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# Development of Bond Market based on the Economy of Nation

**Surbhi Gupta**

**Abstract:** ***The main goal of this report is to examine the structural, financial, developmental, institutional and macroeconomic factors influencing the development of bond market. This report gives a brief discussion of the variables: size of the economy, openness to trade, English legal origin, separation from equator, GDP per capita, quality of institutions, size of banking framework, banking concentration, capital controls, interest rates volatility, exchange rate volatility, interest rate spread and fiscal balance that affects the bond market development. The basic relationships (positive, negative or no impact) of each variable with the sample (bond market development) are deduced theoretically, analytically and taking into consideration many studies and experiments. It mainly focuses on three main factors, which are the size of the economy, trade openness and size of the banking framework. A comparative study of the effect of these three factors on the bond markets of the given nations: India, USA and China is given.***

**Keywords:** macroeconomic factors, size, trading openness, bond market

## 1. Introduction

The main goal of this report is to examine the structural, financial, developmental, institutional and macroeconomic factors influencing the development of bond market. This report gives a brief discussion of the variables: size of the economy, openness to trade, English legal origin, separation from equator, GDP per capita, quality of institutions, size of banking framework, banking concentration, capital controls, interest rates volatility, exchange rate volatility, interest rate spread and fiscal balance that affects the bond market development. The basic relationships (positive, negative or no impact) of each variable with the sample (bond market development) are deduced theoretically, analytically and taking into consideration many studies and experiments. It mainly focuses on three main factors, which are the size **of the economy**, **trade openness** and **size of the banking framework**. A comparative study of the effect of these three factors on the bond markets of the given nations: **India**, **USA** and **China** is given..

The factors that affect the development of bond market are divided on the basis of two factors. First being the type of the bond, and the second being the impact of that factor on the development i.e. positive or negative.

- **Sovereign Bond Markets:** National government issues such a type of debt instrument. These types of bond are issued in the money of a nation with a steady economy, and are issued by the government of a nation not having a stable economy. These bonds are usually offered at a discount from the par value.

  Positive impacts: Size of the economy, distance from the equator, profile of investment, transparency of trade and capital account.

  Negative impacts: Convergence of managing an accounting division, bureaucratic quality, interest rate spread, swapping scale variability, and the fiscal balance.

- **Corporate bonds:** These are debt securities issued by the companies in order to increase the funds.

  Factors having positive impacts: size of the economy, distance from the equator, dishonest dealings, bureaucratic quality, transparency of trade, private credits and standards of accounting.

  Factors having negative impacts: interest rate spread, swapping scale volatility and English as the legal origin.

  If we observe a countries historical performance on inflation, and it turns out that it is good enough then it behaves as a positive factor for both corporate and sovereign bonds as such a performance represents stable economies.

- **Government bonds**: these are debt instruments which are issued by the government of that nation.

Factors affecting it are as shown in the figure:


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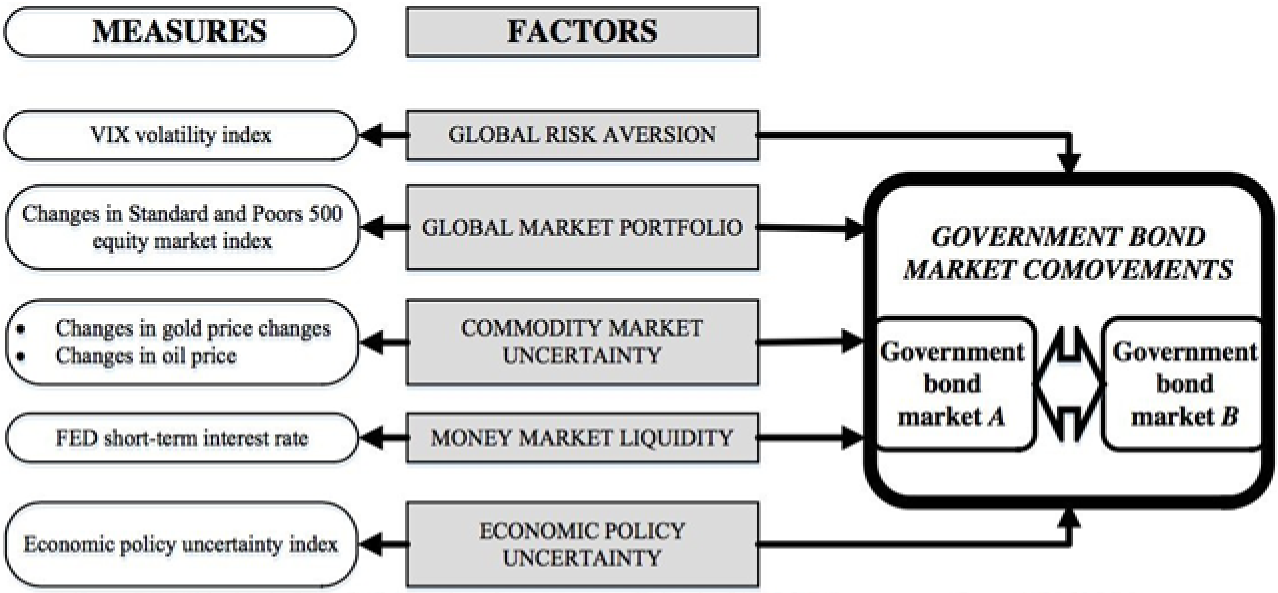


**Figure 2. Global Factors, Influencing Government Bond Market Comovements, and their Measures**

(Source: compiled by the author, based on the systemization of previous researches)

Along with these five, size of the economy, fiscal burden, transparency to trade and capital account and the country's historical inflation performance also leads to the development of the bond market.

**Factor 1: Size of the economy**

An increase in the economic size of economy of any nation leads to the advancement of the bond market. As a larger economy cannot manage its complete financing only with the help of banks, and thus the requirement of bonds increases. This increased need of bonds leads to an enhancement of the bond market. However, we can observe that this is not the case for a smaller economy.

**Factor 2: Trade Openness**

It is a measurement of the extent to which non-domestic transactions i.e. imports and exports takes place and affects the size and growth of a national economy. Impact of this policy on the sample is yet a questionable statement. There are evidences which conclude positive impact of trade openness. Also, there are refute statements concluding its negative or no impact.

**Factor 3: Size of Banking framework**

Here again evidences for both, the positive impact and the negative impact are provided. But the negative impact is taken as very small and is thus neglected. This is why, it has been concluded that the size of banking framework provides a positive relationship with the bond market development.

The important discussions in this report are that of relationship of trade openness with the bond market development. Also, a comparative study of the development of the bond market of three nations: India, USA and China, using graphs has been given. A proper discussion about the size of these economies, along with its relationship with the bond market development has been given.

This report begins with a brief overview of the information provided. This includes division of the features influencing bond market development based on the types of security instruments and also on its relationship with the sample. Then a brief discussion of all the factors categorized as macroeconomic, developmental, legal, structural and financial has been given. A detailed analysis of three of these factors along with the comparative analysis of the same for different nations has been done. The report ends with a brief summary and conclusion of all the information that has been provided.

## 2. Sample and the variables

### 2.1 The Sample

In this section, we will actually study the factors affecting different sectors of development of bond market. These factors are categorized as follows:

a) Macroeconomic
b) Developmental
c) Structural
d) Legal
e) Financial

### 2.2 Definition of Variables

Here, the **bond market development** is the dependent variable, and is figured by finding the share of total corporate, domestic and sovereign fixed income securities in GDP.

