

COVID-19: THE FLUCTUATIONS IN THE BOND AND EXCHANGE MARKETS AMONG BRICS COUNTRIES

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Abstract: We study the fluctuations in the bond market and exchange market during covid-19 among the BRICS (Brazil, Russia, India, China, and South Africa) countries. The bond market fluctuation has been examined by using the yield spread between the 10 years government bonds yield of BRICS countries and 10 years government bond yield of US. The exchange market pressure index is calculated to understand the pressure in the exchange market. The study finds that the reaction of these countries were high during the end of March and beginning of the April when US and majority of the countries went into lockdown. However the anxiety reduce after July end as a result of different economic packages announced by countries along with the positive news about the vaccine development.

Keywords: Covid-19, Bond Market Yield, EMPI, BRICS

1. INTRODUCTION

The current ongoing crisis of covid-19 has made a drastic impact on the global economy. Policymakers are clueless about what is coming in near future. The pandemic has impacted not only economic aspect but also infected the social, and political scenarios of the world. It was December 21, 2019 when world health organization (WHO) declared the covid-19 as global pandemic. Since then environment of anxiety and panic among all the countries, emerging as well as developed has started spreading. Researcher, regulators and policymakers are working hard to understand and predict the actual impact of this crisis globally. However an environment of uncertainty is still prevailing as the crisis is going on. Policy makers and government across the countries are launching various stimulus economic package to revive their respected infected economies. Although the crisis has disturbed the overall global economic environment however

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the quick reaction are being observed through the wide fluctuation in some of the key sectors of financial market such as stock market, bond market, exchange market and banking sector. A significant number of literature can be observed measuring the impact of Covid-19 on stock exchanges across the world. However, the attention towards the bond market and exchange market is still little low. This paper investigates the impact of covid-19 among BRICS countries in two sectors of the financial market- the bond market and exchange market.

BRICS countries (Brazil, Russia, India, China and South Africa) are the biggest emerging players in the world. This is one of the largest political cooperation group. BRICS has significant role in the world economy. These countries together share the 30% of the total world trade and are inhabitant more than 40% of the world population. During covid-19 India, Brazil, Russia are among the worst hit countries after United States (US), whereas South Africa is also among the top 20 worst hit countries to the date of data collection. Being some of the largest economies, the impact of the pandemic on these countries will have significant impact on the world economies as a whole. Among the five countries India, Brazil and South Africa are expected to have more severe impact since these countries are the emerging economies and still having several fundamental issues. Despite being a developing economy, however, China is the only country in the group (and in the world as well) which has started showing a recovery during late September. However the future is still uncertain and prediction cannot be made with certainty as the pandemic is still going on.

The emerging nature of these economies make the role of bond market and foreign reserve very crucial for the development of these countries. Since the fluctuation in the bond market and exchange market have serious implications in the development of BRICS, the impact of pandemic on these two sectors among BRICS countries worth to be studied. The study is conducted to understand the fluctuations occurred in two sectors (bond market and exchange market) during the last 10 months of the pandemic. We analyzed the daily data from December 2019 to October 2020. We have used exchange market pressure index (EMPI) suggested by Girton and Roper (1977) to measure the stress in exchange market. To examine the stress in long term bond market, the difference between the 10 years government yield of each country and US 10 year government bond yield has been taken.

2. LITERATURE REVIEW

The impact of Covid-19 has affected almost all the aspects of the world including economic, social and political. From developed to developing

countries, economies across the world are suffering from the adverse impact of the pandemic. The situation in emerging economies is more severe as the countries are facing the collapse of exports and tight credit conditions (Djankov and

Panizza, 2020). Hevia and Neumeyer, 2020 argue that developing countries are struggling more compare to developed countries due to their less effective policy measure to fight the pandemic. These countries are finding it difficult to issue new debt for reducing the pandemic shock. The impact of this global pandemic on world economy was obvious, however the clearer picture of the magnitude of this impact would become clear in coming future. Policymakers, Practitioners and scholars are giving significant attention to understand and examine the impact of the covid-19 on the health of world economy. For instance, Topcu and Gulal, (2020), have conducted a study to examine the impact of Covid-19 on the stock markets of emerging countries and contend that the response time of officials and the economic packages provided by the regulators have an impact on the offsetting the effects of the pandemic. Similarly, Phan and Narayan, (2020), examine the stock market reaction in real time at different stages of the pandemic. Beck *et al.*, 2020, conducted another study to examine the impact of covid-19 at firm level by taking a sample of 500 listed companies from 10 emerging markets. They found that majority of the firms have a negative impact of the pandemic. This led these countries to reduce their investment and putting several projects on halt.

