

Status of Research on Global Sovereign Bond Markets: An Exploratory Research

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ABSTRACT

This paper examines the current status of research on the sovereign bond market around the world and the level of consideration received by Indian sovereign bonds in international peer-reviewed finance journals as well as top Indian finance journals for the last 18 years, from 2000-2017. The authors explored all the published research articles available in four popular online research databases such as ScienceDirect, Emerald Insight, Wiley online library, and Sage publications by using the keyword "Sovereign Bond" and identified 370 scholarly articles on 12 different sub-themes across 64 top rated international journals. 16 of 370 articles had considered Indian sovereign bond market as a sample. The authors could also identify an increasing trend in the number of research works. Using the same methodology the authors examined 8 top Indian journals, from which only 2 articles were identified. The paper also explored 83 working papers on Indian sovereign bonds. Overall, there is a visible growth in research related to global sovereign bond markets, whereas Indian sovereign bond markets are not being considered.

Keywords: Sovereignbond markets, well-established markets, developed and developing nations etc.

INTRODUCTION:

The financial history of the world has witnessed remarkable globalization in the last three decades. The emerging economies from Asia, Latin America, Eastern Europe, and the former Soviet Union began to receive huge amount foreign capital flows. This Integration of global markets created a need for having in-depth researches on these emerging markets on various aspects.

Sovereign rating and related research works were the most required area to be studied. Bissoondoyal-Bheenick (2005) described 'Sovereign Rating' as an assessment of a government's ability and willingness to service its debts in full and on time, and is thus a forward estimate of the probability of default. According to Cantor and Packer (1996) 'Sovereign Rating' is an assessment of the relative likelihood of a country defaulting on its financial obligations. It is a well-known fact that changes in the rating have a significant impact on the international capital market. Factors affecting sovereign rating and impact of sovereign rating changes on various financial instruments as well as markets are the concentration in most of such research works.

Another serious issue being researched in the financial world is with regard to the crisis situations like the global financial crisis 2007-2009 and the European sovereign debt crisis which started at the end of 2009. The global financial crisis of 2007-2009 is considered to be the worst crisis since the great depression of 1930's by many well-known economists. Because, it seriously affected financial markets from almost all nations. According to Iuliana Matei and Angela Cheptea (2012), "the financial crisis started in mid-2007-2009, this unpredicted crisis had a huge impact on Eurozone govt bond market". In contrast, John Ammer, Fang Cai, and Chiara Scotti, (2011) viewed effects as "the response of emerging market asset prices to the crisis of 2007-2009, which was centered on the U.S and European financial intermediaries was fairly mild in comparison to historical

experience". The European sovereign debt crisis started during end 2009 due to the failure of peripheral Eurozone member states such as Greece, Spain, Ireland, Portugal, and Cyprus to fulfill their repayment obligation least by way of refinancing their govt debt or by way of bailing out their beleaguered banks without the assistance of third-party financial Institutions.

Next major research area is the bond yield spread or the difference between the yield on long term and short term securities is frequently regarded by the market participants and monetary authorities as an important predictor of output growth. According to expectations hypothesis of the term structure, long-term securities generally command higher yields than their short-term counterparts, because of the term premium associated with investors' preference to hold the later. George Chen, Abbas Valadkhani and BligGrant(2016) identified that the spread is capable of predicting cumulative and marginal changes for up to four years and six quarters respectively.

Another important aspect researched is on the ongoing sovereign debt crisis and risky situations which increased the necessity for proper sovereign risk monitoring. Bond market risk management is yet another important area of study. According to Samuel Pollege and Peter N Posch (2013), "using information from sovereign credit default swap (CDS) and government bond markets enables asset managers and traders to get a better picture on the sovereign risk of an entity. The difference between CDS and government bond prices (CDS-Bond basis), should be close to zero in efficient markets. Thus, a significant non- zero basis indicates a situation in which one market demands a price premium.

Other important aspects which have been a matter of study are: impact of macroeconomic variables on sovereign bond markets, financial globalization of sovereign bond markets, debt restructuring, impact of various monetary policies on sovereign bond markets, bond pricing, spillover effects from cross-border bond markets, liquidity issues in sovereign bond markets, market volatility, country risk on sovereign bond trading, studies on market microstructure, and many more.

In this paper, an attempt is made to summarize all those scholarly peer-reviewed articles on sovereign bonds available on popular online research databases such as ScienceDirect, Emerald Insight, Wiley online Library, Sage Publications etc, during the past 18 years period from 2000 to 2017. This paper also made an inquiry into the trend among research works happening in International as well as Indian contexts, followed by a thematic analysis on all those articles explored through above mentioned online sources in the past 18 years. Further, this paper could identify the trend in changing interest among researchers, during the study period.

