

6. Derivatives Market

6.1 Introduction

The emergence and growth of the market for derivative instruments can be traced back to the willingness of risk-averse economic agents to guard themselves against uncertainties arising out of fluctuations in asset prices. Let us consider an example of how buying put options of a stock minimizes downside risk. Suppose, an investor bought 1000 shares of a company a year ago and the company's stock has increased from Rs100 to Rs150 over the last year. The investor likes to hold on to the stock but is concerned about price correction that could accompany such a strong upmove. The investor can meet his or her objective by buying put options of the stock. If the investor buys the put option with an exercise price of Rs150 and an expiry day six months into the future, he or she will be able to guarantee a sale price of Rs150 irrespective of the stock price performance over the next six months. To get this insurance from downside risk, the investor pays the option premium (Box 1). Thus use of put option limits downside risk while the investor continues to gain if the stock price rises further.

Derivatives are meant to facilitate the hedging of price risks of inventory holdings or a financial/commercial transaction over a certain period. By locking in asset prices, derivative products minimize the impact of fluctuations in asset prices on the profitability and cash flow situation of risk-averse investors, and thereby, serve as instruments of risk management. Also, now with global markets for trade and finance becoming ever more integrated, derivatives have strengthened important market linkages between geographies and have facilitated the flow of trade and finance. As an example, suppose that an Indian exporter sells its product to an American company for US\$10,000, with the payment to be made in USD by the US company to the Indian exporter at the end of three months. Suppose the current exchange rate is Rs65/USD. Thus, if the Indian exporter is paid immediately, it would receive Rs6,50,000. However, payment is due after three months and thus the Indian exporter faces the risk that the Indian rupee appreciates (for example, becomes Rs63/USD). The Indian exporter can protect its Rupee revenue from possible exchange rate appreciation while still benefiting if the exchange rate depreciates (for example, becomes Rs66/USD) by buying a put option on the USD today. Similarly, importers who need to make payments in USD in the future, can buy call options on the USD today to lock-in the exchange rate.

Besides, investors can use index derivatives as a tool to minimize systemic risks associated with their investment portfolio of stocks. It has been seen earlier that share prices of large companies move in same direction when a large adverse move happens in the economy or financial market. Then, diversifying total portfolio in different stocks of large companies may not help to reduce total risk associated with those stocks. In such scenario, investors can buy index derivatives to mitigate their risks and have a fruitful return in the future.

Box 1: Different Types of Derivatives

There are different types of derivatives which can be used to mitigate total risk associated with an investment in the financial market.

- a. *Forwards and futures:* Investors can purchase forward and future contracts that obligate them to purchase an asset at a pre-agreed price on a specified future date. Forward derivatives are more flexible contracts as both the parties can customize the underlying assets, price, date and other obligations according to their requirement, whereas future derivatives are standardized that are traded in exchanges.
- b. *Options:* These financial instruments provide the buyer the rights but not the obligations to purchase or sell the underlying assets at a predetermined price on/before a specified date. In return for granting the option, the seller collects a payment from the other party. This payment collected is called the “premium” or price of the option. There are two types of options, (a) European options, where the buyer can exercise the option only on the maturity date, and (b) American options, where the buyer can exercise the option on or before the maturity date.
- c. *Swaps:* These derivative contracts allow two parties to swap their cash flows. These parties usually swap fixed cash flow with flexible cash flows. Interest rate swaps, commodity swaps and currency swaps are most popular among all. In an interest rate swap, each counterparty agrees to pay either a fixed or floating rate denominated in a particular currency to the other counterparty at regular intervals (say six months) over a defined period of time (say five years). The fixed or floating rate is multiplied by a notional principal amount (say, Rs1 crore). This notional amount of Rs1 crore is generally not exchanged between counterparties, but is used only for calculating the size of cash flows to be exchanged.

6.2 History

Financial derivatives first gained prominence in 70s, but in recent years, the market for financial derivatives has grown in terms of the variety of instruments available, as well as their complexity and turnover. They have changed the world of finance through the creation of innovative ways to comprehend, measure and manage risks.

India’s tryst with derivatives began in 2000 when both NSE and BSE commenced trading in equity derivatives. In June 2000, index futures became the first type of derivative to be launched in the Indian market, followed by index options in June 2001, options in individual stocks in July 2001, and futures in single stock derivatives in November 2001. Since then, equity derivatives have come a long way, and the response of Indian investors to this segment has been extremely positive. The turnover of derivatives on NSE increased from Rs24bn in 2000–01 to Rs292tn in 2010-11, the first decade, and have only risen further since, to Rs648tn by 2015-16, and Rs2,376tn in 2018-19. During this financial year, total turnover of futures and options segment of NSE increased by 75% over previous financial year.

New products, rising volumes and the best risk management framework for exchange-traded derivatives have been the hallmark of the journey of equity derivatives in India so far. For instance, NSE and BSE launched weekly options on Bank Nifty in 2016 and 2018 respectively. They also launched weekly options in the currency derivatives segment on the USD-INR currency pair and weekly options contracts on NIFTY 50 Index in 2018.

