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IMPACT OF MACROECONOMIC EVENTS ON SHANGHAI STOCK EXCHANGE

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Abstract

In this study we investigate the impact of macroeconomic events (i.e. 2000 dot-com bubble, 2008 Global financial crisis and 2015 announcement of RNB consideration in the SDR basket) on returns of Shanghai Stock Exchange Composite Index for 2000 dot com bubble (t ± 30 days as the event window), 2008 Global financial crisis (t ± 60 days as the event window) and 2015 stock market crash in China aided by announcement of RNB getting listed in the basket of currencies i.e. in SDR (t ± 60 days as the event window) by applying event study technique for quantifying Average Abnormal Returns and Cumulative Average Abnormal Returns and test for statistical significance of the obtained results. We find that the Returns of Shanghai Stock Exchange Composite Index responded negatively to the events implying that Chinese stock market was negatively affected by all three events considered but varying in the degree of their impact owing to the extent of impact on the economy of China as a whole. The results of the study provide insights to potential investors, fund managers and policymakers to take an informed decision whether to invest in Shanghai Stock Exchange if such events would reoccur in future.

1. INTRODUCTION

China's economy (being socialist market economy) ranks 2nd in terms of Nominal GDP and 1st in terms of Purchasing Power Parity in the world[1]. Chinese economy with the overwhelming growth in the past few decades has become the world's second largest economy by moving from 9th rank in 1978[2]. The GDP of the country as per official exchange rate stands at USD 10.36 Trillion[3], with the maximum share coming from the Services (48.2%); followed by Industry (42.6%) and Agriculture (9.2%)[4]. In terms of purchasing power parity (PPP), GDP of the country is USD 17.63 Trillion, with a GDP-per capita (PPP) of USD 12,900[5]. In case of China, GDP as per PPP gives an accurate measure as the exchange rates are determined by fiat[6] and not by the demand and supply forces, so

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[1] Based on the report for selected countries and subjects as retrieved from http://www.imf.org

[2] In terms of nominal GDP

[3] Source: www.worldbank.org

[4] Based on the report for selected countries and subjects as retrieved from http://www.imf.org

[5] Source: www.imf.org

[6] Fiat Money is a currency which determines its value from the government regulation and law.

GDP as per PPP provides the best measure for the comparison of output across the countries. The GDP growth rate of the country stands at 7.4%[7] for the year 2014 with a Gross National Savings of 49.5% of the GDP. If we look at the GDP consumption by end user, it is found that maximum is invested in fixed capital followed by household consumption and exports of goods & services with negative imports of goods & services.

Re-established on 26th November, 1990, the Shanghai Stock Exchange has 1071 companies listed on it with 4621 listed securities having a market capitalization of USD 5.2 Trillion and is regulated by China Securities Regulatory Commission. Shanghai Stock Exchange Index series consists of 75 indices of which, 69 are equity indices and 5 are bond indices and 1 fund index[8]. There are four important indices on the Shanghai Stock Exchange namely SSE Composite, SSE 50, SSE 180 and SSE 380.

The securities listed on SSE are categorized under Stocks, Bonds and Funds of which bonds include Treasury bond, corporate bonds and convertible corporate bonds with Treasury bond being the most active of its kind. The SSE Composite index lists stocks in 2 categories i.e. A share and B share. The A shares are quoted in local currency i.e, Renminbi Yuan whereas B share is quoted in US Dollar. The base day for SSE Composite index is 19th December 1990, with a base value of 100. Launched on 15th July, 1991 SSE Composite which stands for Shanghai Stock Exchange Composite Index (abbreviated as SHA:000001) is a market index for all the stocks of both A share and B share traded in the Shanghai Stock Exchange. The calculation of the Index is done using the Paasche weighted composite price index formula. The index is based on a base figure of a certain base day, with a base value of 100[9]. Some of the constituents of the SSE Composite Index are: Air China, Bank of China, China Life Insurance, China Merchant Bank, Citic Securities, Daqin Railway, Offshore Oil Engineering, Shanghai International Airport, etc.

In this study we investigate the impact of macroeconomic events (i.e. 2000 dot-com bubble, 2008 Global financial crisis and 2015 Announcement of RNB consideration in the SDR basket) on Shanghai Stock Exchange. Through this study we intend to quantify which of the three events had a greater impact on the returns of Shanghai Stock Exchange Composite Index. The rest of the paper is structured as follows. In section 2 we Review the literature. In section 3 we elucidate on the research methodology adopted explaining the data used and the model. In section 4 we present our empirical findings and conclude our study in Section 5.

2. LITERATURE REVIEW

Literature illustrates many studies investigating the impact of political effects, dividend announcements, oil price change, etc on their impact of stock returns. Dyckman et al. (1984) examined the effects of the uncertainty pertaining to the considered event a few days before and after the event date, size of the portfolio and the magnitude of abnormal returns earned similar to Brown and Warner (1980) study. Brown and Warner (1985) in their study examined the properties exhibited by daily stock returns and how each of the scrupulous characteristic of the considered data impacts the results found using event-study techniques. Agarwal and Kamakura (1995) is their study found that announcements of 110 celebrity backing and endorsement contracts in United States were found to have positive impact on Stock market returns of their respective firms implying investment via celebrity endorsements as a useful tool in advertising.

