various aspects of innovative financial instruments in order to develop a comprehensive understanding of their evolution, advantages, limitations and risks and contribute to the available literature on the subject. The research for this project was carried out with the help of library based online research and the review of existing literature on the subject. Information sources for the review were generated with the help of extensive keyword based online search.

The information obtained in the course of literature review was thereafter subjected to suitable discussion and analysis. The conduct of the research revealed that innovation in the area of financial instruments has been occurring since historical times and has intensified in the course of the last four decades. Financial instruments are now being used extensively across the global environment for purposes of investment, speculation, hedging and risk mitigation and transfer. It is however also extremely important to ensure the recognition of the various risks associated with these instruments and ensure their appropriate management.

### 1. Introduction

This research project essentially aims to study, examine, analyse and assess innovative financial instruments in a multidimensional and comprehensive manner in order to develop a detailed understanding of the subject. This introductory section provides a broad overview of the research subject, clarifies the aims and objectives of the study, details the research questions and explains the purpose and benefits of the study.

#### 1.1. Overview

Innovative financial instruments have become a subject of intense debate and discussion in the wake of the banking and financial crisis of 2007-2009 (Adam &Guettler, 2015; Batiz-Lazo, 2011). Various experts have stated that the indiscriminate and unregulated use of various new types of financial instruments like mortgage backed securities, securitisation, credit derivatives and swaps resulted in the development of systemic risk across the western banking systems and played an important role in the triggering of the banking and financial crisis (Adam &Guettler, 2015; Asante et al., 2017). Other experts have on the other hand commented that the crisis occurred on account of a range of reasons, including excess liquidity, poor regulation, the

ambition and greed of bank managers and the inadequate working of credit rating agencies (Adam &Guettler, 2015; Asante et al., 2017). Armstrong et al., (2012) stated that the premise of innovation being a positive contributor to finance, economic improvement and wellbeing has thus been disputed and the net balancing of benefits and risks on account of financial innovation, the economy and the society has been queried. It is also important to keep in mind that financial innovation has been criticised by experts, policy makers, the public and the media (Armstronget al., 2012; Asante et al., 2017). Interest has thus arisen on the preservation of benefits and the limitation of risks of financial innovation (Asante et al., 2017; Adam &Guettler, 2015). It is thus important to examine the evolution of innovative financial instruments, their benefits and risks and the ways in which they can be managed.

Asante et al., (2017) stated that financial innovation comprised the creation, utilisation and popularisation of various types of new financial instruments, technologies, markets and institutions. Fostel and Geanakoplos (2016) added to this description and stated that financial innovation could be considered to be a process involving the development, formulation, spread and usage of new, both radical and incremental, products, processes, platforms and technologies, which resulted in changes in the conducting of financial operations. Gubler (2011) stated that innovation, which involved the creation of commercially beneficial, new products, processes and services was inherent to the process of human development. Various individuals and entities have,over the years searched for new forms to react to various environmental opportunities and challenges and have in the process brought about numerous revolutions (Gubler, 2011; Fostel&Geanakoplos, 2016). Such innovative activity has affected, amongst other things, the area of finance and improved economic wellbeing and prosperity (Nejad&Estelami, 2012; Fostel&Geanakoplos, 2016). Financial innovation can be considered to be related to the modernisation of financial systems or practices and includes new, altered and transformed financial instruments (Nejad&Estelami, 2012; Beck et al., 2016). The examination of history revealed the continuous development of financial innovation in various places and timeframes (Nejad&Estelami, 2012; Beck et al., 2016). Such innovations occurred, for example in Sumer, Egypt, Italy, China and Europe. A bill of exchange was developed by Chinese merchants in the 9th century (Fostel&Geanakoplos, 2016; (Nejad&Estelami, 2012).

Recent years have witnessed the development and spread of a wave of financial innovation across the developing countries, which in turn have resulted in the generation of important alterations in the financial environment (Beck et al., 2016; Asante et al., 2017). Whilst such a process of innovation has varied from state to state, it has also been characterised by (1) the creation of new and innovative financial products and markets, (2) securitisation and the replacement of bank loans with financial instruments that are marketable and where interest is influenced by market considerations, (3) the impact of deregulation on the liberalisation of practices in national markets, (4) globalisation, involving the integration of financial markets and the erosion of state borders and (5) ongoing rivalry between financial institutions and the blurring of conventional differences and distinctions between banks and securities organisations (Asante et al., 2017; Beck et al., 2016).

## 1.2. Aims and Objectives of Study

This research project will aim to study, examine and analyse innovative financial instruments from various perspectives in order to achieve a broad and comprehensive understanding of the subject.

The objectives of the study are detailed below.

- To examine and study the evolution of financial instruments over the years and the ways in which innovative financial instruments have developed from time to time.
- To study and examine the various types of innovative financial instruments, with specific regard to their utility, advantages and limitations.
- To study the role of financial instruments in the modern global economy.
- To examine and analyse the risks associated with innovative financial instruments and the ways in which such risks can be governed and controlled.

## 1.3. Research Questions

The research questions for this study, formulated in accordance with the detailed aims and objectives are provided below.

- Research Question 1: How have innovative financial instruments developed and evolved over time?

- Research Question 2: What are the various types of innovative financial instruments; what are their advantages, limitations and risks?
- Research Question 3: What is the role of financial instruments in the modern economy?