India is one of the most successful developing countries in terms of a vibrant market for exchange-traded derivatives. This reiterates the strengths of the modern development in India’s securities markets, which are based on nationwide market access, anonymous electronic trading, and a predominantly retail market. There is an increasing sense that the equity derivatives market plays a major role in shaping price discovery.

The various kinds of equity derivative contracts that are traded on NSE indices other than individual stocks are shown in Table 6.1 including the derivatives on global indices such as Dow Jones, S&P 500 and FTSE 100.

Table 6.1: Benchmark Indices-Contracts and Volume in Futures and Options Segment of NSE in 2017-18 and first half of 2018-19

Indices	No. of Contracts Traded (thousand)	Traded Value (Rsbn)	Traded Value (US\$bn)	Percentage of Contracts to total contracts (%)	2017-2018		Apr-Dec 2018	
					No. of Contracts Traded (thousand)	Traded Value (Rsbn)	Traded Value (US\$bn)	Percentage of Contracts to total contracts (%)
Index Futures								
NIFTY 50	37,324.8	28,235.8	438.1	2.37	29,836.5	24,157.5	374.8	1.64
BANKNIFTY	20,178.7	19,756.7	306.5	1.28	21,044.1	18,270.3	283.5	1.16
NIFTYIT	79.5	44.9	0.7	0.01	82.3	59.3	0.9	0.00
NIFTYMID50	23.9	25.1	0.4	0.00	86.9	53.6	0.8	0.00
S&P500	44.8	27.3	0.4	0.00	0.0	0.0	0.0	0.00
DJIA	22.8	14.7	0.2	0.00	0.0	0.0	0.0	0.00
Index Options								
BANKNIFTY	894,080.8	1,823.0	28.3	56.85	1,330,424	2,500	39	73.24
NIFTY 50	620,948.9	2,783.4	43.2	39.48	434,965	2,303	36	23.95
NIFTYMID50	3.2	0.1	0.0	0.00	0	0	0	0.00
NIFTYCPSE	1.3	0.0	0.0	0.00	0	0	0	0.00
Total of all Indices	1,572,708.8	52,711.1	817.9	100.00	1,816,439	47,344	735	100.00
Total of Nifty Index Futures and Options	658,273.8	31,019.2	481.3		464,801	26,461	411	

Source: NSE.

Note: India VIX is not included. Traded Value is the premium value.

6.3 Global Derivative Markets

As per the WFE IOMA 2018 derivatives report, total volume of futures and options traded on exchanges around the world increased by 21% year-on-year in 2018 after an overall decrease by 0.9% in the previous year (Table 6.2). Total trading in all major segments have increased. Total volume in equity segment 34%, followed by currency segment (33%). ETF segment and interest rate derivatives increased by 17% and 16% (YoY) respectively in 2018. Among all, total trading of stock index futures increased tremendously by 42% from 2,383 mn in 2017 to 3,379 mn contracts in 2018.

Table 6.2: Number of Exchange Traded Derivatives Traded Worldwide (mn of contracts)

Sl. No.	Category	2015	2016	2017	2018	Change (2015-16)	Change (2016-17)	Change (2017-18)
1.	Total Equity	10,994	9,705	10,192	13,641	-11.7%	5.0%	33.8%
1.1	Single Stock Options	3,499	3,353	3,485	4,452	-4.2%	3.9%	27.7%
1.2	Single Stock Futures	1,001	1,016	1,138	1,455	1.5%	12.0%	27.9%
1.3	Stock Index Options	3,741	2,771	3,186	4,355	-25.9%	15.0%	36.7%
1.4	Stock Index Futures	2,753	2,565	2,383	3,379	-6.8%	-7.1%	41.8%
2	Total ETF	1,559	1,673	1,613	1,891	7.3%	-3.6%	17.2%
1.5	ETF Options	1,557	1,671	1,611	1,889	7.3%	-3.6%	17.3%
1.6	ETF Futures	2	2	2	2	15.0%	-17.4%	7.7%
3	Total Interest Rates	3,267	3,503	3,962	4,579	7.2%	13.1%	15.6%
3.1	STIR Options	341	425	520	545	24.6%	22.4%	4.8%
3.2	STIR Futures	1,339	1,390	1,566	1,754	3.8%	12.7%	12.0%
3.3	LTIR Options	227	207	263	330	-8.8%	27.1%	25.5%
3.4	LTIR Futures	1,361	1,481	1,645	1,950	8.8%	11.1%	18.5%
4	Total Currency	2,581	2,855	2,763	3,673	10.6%	-3.2%	32.9%
4.1	Currency Options	467	650	814	1,155	39.2%	25.2%	41.9%
4.2	Currency Futures	2,115	2,205	1,949	2,518	4.3%	-11.6%	29.2%
5	Total Commodity	5,392	6,881	5,884	5,920	27.6%	-14.5%	0.6%
5.1	Commodity Options	238	256	261	280	7.6%	2.0%	7.3%
5.2	Commodity Futures	5,154	6,626	5,624	5,640	28.6%	-15.1%	0.3%
6	Total 'other'	627	452	433	374	-27.9%	-4.2%	-13.6%
6.1	Other Options	157	158	197	182	0.6%	24.7%	-7.6%
6.2	Other Futures	470	295	236	192	-37.2%	-20.0%	-18.6%
	Grand Total	24,420	25,070	24,847	30,078	2.7%	-0.9%	21.1%

Source: WFE IOMA 2018 derivatives report.