Papaioannou et al. (2000) in their study analyzed the impact of stock dividend distribution decisions on stock market returns of Athens Stock Exchange and found that stock dividend distribution announcement have insignificant impact on returns. Joshipura (2009) in their study analyzed the impact of stock dividends distribution decisions on stock market returns and found significant and

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[7] Source: http://www.focus-economics.com/countries/china

[8] Source: http://english.sse.com.cn/information/indices/introduction/

[9] Current Index = Current total market capital of the constituents*Base Value/Base Period

positive abnormal returns pre-announcement of stock dividend distribution and on the day of bonus share distribution announcement. Kilian and Park (2009) in their study investigated impact of oil prices on the US stock market return by taking into account the oil demand shocks and oil supply shocks. Girish and Rastogi (2013) in their study examined the impact of adoption of Box spread strategy on S&P CNX Nifty Index options given by National Stock Exchange of India. Mahmood *et al.* (2014) examined the impact of political events on the stock market returns by taking into consideration 50 political events ranging for about 15 years. Mehta *et al.* (2014) in their study analyzed the impact of stock dividend decisions on stock market returns in Indian context by considering 51 such stock dividend announcements and considering pre-announcement and post-announcement returns and have empirically found that announcement of stock dividends has a positive impact and increases shareholders wealth of the country. Mahmood *et al.* (2014) in their study found that major political events in Pakistan had resulted in negative abnormal returns for KSE-100 prior and post the occurrence of the event.

Created by IMF in 1969 to support the Bretton Woods Exchange Rate System, SDR is an international reserve asset, whose value is based on the basket of four key currencies namely USD, Pound Sterling, Euro and Yen. As per the Bretton Woods System, any country participating in this system was required to keep Gold and a widely accepted foreign currency which could purchase the domestic currency in the foreign market to control the exchange rate, but the same proved to be inadequate for expansion and development. SDR, the interest bearing currency basket also provides liquidity to the global economic system and supplements the official reserve of the member countries in the atmosphere of global financial crisis. Initially, the value of SDR was equivalent to 0.888671[10] grams of fine gold sometimes also being equivalent to one US Dollar. Presently the value of SDR is determined daily in terms of US Dollar on the basis of the exchange rates quoted in London Market and is calculated as the sum of specific amounts of four currency basket. With the Gold Yuan replacing Fabi in 1948 at a rate of 1 Gold Yuan to 3 Million Yuan Fabi, the Chinese currency has a history of about 3000 years having existed in both the Ancient as well as Imperial China with the Solver Dollar being the official currency of Republic of China in 1914 along with Copper, Fen and Nicole coins being added in 1930s. During that time, the silver appreciated in value which gave rise to Fabi in 1935. To help stabilize the communist held area in 1948, Yuan Renminbi often known as RNB was introduced, with a revaluation in 1955 giving rise to new Yuan Renminbi at a rate of 1 new Yuan to 10,000 Yuan.

Event study techniques measure the impact of any event on stock market returns by designing a window pre and post event and calculating abnormal returns during the period. This technique can also be employed to ascertain the efficiency of any stock market and analyze trend of the market as suggested by Bhagat *et al.* (1985). Hasan *et al.* (2013) in their study examined the impact of hartal (Strike) on the stock market performance by taking the case of Bangladesh. We believe returns given by SSE Composite Index would be the best indicator to analyze the effect of any event on the economy of China from a short term perspective. Our study is one of those few studies in literature which attempts to quantify and compare the impact of Dot-com Bubble in 2000, Global Financial Crisis in 2007 and also with the announcement of RNB getting listed in the basket of currencies, i.e. in SDR in 2015 on Stock market returns of Shanghai Stock Exchange by using daily returns of Shanghai Stock Exchange Composite Index.

3. RESEARCH METHODOLOGY

Global crisis originating from one country affects economy of almost all the countries across the globe however the magnitude and extent of impact depends on the country's economic conditions, resilience to market forces complemented by other macro-economic factors. Be it the Dot-com bubble of 2000, Global Financial crisis of 2007-08 or the crisis in a country or across the globe usually tends to affect the stock market returns of all the countries maybe positively or negatively. In this study we investigate the impact of Dot-com bubble, Global Financial Crisis and the

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[10] http://www.imf.org/external/np/exr/facts/sdr.htm

Announcement of RNB to be considered in the SDR, i.e, the Basket of Currency on the stock returns of Shanghai Stock Exchange by using data of Shanghai Stock Exchange Composite Index (SSE, 2015, Composite). We employ event-study technique for analyzing the impact of the aforementioned events on the returns and calculate abnormal returns of the market before and after the event as suggested by Brown and Warner (1985).