#### 1.4. Benefits of the Study

Innovation is a continuous and ongoing process and its continuous occurrence in the area of finance has resulted in the development of numerous types of financial instruments, practices, processes and markets (Gallouj&Djellal, 2010; Sandor, 2012). The area has become extremely complex and comprises numerous types of financial instruments with different characteristics and features (Sandor, 2012; Gallouj&Djellal, 2010). The area of financial instruments has in recent years attracted significant debate and discussion on account of its perceived role in the development of the financial crisis (Bernholz&Vaubel, 2014; Beck et al., 2016). The subject is thus of great contemporary interest and fit for detailed research. The conduct of the research project has generated focused, detailed and useful information on the subject.

#### 1.5. Structure of Dissertation

The research project has been appropriately structured:

- This introductory chapter provides a brief overview of the subject, details the aims, objectives and research questions, and explains the benefits of the study.
- The second chapter provides details about the research method adopted for the dissertation and the reasons for its adoption.
- The third chapter contains a detailed literature review of the research subject.
- The fourth chapter contains a discussion and analysis of the findings of the literature review.
- The fifth chapter contains summative conclusions of the research study.

## 2. Research Method

The development of an appropriate research method is an extremely important element of a research project on account of its impact on research outcomes. It should thus be carried out with considerable thought and care. The research for this project shall essentially be library based and entail the conduct of an elaborate and detailed review of available literature on the subject. Such

a research approach is considered to be appropriate for research subjects that do not need empirical or analytical study and where substantial information is available in the public space. The conducting of a detailed review of literature in such circumstances helps in the generation of considerable important information, which can thereafter be taken up for critical review, discussion and analysis (Saunders et al., 2007).

Information for this literature review has been obtained in a clear and sequential manner. The exercise has been initiated with the formulation of carefully chosen and appropriate keywords and phrases, which have thereafter been used for the identification of appropriate information sources. These information sources have been carefully examined, with particular regard to their relevance for the study, the reliability and dependability of the authors and publishers and the number of citations. The chosen information sources have thereafter been studied in detail, compared and contrasted with each other, to generate a comprehensive understanding of the research topic.

The information obtained from the review of literature has thereafter been subjected to detailed qualitative analysis in accordance with the aims and objectives of the study and the formulated research questions in a thematic manner in order to arrive at final outcomes. The adoption of such a research method has helped in the generation of interesting and useful research outcomes (Bryman & Bell, 2007).

### 3. Literature Review

This review of literature has entailed the detailed study of various aspects of the research subject with the help of information sources that have been accessed with systematic keyword based search. The review has been structured in a sequential manner and includes an overview of financial innovation, the evolution of innovative financial instruments, types of innovative financial instruments, the role and utility of these instruments in the global economy and the risks that are inherent in their usage.

#### 3.1. Overview of Financial Innovation

Innovation is widely accepted and acknowledged to be one of the most important drivers and shapers of the society and the economy (Ketkar&Ratha, 2008; Adam &Guettler, 2015). The development of various innovative products and services has led to very significant changes and

alterations in human life and society (Armstrong et al., 2012; Ketkar&Ratha, 2008). Innovation has been described as the development and creation of new products, services and processes that can be commercially exploited for organisational and stakeholder benefit (Adam &Guettler, 2015; Ketkar&Ratha, 2008). The area of finance has also experienced significant innovation (Ketkar&Ratha, 2008; Armstrong et al., 2012). Vachris (2017) stated that financial innovation has entailed the generation of various types of advances in areas of financial instruments and systems of payment that are used in the borrowing and lending of funds. Such innovative changes, which have been driven by modernisation and updates in equity and credit generation, risk transfer and technology have resulted in greater credit facilities for bank customers and provided banks with new and comparatively inexpensive ways for raising equity capital (Vachris, 2017; Armstrong et al., 2012).

United Nations Development Programme (2012) stated that financial innovation increases institutional sustainability and facilitates their outreach to economically disadvantaged social segments. OECD (2014) differentiated financial innovation into three specific segments, i.e. product innovation, process innovation and innovations in financial systems and institutions. Product innovation include the development, creation and introduction of various new financial products in diverse areas like deposits, credit, leasing, insurance, hire purchase and others. They are developed and introduced from time to time in order to respond and react to market alterations and improve marketing and operating effectiveness (Anderloni&Bongini, 2009; Schueffel&Vadana, 2015). Process innovations essentially comprise the development and introduction of different types of new business processes that can result in market expansion or greater efficiencies (Mention &Torkkeli, 2014; Anderloni&Bongini, 2009). Innovations in areas of financial systems and institutions can impact the financial sector and are connected to alterations in business structures, the development of new varieties of financial intermediaries or to alterations in the supervisory and legal framework (Mention &Torkkeli, 2014; Anderloni&Bongini, 2009).

Gubler (2010) stated that innovation is a two-edged sword and results in both positive and negative development. The Internet for example has provided huge benefits to society, but has also facilitated cyber crime and the spread of various types of pornography (Armstrong et al.,

2012; Schueffel&Vadana, 2015). The development of the automobile similarly has brought about significant mobility and economic growth, along with deaths from accidents and significant pollution problems (Gubler, 2010; Mention & Torrkeli, 2014). Innovation in financial services also has its inherent advantages and disadvantages (Henderson & Pearson, 2009). Whilst it has led to several types of benefits, many experts feel that it has contributed significantly to the recent financial crisis (Henderson & Pearson, 2009). Some positive financial innovations, which have occurred in recent years and have provided strong economic benefits, include the development and expansion in use of credit and debit cards, the proliferation of automated teller machines, money market and indexed mutual funds, exchange traded funds, credit scoring, basic forms of securitisation, venture capital funds and current and interest rate swaps (Jenkinson et al., 2008; Asante et al., 2017). The negative characterisation of financial innovation has on the other hand been strongly shaped by the severe financial crisis of 2007-2009 (Asante et al., 2017; Vachris, 2017).