Note: Based on the number of contracts traded and/or cleared at 47 exchanges worldwide who have responded to this year's survey.

In terms of number of trades in derivatives segments in the year 2018, NSE performed well among all large exchanges globally for several products (Table 6.3). Notably, NSE registered highest number of trades among all global exchanges in currency derivatives and stock index options. NSE ranked 2nd after Korea Exchange in case of single stock futures and 8th in single stock options in terms of number of trades. Though NSE did not rank below 10 in other derivatives segments, total volumes increased tremendously in recent years as can be seen in the following sections.

Table 6.3: Rank of NSE Globally in Different Derivatives Segments (2018)

Segment	Rank
Single stock options	8
Single stock futures	2
Stock Index Options	1
Long-term interest rate options and futures	8
Currency options and futures contracts	1

Source: 2018 IOMA Derivatives Market Survey.

Note: Only WFE member exchanges are considered while ranking the exchanges.

The ranking is done based on total number of contracts traded in the exchange.

6.4 Indian Equity Derivative Markets

6.4.1 Turnover

Total turnover in equity derivatives at NSE and BSE increased by 75% from Rs944tn in 2016-17 to Rs1,650tn in 2017-18 (Table 6.4). The growth was entirely contributed by NSE where total turnover increased by 75%. In contrast, BSE experienced a sharp decline in total turnover during the same time period. Interestingly, total 1,913mn contracts with a turnover of Rs1,649tn were traded at NSE, while at BSE merely 44,701 contracts were traded with trading value of Rs32.6bn. Hence, almost 100% of total contracts were traded at NSE in 2017-18. Additionally, investors prefer derivatives market over cash market in the equity segment, as can be seen in Table 6.5. Since 2010-11, total turnover in derivatives market is about three times of total turnover in cash market for the equity segment except in 2012-13.

Table 6.4: Trade Details of Equity Derivatives Market

Month/ Year	NSE			BSE			TOTAL		
	No. of Contracts Traded (mn)	Turnover (Rsbn)	Turnover (US\$bn)	No. of Contracts Traded (mn)	Turnover (Rsbn)	Turnover (US\$bn)	No. of Contracts Traded (mn)	Turnover (Rsbn)	Turnover (US\$bn)
2010-11	1,034	292,482	6,551	0.0	1.5	0.0	1,034	292,484	6,551
2011-12	1,205	313,497	6,269	32.2	8,084.8	158.9	1,237	321,582	6,428
2012-13	1,131	315,330	5,800	262.4	71,635.2	1,317.7	1,394	386,965	7,118
2013-14	1,284	382,114	6,375	285.6	92,194.3	1,538.2	1,570	474,308	7,913
2014-15	1,837	556,065	9,095	505.5	203,627.4	3,330.5	2,343	759,692	12,425
2015-16	2,099	648,258	9,773	106.2	44,750.1	674.6	2,205	693,008	10,447
2016-17	1,400	943,703	14,494	0.1	69.4	1.1	1,400	943,772	14,495
2017-18	1,914	1,649,849	25,599	0.0	32.6	0.5	1,914	1,649,881	25,599
Apr-18	176	156,202	2,424	0.0	0.0	0.0	176	156,202	2,424
May-18	211	193,421	3,001	0.0	0.0	0.0	211	193,421	3,001
Jun-18	200	186,106	2,888	0.0	0.3	0.0	200	186,106	2,888
Jul-18	197	186,571	2,895	0.0	0.0	0.0	197	186,571	2,895
Aug-18	201	200,461	3,110	0.0	0.0	0.0	201	200,461	3,110
Sep-18	234	224,586	3,485	0.0	0.0	0.0	234	224,586	3,485
Oct-18	273	224,333	3,481	0.0	0.0	0.0	273	224,333	3,481
Nov-18	326	184,145	2,857	0.0	0.0	0.0	326	184,145	2,857
Dec-18	328	191,838	2,977	0.0	0.0	0.0	328	191,838	2,977
Apr-Dec '18	2,145	1,747,663	27,117	0.0	0.4	0.0	2,145	1,747,664	27,117

Source: BSE, NSE.

Table 6.5: Derivatives to Cash Ratio in Equity Segment

Year	Futures Turnover & Option Premium (Rsbn)	Cash Turnover (Rsbn)	Derivatives to Cash Ratio*
2010-11	100,656	35,774	2.8
2011-12	79,254	28,109	2.8
2012-13	69,697	27,083	2.6
2013-14	83,251	28,085	3.0
2014-15	127,283	43,297	2.9
2015-16	127,981	42,370	3.0
2016-17	159,111	50,559	3.1
2017-18	210,168	72,348	2.9
2018-19	225,700	79,490	2.8

Source: NSE.

Note: *(Equity futures turnover+Equity option premium)/Cash market turnover.