**Factors influencing Bond Market Development**

The factors affecting the bond market are considered as the number of variables. These variables are directly related to the economic and financial development. The factor along with their impact on the bond market development has been provided in the discussion below:

### 2.3 Structural Factors

a) **Economic Size** (*Positive impact*): This is the most


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important among the structural features. Financial needs of a large economy cannot be met by just banks, so to satisfy we need bonds along with the banking system whereas that of a smaller economy does not require to issue bonds, also the costs of issuance in such an economy is very high. So we can observe that the size of the economy plays a key role in the bond market's development. Bigger economy would diminish the normal loaning expense and a risk related with it and henceforth advances a more extensive access of companies and governments to bond financing. The size of the economy is measured by utilizing GDP represented in PPP (purchasing-power-parity) at billions of 2011 worldwide dollars.

b) **Trade Openness (Positive or Negative impact):** Its effect on bond market improvement isn't as clear just like the size of the economy. It is measured by utilizing proportion of exports to GDP. Higher level of trade openness encourages firms to grow their production so as to approach overseas markets, and to do that more financing is required so that the generation limit develops, also to develop utilization of sources of capital merchandise. A more open economy suggests a more open money related records, which may create a swarming out marvels between overseas and domestic financing. This implies that as the economy turns out to be more open, global capital inflows in hard monetary standards as bond financing could swarm out local bond financing.

c) **English Legal Origin (Positive impact)**: English customary law legal framework offers higher insurance for rights of private speculator than the French common law legal framework. This encourages the development of security markets. Thus, we can conclude that english legal origin affects the independent variable in a positive way.

d) **Separation from the Equator (Positive impact)**: Nations with troublesome land or sickness gifts have a tendency of having an underdeveloped security markets. The principle reason behind this is that these ecological variables are apparently forming a market which exists for a long time which is required for monetary development. This is why the distance of the nation from the equator is calculated to get an estimate of the topographical blessings.

**Developmental Factors**

**a) Stage of Development of an economy (Positive impact):** The degree of monetary improvement, proxied by per capita GDP, is a factor which helps in determining advancement of security markets. As more developed economies require bigger financing for bigger settled capital, training, innovation and between generational ventures. Moreover, nations which are not developed much are frequently portrayed by poor transparency, powerless bank rights, lacking corporate administration, and risky conditions of investment.

**Financial and Legal factors**

a) **Quality of Institutions**: The experimental writing has now achieved an accord that well-developed organizations matter for budgetary and monetary improvement as they encourage interest in physical and human capital, shape the structure of financial motivating forces in the general public, and add to the productive allotment of assets in the economy. We measure the nature of foundations with four records:

- Investment Profile (IP) **(Positive impact)**: It is evaluated by a risk rating, which is done by utilizing the whole of contract feasibility, installment delays and benefits/profits repatriation. It is an appraisal of components impacting the risk to venture.
- Law & Order (LO)**(Positive impact)**: It is an evaluation of the famous recognition of the law and the strength and the unbiasedness of the legitimate framework.
- Corruption Control (CC)**(Positive impact)**: It is an evaluation of corruption inside the political framework.
- Bureaucratic Quality (BQ)**(Positive impact):** It is an evaluation of institutional strength and organization. Higher scores are given to nations where the bureaucracy has a tendency to be self-governing from political weights and has the power and skill to administer without fierce changes in policy or interferences in administrative administrations.

In the above four records, IP and LO are from the Developmental sector and CC and BQ from the financial sector.

A high score in investment profile suggests that investment risks are low, which provokes security market capitalization. On the other hand, a lower score in debasement (corruption) would mean a mutilated monetary and money related advancement with lessened productivity of both government and corporate part.

This is why, long term choices would be conceivable if there are no profound changes just by the landing of another administration and this would encourage security markets.

b) **Size of banking framework (Positive Impact):** The effect of a nation's banking framework on the advancement of security markets is arguable. On observing we found that banks and bonds are contending sources of outside finance and this is why a more advanced banking framework may prevail with regards to denying securities from market share. This is the alleged "crowding out" effect.

Whereas, as banks fill in as merchants and market creators existence of a well managed banking framework is needed for the development of a liquid and profound security market.

With this we can see that bond and bank financing are supplements as opposed to substitutes.

c) **Banking concentration (Negative impact):** It is measured by using the proportion of the profits of the 3 biggest banks to aggregate assets of business banks. Consequently, a higher rate would infer a more focused banking framework and, in this way, a little bond securities market.