Llewellyn (2009) stated that various innovative financial instruments like credit default swaps, collateralised debt obligations and mortgage backed securities were misused and played a significant role in the aggravation of the financial crisis. Lumpkin (2010) stated that financial innovation has been driven by various factors, including high market interest rates, technological change, developments in communication and data processing, changes in regulations and laws, perceptions about high profit opportunities and low barriers to the deployment of technology.

Financial innovation has also brought about several consequences for modern individuals (Michalopoulos et al., 2009). There has been substantial increase in the numbers and types of financial instruments for consumers, who have benefited from them, as also from the development of new financial services (Michalopoulos et al., 2009; Beck et al., 2016). Changes in mortgage financing mechanisms have benefited customers and business firms have experienced expanded options in financial services (Michalopoulos et al., 2009; Beck et al., 2016). Rose et al., (2009) stated that financial innovation has been an important driver of change. It has enabled markets to develop specific mortgage contracts and transfer risks through the pooling, repackaging and sale of mortgages as mortgage backed securities (Rose et al., 2009; Fostel&Geanakoplos, 2016). It has helped consumers by reducing mortgage costs, which have



reduced by approximately 2 to 3% over the course of the last two decades (Rose et al., 2009). Whilst mortgages were provided with only one or two different mortgage products in the past, borrowers can now select from different types of instruments and payback structures (Fostel & Geanakoplos, 2016; Mullineux, 2010). The development of financial innovation, especially the generation of innovative financial instruments has resulted in a significant enhancement in the number of players in the mortgage market, including underwriters, rating agencies and brokers, which in turn has resulted in greater specialisation and volume of lending (Mullineux, 2010; Fostel & Geanakoplos, 2016).

### 3.2. Evolution of Innovative Financial Instruments

Owen et al., (2009) stated that the occurrence of financial innovation and the development of innovative financial instruments has been an inherent element of the financial and economic environment in historical times, as also the past few centuries. Financial markets in recent times have produced numerous new types of products, including different types of derivatives, tax deductible equity variants, funds traded on exchanges and alternative products for risk transfer (Owen et al., 2009; Mention & Torkkeli, 2012). Wyman (2012) made the point that the development of innovative financial instruments is a continuous and ongoing process, which arises from the tendencies of business firms to engage in differentiation of products and services in response to alteration in the economic environments.

The study of the evolution and history of financial innovation revealed that such innovation was occurring at a brisk pace in the Mesopotamian civilisation, which existed in 3000 BC (Laevenet al., 2015; Verdier, 2013). Whilst many transactions in those days occurred free of cost and without agreements for future or immediate compensation, trade through exchange of goods of equivalent value was strongly prevalent (Laevenet al., 2015; Verdier, 2013). This resulted in the conceptualisation of commodity money, which enabled people to procure products and services with the help of commodities like gold and other precious metals, which were considered to be valuable (Raiiene, 2015; Mention & Torkkeli, 2014). The development of trade resulted in the generation of forms of personal loans, which were compensated through interest. This in turn resulted in the development of increasingly sophisticated financial instruments and the establishment of banking firms in the Mesopotamian valley (Raiiene, 2015; Mention & Torkkeli,

2014). This resulted in the development of specific financial instruments like bank deposits and acceptances from bankers (Raiiene, 2015; Mention &Torkkeli, 2014).

This period also witnessed the development of contingency claims (Arthur, 2017a; Lee et al., 2012). With individuals being able to transfer ownership of monies through financial arrangements to the future, they simultaneously became vulnerable to risks on account of future uncertainties (Arthur, 2017a; Lee et al., 2012). Both borrowers and lenders could as such buy contingency claims through entry into financial agreements that called upon one party to make a payment that depended on the results of some occurrence (Mention &Torkkeli, 2014; Lee et al., 2012). Such arrangements were however subject to the inherent limitations of the barter system and could occur only if traders could identify people who desired the product or service that was on offer (Mention &Torkkeli, 2014; Lee et al., 2012).

With there being a necessity for a medium of exchange for the facilitation of trade, early types of metal money started to emerge, first in China in 1000 BCE and then in other countries, especially in the Middle East (Wyman, 2012; Laevenet al., 2015). This helped market participants in trading contractual claims to other parties (Wyman, 2012; Laevenet al., 2015). Lenders could for example sell their loan contracts for coins when in sudden need of cash. State bank paper money emerged in the 11th century AD, which facilitated financing arrangements (Su & Si, 2015; Arthur, 2017a).

Whilst there was a lull in financial innovation during the dark ages, commercial practices in city states like Venice and Genoa in Northern Italy evolved in the 12th and 13th centuries, resulting in use of bank deposits and acceptances (Schueffel&Vadana, 2015; Raiiene, 2015). The use of these instruments spread widely in Europe in subsequent years along with the development of capitalism, which was based upon specific investments in the development of marketable goods (Schueffel&Vadana, 2015; Raiiene, 2015). The growth of capitalism, which was distinguished by entrepreneurial activity, increasing competition, private ownership, and joint stock companies, resulted in the motivation for the creation of new financial instruments and products to satisfy the requirements of capitalists (Su & Si, 2015; Arthur, 2017a). Bonds and equities, two new financial instruments were developed to facilitate this by the 16th century (Su & Si, 2015; Arthur, 2017a). A Russian joint stock company issued equity in the 1550s, followed by the issue of bonds by the French government (Lee et al., 2012; Mention &Torkkeli, 2014). The use of

bonds and equities spread across the western nations. Companies started issuing bonds and developed other types of securities like preferred stock and convertibles to satisfy investor requirements (Lee et al., 2012; Mention & Torkkeli, 2014). Cheques were introduced in London in the middle of the 17th century (Lee et al., 2012; Mention & Torkkeli, 2014).