3.1. Data

SSE Composite Index data from January 2000 to July 2015 was collected in order to conduct the study and compare as to which of the three events majorly affected the returns of the stock exchange of the index. The data was collected from the website www.quandl.com and the authenticity has been cross-verified from data provided by www.in.investing.com, www.google.com/finance as well as www.in.finance.yahoo.com.

3.2. Event window

Three event windows have been set-up to gauge the effect on the returns of the SSE Composite Index. The first window is for the Dot-Com Bubble of 2000 comprising of 61 days window with 30 days before and 30 days after the event. The date of the event day being the day on which NASDAQ recorded climax peak in intraday trading, leaving investors with an unexpected return in their hands. The second window is for Global Financial crisis of 2007 comprising of 121 days window with 60 days before event and 60 days after event. In this case the event day is recorded as the day on which PNB Paribas halted the redemption of three investment funds, marking the day as the beginning of the liquidity crisis. The third window records the return for 2015, the announcement of the IMF (2015) considering including RNB into basket of currency (final decision being due October 2015). The length of the window is taken as 121 days comprising 60 days before announcement and 60 days after announcement and the event date being the date of announcement by IMF.

3.3. Market adjusted returns

Market Adjusted Returns is a return generating technique used to calculate the returns on the stock or index. Returns of the index have been calculated for the data collected in the following manner:

$$\text{Return} = \frac{P_t - P_{t-1}}{P_{t-1}}$$

Where,

P_t = Closing price of today
P_{t-1} = Previous closing price

Mean return of the sample is calculated on a whole as well as separately for before the event and after the event. Mean return is calculated by summating the daily returns and dividing it by the number of days. After the calculation of the mean return, calculation for the average abnormal return (AAR) is made. It is the excess return that we actually get because of the occurrence of any event. Average abnormal return (AAR) has been calculated as follows:

$$\text{Average abnormal return} = \frac{Actual\ Return\ of\ the\ day}{Mean\ return}$$

When the average abnormal return for all the days of the sample window is obtained, it is summated to get the Cumulative Average Abnormal Return or CAAR. This is calculated to find the total average abnormal return made by the index before and after the event and also the overall average abnormal return because of the happening of the event. We have considered 252 trading days on a stock exchange. Annualized risk and return has also been calculated as follows:

$$\text{Annualized risk} = Standard\ Deviation\ of\ Return * Square\ root\ (12)$$
$$\text{Annualized return} = (1 + Average\ Daily\ Return)^{252} - 1$$

3.4. Test of significance

To empirically investigate the statistical significance of the results obtained pertaining to average abnormal return and cumulative abnormal return we perform the T Test on the returns of the SSE Composite Index with the assumption that returns of the market follows normal distribution both pre and post event and the t value is computed as follows:

$$\text{T value (AAR)} = \frac{AAR}{Standard\ deviation\ of\ AAR}$$

$$\text{T value (CAAR)} = \frac{CAAR}{Standard\ deviation\ of\ CAAR}$$

4. EMPIRICAL FINDINGS

In this study we investigated the impact of macroeconomic events (i.e. 2000 dot-com bubble, 2008 Global financial crisis and 2015 announcement of RNB consideration in the SDR basket) on Shanghai Stock Exchange by using daily closing data of Shanghai Stock Exchange Composite Index for 2000 dot com bubble (t ± 30 days as the event window), 2008 Global financial crisis (t ± 60 days as the event window) and 2015 stock market crash in China (t ± 60 days as the event window) and applying event study technique for quantifying Average Abnormal Returns and Cumulative Average Abnormal Returns and test for statistical significance of the obtained results.

Table 1 shows the average daily return of the index along with daily average abnormal return, cumulative average abnormal return and also t value calculated on the average abnormal return as well as cumulative average abnormal return on a day-to-day basis to check the significance of the event at 95% significance level. After the daily calculations, cumulative average daily return of the window has been made along with the cumulative average daily returns before the event and after the event and the same calculations has been done for the cumulative average abnormal return. Annualized risk and return has also been calculated to get a better comparison picture. Table-1 gives details about the empirical results of returns of the year 2000 when the Dot-Com bubble happened. By selecting +30 days and -30 after and before the event respectively we find that the average daily return of 67.96% before the event dropped to 26.88% after the occurrence of the event with an overall average return being 44.06%. When the t test was applied with a significance level of 95% on the CAAR and AAR it has been found that the index started showing high volatility 19 days before the occurrence of the event which continued in a block of 2 days, 5 days and 6 days. The market remained more or less normal after the occurrence of the event and no volatility in the return was observed.