During these last few months, majority of the studies are done on the impact of covid-19 on stock market and a very little attention has been paid on bond market and exchange market. This study examine the impact of pandemic on covid-19 on bond market and exchange market among the BRICS countries. The study shows that though the bond market and exchange market have shown fluctuation during the initial period of the pandemic, the anxiety had reduced later on.

2.1. Covid-19 and BRICS

The report published by the World Bank, in 2020, Russian GDP growth is expected to contrast by 6% which is lowest in past eleven year. A large portion (83.5%) of the Brazilian labor market has entered into a vulnerable stage (Barbosa *et al.* 2020; Prates and Barbosa 2020). Besides, around 26 million workers will not get be compensated through any financial package like unemployment insurance, emergency basic income (EBI) or any other relief compensation (Prates and Barbosa, 2020). Similarly, report published by UNDP 2020 estimates a sharp contraction of 8% in South African

economy. In an address to the nation South African president also quoted that the pandemic will have utter consequences for the economy as the country already struggling with high level of poverty, malnutrition and disease like HIV and TB. Indian scenario is no different.

The economy went into lockdown (the largest lockdown in the world) on 25th March. UN has forecasted a contraction of 5.9% in the country's GDP and also warned that this contraction may translate into permanent income loss. The case of Chinese economy however is different and giving a positive indicator of the growth. As per UN report the country is expected to register an economic growth of 1.3% in 2020 and a good growth of 8.1% in 2021. These estimates are sufficient to indicate that the coming some years in the future would not be very smooth for these economies. Keeping the importance of BRICS economies and the role of bond and exchange market in their development, we study the covid-19 impact on these two sectors among BRICS countries.

3. DATA AND METHODOLOGY

Daily data on bonds and exchange rate has been collected from December 2019 to October 2020. December was the month when WHO declared the Covid-19 as the global pandemic and led the fluctuation among global financial markets. The data has been collected from the respected country's central bank database and the database of bank for international settlement (BIS). We have considered only long term bond yield as the objective of the study is to measure the stress in the long term bond markets. The yield spread has been calculated by taking the difference between the 10 year government yield of BRICS countries and US 10 year government bond yield. We have considered US bond yield as the risk free yield following the previous literature. The spread is calculated on daily basis. To reflect the monthly movement the daily spread has been converted into monthly average to make a monthly comparison. For understanding the pressure in exchange market, we have used exchange market pressure index (EMPI) suggested by Girton and Roper (1977). Following is the formula for calculating the Exchange Market Pressure Index;

$$EMPI = \frac{(\Delta EXC_{i,t} - \mu_{i\Delta EXC})}{\sigma_{\Delta i, EXC}} - \frac{(\Delta RES_{i,t} - \mu_{i\Delta RES})}{\sigma_{\Delta i, RES}}$$

Where, ΔEXC , Δe_{RES} represent the monthly change in the exchange rate and foreign reserves respectively while μ is the mean and σ is the standard deviation of the selected variables

Table 1: Descriptive Statistics of Bond Yield Spread

<i>Brazil</i>			
<i>Month</i>	<i>Mean</i>	<i>Median</i>	<i>Stdev</i>
December	5.98	5.99	0.09
January	5.90	5.90	0.06
February	5.69	5.71	0.10
March	6.98	6.99	1.04
April	6.75	6.72	0.41
May	6.80	6.72	0.40
June	5.93	5.92	0.10
July	5.61	5.57	0.10
August	5.98	5.87	0.28
September	6.21	6.22	0.21
October	6.65	6.67	0.10
<i>Russia</i>			
December	5.48	5.49	0.05
January	5.35	5.36	0.05
February	5.26	5.23	0.13
March	6.30	6.27	0.72
April	5.62	5.79	0.31
May	4.84	4.70	0.26
June	4.77	4.76	0.10
July	4.98	4.97	0.08
August	5.18	5.22	0.13
September	5.35	5.33	0.06
October	5.18	5.15	0.08
<i>India</i>			
December	5.73	5.76	0.11
January	5.71	5.71	0.04
February	5.55	5.54	0.05
March	5.36	5.37	0.09
April	5.43	5.43	0.14
May	5.16	5.21	0.22
June	4.97	4.99	0.08
July	4.94	4.94	0.03
August	5.10	5.12	0.13
September	5.14	5.13	0.05
October	5.04	5.10	0.24
<i>China</i>			
December	2.33	2.34	0.03
January	2.27	2.24	0.09
February	2.00	2.00	0.04
March	1.83	1.83	0.05
April	1.66	1.67	0.03