The 17th century witnessed increasing economic activity by both governments and firms, which necessitated secondary trading and better organisation of the working of financial markets (Sánchez, 2010; Owen et al., 2009). Securities trading markets were opened in Amsterdam, which in turn resulted in the sophistication of trading practices and the development of financial innovation, especially in areas of risk management (Sánchez, 2010; Owen et al., 2009). The development of complex and sophisticated financial instruments and products occurred shortly thereafter (Mention & Torkkeli, 2012; Su & Si., 2015). The recognition of the corporation as a legal entity was considered to be an important financial innovation and resulted in significant changes in the financial sectors (Mention & Torkkeli, 2012; Su & Si., 2015). Financial activity increased on account of faster railway and canal activity, which in turn resulted in the development of more complex forms of bonds and equity (Laeven et al., 2015; Schueffel & Vadana, 2015). Increasing need for capital in the USA on account of enhancement in railway construction and the civil war resulted in the development of various forms of financial securities, including warrants, commercial paper and income bonds (Laeven et al., 2015; Schueffel & Vadana, 2015).

Whilst financial instruments experienced relative stability after the depression of the 1930s and the Second World War, the pace of innovation increased swiftly from the 1960s onward on account of various factors, including alterations in underlying finance technologies, namely telecommunications and data processing, changes in regulation, liberalisation, alterations in the economic environment and an increasing desire to circumvent regulation (Owen et al., 2009; Mention & Torkkeli, 2012). Firms gradually introduced instruments like floating rate notes and zero coupon bonds (Wyman, 2012; Laeven et al., 2015). Mention and Torkkeli (2014) stated that currency swaps were developed by British banks in the 1960s to avoid exchange control regulations, whereas securitised loans were developed in the USA in the 1970s. Acceleration in technological advances led to the creation of diverse innovations that were related to processes,

like for example credit and debit cards, telephone and online banking systems and automated teller machines (Schueffel&Vadana, 2015; Railiene, 2015). The concept of securitisation, which involved the conversion of illiquid and cumbersome financial contracts into instruments that were liquid, as well as of lesser denomination followed thereafter (Schueffel&Vadana, 2015; Railiene, 2015). The development of such instruments, which could be traded on capital markets, was followed by the development of sophisticated asset backed securities, including collateralised debt obligations (Owen et al., 2009; Mention &Torkkeli, 2012).

It is evident from the preceding information that evolution of financial instruments has occurred in a progressive manner over the course of 5000 years, beginning with the Mesopotamian civilisation in 3000 BCE. These instruments have developed and become increasingly sophisticated over time and have contributed in various ways to the enrichment of the current financial systems.

### 3.3. Types of Innovative Financial Instruments and Associated Risks

As elaborated in the earlier section, financial instruments have on account of continuous innovation evolved enormously over the years and can be classified into various types. This section of the dissertation engages in a discussion of the various types of innovative financial instruments and their associated risks. Li et al., (2009) stated that financial instruments involved various types of risks; a number of risk factors however apply to all types of financial instruments. These are detailed below.

- **Market Risk:** Market risks evolve from the fact that alteration in market prices can have adverse consequences for financial instruments (Kolb &Overdahl, 2009; Norden et al., 2014).
- **Interest Rate Risk:** This risk stems from the fact that alterations in interest rate can have adverse consequences for the value of financial instruments (Crouhyet al., 2008).

- **Currency Risk:** Exchange rates generally fluctuate from time to time. Financial instruments that are registered in foreign currencies are subject to currency risks. Alterations in currency rates can result in profits or losses, even though the currency value, wherein the underlying financial instrument is registered is not subject to alteration (Kolb &Overdahl, 2009; Norden et al., 2014).
- **Liquidity Risk:** Such a risk may stem from the fact that the holder of an instrument may not be able to purchase or sell a particular financial instrument at a specific point of time or may be able to do so only on terms that are significantly lower than the standard in an active market in general. Such liquidity risks can be generated by diverse factors, like for example market inactivity with regard to a specific instrument, size of contract and diverse other factors that may impact demand and supply, as well as the behaviour of market participants (Corsiet al., 2016).
- **Economic Risk:** There is little doubt that economic alterations and fluctuations, especially economic booms and slumps can impact the prices of financial instruments. These fluctuations can vary in different ways with regard to both magnitude and time and can impact diverse industries in different ways (Crouhyet al., 2001; Cherotichet al., 2015).
- **Country Risk:** This risk stems from various environmental issues like political risks, economic risks, risks connected to capital transfers and currency risks. The risk is connected to various economic factors that could significantly affect the larger business environment in which the registration of the financial instrument has taken place (Corsiet al., 2016; ForrerAcie&Forrer Donald, 2015).
- **Legal Risk:** This risk stems from the changes made by governments to existing laws and regulations like for example alterations in taxation laws or inter border capital transfer laws, which can have an adverse impact on the value of financial instruments (ForrerAcie&Forrer Donald, 2015).
- **Inflation Risk:** This risks stems from the likely impact of inflation on the valuation of a financial instrument (Crouhyet al., 2001).
- **Counterparty Risk:** This risk stems from the possibility that a counterparty may not be able to satisfy its contractual obligations completely (Cherotichet al., 2015).
- **Settlement Risk:** This risk is connected with the possibility of a counterparty not being able to satisfy contractual obligations on the date of settlement. Losses in settlement can

take place on account of default or even on account of differences in timings of settlement between relevant parties (Altman et al., 2005).