Table 1: Average abnormal return and cumulative average abnormal return for SSE composite index due to dot-com bubble in 2000

Day	Daily Return (%)	Average Abnormal Return	CAAR	t value (CAAR)	t test (AAR)
-30	-1.095	-1.535	-1.535	-0.438	-0.772
-29	1.738	1.297	-0.238	-0.068	0.652
-28	-0.468	-0.909	-1.147	-0.327	-0.457
-27	0.988	0.548	-0.599	-0.171	0.275
-26	1.814	1.374	0.775	0.221	0.691
-25	-0.121	-0.562	0.213	0.061	-0.282
-24	0.837	0.396	0.609	0.174	0.199
-23	-0.057	-0.497	0.111	0.032	-0.250
-22	0.312	-0.128	-0.017	-0.005	-0.065
-21	1.732	1.291	1.274	0.363	0.649
-20	1.874	1.433	2.707	0.772	0.720
-19	9.052	8.611	11.318	3.229	4.329
-18	-0.196	-0.636	10.682	3.047	-0.320
-17	1.343	0.902	11.585	3.305	0.454

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-16	-3.098	-3.539	8.046	2.295	-1.779
-15	1.673	1.232	9.278	2.646	0.619
-14	0.542	0.102	9.379	2.675	0.051
-13	-2.674	-3.114	6.265	1.787	-1.566
-12	-2.289	-2.730	3.535	1.008	-1.372
-11	2.469	2.028	5.563	1.587	1.020
-10	-0.167	-0.608	4.956	1.414	-0.306
-9	4.491	4.051	9.006	2.569	2.036
-8	0.570	0.130	9.136	2.606	0.065
-7	-0.567	-1.008	8.128	2.319	-0.507
-6	0.479	0.038	8.166	2.329	0.019
-5	1.460	1.019	9.185	2.620	0.512
-4	-3.276	-3.717	5.469	1.560	-1.868
-3	0.816	0.375	5.844	1.667	0.189
-2	1.843	1.402	7.246	2.067	0.705
-1	0.366	-0.075	7.171	2.046	-0.038
0	-1.576	-2.016	5.155	1.470	-1.014
1	1.398	0.957	6.112	1.744	0.481
2	-2.518	-2.959	3.153	0.899	-1.488
3	-0.230	-0.671	2.483	0.708	-0.337
4	-4.398	-4.838	-2.356	-0.672	-2.432
5	3.177	2.737	0.381	0.109	1.376
6	2.451	2.010	2.391	0.682	1.010
7	0.652	0.211	2.602	0.742	0.106
8	0.592	0.151	2.753	0.785	0.076
9	1.557	1.117	3.870	1.104	0.561
10	-0.958	-1.399	2.471	0.705	-0.703
11	2.624	2.184	4.655	1.328	1.098
12	0.874	0.434	5.089	1.452	0.218
13	-0.147	-0.588	4.501	1.284	-0.295
14	1.240	0.799	5.300	1.512	0.402
15	-0.594	-1.035	4.265	1.217	-0.520
16	0.043	-0.397	3.868	1.103	-0.200
17	-2.238	-2.679	1.189	0.339	-1.347
18	0.597	0.156	1.345	0.384	0.078
19	2.142	1.702	3.047	0.869	0.855
20	0.594	0.154	3.201	0.913	0.077
21	0.339	-0.102	3.099	0.884	-0.051
22	-0.268	-0.708	2.390	0.682	-0.356
23	-0.760	-1.201	1.189	0.339	-0.604
24	1.340	0.899	2.089	0.596	0.452
25	0.116	-0.325	1.764	0.503	-0.163
26	-2.105	-2.546	-0.782	-0.223	-1.280
27	1.027	0.586	-0.196	-0.056	0.295
28	0.839	0.398	0.203	0.058	0.200
29	1.002	0.561	0.763	0.218	0.282
30	-0.323	-0.763	0.000	0.000	-0.384

2000 Dot Com Bubble: CAAR Plot
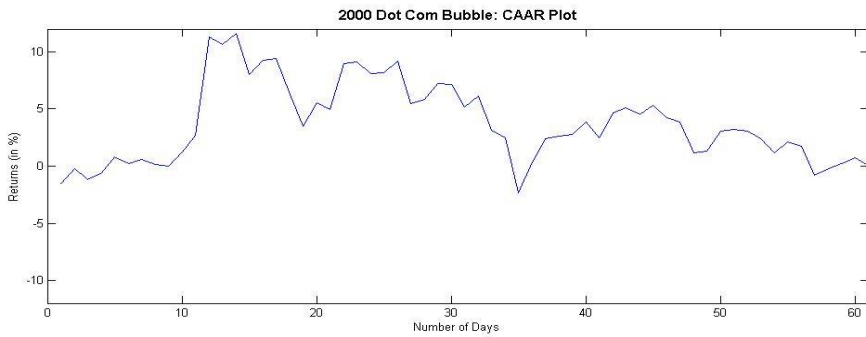
Table 2 represents a 121 days window with 60 days before and after the event data and gives details about the empirical results of returns for 2007 Global Financial Crisis and we have found that the daily average return of the index before the event was 29.43% and it dropped to 21.02% after the occurrence of the event with the overall average return of the window being 26.63%. At 95% significance level on the AAR and CAAR, it was found that there was only a minor volatility on the index which is very normal thing in any stock market index. The 2007 global financial crisis event didn't seem to have extreme impact on Chinese Stock market.