METHODOLOGY:

The authors explored all the published research works on 'Sovereign Bonds' in the last 18 years, from 2000 to 2017 in four popular online research databases such as Science Direct, Emerald Insight, Wiley Online Library and Sage Journals. The sample selection for the review of the status of research relating to 'Sovereign Bonds' was based on judgment calls (Mc Grath, Martin, Kulka 1982) in order to ensure subjectivity as there are no strict rules for the researchers while doing reviews. The words "Sovereign Bond" were used as the keywords to search the articles, which resulted in 8418 scholarly articles. As 'sovereign bonds' are widely connected with almost all other financial instruments and markets, we realized the necessity to identify and avoid those studies not giving a prime importance for issues relevant to sovereign bond markets. The abstract of all these 8418 articles was examined to ensure relevance of those studies in the specified research area. This process leads to a decision of rejecting 8048 articles because these studies were not actually focusing on sovereign bonds in their research objectives. But, the term "Sovereign Bonds" was used in those papers several times. The remaining 370 scholarly research articles which mainly focused on sovereign bonds were from 64 high rated and peer-reviewed International journals covering 12 different research areas on sovereign bonds. i.e., Journal of International Money and Finance; Journal of Banking and Finance; Journal of International Financial Markets, Institutions and Money; Journal of International Economics; Emerging Market Review; Journal of Financial Stability; Journal of Financial Stability; Journal of Empirical Finance; Journal of Research Letters; International Review of Economics and Finance; International Review of Financial Analysis; Journal of Financial Economics; European Economic Review; European Journal of Political Economy; Journal of Macro Economics; Journal of Macro Economics; Procedia Economics and Finance; Economic Systems; Economic Letters; Global Finance Journal; Physica A: Statistical Mechanics and its Applications; International Finance Review; The Journal of Risk Finance; Contemporary Studies in Economic and Financial Analysis; Journal of Financial Economic Policy; Journal of Financial Regulation and Compliance; Journal of Economic Studies; Managerial Finance; Studies in Law, Politics, and Society; African Journal of Economic and Management Studies; Baltic Journal of Management; China Finance Review International; Frontiers of Economics and Globalization; International Journal of Islamic and Middle Eastern Finance and Management; International Journal of Law and

Management; Journal of Property Investment and Finance; Qualitative Research in Financial Markets; Studies in Economics and Finance; Accounting, Auditing, and Accountability Journal; Advances in Econometrics; Journal of Emerging Market Finance; Security Dialogue; Comparative Political Studies; Studies in Macro Economics; The American Review of Public Administration; Politics and Society; European Journal of International Relations; Philosophy and Social Criticism; Asia Pacific Journal of Financial Studies; Public Budgeting and Finance; Journal of Economic Surveys; European Financial Management; The Economic Journal; International Finance; Journal of Money, Credit, and Banking; International Studies Quarterly; Review of International Economics; German Economic Review; International Journal of Finance and Economics; Bulletin of Economic Research; Canadian Journal of Administrative Series; Risk Analysis; The Manchester School; The History Review and Economic Outlook Etc.

Using ScienceDirect, we could identify 282 articles published during the period from 2000 to 2017 in 20 different journals. Similarly a search in Emerald insight contributed 56 scholarly articles from 19 high rated peer-reviewed journals from 2000 to 2017. Search in Sage publications resulted in 13 scholarly research works dealing with various issues related to sovereign bonds from 8 International peer-reviewed journals. Finally, we used another online database called Wiley Online Library, from which 21 scholarly research articles from 17 Wiley journals were identified.

Next, the authors made a secondary research using the term "India" in order to identify relevant research works on Indian Sovereign bonds and it identified 354 research papers out of 370 research papers which were selected in the earlier classification process. These 354 papers either had the word "India" in the bibliography (or reference section) or just had a mention about 'India' in the article. Further exploration found that, out of 16 articles which had relevance to Indian Sovereign bonds, 15 were seen considering 'India' as one among the many samples. Only one paper is found to have examined Indian sovereign bonds exclusively.

The abstracts of all the 370 papers were reviewed by the authors, followed by a thematic analysis of the content. In order to ensure reliability and validity of classification, the authors followed several procedures, like, multiple analysis of abstracts to ensure that the classification of the theme is same at all times. Then, keywords were used to check the classification of the themes.

In addition to the 370 journals selected from the four online databases which published articles on 'Sovereign Bonds', we chose eight other reputed peer-reviewed Indian finance research journals such as, Journal of Emerging Market Finance; Indian Journal of Finance; Finance India; Global Business Review; IIMB Management Review; India Review; IUP Journals; Journal of Indian Business Research, to deepen our enquiry of research works on Indian Sovereign Bond Market. The same process which is adapted for international journals were adopted for the articles published in Indian Journals. There is no ranking available for scholarly peer-reviewed Indian journals. We reviewed some of the key journals published by the national institutes, research associations, and management schools in India that are considered to be a high standard.