6.4.2 Product-wise Turnover

The index options segment continued to remain the clear leader in the product-wise turnover of the futures and options segment of NSE in 2017–18 (Table 6.7). The notional turnover in the index options category was 81.78% of total turnover in the F&O segment of NSE. There was a gradual decline in the percentage share of index futures and stock futures in 2017-18. During April-Dec'18, index options constituted around 85% of the total turnover in F&O segment, whereas the turnover of index futures and stock future have further declined to 2.43% and 7.16% of total turnover respectively.

6.4.3 Open Interest

Open interest is the total number of unsettled derivative contracts on a security; i.e. the number of futures or options that have not been exercised, expired or fulfilled by delivery. Increasing open interest means that fresh positions are being taken on the security, while declining open interest means that more positions are being squared off. Open interest in the equity derivatives segment at the end of the year 2017-18 at NSE was 3.8mn in terms of number of contracts as compared to 3.5mn in 2016-17. In terms of value, the figure stood at Rs2,749bn at the end of 2017-18 as compared to Rs2,495bn in the previous year end (Table 6.6).

Table 6.6: Open Interest in Various Derivatives Segments at NSE (Year-end)

Segment	No. of Contracts (thousand)			Value (Rsbn)		
	2015-16	2016-17	2017-18	2015-16	2016-17	2017-18
Equity Derivatives	2,908	3,542	3,800	1,544	2,495	2,749
Index Futures	334	423	324	188	302	255
Stock Futures	1,086	1,362	1,682	510	943	1,103
Index Options	1,394	1,559	1,655	802	1,108	1,299
Stock Options	95	199	140	45	142	93

Source: SEBI Annual Report.

6.4.4 Settlement

In 2017–18, total settlement of index/stocks derivatives increased to Rs1,398bn as compared to Rs901bn in 2016-17. During Apr-Dec'18, total settlement amounted to Rs1,286bn. The details of the settlement statistics in the F&O segment are presented in Table 6.8.

Table 6.7: Product-wise Turnover in Derivatives Segment of NSE

Year	Index Futures			Stock Futures			Index Options				Stock Options				Total		Average Daily Turnover (Rsbn)
	No. of contracts (mn)	Turnover (Rsbn)	Percent-age share in total Turnover	No. of contracts (mn)	Turnover (Rsbn)	Percent-age share in total Turnover	No. of contracts (mn)	Premium Turnover (Rsbn)	Notional Turnover (Rsbn)	Percentage share in total Turnover	No. of contracts (mn)	Premium Turnover (Rsbn)	Notional Turnover (Rsbn)	Percentage share in total Turnover	No. of contracts (mn)	Turnover (Rsbn)	
2014-15	129.3	41,072	7.39	237.6	82,918	14.91	1,379	2,653	399,227	71.80	91.5	617.3	32,826	5.90	1,837	556,065	2,288
2015-16	140.5	45,571	7.03	234.2	78,286	12.08	1,624	3,512	489,519	75.51	100.3	611.2	34,882	5.38	2,099	648,258	2,625
2016-17	66.5	43,359	4.59	173.9	111,296	11.79	1,067	3,500	727,973	77.14	92.1	955.7	61,075	6.47	1,400	943,703	3,805
2017-18	57.7	48,105	2.92	214.8	155,975	9.45	1,515	4,607	1,349,219	81.78	126.4	1,482.2	96,550	5.85	1,914	1,649,849	6,707
Apr-18	5.0	4,337	2.78	20.0	14,320	9.17	138	436	127,408	81.57	13.5	148.8	10,138	6.49	176	156,202	7,438
May-18	5.0	4,467	2.31	21.8	14,305	7.40	169	472	164,192	84.89	15.1	162.1	10,456	5.41	211	193,421	8,792
Jun-18	5.2	4,686	2.52	20.0	13,174	7.08	161	499	158,871	85.37	13.2	133.6	9,375	5.04	200	186,106	8,862
Jul-18	4.7	4,295	2.30	21.8	14,769	7.92	154	443	155,013	83.09	16.8	193.4	12,495	6.70	197	186,571	8,480
Aug-18	4.1	3,942	1.97	21.6	15,450	7.71	158	414	168,114	83.86	16.6	195.5	12,955	6.46	201	200,461	9,546
Sep-18	5.8	5,400	2.40	21.6	14,644	6.52	191	644	193,378	86.10	14.9	178.1	11,164	4.97	234	224,586	12,477
Oct-18	8.2	6,673	2.97	24.9	14,881	6.63	224	808	192,631	85.87	15.1	207.4	10,149	4.52	273	224,333	10,683
Nov-18	6.7	4,419	2.40	21.3	11,872	6.45	283	493	159,190	86.49	15.2	147.7	8,665	4.71	326	184,048	9,202
Dec-18	6.3	4,322	2.25	20.5	11,708	6.10	286	593	167,230	87.17	14.4	141.2	8,578	4.47	330	191,838	9,592
Apr-Dec '18	51.0	42,541	2.43	193.6	125,121	7.16	1,765	4,803	1,486,026	85.03	134.7	1,507.8	93,975	5.38	2,145	1,747,663	9,396

Source: NSE.