### 3.3.1. Shares

Shares are issued by corporations or limited firms to shareholders as proof of their ownership interest in specific companies (Turnbull, 2010; Domeheret al., 2015). Such shares are issued either electronically in a securities depository or as written instruments (Turnbull, 2010; Domeheret al., 2015). Shareholders can trade their shares in the market and are entitled to the rights that are provided by law, as well as the articles of association of specific companies (Turnbull, 2010; Domeheret al., 2015). Investing in shares can result in exposure to different types of risks, including company risk, price risk and dividend risk (McNeil et al., 2005; Li et al., 2009). Investors, through the purchase of their shares contribute money to specific companies and become co-owners along with other shareholders (McNeil et al., 2005; Li et al., 2009). As owners, they are involved in organisational development, as well as the alterations that take place in assets and liabilities (Yu, 2007; Pykhtin, 2005). Whilst it is firstly difficult to estimate the returns that shareholders are likely to receive on their investments, they are also exposed to financial losses on account of bankruptcy because of very low priority to shareholder claims during bankruptcy proceedings (Yu, 2007; Pykhtin, 2005). The price of shares may also increase or reduce in an unpredictable manner (Pykhtin, 2005; Cao et al., 2011). It is important to differentiate price risk from company risk, even though these factors separately or jointly influence share prices with consequent risks for investors (Pykhtin, 2005; Cao et al., 2011). The dividends that are paid out by organisations, firstly depend upon the profits earned by organisations and secondly on the dividend policies of individual organisations (Longsta&Rajan, 2008; Sun, 2008). It is possible that dividend payouts may reduce considerably or even stop when companies experience losses (Longsta&Rajan, 2008; Sun, 2008).

### 3.3.2. Bonds

Bonds are specific written declarations, wherein issuers unconditionally and unilaterally acknowledge and accept their obligations to pay specific amounts of money at given times in accordance with stated terms (Schnbucher, 2003; Yu, 2007). Bonds are largely issued by government bodies and companies with terms like maturity and interest being fixed in advance. Interest in the case of bonds can be variable or fixed (Schnbucher, 2003; Yu, 2007). Duffie and



Zhu (2011) stated that bonds can be linked to specific indices, wherein the direct principal will be modified in accordance with the movement of particular price indices. The principal amount of the debt is paid either in one sum on the final maturity date or on specified other dates (Turnbull, 2005; Schnbucher, 2003). A bond purchaser very clearly has a claim against the bond issuer for the receipt of money in accordance with predetermined terms and conditions (Turnbull, 2005; Schnbucher, 2003).

Investing in bonds can involve specific risks, including issuer risk, interest rate risk, call risk and other risks (Li et al., 2009; Longsta&Rajan, 2008). Issuer risks can arise, when bond issuers are unable to meet their obligations on account of temporary or long term paucity of funds (Li et al., 2009; Longsta&Rajan, 2008). Various environmental developments, including political and economic occurrences in the concerned sector or the country can also influence the payment capacities of organisations (Arnaboldi&Rossignoli, 2015). The credit rating of an issuer can also alter on account of positive or negative occurrences in organisational operations and shape the market price of the bonds (Arnaboldi&Rossignoli, 2015). There is generally a relationship between the credit rating of a bond and the interest on it; the interest increases with reduction in credit rating (Arnaboldi&Rossignoli, 2015). The market risk factor with the most impact on prices of bonds constitutes alterations in interest rates in specific markets (Li et al., 2009; Longsta&Rajan, 2008). Enhancement in interest rates results in lowering of market value, whereas reduction in interest rates leads to an increase in the same. The risk also increases with enhancement in maturity of the bond (Arnaboldi&Rossignoli, 2015).

Bonds are also subject to call risks as bonds can be called by issuers before maturity (Sun, 2008; Jarrow & Yu, 2001). Such premature redemption can impact the yield of the bond and expose the bond holder to risks (Sun, 2008; Jarrow & Yu, 2001). Other risk can also be involved in investments of various types of bonds. Investors should thus carefully read the terms of individual bond issues before they engage in investments (Sun, 2008; Jarrow & Yu, 2001).

### 3.3.3. Funds

The primary purpose of investment funds is the acceptance of money from investors for the creation of collective investments in diverse financial instruments on the specific basis of diversification in line with the specified investment strategy of the funds (Cao et al., 2011; McNeil et al., 2005). The distinguishing characteristics between these funds primarily rest in

their authorisations for investments (Cao et al., 2011; McNeil et al., 2005). These funds are always liable for redemption and holders of units can thus request to redeem their holdings at any time of their convenience (Cao et al., 2011; McNeil et al., 2005). Management companies can also establish professional investment funds that do not accept money from the public (Chavaet al., 2013; Altman et al., 2005). With there being very few legal constraints on the monies invested in such funds, investments are thus significantly riskier compared to other funds (Chavaet al., 2013; Altman et al., 2005). Investments in funds expose owners to specific risks, including risks on sale and redemption, leveraging rights of participation, investment strategies, evaluation, underlying assets and management (Chavaet al., 2013; Altman et al., 2005).