Unfortunately, we couldn't identify many articles on Indian sovereign bonds even in top rated Indian financial research journals. From the top eight journals mentioned above, we identified only two articles on Indian Sovereign bonds published during 2000 to 2017. The use of this similar methodology in identifying the articles helped to bring consistency in the process of analysis. This had facilitated comparison of trends in sovereign bond market research on India, in the global and Indian literature.

Selection of apt keyword is another factor, which can influence the results. Here the keyword 'Sovereign Bond' is used by the authors to search the entire content of papers. The common trend of limiting the scope of keywords with "Title, Abstract and Key Words" is avoided, because it is realized that the authors are using synonyms of a sovereign bond, like, Government Bond, Treasury Bond, etc. in their titles and abstract.

ANALYSIS:

Studies on Sovereign Bond Market in top international journals:

This paper explored all papers listed in most popular online research databases, such as ScienceDirect, Emerald Insight, sage publications, and Wiley online Library during last 18 years from 2000 to 2017, by using the keyword "Sovereign Bond". It produced a result of 8418 scholarly research articles. As the terminology sovereign bonds are well connected with all other financial markets and instruments, it was used either as a benchmark or as a variable for many studies. So, we realized the need of having a screening process. From a thorough analysis of abstracts of all 8418 articles, we could identify that the objectives of 8048 articles were not focusing on sovereign bonds. At the same time, they just used the term 'Sovereign Bonds' many times in their content. The remaining 370 articles (out of this 370 articles, 16 having relevance to Indian market), were identified from 64 top rated international peer-reviewed journals, which were presented in Table No.1 below.

Out of these 64 International peer-reviewed journals, 10 were having at least one article which has relevance to Indian sovereign bond market. At the same time, 15 out of 16 research articles considered India as one among the many samples. The remaining one paper made a research exclusively on Indian sovereign bonds which appeared in Journal of Emerging Market Finance, published by Sage publications titled "Idiosyncratic factors in Pricing Sovereign Bonds: An Analysis of the Government of India Bond Market" written by Indian authors, Gangadhar Darbha, Sudipta Dutta Roy, and Vardhana Pawaskar in the year 2002. This shows that only 4% of researchers considered India in their matter of inquiry and also it is hard to find exclusive researches on Indian sovereign bonds in international literature.

Table 1: Studies on Sovereign Bond Market in top international journals

No	Name of Journal	Articles on/Related to Sovereign Bonds	Articles having relevance to Indian Sovereign Bond Market.
ScienceDirect			
1	Journal of International Money and Finance	51	2
2	Journal of Banking and Finance	36	1
3	Journal of International Financial Markets, Institutions, and Money	28	2
4	Journal of International Economics	21	Nil
5	Economic Modeling	17	1
6	Emerging Market Review	15	3
7	Journal of Financial Stability	14	Nil
8	Journal of Empirical Finance	11	Nil
9	Journal of Research Letters	9	Nil
10	International Review of Economics and Finance	8	Nil
11	International Review of Financial Analysis	8	Nil
12	Journal of Financial Economics	8	Nil
13	European Economic Review	7	Nil
14	European Journal of Political Economy	7	Nil
15	Journal of Macro Economics	7	Nil
16	Procedia Economics and Finance	7	Nil
17	Economic Systems	6	Nil
18	Economic Letters	6	Nil
19	Global Finance Journal	6	2
20	Physica A: Statistical Mechanics and its Applications	6	Nil
Emerald Insight			
21	International Finance Review	7	Nil
22	The Journal of Risk Finance	7	Nil
23	Contemporary Studies in Economic and Financial Analysis	6	Nil
24	Journal of Financial Economic Policy	5	1
25	Journal of Financial Regulation and Compliance	3	Nil
26	Journal of Economic Studies	3	Nil
27	Managerial Finance	3	1
28	Studies in Law, Politics, and Society	3	Nil
29	African Journal of Economic and Management Studies	2	Nil
30	Baltic Journal of Management	2	Nil
31	China Finance Review International	2	Nil
32	Frontiers of Economics and Globalization	2	Nil
33	International Journal of Islamic and Middle Eastern Finance and Management	2	Nil

34	International Journal of Law and Management	2	Nil
35	Journal of Property Investment and Finance	2	Nil
36	Qualitative Research in Financial Markets	2	Nil
37	Studies in Economics and Finance	2	Nil
38	Accounting, Auditing, and Accountability Journal	1	Nil
39	Advances in Econometrics	1	Nil
Sage Publications			
40	Journal of Emerging Market Finance	5	2
41	Security Dialogue	2	Nil
42	Comparative Political Studies	1	Nil
43	Studies in Macro Economics	1	Nil
44	The American Review of Public Administration	1	Nil
45	Politics and Society	1	Nil
46	European Journal of International Relations	1	Nil
47	Philosophy and Social Criticism	1	Nil
Wiley Online Library			
48	Asia Pacific Journal of Financial Studies	1	Nil
49	Public Budgeting and Finance	1	Nil
50	Journal of Economic Surveys	1	Nil
51	European Financial Management	1	Nil
52	The Economic Journal	1	Nil
53	International Finance	1	Nil
54	Journal of Money, Credit, and Banking	1	Nil
55	International Studies Quarterly	1	Nil
56	Review of International Economics	1	Nil
57	German Economic Review	1	Nil
58	International Journal of Finance and Economics	5	1
59	Bulletin of Economic Research	1	Nil
60	Canadian Journal of Administrative Series	1	Nil
61	Risk Analysis	1	Nil
62	The Manchester School	1	Nil
63	The History Review	1	Nil
64	Economic Outlook	1	Nil
		370	16