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**Macroeconomic Factors**

a) **Capital controls (Positive or negative impact)**: Openness to remote portfolio investments facilitates the evaluation of domestic as well as overseas debt, as well as helps in advancing the nature of administration of native firms, this is why bond market develops if capital controls is not present *(Adelegan and Radzewicz-Bak,2009)*. The mean between inflow and outflow controls is known as the overall index. 0 implies: no control; 1 implies: total control.
b) **Interest rates volatility (Positive or negative impact):** It is measured by using an algorithm of the standard deviation of loan costs. Low value implies stable interest rates, whereas high value implies more volatile/unstable interest rates. Unstable interest rates demoralize the people who are willing to invest in long haul bonds due to the risk associated with it. This is why, a negative connection is expected between the development of bond markets and the volatility of interest rates.

c) **Interest rates spread (Positive or negative impact):**

$$\boxed{\textit{Interest rate spread} = \textit{lending rate} - \textit{borrowing rate}}$$

Administration would be less willing to borrow money when interest rates are unreasonable, and thus leading to a negative impact on the development of bond market. Also, a spread in interest rates of banks may encourage competition and thus indicating higher requirement of the security markets.

d) **Exchange rate instability/volatility (Positive or negative impact):** It is estimated by standard deviation of the distinction in the logarithm of the nominal overseas exchange rate. If exchange rates are stable, then it is a positive factor, as steady trade rates possess lower risk to outside speculators. But it might also lead to disparage the risk of loaning to companies and banks, and henceforth, the overseas contention may upset the local intermediation growth.

e) **Fiscal balance (Negative Impact):**

$$\boxed{\textit{Fiscal balance} = \textit{fiscal revenues} - \textit{fiscal expenditures}}$$

Fiscal deficits effects capital structures, interest rates, private borrowing, diminishes net fares, and leads to higher duties, higher inflation or both.

**Size of the Economy**

Size of the economy follows a positive relationship with the development of bond market. Its effect is about 1 percent. This tells us that bond markets of a larger economy are bigger than that of a smaller economy, and which is aligned with most of the studies on this factor.

A banking framework alone cannot deal with the financing of a large economy, so to manage this demand of extra financing bonds are present. But, if we look at smaller economies, the financing needs are usually satisfied by the banking framework.

Risks associated with average cost of lending, and also the cost decreases in a larger economy, which in turn helps governments and firms to get a wider access to bond financing.

Also, the people willing to invest won't be interested in investing a smaller economy, i.e. a riskier economy. This is why such economies won't be incorporated in the worldwide portfolio records.

Size of the economy is measured by using gross domestic product (GDP) represented in purchasing-power-parity (PPP), at billions of the current international dollars.

Now, as we know the trend followed by the size of the economy on the development of bond market. We can compare the three main countries on it's basis.

The economy of US is biggest globally, when calculated in terms of nominal GDP, but when measured in terms of GDP represented in PPP, China turns out to be the largest economy with a difference of around $3.77 trillion. Even though, the nominal GDP of US is way forward than that of China. The economy of US is around 25% of the total GDP of the world i.e. gross world product. It is expected that in the year 2022, the GDP based on PPP of China will be around 34 trillion international dollars and that of US will be around 24 trillion international dollars. Also, the nominal GDP of the US is still expected to be higher than that of China, by a difference of about 6 trillion international dollars.

Now, looking at Indian economy we see that it is the sixth biggest economy in the world when calculated in terms of nominal GDP, and third biggest when GDP based on PPP is given. On comparing it with other western countries, we observe that the GDP of India depends highly on agriculture.

It is expected that India's economy will jump to rank fourth (when measured in terms of nominal GDP) by 2022. As Indian economy is one of the fastest growing economies, we can observe its impact on the development of bond markets as well. Till 2013, companies of India were not allowed to list securities internationally, without completing an IPO (initial public offering). IPO is a measure of the existing conditions of the market, approval process of government and other regulations. But in 2013, companies were allowed to choose whether they want to list domestic, overseas or both. Furthermore, many other laws have been amended in order to increase the liquidity.