#### 3.3.4. Derivatives

A derivative essentially constitutes an agreement; wherein settlement clauses are primarily based on changes in specific factors during specific periods, like for example interest and exchange rates, prices of securities, prices of commodities and securities indices (ForrerAcie&Forrer Donald, 2015). Such derivatives provide investors with specific rights to purchase or sell specific underlying assets or ask for cash settlements (ForrerAcie&Forrer Donald, 2015). The valuation of these agreements depends upon the development of specific underlying factors from the date of contract to the date of settlement (Gianiodiset al., 2014; Corsiet al., 2016). Investments in derivatives are frequently leveraged in order to ensure that a nominal alteration in the valuation of underlying assets can result in proportionately significant effect on the valuation of the derivative agreement with accompanied good or bad outcomes for relevant investors (Gianiodiset al., 2014; Corsiet al., 2016). Such agreements are essentially temporary and become worthless on expiration if prices do not move in accordance with investor anticipation (Gianiodiset al., 2014; Corsiet al., 2016).

Some examples of derivative contracts are forward contracts, options, financial contract for differences, swap agreements and derivatives outside the regulated market for securities (Dai et al., 2007; Arnaboldi&Rossignoli, 2015). Forward contracts lay down the obligations of the concerned parties for the purchase or sale of specific assets at particular prices and predetermined times (Dai et al., 2007; Arnaboldi&Rossignoli, 2015). Such contracts are very risky particularly because investors frequently need to contribute a portion of invested amount



and thus take a loan for the difference (Domeheret al., 2015; Kolb &Overdahl, 2009). This implies that a slight alteration in underlying asset prices can lead to a significantly greater impact on agreement value and consequently enhance or reduce its market value (Domeheret al., 2015; Kolb &Overdahl, 2009). An option constitutes a contract wherein the buyer obtains the right, but not the obligation for the purchase or sale of particular assets at predetermined prices within specific time boundaries or on a specified time (Jarrow & Yu, 2001; Zhao et al., 2009). The seller, as consideration for such a right is provided with a specific fee that is determined by the option's market value at the commencement of the contract (Jarrow & Yu, 2001; Zhao et al., 2009).

A swap agreement constitutes an agreement between parties for swapping different payment flows over specific periods (Cherotichet al., 2015; Crouhyet al., 2001). Whilst different types of swap agreements exist, the most common are currency swap and interest rate agreements (Cherotichet al., 2015; Crouhyet al., 2001). It is important to keep in mind that trading in derivatives also frequently takes place outside the regulated market for security and financial establishments have to mandatorily inform investors when this takes place (Zhao et al., 2009; Dai et al., 2007). Investment in derivatives outside the regulated market can lead to investor risks because they may not be able to settle agreements for open derivatives, because of the absence of a market for the same (Zhao et al., 2009; Dai et al., 2007).

### 3.3.5. Mortgage Backed Securities

A mortgage backed security constitutes a type of an asset backed security that is essentially secured either by a mortgage or a group or collection of mortgages (Norden et al., 2014; Crouhyet al., 2008). Such a security may also be grouped in a rating as specified by an accredited credit rating agency and involves periodic payments (Norden et al., 2014; Crouhyet al., 2008). Such a security is very frequently used for the redirection of principal and interest payments from the pool of mortgages to shareholders (Norden et al., 2014; Crouhyet al., 2008). Investors buy mortgage backed securities because they provide attractive rates of return. Other advantages include liquidity, efficiency and transfer of risk. These securities are however associated with some risks (Dai et al., 2007; Arnaboldi&Rossignoli, 2015). Borrowers can prepay mortgages, which can create risks in falling rate environments as they could refinance their mortgages at

cheaper rates (Dai et al., 2007; Arnaboldi&Rossignoli, 2015). As they can be refinanced, they also have call risk.

### 3.4. The Role and Utility of Innovative Financial Instruments in the Global Economy

Cherotichet al., (2015) stated that financial instruments constituted legal agreements that called upon one party to pay money or other consideration of value or commit for payment in accordance with clearly laid down conditions to counterparties in exchange for indemnification against various risks, interest payments, premiums and acquisition of rights. The counterparty, in exchange for such payment hoped to benefit through premiums, the achievement of capital gains, and the receipt of interest or the indemnification of losses (Crouhyet al., 2008; Chavaet al., 2013). Whilst financial instruments can exist in documentary forms like loan contracts or stock certificates, they have increasingly been standardised and are recorded in electronic accounting systems (Crouhyet al., 2008; Chavaet al., 2013). Innovative financial instruments have grown in usage across the world steadily on account of their diverse benefits (Corsiet al., 2016; ForrerAcie&Forrer Donald, 2015). They are utilised by traders for speculation with regard to interest rates, future prices, levels of indices, as well as other financial measures, as also to hedge financial risks (Corsiet al., 2016). Speculators bet on future prices through the prediction of future prices or other financial measures (Corsiet al., 2016; ForrerAcie&Forrer Donald, 2015). Hedgers on the other hand aim to reduce financial risks through the purchase or sale of financial instruments, whose value is likely to vary inversely with the hedged risk (Laevenet al., 2015; Schueffel&Vadana, 2015). As elaborated in the previous section, there are several types of financial instruments, many of which can be tailored by parties for their own requirements (Laevenet al., 2015; Schueffel&Vadana, 2015). Individuals and organisations make use of options and futures for achievement of capital gains or the limitation of risks; currency trading is also carried out for the same purpose (Railiene, 2015; Mention &Torkkeli, 2014).