Source: Compiled by the authors

It is also identified that 'Journal of International Money and Finance' from ScienceDirect is having the most number of studies (51 research articles) on sovereign bonds from the selected set of journals during the period 2000 and 2017. This is followed by 'Journal of Banking and Finance' (36 Articles); 'Journal of International Financial Markets, Institutions, and Money' (28 Articles). Out of the total 64 journals, 24 journals had a single paper on sovereign bonds.

While considering journals which dealt with articles relevant to Indian sovereign bond markets, 'Emerging Market Review' stands first with 3 research articles, followed by 'Journal of Money and Finance' (2 articles), 'Journal of International Financial Markets, Institutions and Money' (2 articles), 'Global Finance Journal' (2 articles) and 'Journal of Emerging Market Finance' (2 articles). Other journals with a single article on Indian sovereign bond markets are, 'Journal of Banking and Finance'; 'Economic Modeling'; 'Journal of Financial Economic Policy'; 'Managerial Finance'; 'International Journal of Finance and Economics'. A notable journal is the 'Journal of Emerging Market Finance' for being the only journal with an exclusive research article on Indian sovereign bond market.

Next, we analyzed the year wise number of papers on sovereign bond markets published from 2000 to 2017. The results are presented in the Table No. 2 below. It can be observed from the table that, on an average, the number of papers published on sovereign bonds in the top international journals is increasing year after year. This shows that research interest on the sovereign bond is getting more attention from researchers. While comparing a number of papers published in the year 2000 with a number of papers published in 2016, there is a 1500% jump in the number of papers, i.e., from 4 to 61 papers. Also, it is observed that after the emergence of

global financial crisis, there is a spurt in research in sovereign bond markets.

Table 2: Year-wise papers on sovereign bond market published between 2007 -2017

Year	Publications	Year	Publications
2000	4	2009	13
2001	3	2010	12
2002	6	2011	15
2003	4	2012	29
2004	5	2013	42
2005	10	2014	57
2006	7	2015	41
2007	14	2016	61
2008	11	2017*	31
Total		370	

Source: Compiled by the Authors.

State of research on Indian sovereign bonds in top Indian journals:

There is no widely accepted ranking available in Indian journals. In order to explore the number of papers relating to Indian sovereign bond market in Indian journals, we considered eight key journals published by some national institutes, research associations, and management schools in India that are considered to be top rated and reputed. From the selected popular journals, we could identify only two articles on Indian Sovereign bond market were published during the last 18 years from 2000 to 2017. Also, it is important to note that both articles appeared in the same journal. i.e., 'Journal of Emerging Market Finance'. The list of such journals is displayed in Table No. 3.2 below. From this, we could understand that Indian research community is not keen in research relating to Indian sovereign bond markets. It is also observed that in spite of growth in research on Indian financial markets, studies on Indian sovereign bond market being neglected during the study period.

Table 3: List of Indian journals with papers on Sovereign Bond market.

Journals	No. of Paper Published
Journal of Emerging Market Finance	2
Indian Journal of Finance	Nil
Finance India	Nil
Global Business Review	Nil
IIMB Management Review	Nil
India Review	Nil
IUP Journals	Nil
Journal of Indian Business Research	Nil
Total	2

Source: Compiled by authors

Thematic analysis of the papers published on Sovereign Bond Market across the globe:

Through a detailed abstract review, the authors identified that the selected 370 articles were dealing with more than 12 different research aspects relating to sovereign bonds. They are: Effect of financial crisis 2007 to 2009 / European sovereign debt crisis, sovereign bond yield spread, sovereign bond market risk and risk management, changes in sovereign credit rating and its effects on sovereign bond prices, impact of changes in macroeconomic variables on sovereign bond prices, market integration among sovereign bond markets of various nations, aspects related to debt restructuring on sovereign bonds, impact of monetary policies and policy changes on sovereign bond markets, bond pricing, spillover effects among bond markets, market liquidity of sovereign bond instruments, sovereign default risk, market volatility in sovereign bond markets, country risk, market microstructure, impact of political condition on bond price movements, impact of economic news / announcement on sovereign bond markets, regulatory aspects and its challenges, usefulness of bond instruments while constructing diversified portfolio, interventions made by central banks and its effectiveness on sovereign bond markets, relationship with corporate bond markets, and relationship with stock markets. All these papers with their themes were tabulated and presented in Table No. 4 below.