As we have seen that the economic size is measured by GDP in terms of PPP, and we already have the order of economies of the three countries in terms of the same. We conclude that if the biggest economy has to be declared only on the basis of size of the economy, then it should be CHINA followed by US, and then INDIA.

**Trade openness**

Calculated in the form of:

$$\boxed{\textit{openness index} = \{(\textit{exports}) + (\textit{imports}) / (\textit{gross domestic product})\}}$$

The effect of trade openness on the development of the bond market is very ambiguous. It either have positive or negative


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effect.

In an economy which is open, the dominance of banks is very low. Banks are the instruments which try to make a policy that disregards any kind of competition from other corporate finance sources. But an open economy allows such type of competitions in corporate financing. (Rajan and Zingales, 2003)

On the other hand, economies having less integration with other markets are more encouraged to develop their bond markets.(Adelegan and Radzewicz-Bak, 2009)

There are many benefits of trade openness. First being the better utilization of resources of the nation due to better conditions of production. WTO also states that openness would have a positive impact on the economic growth.

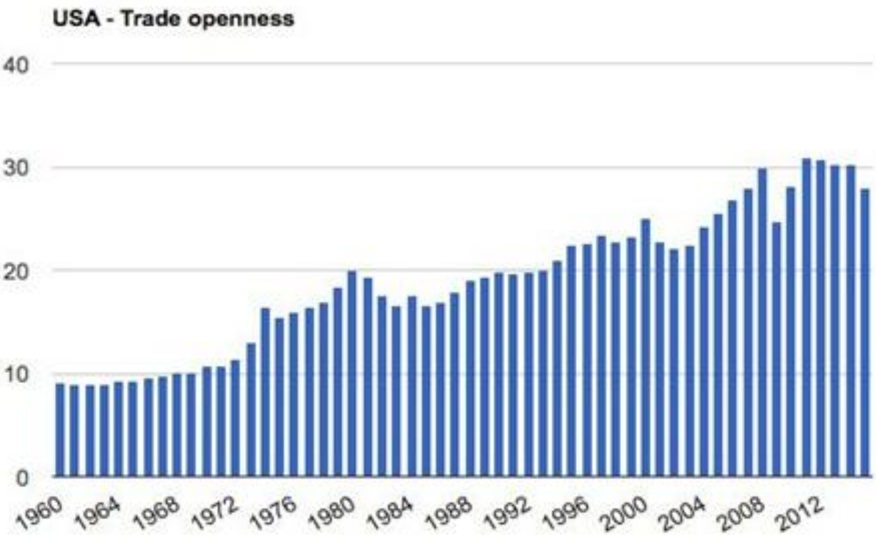
China is one such example, in which trade openness has lead a positive impact on the development of bond market. China decided to become an open regime in 80s, i.e. in the period 1978-2001. In 1977, China's total trade was around $20 billions only, which rose to $475 billions in 2000.

Like China, mostly developing countries have a positive impact of trade openness as the primary goal of it is promoting the industrialization which lead to increase in the economic size, and which also have a positive impact on the bond market development.

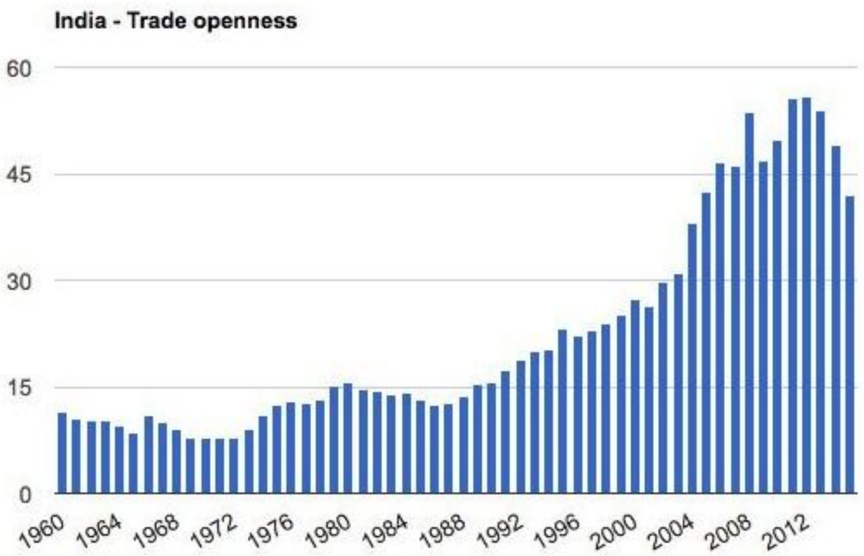
Also, discussing panel data and cross-country data, over a period of around three decades have given the result that it leads to a positive impact on the development of bond market. Also the most-acceptable study by Rodriguez & Rodrik (2000) gave the same conclusion.