SEBI is currently in the process of enforcing physical settlement for all stock derivatives in a phased manner. The primary objective is to encourage investors to participate in derivative market primarily for hedging and discourage investors from indulging in speculative trades. In this regard, NSE released a list of 46 stock futures to enforce physical settlement based on certain eligibility criteria specified by SEBI in April 2018. In the coming months, NSE will implement physical settlement for other stock futures as well. Table 6.8 shows there is no significant change in the pattern of settlement post implementing physical settlement of 46 shares. It would be interesting to see how the pattern changes overtime.

Table 6.8: Settlement Statistics in F&O Segment

Month/Year	Index/Stock Futures		Index/Stock Options		Total Settlement (Rsbn)	Total Settlement (US\$bn)
	MTM Settlement	Final Settlement	Premium Settlement	Exercise Settlement		
	(Rsbn)					
2010-11	672.9	15.9	127.0	21.2	837.0	18.7
2011-12	566.6	12.7	128.0	15.6	723.0	14.1
2012-13	419.3	12.2	119.1	17.0	567.6	10.4
2013-14	422.9	14.3	132.6	21.6	591.3	9.9
2014-15	687.7	15.4	133.1	25.0	861.2	13.0
2015-16	855.8	14.2	159.2	28.0	1,057.3	15.9
2016-17	704.4	20.5	150.2	25.8	900.9	13.9
2017-18	1,154.6	22.1	189.4	32.1	1,398.2	21.7
Apr-18	94.3	1.6	14.5	1.4	111.9	1.7
May-18	124.2	3.7	12.8	2.1	142.8	2.2
Jun-18	112.4	3.0	16.5	3.9	135.8	2.1
Jul-18	123.9	1.6	13.2	1.2	140.0	2.2
Aug-18	90.0	1.1	11.9	1.3	104.3	1.6
Sep-18	166.4	3.5	18.6	2.6	191.1	3.0
Oct-18	192.8	3.6	24.6	2.7	223.7	3.5
Nov-18	85.4	3.0	12.0	1.6	101.9	1.6
Dec-18	109.4	0.9	20.4	3.8	134.5	2.1
Apr-Dec 18	1,098.8	22.0	144.4	20.8	1,286.0	20.0

Source: NSE.

6.5 Currency Derivatives in India

The currency derivatives turnover on NSE increased by 4% from Rs48.6tn in 2016-17 to Rs50.3tn in 2017-18. The growth has accelerated in 2018-19. The trading value for the period April-Dec'18 was Rs62.7tn which is about 25% higher than total turnover in 2017-18. Table 6.9 presents the business growth in the currency derivatives segment (volumes) on NSE while Table 6.10a and 6.10b presents the number of contracts and turnover for all products in the segment.

Total currency futures and options traded on NSE during 2017-18 stood at 765mn contracts with a traded value of Rs50.3tn, a 4% increase as compared to 2016-17. Among all products in the segment, total turnover of USD-INR currency option contracts was about 48% of total turnover in all currency derivatives in 2017-18 followed by USD-INR Futures with 43% of total turnover. In the same time period, number of USD-INR currency option and future contracts traded stood at 374mn and 337mn

with a traded value of Rs24.3tn and Rs21.8tn respectively. Many currency derivatives based on different currency pairs were launched in 2017-18. Only few of them could gather momentum in the current financial year. Notably, 4.8mn GBP-USD Future contracts were traded with a traded value Rs390bn during April-Dec'18 and 3mn EUR-USD Future contracts traded with a value of Rs280bn during same time period.

Table 6.9: Business Growth of Currency Futures and Options segment at NSE

Month/Year	Currency Futures		Currency Options		Total	
	No. of contracts	Turnover	No. of contracts	Notional Turnover	No. of contracts	Turnover*
	(mn)	(Rsbn)	(mn)	(Rsbn)	(mn)	(Rsbn)
2010-2011	712	32,790	37	1,708	750	34,498
2011-2012	701	33,785	272	12,965	973	46,750
2012-2013	684	37,651	275	15,094	959	52,745
2013-2014	478	29,409	182	10,716	660	40,125
2014-2015	356	22,480	125	7,759	481	30,239
2015-2016	410	27,493	264	17,526	674	45,019
2016-2017	363	24,898	350	23,673	712	48,571
2017-2018	390	25,957	375	24,328	765	50,285
Apr-18	44	2,974	31	2,053	75	5,027
May-18	58	4,034	42	2,861	100	6,895
Jun-18	52	3,602	37	2,522	89	6,124
Jul-18	45	3,197	35	2,391	80	5,589
Aug-18	57	4,039	49	3,450	106	7,489
Sep-18	71	5,174	61	4,425	132	9,599
Oct-18	64	4,811	40	2,964	105	7,775
Nov-18	47	3,459	46	3,358	94	6,817
Dec-18	53	3,831	50	3,587	104	7,418
Apr-Dec 18	491	35,121	392	27,611	883	62,732

Source: NSE.

Note: *In case of Option Contracts "Turnover" represents "Notional Turnover".

In BSE, currency derivatives turnover had increased by 15% in 2016-17 which accelerated further by 40% to reach Rs44.4tn in 2017-18. In contrast, total turnover in MSEI started declining since 2014-15. In 2017-18, total turnover declined significantly by 61% to reach Rs1,157bn and overall trend continues in 2018-19 as well.