Table 2: Average abnormal return and cumulative average abnormal return for SSE composite index due to global financial crisis in 2007

Day	Daily Return (%)	Average Abnormal Return	CAAR	t value (CAAR)	t test (AAR)
-60	1.562	1.295	1.295	0.158	0.571
-59	-0.445	-0.712	0.584	0.071	-0.314
-58	1.041	0.775	1.359	0.165	0.341
-57	0.937	0.671	2.029	0.247	0.295
-56	1.541	1.274	3.304	0.402	0.561
-55	-0.541	-0.807	2.496	0.304	-0.356
-54	0.690	0.424	2.920	0.355	0.187
-53	2.209	1.943	4.863	0.592	0.856
-52	1.470	1.204	6.067	0.738	0.530
-51	-6.502	-6.768	-0.701	-0.085	-2.982
-50	1.396	1.129	0.428	0.052	0.498
-49	-2.650	-2.916	-2.488	-0.303	-1.285
-48	-8.257	-8.523	-11.011	-1.339	-3.755
-47	2.635	2.368	-8.643	-1.051	1.043
-46	0.245	-0.022	-8.665	-1.054	-0.010
-45	3.032	2.765	-5.899	-0.718	1.218
-44	0.574	0.308	-5.592	-0.680	0.136
-43	2.109	1.843	-3.749	-0.456	0.812
-42	1.914	1.647	-2.101	-0.256	0.726
-41	2.562	2.296	0.195	0.024	1.012
-40	-1.467	-1.733	-1.539	-0.187	-0.764
-39	0.429	0.163	-1.376	-0.167	0.072
-38	2.915	2.649	1.273	0.155	1.167
-37	0.380	0.114	1.387	0.169	0.050
-36	-2.066	-2.332	-0.945	-0.115	-1.028
-35	1.184	0.918	-0.028	-0.003	0.404
-34	-3.294	-3.561	-3.588	-0.436	-1.569
-33	-3.675	-3.941	-7.530	-0.916	-1.737
-32	0.819	0.553	-6.977	-0.849	0.244
-31	2.648	2.382	-4.595	-0.559	1.049
-30	-4.031	-4.297	-8.892	-1.082	-1.893

-29	-2.389	-2.655	-11.547	-1.405	-1.170
-28	0.408	0.142	-11.405	-1.387	0.062
-27	1.653	1.387	-10.018	-1.219	0.611
-26	-2.143	-2.409	-12.427	-1.512	-1.061
-25	-5.249	-5.515	-17.942	-2.182	-2.430
-24	4.576	4.310	-13.632	-1.658	1.899
-23	2.694	2.428	-11.204	-1.363	1.070
-22	-0.778	-1.044	-12.248	-1.490	-0.460
-21	0.330	0.063	-12.184	-1.482	0.028
-20	1.300	1.034	-11.150	-1.356	0.456
-19	-0.041	-0.307	-11.457	-1.394	-0.135
-18	-2.363	-2.629	-14.086	-1.714	-1.158
-17	1.943	1.677	-12.409	-1.509	0.739
-16	0.869	0.603	-11.806	-1.436	0.266
-15	-0.436	-0.702	-12.508	-1.522	-0.309
-14	3.729	3.463	-9.045	-1.100	1.526
-13	3.807	3.540	-5.505	-0.670	1.560
-12	-0.072	-0.338	-5.843	-0.711	-0.149
-11	2.699	2.433	-3.411	-0.415	1.072
-10	0.520	0.254	-3.157	-0.384	0.112
-9	-0.025	-0.292	-3.448	-0.419	-0.128
-8	2.196	1.929	-1.519	-0.185	0.850
-7	0.681	0.415	-1.104	-0.134	0.183
-6	-3.813	-4.079	-5.183	-0.630	-1.797
-5	2.492	2.226	-2.957	-0.360	0.981
-4	3.472	3.206	0.249	0.030	1.412
-3	1.476	1.210	1.459	0.177	0.533
-2	0.500	0.233	1.692	0.206	0.103
-1	0.257	-0.010	1.682	0.205	-0.004
0	1.950	1.684	3.366	0.409	0.742
1	-0.099	-0.366	3.000	0.365	-0.161
2	1.489	1.222	4.222	0.514	0.538
3	1.094	0.827	5.050	0.614	0.365
4	-0.060	-0.326	4.724	0.575	-0.144
5	-2.145	-2.411	2.313	0.281	-1.062
6	-2.285	-2.551	-0.238	-0.029	-1.124
7	5.332	5.066	4.828	0.587	2.232
8	1.027	0.760	5.588	0.680	0.335
9	0.502	0.236	5.824	0.708	0.104
10	1.053	0.786	6.610	0.804	0.346
11	1.494	1.227	7.837	0.953	0.541
12	0.831	0.565	8.402	1.022	0.249
13	0.865	0.599	9.001	1.095	0.264
14	-1.641	-1.908	7.094	0.863	-0.840
15	1.144	0.878	7.971	0.970	0.387
16	0.986	0.719	8.691	1.057	0.317
17	1.959	1.693	10.383	1.263	0.746
18	-0.508	-0.774	9.610	1.169	-0.341
19	0.315	0.049	9.658	1.175	0.021
20	1.562	1.296	10.954	1.332	0.571
21	-2.160	-2.426	8.528	1.037	-1.069
22	1.480	1.214	9.742	1.185	0.535
23	-4.506	-4.772	4.969	0.604	-2.103
24	1.147	0.881	5.850	0.712	0.388
25	1.952	1.686	7.535	0.917	0.743