Table 4: Themes based on which papers were published in top-ratedfinance journals

Themes	Theme-wise No. of papers	Related to India
Effect of Financial / Sovereign Debt Crisis	63	3
Risk and Risk Management	53	Nil
Impact of Macro-Economic fundamentals	50	1
Bond Yield Spread	48	1
Market Integration	40	1
Credit Rating	25	5
Debt Restructuring	15	Nil
Bond Pricing	14	2
Market Liquidity	13	2
Market volatility	11	Nil
Regulatory Aspects and Central bank operations	10	Nil
Market Micro-Structure	8	Nil
Other	18	1
Total	370	16

Source: Compiled by authors

While reviewing the articles on sovereign bond from the 4selected online research databases, we could identify a number of 370 scholarly peer-reviewedarticles were published during past 18 years. Out of these 370 articles, 16 of them were related to Indian sovereign bond market. Similarly, out of these articles, 48% of articles were related to bond markets of European countries and 28% were focused on U.S bond markets and remaining 24% of articles were shared by many other developed as well as developing countries. From this, it is clear that researchers were concentrating mainly on theU.S and European countries for research relating to sovereign bond markets. So, these two regions are being considered as thebackbone of global sovereign bond markets. Now, this paper analyses the papers based on the thematic grouping.

Effect of Financial / Sovereign Debt Crisis:

Being the most serious issue faced by the financial markets, it is obvious that, the issue related to financial crisis and other crisis situationswere given much importance for research. Here in our exploratory inquiry, we could identify that 63 scholarly research papers out of 370 articles (17 % of the total research papers) were concentrating on the effect of the Global financial crisis 2007 to 2009 and the European sovereign debt crisis.Out of these 63 papers,three of them considered India while selecting their samples.

Bond Yield Spread:

The bond yield spread or the difference between the yield on long term and short term securities is frequently regarded by the market participants and monitory authorities as an important predictor of output growth. According to 'Expectations hypothesis' of the term structure, long-term securities generally command higher yield than their short-termcounterparts.Because of the term premium associated with it, the investors prefer to hold the later. It is a proven fact that the spread is capable of predicting cumulative and marginal changes. Hence, the analysis of bond yield spread also received themost attention from sovereign bond market researchers.There was48 scholarly peer-reviewed articles out of total 370 articles on sovereign bonds. This accounts for 13% of the total studies.Only one study had relevant consideration of Indian sovereign bond market.

Risk Management:

Financial markets are always risky in nature.Risk prevails even in the case of sovereign bond instruments which are considered to be insulated from instrument specified risks such as default risk etc..Bonds are not secure from market risks. The on-going sovereign debt crisis and other risky situations increased the necessity for proper sovereign risk monitoring. To get a better picture of the sovereign risk of an entity, sovereign credit default swap (CDS) and government bond markets is being used by the traders as well as asset managers. Hence, bond market risks and mechanisms to manage risks has popular among researchers.31 scholarly peer-reviewedarticles out of 370 articles were focused on sovereign bond risk management aspects, which contributed more than 8% to the total research. AsIndian risk management instruments are in its infant stage,we

couldn't identify any study related to Indian sovereign bonds from risk management perspective.

Credit Rating:

The credit rating of the sovereign bond is related to a government's ability and willingness to service its debts in full and on time. Thus, a forward estimate of the chance to have default or risk freeness of the instrument must be well enquired before making any investment in any government security. Thus emerged the need of having a standardized sovereign credit rating on all governments which intends to issue securities in financial markets. It is a well-known fact that changes in sovereign rating will have a significant impact on international capital markets. In our study, we found 25 scholarly articles out of total 370 articles (7% of total research studies) were considering the factors that would affect sovereign rating on various financial instruments as well as markets. Out of which 5 studies considered India as one of their samples.

Impact of Macro-Economic Variables:

The influence of macroeconomic variables is larger in financial markets, especially on government securities. Macroeconomic fundamentals can be broadly classified into three categories, Monetary factors, Real activity factors, and Fiscal factors. According to Mohammad and Kashani (2011), monetary factors normally contains interest rate, exchange rate, inflation rate, and oil prices. Francois, Mignon (2005) and Francesco Ravazzolo (2015) treated Index of Industrial Production (IIP), Gross Domestic Production (GDP) and Consumer Price Index (CPI) as real activity factors. While discussing fiscal factors, Joseph Gruber and Steve Kamim (2011) considered Government debt as a factor. Deficit finance, Government expenditure taxes were considered as fiscal factors by Kerstin Bernoth, Jurgen von Hagen, Ludger Schuknecht (2014). According to Alexandra Popescu and Camelia Turcu (2016), countries with high public debt and deficits, but also high yields, have experienced in recent years an important increase in their contribution to systematic risks which affects sovereign bond markets. Dionysios Chionis, Ioannis Pragidis and Panagiotis Schizas (2014) concluded the existence of a structural break due to macro fundamentals of the yield function. They also identified inflation and unemployment as significant determinants for the yield. Here, our study identified 21 scholarly peer-reviewed research works from the international literature (6% of total studies identified) concentrating on the impact of macroeconomic variables on government securities. None of the studies considered India as their research interest.

