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INTRODUCTION

REVIEW OF LITERATURE

NEED/IMPORTANCE OF THE STUDY

STATEMENT OF THE PROBLEM

OBJECTIVES

HYPOTHESES

RESEARCH METHODOLOGY

RESULTS & DISCUSSION

FINDINGS

RECOMMENDATIONS/SUGGESTIONS

CONCLUSIONS

SCOPE FOR FURTHER RESEARCH

ACKNOWLEDGMENTS

REFERENCES

APPENDIX/ANNEXURE

It should be in a 8 point Calibri Font, single spaced and justified. The manuscript should preferably not exceed **5000 WORDS**.

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BOOKS

- Bowersox, Donald J., Closs, David J., (1996), "Logistical Management." Tata McGraw, Hill, New Delhi.
- Hunker, H.L. and A.J. Wright (1963), "Factors of Industrial Location in Ohio" Ohio State University, Nigeria.

CONTRIBUTIONS TO BOOKS

- Sharma T., Kwatra, G. (2008) Effectiveness of Social Advertising: A Study of Selected Campaigns, Corporate Social Responsibility, Edited by David Crowther & Nicholas Capaldi, Ashgate Research Companion to Corporate Social Responsibility, Chapter 15, pp 287-303.

JOURNAL AND OTHER ARTICLES

- Schemenner, R.W., Huber, J.C. and Cook, R.L. (1987), "Geographic Differences and the Location of New Manufacturing Facilities," Journal of Urban Economics, Vol. 21, No. 1, pp. 83-104.

CONFERENCE PAPERS

- Garg, Sambhav (2011): "Business Ethics" Paper presented at the Annual International Conference for the All India Management Association, New Delhi, India, 19–22 June.

UNPUBLISHED DISSERTATIONS AND THESES

- Kumar S. (2011): "Customer Value: A Comparative Study of Rural and Urban Customers," Thesis, Kurukshetra University, Kurukshetra.

ONLINE RESOURCES

- Always indicate the date that the source was accessed, as online resources are frequently updated or removed.

WEBSITES

- Garg, Bhavet (2011): Towards a New Natural Gas Policy, Political Weekly, Viewed on January 01, 2012 http://epw.in/user/viewabstract.jsp

CURRENCY FUTURES POTENTIAL IN INDIAN CAPITAL MARKETS

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ABSTRACT

Currency futures were introduced to mitigate the risk arising out of excess volatility in the exchange rate. The prime objective of using currency futures as a derivative is to combat currency risk volatility. Within its first year of operation, the daily turnover of exchange traded currency derivatives already reached around Rs. 30,000 crores. The study describes the benefits of currency futures, how currency futures work in the Indian context, and various reasons for fluctuation in currency. The objectives of the study were twofold: Part A was to analyse the changes in the daily value of Rupee compared to the Dollar, Euro and Pound respectively. Data was collected from multiple observation points separately for every month for a 13 month period from January 2012 to January 2013. Kolmogorov Smirnov test was subsequently used to test the author's null hypothesis that the returns are normally distributed; which in turn was accepted. Part B of the study analysed NSE, BSE and MCX data for the same time period of 13 months across two parameters – price and the volume of transactions. The finding was that there are high correlation values between price fluctuations of the three indexes.

JEL CLASSIFICATION
F37, F31, G14, G15, G17.

KEYWORDS
Bombay Stock Exchange (BSE), Currency Futures, Exchange Rate, Multi Commodity Exchange (MCX), National Stock Exchange (NSE)

1. INTRODUCTION

Currency futures refers to a standardized foreign exchange derivative contract traded on a recognized stock exchange to buy or sell one currency against another on a specified future date, at a price specified on the date of the contract, but does not include a forward contract. Currency futures can be used for trading and for combating currency risk volatility. It allows the clients to view the movement of exchange rate to offset the currency risk. The market for currency futures refers to the place where currency futures are traded.

Investors can exit their obligation to buy or sell the currency prior to the contract's delivery date because currency futures contracts are marked-to-market daily. This is done by closing out the position.

The regulators in India have already permitted stock exchanges to offer currency futures in the following pairs – USDINR, EURINR, GBPINR, and JPYINR. FIIs and NRIs are not permitted to participate in risk management – only residents of India may trade in currency futures.