| 26	0.732	0.465	8.001	0.973	0.205
27	2.056	1.790	9.790	1.191	0.788
28	0.070	-0.196	9.594	1.167	-0.086
29	-0.552	-0.818	8.776	1.068	-0.361
30	1.386	1.120	9.896	1.204	0.493
31	-0.281	-0.548	9.349	1.137	-0.241
32	0.556	0.290	9.639	1.172	0.128
33	-1.078	-1.344	8.294	1.009	-0.592
34	-1.610	-1.876	6.418	0.781	-0.827
35	1.328	1.061	7.479	0.910	0.468
36	2.642	2.375	9.855	1.199	1.047
37	2.530	2.263	12.118	1.474	0.997
38	0.406	0.140	12.258	1.491	0.062
39	0.972	0.706	12.964	1.577	0.311
40	2.456	2.190	15.154	1.843	0.965
41	-0.169	-0.435	14.719	1.790	-0.192
42	2.148	1.882	16.601	2.019	0.829
43	1.028	0.761	17.363	2.112	0.335
44	-0.916	-1.182	16.181	1.968	-0.521
45	-3.496	-3.762	12.419	1.511	-1.657
46	-0.124	-0.391	12.028	1.463	-0.172
47	-2.590	-2.857	9.172	1.116	-1.259
48	1.871	1.605	10.777	1.311	0.707
49	1.208	0.941	11.718	1.425	0.415
50	-4.804	-5.071	6.647	0.809	-2.234
51	0.490	0.223	6.871	0.836	0.098
52	2.833	2.567	9.438	1.148	1.131
53	2.596	2.329	11.767	1.431	1.026
54	0.976	0.710	12.477	1.518	0.313
55	-0.680	-0.946	11.531	1.403	-0.417
56	-2.308	-2.574	8.957	1.090	-1.134
57	-2.481	-2.747	6.210	0.755	-1.210
58	-1.737	-2.004	4.206	0.512	-0.883
59	1.178	0.912	5.118	0.623	0.402
60	-4.851	-5.118	0.000	0.000	-2.255
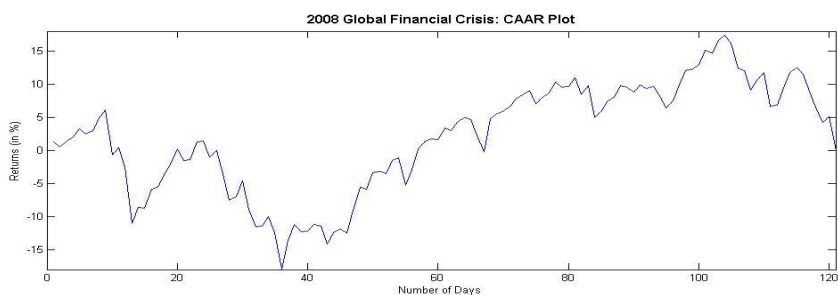
Table 3 represents a 121 days window with 60 days before and after the occurrence of the event of the announcement of IMF of considering RNB in SDR (Special Drawing Rights) for which the final decision is still awaited in October 2015. We found that the average daily return of 46.10% before the event dropped down to -8.44% after the event which eventually became a cause for more than 50% of the shares listed on the exchange to stop their trading. This wide fluctuation and volatility in the market led to huge abnormal returns ranging from 25.19% before the event to -29.35% after the occurrence of the event. T test on AAR and CAAR at 95% significance level testifies the findings. The volatility in the stock market returns was minor in the initial days but started increasing from the

5th day, followed by 7th to 9th day, 12th day, and 26th to 30th day with the toughest phase between 32nd to 45th days.