Cao et al., (2011) stated that financial instruments appeal to policy makers for specific purposes. They can be used for the enhancement of sustainability of public investments because they can be used for recycling capital for future use (Schnbacher, 2003; Yu, 2007). They have a leverage

impact that facilitates the unlocking of higher degrees of both private and public sector resources and consequently enhance the available capital for purposes of policy formation (Schnbacher, 2003; Yu, 2007). They help in the incorporation of the participation of the private sector for purposes of decision making, selection of projects, management of commercial operations, and the capability for achievement of commercial returns (Li et al., 2009; Turnbull, 2010). They can also help considerably in ensuring higher levels of commitment, (through the sharing of involved risks), by project promoters towards the credibility of investment plans (Li et al., 2009; Turnbull, 2010).

Domeheret al., (2015) stated that contemporary international markets have nurtured and fostered swift growth in derivative instruments. These instruments can be used by knowledgeable investors to profit from alterations in equity markets and interest rates across the world, alterations in currency exchange rates and changes in the global demand and supply situation for commodities, including agricultural products, energy products and precious and industrial metals (Gianiodiset al., 2014; Corsiet al., 2016). The addition of derivative instruments to traditional investment portfolios can help in global diversification in currencies and financial instruments, assist in hedging for deflation, and inflation and develop returns that are not connected with more traditional investments (Gianiodiset al., 2014; Corsiet al., 2016). Dash et al., (2014) stated that the use of derivative instruments can specifically help in the generation of benefits with specific regard to price discovery, risk management, the improvement of market efficiency for underlying assets and reduction of market transaction costs.

It nevertheless needs to be recognised that the occurrence of the global financial crisis underscored the limitations and risks of innovative financial instruments and reduced focus on its core economic benefits. This occurred because many innovative and complex financial instruments, especially collateralised debt obligations and credit default swaps were extensively used for pushing expansion of credit, which in turn triggered the crisis (Domeheret al., 2015; Kolb & Overdahl, 2009). Mortgage securitisation especially in the boom years did not assist in the reduction of the informational challenges that are associated with credit transactions and did not help in suitable risk assessment (Longsta&Rajan, 2008; Sun, 2008). The occurrence of the

financial distress revealed the laxity in standards in the origination of securitised risks and the readiness of investors to assume substantially underestimated risks (Longsta&Rajan, 2008; Sun, 2008).

Arnaboldi and Rossignoli (2015) stated that the contraction in mortgage markets, which resulted in the recession of 2008-2009 was preceded by extensive usage of specific complex financial instruments, like collateralised debt obligations in the US and other nations. Corsiet al., (2016) however stated that derivatives transfer risks, rather than create them. Systemic crises take place when rapid expansion in credit and investment booms collapse because of non-fulfilment of expectations about future returns (Duffie& Zhu, 2011). The financial crisis revealed the loose standards in the origination of securitised credit and the readiness of institutions and funds to assume underestimated risks (Duffie& Zhu, 2011).

#### 4. Discussion and Analysis

This section of the dissertation takes up the discussion and analysis of the findings of research in accordance with the aims and objectives of the study and the formulated research questions. The discussion and analysis has been carried out with regard to specific themes that are in accordance with aims, objectives and research questions.

##### Theme 1: Evolution of Innovative Financial Instruments

The examination carried out in the course of the literature review revealed that innovation was a continuous and ongoing process that commenced in historical times and was still going extremely strong today. It constituted the development and creation of various new types of products, services or processes that could be commercially exploited and bring about a range of positive benefits for innovative individuals and organisations, as well as human society (Armstrong et al., 2012; Ketkar&Ratha, 2008). Innovation takes place in all areas of human life and has occurred extensively in the area of finance (Vachris, 2017; Armstrong et al., 2012). Innovation in finance has resulted in the development of various types of financial instruments,

systems of payments and processes (Anderloni&Bongini, 2009; Schueffel&Vadana, 2015). Such innovations have resulted in significant sophistication and development of the financial systems and have resulted in substantial benefits for individuals and organisations (Mention &Torkkeli, 2014).

The research revealed that innovations in finance commenced during the Mesopotamian civilisation in 3000 BCE and have occurred progressively since then(Wyman, 2012; Laevenet al., 2015). Financial innovations started with the conceptualisation and development of commodity money, which was followed by the development of personal loans and later by the development of banking facilities, bank deposits and banker acceptances (Lee et al., 2012). Innovation in financial instruments gained momentum after the development of metal money, which enabled the development of tradable contracts(Arthur, 2017b; Lee et al., 2012). Further evolution of financial instruments occurred in the 12th and 13th centuries spurred by the development of commercial practices in city states in North Italy (Schueffel&Vadana, 2015; Railiene, 2015). The development and growth of capitalism in subsequent years, characterised by private ownership and increasing entrepreneurial activity, boosted innovation in the area of financial instruments and led to the development of bonds, equities, cheques and other types of securities like preferred stock and convertibles (Su & Si, 2015; Arthur, 2017b). Financial activity in subsequent years was boosted by the opening of securities trading markets, the growth of railway, road and canal activity and the civil war in the USA (Laevenet al., 2015; Schueffel&Vadana, 2015). These developments, along with the recognition of the corporation as a legal entity spurred the development of complex and sophisticated financial instruments, including complex forms of bonds and equity, as well as financial securities, including income bonds and commercial paper (Owen et al., 2009; Mention &Torkkeli, 2012).