Market Integration:

Over recent decades, there has been a tremendous growth in cross-border financial flows throughout the world. Securities market of developed nations has enjoyed a clear cross-border accessibility. Recently, many newly issued securities were designed and offered to the public in such a way to maximize their presence to international investors. This integration process was not smooth many times because of global and country-specific factors. Petra Posedel Simovic et al (2015) identified sovereign bonds can still be considered as an imperfect substitute due to differences in their domestic risk factors. However, as the level of integration has been increasing over the time, diversification opportunities have been subsiding. According to Ferguson et al (2009), financial integration could have both stabilizing and destabilizing effects. Some of the main stabilizing effects were expected to come from increased portfolio diversification. Demyanyk et al (2008) noted that if banks and other investors became more diversified across borders within the euro area, they could reduce their exposure to domestic shocks, and would reflect in greater income and consumption risk-sharing. Indeed, global and European evidence suggested that financial openness and integration had reduced consumption growth volatility (Bekaert et al (2006)). Research by Giannetti and Ongena (2009) suggested that large cross-border banks in Europe could improve overall economic performance by making sure that productive capital was channeled towards most efficient firms and countries. Due to the importance of market integration and cross-border financial flows, we could find a significant number of research papers on sovereign bond markets concentrating on these aspects. Out of 370 studies explored from the international literature, 16 were found focusing on market integration, and one of them considered India for this matter.

Debt Restructuring:

Financial stability of the debtor and stability of the international financial markets particularly in the case of sovereign debt may be seriously affected by debt defaults. In order to minimize this issue, an efficient and timely restructuring of the debt can be considered. Most of the debt restructuring contains an exit consent and it becomes an inevitable part of debt restructuring. Kennath Daniels and Gabriel G Ramirez (2007) explained an exit consent is a feature of a debt exchange offer that requires the consent of tendering bondholders to change some of the terms of bond indentures as a condition to participate in the offer. DeSieno and Carey (2005) argue that bond issuers take advantage of bondholders through intentionally coercive exit consents. They claim that

bond issuers exploit the institutionalized perceptions of bondholders and often overreach the use of exit consents for the issuer's benefit. The result is an unfavorable change in terms of payments which lead to a wealth transfer from bondholders to bond issuers. In contrast, Buchhiet and Gulati (2000) and Tamura (2002) commented that exit consents are essential. Otherwise "Opportunistic" bondholders will exploit their advantage holding out in the debt restructuring to demand preferential payment, potentially leading to financial instability, particularly for sovereign debt restructuring. Though it is obvious that, more comprehensive research in this area still required, our study reveals that a total 15 studies were explored from international literature on debt restructuring related to sovereign bonds, and none of them touched on Indian sovereign bond market.

Bond Pricing:

Since the emergence of European sovereign debt crisis from end 2009, economists and finance researchers started showing interest in the pricing of sovereign bonds. Aizenman et al., (2013) stated that, "question at the heart of the policy debate is to which extent market prices of sovereign bonds reflect economic fundamentals in an appropriate fashion or whether swing in risk appetite has led to an underpricing of risk prior to the global financial crisis and possibly an overpricing of risk during the European sovereign debt crisis". As a consequence of the crisis, it became necessary to examine the pricing mechanisms prevailing in sovereign debt markets of developed economies in a better way. The earlier studies have made distinctive analysis on emerging markets (Edwards 1984, 1986; Uribe and Yue 2006) and majority of the literature on advanced economies has concentrated on Euro area countries from the early years of formulating European Monetary Union (EMU) (Favero et al., 1997; Codogno et al., 2003) as well as more recently during the sovereign debt crisis (Bernoth and Erdogan 2012; Borge et al., 2011). Even though less in number, the pricing of sovereign debt in other advanced economies and the pricing of low yielding debt zones like OECD and G7 countries also were considered by researchers. From the Table No.4, it can be observed that the number of studies on bond pricing is not satisfactory. The authors identified only 14 research works on bond pricing, of which 2 of them considered Indian sovereign bond market as one of their samples.