Table 3: Average abnormal return and cumulative average abnormal return for SSE composite index due to announcement of RNB to be considered in SDR Basket

Day	Daily Return (%)	Average Abnormal Return	CAAR	t value (CAAR)	t test (AAR)
-60	1.819	1.610	1.610	0.149	0.678
-59	4.745	4.536	6.146	0.569	1.909
-58	0.594	0.385	6.531	0.604	0.162
-57	0.252	0.043	6.573	0.608	0.018
-56	0.937	0.728	7.302	0.676	0.306
-55	-0.893	-1.102	6.199	0.574	-0.464
-54	-1.408	-1.617	4.582	0.424	-0.681
-53	-1.314	-1.523	3.059	0.283	-0.641
-52	-1.592	-1.801	1.257	0.116	-0.758
-51	-2.556	-2.765	-1.508	-0.140	-1.164
-50	2.449	2.240	0.732	0.068	0.943
-49	-0.960	-1.170	-0.438	-0.041	-0.492
-48	-1.184	-1.394	-1.831	-0.169	-0.586
-47	-1.933	-2.142	-3.973	-0.368	-0.901
-46	0.625	0.416	-3.558	-0.329	0.175
-45	1.501	1.292	-2.265	-0.210	0.544
-44	0.513	0.304	-1.962	-0.182	0.128
-43	0.498	0.288	-1.673	-0.155	0.121
-42	0.958	0.749	-0.924	-0.086	0.315
-41	0.579	0.369	-0.555	-0.051	0.155
-40	0.762	0.553	-0.002	0.000	0.233
-39	0.000	-0.209	-0.211	-0.020	-0.088
-38	0.000	-0.209	-0.420	-0.039	-0.088
-37	0.000	-0.209	-0.629	-0.058	-0.088
-36	0.000	-0.209	-0.838	-0.078	-0.088
-35	-0.556	-0.766	-1.604	-0.148	-0.322
-34	2.153	1.944	0.340	0.031	0.818
-33	0.362	0.153	0.493	0.046	0.064
-32	0.785	0.576	1.069	0.099	0.242
-31	-2.195	-2.404	-1.336	-0.124	-1.012
-30	0.505	0.296	-1.040	-0.096	0.125
-29	-0.947	-1.156	-2.196	-0.203	-0.487
-28	-0.224	-0.434	-2.629	-0.243	-0.182
-27	1.889	1.680	-0.950	-0.088	0.707
-26	-0.495	-0.704	-1.653	-0.153	-0.296
-25	0.147	-0.062	-1.716	-0.159	-0.026
-24	1.775	1.566	-0.149	-0.014	0.659
-23	0.704	0.495	0.346	0.032	0.208
-22	2.265	2.056	2.402	0.222	0.865
-21	1.552	1.343	3.745	0.347	0.565
-20	2.126	1.916	5.661	0.524	0.807
-19	0.139	-0.070	5.591	0.517	-0.030
-18	0.978	0.769	6.360	0.589	0.324
-17	1.946	1.737	8.098	0.749	0.731
-16	0.100	-0.109	7.988	0.739	-0.046
-15	-0.831	-1.040	6.948	0.643	-0.438
-14	0.584	0.375	7.322	0.678	0.158
-13	0.244	0.035	7.358	0.681	0.015

-12	2.587	2.377	9.735	0.901	1.001
-11	-1.021	-1.230	8.505	0.787	-0.518
-10	1.665	1.456	9.961	0.922	0.613
-9	0.407	0.197	10.158	0.940	0.083
-8	0.997	0.788	10.946	1.013	0.332
-7	2.522	2.313	13.259	1.227	0.973
-6	0.844	0.635	13.894	1.286	0.267
-5	-0.933	-1.142	12.751	1.180	-0.481
-4	1.940	1.731	14.482	1.340	0.728
-3	2.167	1.957	16.440	1.522	0.824
-2	0.336	0.127	16.567	1.533	0.053
-1	-1.243	-1.452	15.115	1.399	-0.611
0	2.709	2.500	17.615	1.630	1.052
1	2.204	1.995	19.610	1.815	0.840
2	-1.638	-1.847	17.763	1.644	-0.777
3	1.815	1.606	19.369	1.793	0.676
4	2.442	2.233	21.603	1.999	0.940
5	0.364	0.155	21.758	2.014	0.065
6	-0.472	-0.681	21.077	1.951	-0.287
7	3.043	2.834	23.911	2.213	1.193
8	-1.130	-1.340	22.571	2.089	-0.564
9	0.009	-0.200	22.371	2.071	-0.084
10	-0.781	-0.990	21.381	1.979	-0.417
11	0.000	-0.209	21.172	1.960	-0.088
12	0.874	0.665	21.837	2.021	0.280
13	-4.057	-4.266	17.571	1.626	-1.795
14	-1.615	-1.824	15.746	1.457	-0.768
15	-2.768	-2.977	12.769	1.182	-1.253
16	2.279	2.070	14.839	1.373	0.871
17	3.035	2.826	17.665	1.635	1.189
18	1.561	1.352	19.017	1.760	0.569
19	-0.578	-0.788	18.229	1.687	-0.331
20	0.058	-0.151	18.078	1.673	-0.063
21	-1.590	-1.799	16.279	1.507	-0.757
22	-0.585	-0.794	15.485	1.433	-0.334
23	3.130	2.921	18.406	1.704	1.229
24	0.651	0.441	18.847	1.744	0.186
25	1.870	1.661	20.508	1.898	0.699
26	2.830	2.621	23.128	2.141	1.103
27	3.354	3.145	26.273	2.432	1.323
28	2.017	1.808	28.081	2.599	0.761
29	0.628	0.418	28.499	2.638	0.176
30	-6.505	-6.714	21.786	2.016	-2.826
31	-0.184	-0.394	21.392	1.980	-0.166
32	4.705	4.496	25.888	2.396	1.892
33	1.694	1.485	27.373	2.533	0.625
34	-0.011	-0.220	27.152	2.513	-0.093
35	0.756	0.547	27.699	2.564	0.230
36	1.536	1.327	29.026	2.687	0.558
37	2.166	1.957	30.983	2.868	0.823
38	-0.358	-0.567	30.416	2.815	-0.238
39	-0.147	-0.356	30.061	2.782	-0.150
40	0.305	0.096	30.156	2.791	0.040
41	0.874	0.665	30.821	2.853	0.280
42	-2.001	-2.210	28.611	2.648	-0.930