6.6 Interest Rate Futures Market in India

An interest rate futures (IRF) contract is "an agreement to buy or sell a debt instrument at a specified future date at a price that is fixed today." The underlying security for Interest Rate Futures is either Government Bond or T-Bill. Exchange traded Interest Rate Futures on NSE are standardized contracts based on 6 year, 10 year and 13 year Government of India Security (NBF II) and 91-day Government of India Treasury Bill (91DTB). All futures contracts available for trading on NSE and BSE are cash settled.

Table 6.10a: Business Growth of Selected Currency Futures and Options (Currency Pairs) at NSE

Month/Year	USD INR Options			USD INR Future			EUR INR Future			EUR INR Options			EUR USD Future			JPY INR Future		
	No. of contracts (thousand)	Traded Value (Rsbn)	No. of contracts (thousand)	Traded Value (Rsbn)	No. of contracts (thousand)	Traded Value (Rsbn)	No. of contracts (thousand)	Traded Value (Rsbn)	No. of contracts (thousand)	Traded Value (Rsbn)	No. of contracts (thousand)	Traded Value (Rsbn)	No. of contracts (thousand)	Traded Value (Rsbn)	No. of contracts (thousand)	Traded Value (Rsbn)	No. of contracts (thousand)	Traded Value (Rsbn)
2016-17	349,836	23,673	317,987	21,406	13,411	992	-	-	-	-	-	-	-	-	-	10,524	663	
2017-18	374,383	24,317	337,292	21,810	21,071	1,607	115.6	9.3	891.0	71.5	7,897	462						
Apr-18	30,946	2,041	38,364	2,532	1,750	142	85.7	6.9	365.9	29.5	629	38						
May-18	42,118	2,853	51,097	3,463	2,305	184	65.1	5.3	1,371.1	109.4	650	40						
Jun-18	36,960	2,518	44,762	3,049	2,219	176	33.7	2.7	992.5	78.6	893	55						
Jul-18	34,620	2,388	38,862	2,676	2,075	167	14.4	1.2	520.9	41.9	917	57						
Aug-18	49,257	3,446	50,634	3,542	2,200	178	16.6	1.4	480.7	38.7	1,026	65						
Sep-18	61,175	4,424	65,291	4,729	1,883	159	9.4	0.8	380.6	32.2	876	57						
Oct-18	40,163	2,964	59,481	4,391	1,837	156	4.3	0.4	367.3	31.0	757	50						
Nov-18	46,354	3,357	43,152	3,102	1,426	117	0.7	0.1	179.8	14.6	553	35						
Dec-18	50,434	3,586	49,321	3,494	1,425	115	1.8	0.2	175.7	14.2	649	41						
April - Dec 18	392,027	27,577	440,964	30,978	17,121	1,395	231.7	18.8	4,834.4	390.1	6,952	438						

Table 6.10b: Business Growth of Currency Futures and Options (Currency Pairs) at NSE

Month/Year	USD JPY Future			GBP INR Future			GBP USD Future			Total		
	No. of contracts (thousand)	Traded Value (Rsbn)	No. of contracts (thousand)	Traded Value (Rsbn)	No. of contracts (thousand)	Traded Value (Rsbn)	No. of contracts (thousand)	Traded Value (Rsbn)	No. of contracts (thousand)	Traded Value (Rsbn)	No. of contracts (thousand)	Traded Value (Rsbn)
2016-17	-	-	20,694	1,837	-	-	712,451	48,571				
2017-18	59.2	3.8	22,575	1,944	647.1	58.8	764,964	50,285				
Apr-18	37.4	2.5	2,122	197	345.9	32.0	74,707	5,027				
May-18	30.7	2.1	2,194	200	385.9	35.1	100,246	6,895				
Jun-18	27.8	1.9	2,222	201	440.1	39.7	88,566	6,124				
Jul-18	27.3	1.9	2,296	208	496.0	44.9	79,857	5,589				
Aug-18	18.1	1.3	1,987	179	401.6	35.9	106,045	7,489				
Sep-18	7.0	0.5	1,729	164	349.3	33.0	131,707	9,599				
Oct-18	3.7	0.3	1,660	160	250.4	24.0	104,528	7,775				
Nov-18	4.2	0.3	1,822	169	230.6	21.4	93,727	6,817				
Dec-18	5.5	0.4	1,693	152	155.2	13.9	103,867	7,418				
April - Dec 18	161.5	11.0	17,725	1,630	3,054.9	280.0	883,249	62,732				

Source: NSE.

Note: Currency Futures on GBP-INR and JPY-INR were introduced w.e.f. February 01, 2010.

Exchange traded Cross Currency Derivatives Contracts were introduced from Feb 22, 2018.

For Options, Notional Value has been considered.