Now, as we have seen that a large number of studies support the argument that trade openness has a positive impact, the government should promote this.

But still due to application of different methodologies over different periods of time a clear conclusion cannot be drawn.




According to data of the World bank, for the year 2015 USA stands on 155th position globally in trade openness, with the first being the Luxembourg.




The India is comparatively more open to trade, holding 145th position globally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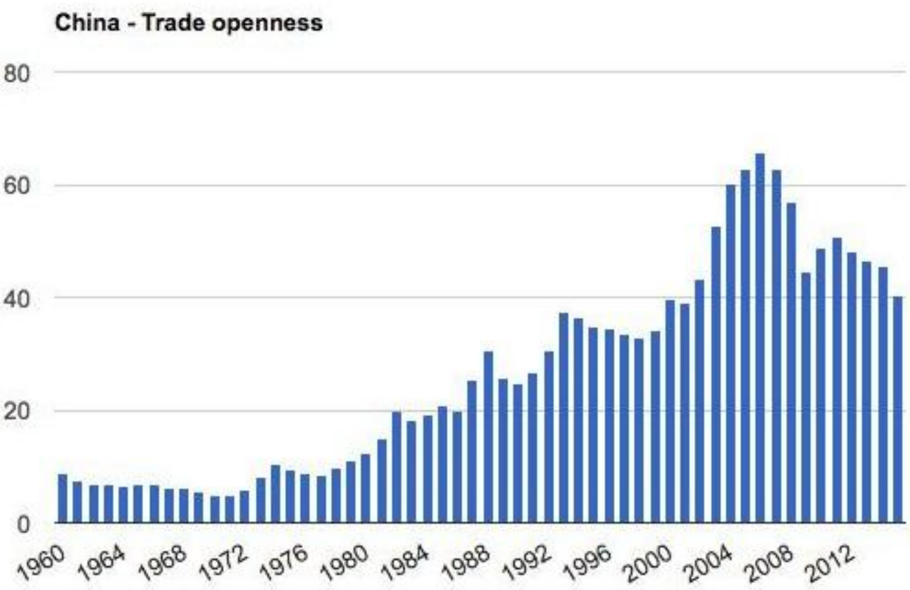



And that of China is at 148th position globally.

So, finally we conclude that on the one hand, there are many economic theories which support the trade openness and believe that it results in monetary growth and development. Then again, many organizations refuse to accept this as they found many correlations between this policy and economic, ecological, human and cultural exploitation.

**Size of the Banking Framework**

The development of bond market has an ambiguous relationship with the size of the banking framework.