| 43	-3.468	-3.677	24.935	2.308	-1.547
44	1.646	1.437	26.372	2.441	0.605
45	-3.674	-3.884	22.488	2.081	-1.634
46	-6.415	-6.624	15.864	1.468	-2.788
47	2.191	1.982	17.846	1.652	0.834
48	2.484	2.274	20.120	1.862	0.957
49	-3.462	-3.671	16.449	1.522	-1.545
50	-7.397	-7.606	8.843	0.819	-3.201
51	-3.335	-3.544	5.299	0.490	-1.492
52	5.531	5.322	10.621	0.983	2.240
53	-5.226	-5.435	5.186	0.480	-2.287
54	-3.477	-3.686	1.501	0.139	-1.551
55	-5.772	-5.981	-4.481	-0.415	-2.517
56	2.414	2.205	-2.276	-0.211	0.928
57	-1.292	-1.501	-3.777	-0.350	-0.632
58	-5.901	-6.110	-9.887	-0.915	-2.571
59	5.764	5.554	-4.333	-0.401	2.338
60	4.542	4.333	0.000	0.000	1.823
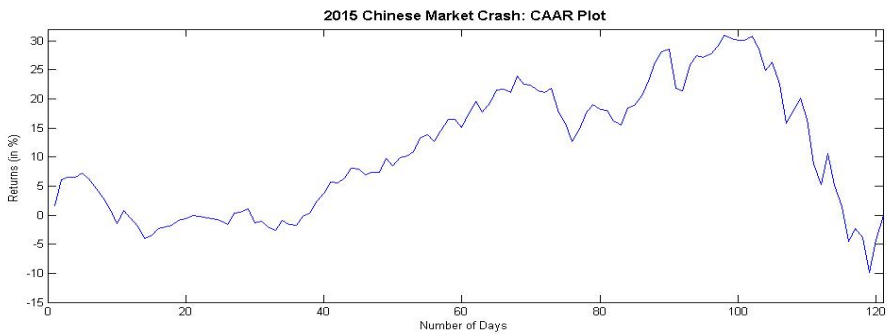
Table 4 gives the summary findings of our study. We find a general pattern that for all the three events of 2000 dot-com bubble, 2008 Global financial crisis and 2015 announcement of RNB consideration in the SDR basket there is a sharp decrease in the average daily return post event as compared to the returns before the event. The results also suggests that 2015 announcement of RNB consideration in the SDR basket seems to have the most impact with stock market returns plummeting to -29.35%. The overall annualized average daily return using daily data is found to be lowest in 2015 amongst the three events along with the lowest abnormal return after the event.

Table 4: Summary results of average daily returns, average abnormal returns before and after the event on shanghai stock exchange

	2000 Dot Com Bubble	**2007 Global Financial Crisis**	**2015 announcement of RNB consideration**
Average daily return before event	67.968	29.434	46.103
Average daily return after event	26.881	21.020	-8.445
Overall average daily return	44.064	26.630	20.912
Average abnormal return before event	23.904	2.803	25.190
Average abnormal return after event	-17.182	-5.609	-29.358
Annualized risk	6.890	7.862	8.231
Annualized Return	202.826	95.462	69.290

5. CONCLUDING REMARKS

In this study we investigated the impact of macroeconomic events namely the 2000 dot-com bubble, 2008 Global financial crisis and the 2015 announcement of RNB consideration in the SDR basket on the Shanghai Stock Exchange Composite Index by applying event-study technique for quantifying Average Abnormal Returns and Cumulative Average Abnormal Returns and test for statistical significance of the obtained results. We find that the Returns of Shanghai Stock Exchange Composite Index responded negatively to the events implying that Chinese stock market was negatively affected by all three events considered but varying in the degree of their impact owing to the extent of impact on the economy of China as a whole. Our empirical findings suggests that the event of 2015 announcement of RNB consideration in the SDR basket has had the most impact on Shanghani Stock Exchange Composite Index as compared to 2000 dot-com bubble and 2007-08 Global financial crisis. The results of the study provide insights to potential investors, fund managers and policymakers to take an informed decision whether to invest in Shanghai Stock Exchange if such events would reoccur in future.

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