Table 6.11: Business Growth of Currency Futures and Options segment at BSE and MSEI

Month/Year	BSE						MSEI					
	Currency Futures		Currency Options		Total		Currency Futures		Currency Options		Total	
	No. of contracts (thousand)	Turnover (Rsbn)	No. of contracts (thousand)	Notional Turnover (Rsbn)	No. of contracts (thousand)	Turnover* (Rsbn)	No. of contracts (thousand)	Turnover (Rsbn)	No. of contracts (thousand)	Notional Turnover (Rsbn)	No. of contracts (thousand)	Turnover* (Rsbn)
2013-2014	34,007	2,118	5,150	325	39,157	2,443	347,017	21,246	51,568	2,978	398,585	24,224
2014-2015	212,435	13,071	96,742	6,015	309,176	19,085	100,105	6,316	2,963	183	103,068	6,499
2015-2016	280,636	18,504	139,591	9,136	420,227	27,639	45,627	3,034	3,232	212	48,858	3,246
2016-2017	268,340	18,078	202,086	13,638	470,425	31,716	42,224	2,855	1,833	125	44,056	2,979
2017-2018	307,657	19,933	382,577	24,431	690,234	44,364	15,393	997	2,457	160	17,850	1,157
Apr-18	30,952	2,048	46,508	3,052	77,460	5,100	802	53	190	13	992	66
May-18	42,674	2,896	65,135	4,389	107,809	7,285	969	66	97	7	1,066	72
Jun-18	45,979	3,130	59,114	4,007	105,093	7,137	704	48	60	4	764	53
Jul-18	37,208	2,564	57,099	3,888	94,307	6,452	1,143	79	70	5	1,213	84
Aug-18	41,814	2,918	59,987	4,164	101,802	7,082	475	33	60	4	536	38
Sep-18	45,790	3,315	48,959	3,485	94,749	6,800	451	33	96	7	547	40
Oct-18	41,294	3,049	45,931	3,364	87,226	6,413	215	16	174	13	388	29
Nov-18	34,950	2,513	44,516	3,225	79,466	5,737	128	9	153	11	281	21
Dec-18	38,918	2,760	33,800	2,397	72,718	5,157	93	7	86	6	179	13
Apr-Dec 18	359,580	25,191	461,049	31,971	820,629	57,162	4,980	345	987	70	5,967	415

Source: SEBI.

Note: *In case of Option Contracts "Turnover" represents "Notional Turnover".

Total turnover of interest rate futures at NSE increased by 4% to Rs3.2tn in 2017-18 from Rs3.1tn in 2016-17. Opposite trend is seen in terms of open interest during the same time period. Total value of open interests at the end of 2017-18 declined by almost 70% compared to the previous financial year. In BSE, total turnover increased tremendously by 75% from Rs1.3tn in 2017-18 to Rs2.2tn in 2017-18.

Table 6.12: Trading Statistics of Interest Rate Futures at NSE and BSE

Year/ Month	NSE					BSE			
	No. of Trading Days	Interest Rate Futures		Open Interest at the end of		Interest Rate Futures		Open Interest at the end of	
		No. of Contracts (thousand)	Traded Value (Rsbn)	No. of Contracts (thousand)	Value (Rsbn)	No. of Contracts (thousand)	Traded Value (Rsbn)	No. of Contracts (thousand)	Value (Rsbn)
2013-14	251	1,502.1	301.7	55.7	11.1	128.5	25.8	9.8	2.0
2014-15	238	20,587.0	4,215.6	338.4	70.7	2,033.3	419.1	80.1	16.7
2015-16	242	26,056.5	5,264.3	2,524.8	509.8	5,687.7	1,141.2	5.6	1.1
2016-17	242	14,807.0	3,078.1	120.4	24.8	6,185.3	1,279.8	18.0	3.8
2017-18	242	16,186.7	3,212.1	41.0	7.8	11,345.2	2,238.8	0.3	0.1
Apr-18	19	1,435.5	270.4	63.8	11.9	477.4	89.8	0.5	0.1
May-18	22	648.0	120.9	46.9	8.7	426.5	79.4	4.4	0.8
Jun-18	21	459.6	86.2	40.0	7.5	353.5	65.6	8.2	1.5
Jul-18	22	729.0	139.4	78.9	15.1	588.9	110.6	9.6	1.8
Aug-18	20	964.1	184.2	93.1	17.7	565.2	105.9	10.0	1.8
Sep-18	18	1,028.6	193.5	51.5	9.7	403.4	74.9	1.9	0.4
Oct-18	21	1,190.1	226.0	71.7	13.7	489.6	92.2	12.8	2.5
Nov-18	19	1,052.3	202.9	69.1	13.4	324.6	61.6	8.6	1.7
Dec-18	20	1,986.7	391.4	79.6	15.7	219.8	42.5	24.6	4.8
Apr-Dec'18	182	9,493.9	1,814.9	79.6	15.7	3,848.9	722.5	24.6	4.8

Source: SEBI.

6.7 Commodity Derivatives Market in India

The commodities exchange space is expected to grow at a faster rate after the integration of commodities and securities market, which has been accomplished over the last four years. The Forward Markets Commission, the then regulator of the commodities market, was merged with SEBI, the main regulator of the securities market, on September 28, 2015 “to strengthen regulation of commodity forward markets and reduce wild speculation” (Union Budget, 2015-16). Then, the Forward Contracts Regulation Act (FCRA) was repealed and the commodity derivatives market regulations came under the purview of SEBI under the Securities Contracts Regulation Act, 1957. SEBI enabled integration of securities brokers and commodities brokers with effect from September 21, 2017. Finally, SEBI has allowed a single exchange to operate in the various asset classes, such as equity, equity derivatives, commodity derivatives, debt, interest rate futures, currency derivatives with effect from October 1, 2018. In response, both NSE and BSE applied for and received SEBI approval to enter into the commodity derivatives segment with effect from October 1, 2018. BSE has launched its commodity segment with gold and silver futures contracts on October 1, 2018, while NSE has started with same commodities from October 12, 2018.