Market Microstructure:

A common definition of the market microstructure is that it relates to the study of the trading mechanisms used for financial securities. National Bureau of Economic Research defines market microstructure as "a field of study that is devoted to theoretical, empirical, and experimental research on the economics of the securities markets. It includes the role of information in the price discovery process, the definition, measurement, and control of liquidity and transaction costs and their implication for efficiency, welfare, and regulation of alternative trading mechanisms and market structures". Chandrasekhar Krishnamurti (2009) stated that market microstructure has broader interest among financial economists since it has implications for asset pricing, international finance, and corporate finance. A basic premise of market microstructure theory is that asset price need not reflect full information-expectations value due to a variety of frictions. The relationship between market microstructure and other areas of finance is relatively new and is continuing to evolve. Research on market microstructure started getting more attention in recent past. It is one of the most potential research areas which has become an important topic of discussion among financial economists. In line with this, in this exploratory study, the authors could identify only eight research works published in highly reputed finance journals during 2000 to 2017. None of them considered India as a sample.

Market Volatility:

Several detailed studies demonstrate that asset prices and returns can predict economic activity. The motive behind such a statement is simple. That is since investors' expectations about the future condition of the economy will determine how much they are willing to spend for an asset today. The plots of market volatility can act as an electrocardiogram, reflecting the pulse of capital markets. Thus, it can demonstrate current market attitude towards future. An important work of Campbell et al., (2017) states, investment opportunities could become progressively worse due to either the decline in expected market returns or the increase in market volatility of stock returns. Merton (1973) extended this conclusion by incorporating the stochastic volatility. This is another area which is emphasized in international journals. In our study, on the sovereign bond market, we could identify 11 studies from international literature on sovereign bond market volatility and none of them considered Indian sovereign bond market.

Sovereign Bond Market Liquidity:

Identifying the liquidity component of bond yield and bond yield spread is important. Alfonso Dufour,

Anderei Stancu and Simone Varotto (2017) showed how the importance of credit and liquidity determinants varies across eurozone countries and between calm and crisis period. They observed market liquidity risk becomes statistically significant during the subprime and sovereign crisis periods. Beber et al., (2009) concluded that credit risk usually accounts for the largest part of sovereign bond spreads but liquidity risk gains importance in times of market uncertainty. Pelizzon et al., (2016) found that liquidity risk does not affect countries indiscriminately, but only those that run into financial difficulties or are likely to be unable to service their debt. This establishes a plausible connection between liquidity and the level of credit risk faced by a sovereign. Ester Faia (2017) states that short-term liabilities are subject to liquidity risk, as investors can withdraw deposits when receiving information signals on nonperforming banks' assets, which include sovereign bonds. Several renowned economists opined that it is very much essential to have a detailed study on the liquidity aspect of financial instruments. Here, we could able to identify 13 scholarly research works focused on sovereign bond market liquidity. Importantly, two of the studies considered Indian bond market since in their opinion Indian sovereign bond market also faced liquidity issues many times.

Regulatory aspects and Central Bank Interventions:

A central bank or monetary authority is a monopolized and mostly nationalized institution with powers to control over the production and distribution of money and credit. In modern economics, they are responsible for formulating monetary policy and regulation of member banks. They are the issuers of government debt securities to the public. Being a monetary authority and responsibility for regulating, these central banks used to take some careful steps and market interventions especially during situations with financial difficulties. It is always important to examine effectiveness and impact of such central bank movements in the open market. L. Pelizzon et al., (2016) found prior to European Central Bank (ECB) intervention, the relationship between credit risk and market liquidity was strong and depended not simply on the changes in credit risk, but also on the level of credit risk. They also proved that following the ECB intervention, the improvement in funding liquidity available to the banks strongly attenuated the dynamic relation between credit risk and market liquidity. Similarly, M. Falagiada, S. Reitz (2015) commented that ECB communications about non-standard operations were able to reduce the sovereign solvency risk. On this aspect, 10 studies were identified by the authors from the total of 370 papers and none of them considered Indian sovereign bond market for their research.

WORKING PAPERS ON INDIAN SOVEREIGN BOND MARKET:

Table 5: Working papers on Indian Sovereign Bond Markets

Working Papers	No. of Papers
Econ Working Papers	33
IDEAS	34
MPRA	2
SSRN	14
Total	83

Source: Compiled by the authors

Here the authors explored various working papers on Indian sovereign bonds using Google search engine, which identified four important working paper archives say, Econ Working Papers, IDEAS, MPRA, and SSRN having 33, 34, 2, and 14 working papers respectively. These are the world's most popular working papers archives which contain working papers and conference papers. It has to be noted that 70% of the working papers or conference papers on sovereign bond markets, which explored from the above-mentioned sources were works carried out by various monetary and regulatory authorities like, RBI, SEBI, IMF, ADB, etc. and most of these works by monetary and regulatory institutions are policy-related papers. These studies mostly focus on the impact of financial crisis 2008, impact of European sovereign debt crisis 2011, impact of changes in macroeconomic factors on sovereign bond markets, forecasting of sovereign spreads, credit rating related issues, policy-making related issues, debt restructuring, and market spillovers etc. Similar to the results of analysis on peer-reviewed published literature, concentration in Asian developing countries, especially countries like India, is very nominal. Even though, we could identify that few works were done by either domestic authors or domestic central banks of respective

developing countries in Asia.