May	1.80	1.78	0.05
June	1.98	1.97	0.06
July	2.13	2.13	0.10
August	2.10	2.10	0.03
September	2.24	2.24	0.04
October	2.33	2.31	0.03
<hr/>			
SA			
December	6.46	6.43	0.14
January	6.84	6.47	0.49
February	7.36	7.32	0.17
March	9.59	9.84	1.28
April	10.12	10.12	0.33
May	8.62	8.52	0.37
June	8.39	8.51	0.27
July	8.76	8.75	0.15
August	8.64	8.63	0.08
September	8.64	8.60	0.14
October	8.60	8.63	0.14

Note: Table 1 presents the descriptive of corporate bond yield spread on month basis. Data on daily basis has been averaged for the respected month to understand the monthly average spread of bond yields with respect to each country.

4. RESULT AND DISCUSSION

4.1. Bond Yield Spreads

Table 1 presents the descriptive on the government bond yield spreads among the BRICS countries. The same has been presented with the help of figure 1. One common observation which is reflected from the table is that except China and India, the countries experienced the highest fluctuation during the end of March and beginning of April. The mean spreads for Brazil and Russia in the months of March were 6.98% and 6.30% respectively. Whereas for South Africa the highest spread (10.12%) was in April. The standard deviation was also highest for these countries during these two months. In the case of India, the mean was not high during this period rather the country experienced a decreasing rate of spreads during the same. The reason being that during the lockdown period the demand for government bond increased (investors were looking for safer place of investment) which lead an increase in the price of bonds and ultimately a decreasing yield rate. Chinese bond market have also experienced a decreasing trend for the same reason as India had. The higher fluctuation during March and April can be attribute to the lockdown and panic in the United States of America. Since we have compared the yield rate with US bond yield, countries were expected to react according to the US economy.

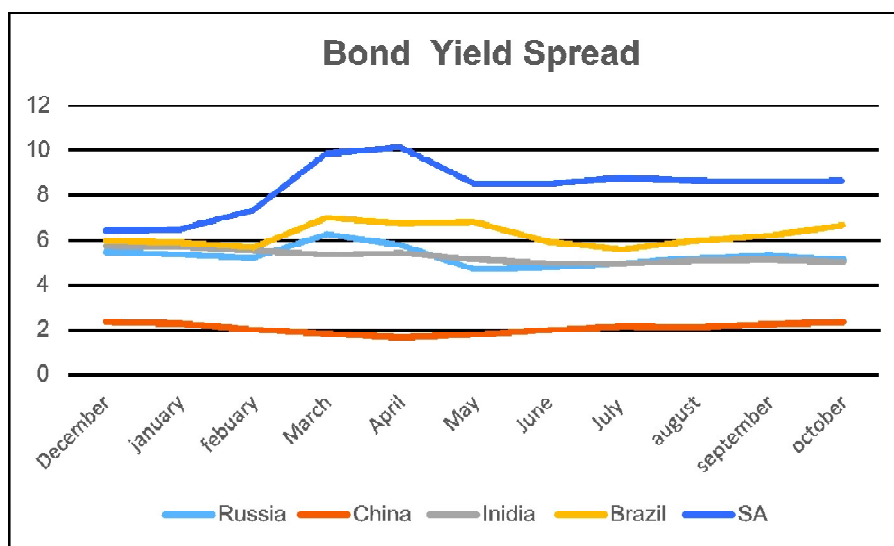


Figure 1: Bond Yield Spread

Note: Figure 1 presents the fluctuation of the government bond yield spreads starting from December 2019 to October 2020. The spread is taken as the difference between the government bond yield of BRICS countries and US government bond yield.