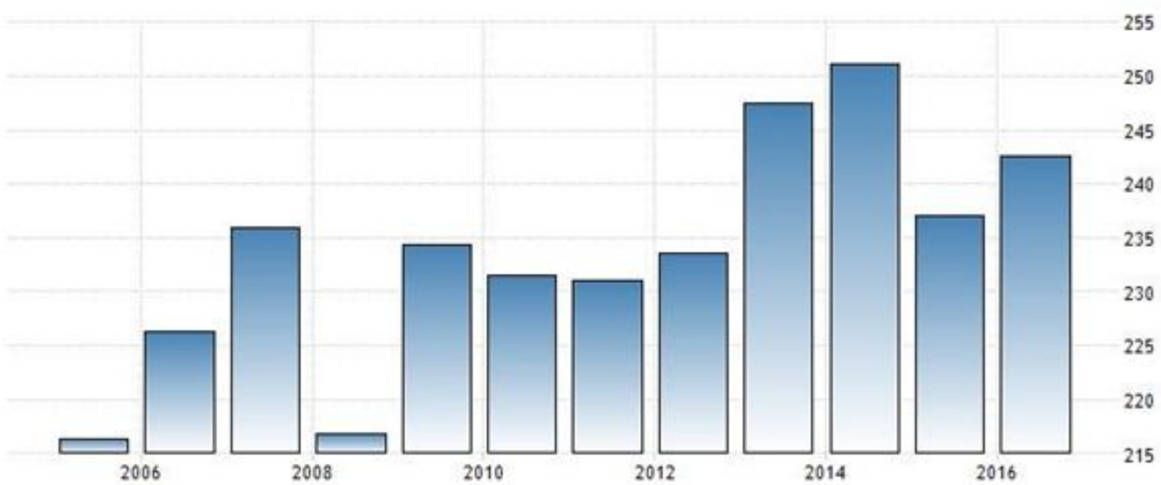
Size of the banking system is represented by domestic credit provided by the banking sector as a percent of GDP.

A strongly capitalized and vast banking framework is fundamental for advancement of a liquid and well-working security market as banks play the dealership and market creators part in monetary markets. (Hawkins, 2000)

But also, as we know bonds and banks are the competitive sources of external finance, and this is why a more advanced system of banks may be present which might outrage the bond market. Such an effect is known as 'crowding-out' effect.

Even though it might look that due to the presence of crowding-out effect it is unsure to predict the relationship between banking system's size and bond market development. But, usually its effect is negligible and hence, a positive relation between this policy and advancement of bond market is taken.

Central bank of the USA is the Federal Reserve System, which is regulated by the Office of the Comptroller of the currency (OCC). Also, it deposits are insured here. According to the World bank, domestic credit provided by the banking sector of USA (as %GDP) was 243% in 2016.