LIMITATIONS OF THE STUDY AND SCOPE FOR FURTHER RESEARCH ON 'SOVEREIGN BONDS':

It is a well-known fact that global research activities are widespread in nature and number of research works are too huge. It is impossible to examine all research works conducted in any specific research area, and this paper considers only papers which are available in few research databases, say, ScienceDirect, Emerald Insight, Wiley Online Library, and Sage Journals, and it also considered some of the top Indian Finance journals and finally some working paper archives. Research databases such as Springer and Archives such as Jstor were not considered for this review paper. These sample sources might not be enough to present exact picture about the current status of research works on sovereign bond markets. Another limitation which can be associated with such a review of literature is limitations of keyword provided to explore research articles from these research databases. In this paper, the keyword used is, 'Sovereign Bond' being most popular term. Whereas, many authors are using synonyms like 'Government Bonds' or 'Treasury Market' etc also. So, it is an important limitation while exploring papers for this research paper. We may have missed some important research papers due to this limitation of the keyword. Time factor also restricted the authors from having an extensive review process on all papers identified from the above-mentioned sources. We could identify around 8500 research articles and only abstract reviews were carried out because of this large number of papers. Here, it is important to note that, using abstracts we may not be able to describe methodological and numerical aspects of a paper always. So, we can agree that the methodological and numerical aspects of selected papers can be missing in this research work.

The basic intention behind this review paper is to examine the current trend and status of research works on sovereign markets and to suggest unexplored potential research areas of sovereign bond markets which is important to be discussed. Accordingly, we could identify some important research gaps on sovereign bond markets on Asian developing countries mainly on India. Sovereign bond markets of Asian developing countries have not been studied much. Also, we should notice that collectively these markets can beat developed sovereign debt markets at times. So, it is essential to study the integration between developing nations, which had not been examined in depth. Another gap identified is on market mechanisms and trading behavior of emerging markets, because many times such emerging markets work more efficiently than developed markets. Consideration of such efficient emerging markets in investment portfolios will bring more profit to investors. Internationally, even if the number of works on sovereign bond markets increased gradually (1500% increase) over the past 18 years, studies on emerging markets like India did not see significant growth. Risk and Risk management aspects of sovereign bond markets is an important aspect which is being widely studied in the international literature. Being Indian debt derivatives market is also growing fast, the effectiveness of such system should be studied. Likewise, all aspects other than aspects related to regulations and policies on sovereign bond markets of emerging countries including India is yet to be studied in depth. This includes research aspects like impact of financial or sovereign debt crisis, risk and risk management aspects, bond yield spread, bond market integration, bond pricing, debt restructuring, market liquidity, market volatility, etc.. on sovereign debt markets of developing countries from Asia, especially on Indian sovereign bond market. Research gap on aspects relating to regulatory and policy-making got narrowed down because the literature on such aspects is available through working papers and reports of various regulatory authorities. It is always important to have an in-depth examination of all aspects of any market, for its successful growth.

CONCLUSION:

Sovereign bond markets are one of the largest financial markets in the world, emphasizing in-depth studies on such large and well-established markets. It is a well-known fact that sovereign markets of developed nations, especially from Europe and America are being examined always. Sovereign bond markets from developing nations like India were not extensively studied, but many times, such markets are working efficiently and as a group, these markets have the power to beat developed markets.

This paper is aimed to understand the current trend in research relating to sovereign bond markets. This paper used four major online research databases, ScienceDirect, Emerald Insight, Online Wiley, and Sage Publications to explore peer-reviewed research articles which published in top-rated international journals by using the keyword "Sovereign Bond", for a period from 2000 to 2017. It resulted in a total of 8418 papers and through a careful abstract review, it was narrowed down to 386 articles which were exactly concentrating on sovereign bond markets. Out of this 386 articles, only 16 were considering Indian sovereign bond market.

The authors had identified more than 12 broad research aspects which have been considered in international journals, including effects of financial or sovereign debt crisis; Risk and risk management; impact of

macroeconomic fundamentals; bond yield spread; global market integration; credit rating; debt restructuring; bond pricing; market liquidity; market volatility; regulatory aspects; and market microstructure. In the year wise year wise classification, a tremendous 1500% growth was identified in the number of papers in the past 18 years. While exploring the top circulated Indian journals, we could identify that only two articles were published on the sovereign bond market of India. Though there were many working papers from various sources, most of them were concentrating only regulatory and monetary aspects.

Overall, from this paper on the review of the literature on global sovereign bond markets, we could be able to conclude that there is not much scholarly research pertaining to Indian sovereign bond market.

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