As of December 2018, there are five exchanges in the commodity segment, viz. National Commodity and Derivatives Exchange (NCDEX), Multi Commodity Exchange (MCX), Indian Commodity Exchange Ltd (ICEX), BSE and NSE. Among them, NCDEX, MCX and ICEX floated 24, 22 and 13 contracts respectively in futures and options for different commodities, whereas BSE and NSE floated 4 and 2 contracts till December 2018 (Table 6.13). In the bullion market, MCX is the major competitor of BSE and NSE where each of them floated 2 contracts in gold and silver each. Besides, BSE has floated one contract in metals other than bullion while MCX and ICEX have already floated 6 and 1 contracts. Table 6.14 shows the trend of total turnover in bullion futures remains similar during April-December 2018 to that of MCX. Surprisingly, there is no significant impact on total turnover after the introduction of bullion futures at BSE and NSE till December 2018.

Table 6.13: Number of Commodities Permitted and Traded at Exchanges

Exchanges	Particulars	Futures					Options			
		Agriculture	Metals other than bullion	Bullion	Energy	Gems and Stones	Agriculture	Metals other than bullion	Bullion	Energy
NCDEX	Permitted for trading	19	2	1	1	0	5	0	0	0
	Contracts floated	19	0	0	0	0	5	0	0	0
	Traded	15	0	0	0	0	5	0	0	0
MCX	Permitted for trading	9	6	3	2	0	0	2	2	1
	Contracts floated	8	6	2	2	0	0	1	2	1
	Traded	4	5	2	2	0	0	1	2	1
ICEX	Permitted for trading	11	1	0	0	1	0	0	0	0
	Contracts floated	11	1	0	0	1	0	0	0	0
	Traded	1	1	0	0	1	0	0	0	0
BSE	Permitted for trading	0	1	2	1	0	0	0	0	0
	Contracts floated	0	1	2	1	0	0	0	0	0
	Traded	0	0	2	0	0	0	0	0	0
NSE	Permitted for trading	0	1	2	1	0	0	0	0	0
	Contracts floated	0	0	2	0	0	0	0	0	0
	Traded	0	0	2	0	0	0	0	0	0

Source: SEBI.

Table 6.14: Trends in Commodity Derivatives

Year/ Month	MCX		NCDEX		ICEX		BSE		NSE	
	No. of contracts traded (thousand)	Turnover (Rsbn)	No. of contracts traded (thousand)	Turnover (Rsbn)	No. of contracts traded (thousand)	Turnover (Rsbn)	No. of contracts traded (thousand)	Turnover (Rsbn)	No. of contracts traded (thousand)	Turnover (Rsbn)
2017-18	205,960	53,934	15,194	5,898	9,016	367	-	-	-	-
2018-19\$	175,828	50,131	11,172	4,282	22,819	239	68	180	9	21
Apr-18	20,349	5,645	1,081	396	1,944	36	-	-	-	-
May-18	17,785	5,398	1,125	418	1,419	35	-	-	-	-
Jun-18	17,349	5,146	1,185	419	1,129	27	-	-	-	-
Jul-18	17,827	5,389	1,566	613	1,609	29	-	-	-	-
Aug-18	18,150	5,221	1,432	584	1,111	20	-	-	-	-
Sep-18	18,500	5,942	923	383	1,059	21	-	-	-	-
Oct-18	20,453	6,260	1,420	541	2,702	17	28	70	3	7
Nov-18	21,678	5,786	1,479	574	5,158	24	27	72	3	8
Dec-18	23,735	5,344	961	355	6,688	30	14	38	3	5

Source: SEBI.

Table 6.15: Trends in Bullion Futures

Year/ Month	MCX		BSE		NSE		Total	
	No. of contracts traded (thousand)	Turnover (Rsbn)	No. of contracts traded (thousand)	Turnover (Rsbn)	No. of contracts traded (thousand)	Turnover (Rsbn)	No. of contracts traded (thousand)	Turnover (Rsbn)
2017-18	27,840	13,637	-	-	-	-	27,840	13,637
2018-19\$	21,579	10,860	68	180	9	2	21,657	11,061
Apr-18	2,673	1,258	-	-	-	-	2,673	1,258
May-18	2,253	1,226	-	-	-	-	2,253	1,226
Jun-18	2,358	1,103	-	-	-	-	2,358	1,103
Jul-18	1,963	996	-	-	-	-	1,963	996
Aug-18	2,451	1,159	-	-	-	-	2,451	1,159
Sep-18	2,506	1,342	-	-	-	-	2,506	1,342
Oct-18	2,716	1,375	28	70	3	7	2,747	1,452
Nov-18	2,405	1,222	27	72	3	8	2,435	1,303
Dec-18	2,255	1,179	14	38	3	5	2,273	1,222

Source: SEBI.