Domestic credit provided by the banking sector (as %GDP) for USA

Indian Banking Sector is one of the fastest growing industries. It utilizes latest technologies. Public sector covers its majority (80%). In 2016, the domestic credit provided by the banking sector as a percentage of GDP in India was studied to be 75.38%, according to the World bank.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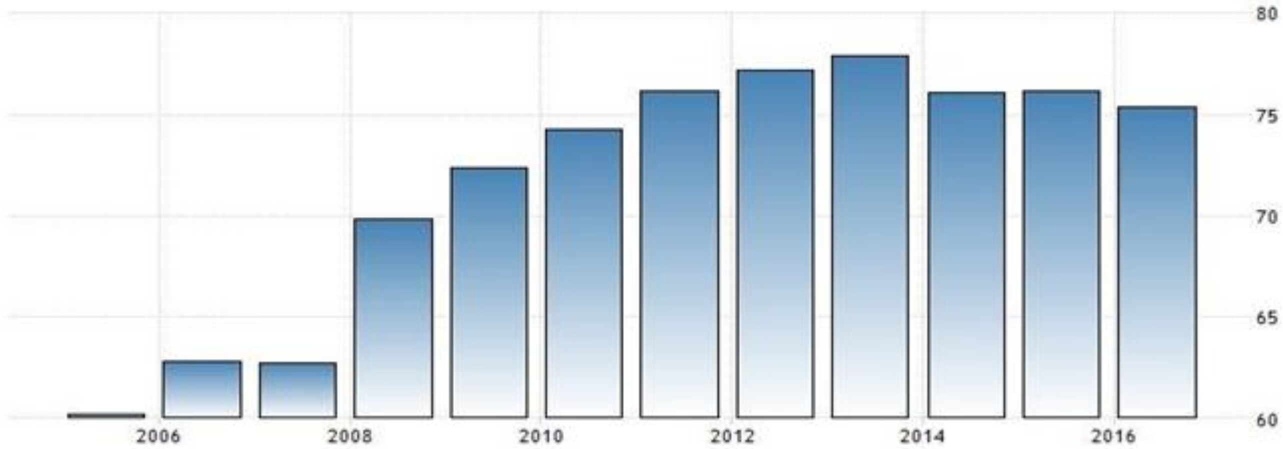
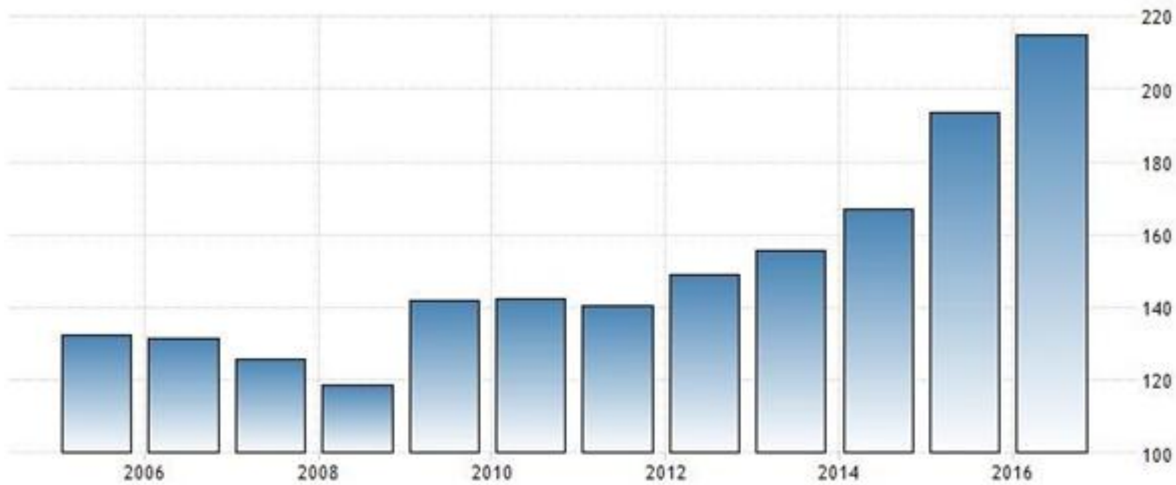



Domestic credit provided by the banking sector (as %GDP) for India

The banking system of China is gigantic, with People's Bank of China (PBC) being the Central Bank. PBC is the chief authority to manage any kind of operation in the country. Chinese banking regulatory commission (CBRC) is the main regulatory body. Also, China does not insure its deposits. The domestic credit (as a % of GDP) provided by the banking sector of China was given to be 215 %, according to a report of World Bank in the year 2016.




Domestic credit provided by the banking sector (as %GDP) for China

As we have seen above, the larger the sizes of banking framework better the bond market. According to the data provided for the year 2016, and considering only this factor it can be stated that the US has the most developed bond market followed by China and then India.

## 3. Summary & Conclusions

Bond markets are crucial element in enhancing the economic development of a nation. Now to do that, it is important to increase local and overseas ventures and investing them productively, which is done with the help of bond markets.

The main goal of this report was to recognize and examine the main factors which affect the development of the security market, mainly in India, USA and China. A well-analysed comparative study of the size of the economies of these three countries along with its effect on the sample has been provided. Importance of openness of trade has been explained and its ambiguous relationship with the sample has been discussed. There exists a need to study this arguable behavior of trade openness, in order to come to a conclusion. According to World Bank, Luxembourg is most open to trade as of 2016.

A brief detail of the banking framework of the three countries along with their domestic credit i.e. money without any involvement of export or import of goods as a percentage of GDP has been provided by this framework. And, then this information is used to establish a relationship with the development of the bond market. It has been found that according to this policy, USA bond market is most developed among the three.

The main reason behind the financial crisis in 1997 is very high dependence of small bond markets on the banks for local financing. And, the soul reason for the global financial crisis, 2008 was due to requirements in securing of local and overseas cash liquidity because of huge withdrawal of ventures in Asia by overseas banks.

Now, that we have discussed almost all the main factors which affect the development of bond market in any way, we realize that there still exists a need for more investigation and to come to proper conclusions.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