The last few decades, especially the period after the ending of the Second World War have witnessed substantial activity in this area, which has resulted in the development of numerous innovative financial instruments, including asset backed securities, collateralised debt obligations, futures, options and currency swaps (Sánchez, 2010; Owen et al., 2009).

## Theme 2: Advantages and Risks of Innovative Financial Instruments

The review of literature revealed that growth in innovative financial instruments has been extraordinary in recent decades, spurred by the needs of various types of individuals, players and institutions (Cao et al., 2011; McNeil et al., 2005). These instruments, which are of various types, including shares, bonds, funds, derivatives, including forwards, options and swaps and asset backed securities have resulted in numerous types of benefits (Gianiodiset al., 2014; Corsiet al., 2016). Stocks are for example used by organisations to raise money from investors and are used by people for investment (ForrerAcie&Forrer Donald, 2015). The sale and purchase of stocks, which has occurred continuously since the development of the joint stock company has resulted in huge economic expansion over the years and to the growth of numerous types of organisations with associated benefits (Arnaboldi&Rossignoli, 2015). The issuance of bonds has likewise enabled organisations to raise funds and at the same time provided investors with opportunities for investments and earnings (Li et al., 2009; Longsta&Rajan, 2008). Financial instruments provide opportunities to speculators for earning of profits; they also help individuals and organisations in the hedging and mitigation of risks (Turnbull, 2005; Schnbucher, 2003).

The review furthermore revealed that the use of innovative financial instruments can help in the enhancement of sustainability of public investment, the incorporation of private sector participation and the sharing of various types of risks (McNeil et al., 2005). It however needs to be recognised that the use of innovative financial instruments is associated with various types of risks that have to be identified, managed and controlled for the enhancement of their various benefits (Chavaet al., 2013; Altman et al., 2005). These risks are of various types and include market risks, interest rate risks, currency risks, liquidity risks, economic risks, country risks, legal risks inflation risks, counterparty risks and settlement risks (Cherotichet al., 2015). Users of financial instruments must recognise and be aware of these risks in order to maximise the benefits of their usage (Crouhyet al., 2001; Cherotichet al., 2015).

## Theme 3: Role of Financial Instruments in the Contemporary Global Economy

The research carried out for this project revealed that the growth in usage of innovative financial instruments has increased worldwide on account of their diverse benefits (Laevenet al., 2015; Schueffel&Vadana, 2015). Whilst millions of people make use of these instruments for purposes of savings and investments, they are also used for purposes of speculation, as well as the management and mitigation of various types of financial risks (Schnbacher, 2003; Yu, 2007). Derivative instruments are used extensively in contemporary environment by knowledgeable investors for achievement of profits, investment portfolio diversification and the generation of benefits, especially in cases of price discovery, risk management and enhancement of market efficiency (Gianiodiset al., 2014).

It however needs to be recognised that the misuse of some financial instruments, especially asset backed securities, including collateralised debt obligations by managers of banks and financial institutions contributed to the triggering of the financial crisis of 2007-2009 (Domeheret al., 2015). Whilst the financial crisis was driven and aggravated by a number of factors, there is considerable agreement that better use of new and innovative financial instruments could have helped considerably in the prevention of the onset and development of the financial crisis (Corsiet al., 2016). There is however little doubt that the use of innovative financial instruments will continue to grow across the world in the coming years and that substantially greater care will be taken in their usage by various people, especially regulators and bankers, to prevent a recurrence of the crisis.

## 5. Conclusions

### 5.1. Conclusions

This research study engaged in the examination and assessment of various aspects of innovative financial instruments in order to develop and generate a comprehensive understanding of the subject. The research for this study was carried out with the help of library based techniques and the conduct of a detailed literature review of various information sources that were identified with the help of keyword based online search. The information obtained in the literature review was thereafter taken up for discussion and analysis in accordance with chosen themes that were



in accordance with the aims and objectives of the study and the formulated research questions. The review entailed the examination of innovation in the area of finance, the evolution of financial instruments over the years, the advantages, limitations and risks of financial instruments and their role in the contemporary global environment.

The study resulted in the identification and elaboration of numerous facts and information about financial innovation and innovative financial instruments that should be of significant utility to the readers of this research study. The study furthermore revealed that whilst the use of innovative financial instruments has been considered to be one of the main drivers of the banking and financial crisis of 2007-2009, it is more or less established that whilst the gross misuse of financial instruments contributed to the development of systemic risk, this was a one off episode and financial instruments, especially mortgage backed securities help in the transfer and sharing of risk rather than in its aggravation. Innovative financial instruments are however associated with several risks, including market risk, interest rate risk, currency risk, counterparty risk and settlement risk. It is thus important to identify such risks in order to manage and mitigate them.

Millions of people are making use of these instruments for savings, investments, speculation and the management and mitigation of diverse types of financial risks. There is little doubt that innovation in the area of financial instruments will continue in the coming years, driven by the needs and requirements of individuals and institutions for availing of their numerous benefits, especially in areas of speculation, hedging, sharing and transfer of risks.

## 5.2. Limitations

The outcomes of this research study may be limited to some extent on account of its dependence upon secondary research and the absence of any primary information.

## 5.3. Recommendations



It is thus suggested that primary information on various aspects of innovative financial instruments should be obtained from selected experts in areas of finance and banking through the holding of semi-structured interviews. The obtaining of such primary information and its comprehensive analysis should add to the outcomes of this research study.

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