Figure 1 represents the fluctuations in the spreads of bond yield among the BRICS countries. During the end of March and beginning of April all the four countries has similar pattern of yield spreads. The reason is being that during this period the US went under lockdown and the cases were spreading very fast in the country. Since we have used US 10 year government bond yield as a benchmark of less risky yield, the fluctuation in US government bond yield show a same pattern for all the countries. After the package announced by the federal government and decreasing the panic among the investors the spread returned back to the level which was before March.

4.2. Exchange Market Stress

Figure 2 represents the stress in exchange market during the Covid-19 periods by using exchange market pressure index. Among all the BRICS countries, Russian exchange market has witnessed the higher fluctuations during these eight months of studies. The stress was higher between January and March, after that it went down till the end of May and again increased after June. In September Russian government announced the successful development of the vaccine which reflected a positive impact on the market. Brazil and India show a similar trend in terms of fluctuations in exchange market. However it is the Chinese exchange market which show small

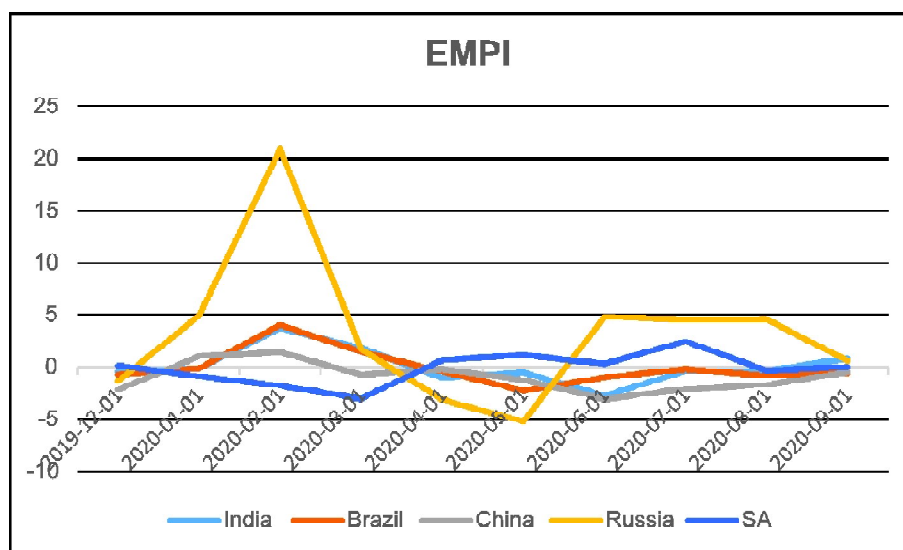


Figure 2: Exchange Market Stress

Note: Figure 2 represents the exchange market stress by using Exchange Market Pressure Index. The index have been developed by taking the mean and standard deviation of change in exchange rate and change in foreign reserve on monthly basis for a period of 10 months.

fluctuations. This happened as the country was able to make an early control over the contagious of disease and ultimately reducing the panic among the investors. One more observation being made from the table is that during the month of March when all the BRICS countries were facing downward trend, South Africa showed the upward trend. However after initial wide fluctuations a stability can be observed after May and June. This could be attributed to different stimulus announced by the governments in these countries as well as positive news on the vaccine development.

Overall the findings of our analysis suggest that though the markets have experienced wider fluctuation during March and April due to the panic among the market player, this anxiety was reduced in the later months, when countries announced different economic packages. The reduction in the fluctuations due to these economic package announcement is consistent with the findings of Topcu and Gulal,(2020). However, since the pandemic is still among us, a prediction of further reactions of markets is hard to make.

5. CONCLUSION

We have studied the impact of Covid-19 on the two important sectors i.e the bond market and exchange market among BRICS countries during last

10 months of the pandemic. We have found the largest fluctuation between these two sectors witness during the end of March and beginning of April, when US and majority of countries went into lockdown. The bond market fluctuation was highest in South Africa whereas Russia experienced the highest bond market fluctuation initially. However after the panic of one month is over, countries started showing some stability. The trend indicates that though initially there was an environment of panic and anxiety, countries later on started showing stability and accepted the situations. Another reason could be different stimulus announced by the countries across the world to revive the economy and positive news about the vaccination. However, any prediction cannot be made since the pandemic is still with us. The development of vaccine however can be seen as a hope of normalcy in 2021.

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