The biggest advantage of trading and foreign currency is that it allows hedge for 12 calendar months. Margin trading is allowed which gives a daily settlement of the mark-to-market pay-in and pay-out in smaller affordable sizes which allows disciplined trading on the recognized stock exchanges. The DVP (*Delivery versus Payment*) principle against cash settlement offers convenience to trade. Electronic platforms of National Exchange for Automated Trading – (NEAT), NSE; FX Market Tracker; MCX – SX Electronic Trade Form etc. are used as trading platforms. Standardized brokerage systems also make trading transparent.

The banks have already been told to do KYC guidelines and open a client account for current account trading mandated by SEBI. Minimum 1% of notional value of contract or higher as per the exchange rate is the initial margin and extreme loss margin (1%) MTM (mark-to-market) settlements have to be done in case of currency futures so that liquidity is higher. The Reserve Bank of India has already sought checks on currency trading as it was resulting in speculation. FSDC (Financial Stability and Development Council) has recently come when the rupee is on a low vis-à-vis and the economy is under pressure. Currency betting through futures has its own repercussions on the economy as the rupee against dollar has already gone up to 57.11[1] over the last year.

1.1 ADVANTAGES OF CURRENCY FUTURES
- Low Commission
- Cut Out the Middleman
- Standardised Lot Size
- Low Transaction Costs
- Near Instantaneous Transactions
- Low Margins; High Leverage
- Online Access
- No Cornering the Market

No Insider Trading - Due to the Forex market's size and non-centralised nature, there is virtually no chance for ill effects caused by insider trading. Fraud possibilities, at least against the system as a whole, are significantly fewer than for any other financial instruments.

Table 1.1 gives a comparison of parameters for the four currency pairs as given by the Reserve Bank of India.

---

[1] US Dollar to Indian Rupee Exchange Rate as on June 22, 2012

TABLE 1.1: COMPARATIVE FEATURES FOR FOUR-PERMITTED CURRENCY PAIRS

	USD-INR	EUR-INR	GBP-INR	JPY-INR
Underlying	USD-Indian Rupee (USDINR)	Euro-Indian Rupee (EURINR)	Pound Sterling – Indian Rupee (GBPINR)	Japanese Yen – Indian Rupee (JPYINR)
Trading Hours	9 a.m. to 5 p.m	9 a.m. to 5 p.m	9 a.m. to 5 p.m	9 a.m. to 5 p.m
Size of the contract	USD 1,000	Euro 1,000	GBP 1,000	Japanese Yen 1,00,000
Quotation	The contract would be quoted in rupee terms. However, the outstanding positions would be in USD terms.	The contract would be quoted in rupee terms. However, the outstanding positions would be in Euro terms.	The contract would be quoted in rupee terms. However, the outstanding positions would be in Pound Sterling terms.	The contract would be quoted in rupee terms. However, the outstanding positions would be in Japanese Yen terms.
Tenor of the contract	The maximum maturity of the contract would be 12 months.	The maximum maturity of the contract would be 12 months.	The maximum maturity of the contract would be 12 months.	The maximum maturity of the contract would be 12 months.
Available contracts	All monthly maturities from 1 to 12 months would be made available.	All monthly maturities from 1 to 12 months would be made available.	All monthly maturities from 1 to 12 months would be made available.	All monthly maturities from 1 to 12 months would be made available.
Settlement mechanism	Cash settled in Indian Rupee.	Cash settled in Indian Rupee.	Cash settled in Indian Rupee.	Cash settled in Indian Rupee.
Settlement price	The settlement price would be the Reserve Bank Reference Rate for USDINR on the date of expiry.	The settlement price would be the Reserve Bank Reference Rate for EURINR on the date of expiry.	GBPINR Exchange rate published by the Reserve Bank in its Press Release captioned RBI Reference Rate for US$ and Euro.	JPYINR Exchange rate published by the Reserve Bank in its Press Release captioned RBI Reference Rate for US$ and Euro.
Final settlement day	The contract would expire on the last working day (excluding Saturdays) of the month. The last working day would be taken to be the same as that for Interbank Settlements in Mumbai. The rules for Interbank Settlements, including those for 'known holidays' and 'subsequently declared holiday' would be those as laid down by FEDAI.			

Source: RBI

1.2   BASIC WORKING OF A CURRENCY FUTURE

A person invests $200,000 abroad for a year when $1 = Rs 50. If his investments yield 20 per cent returns in a year, he stands to make $40,000; or Rs 20 lakh ($40,000 x 50) in rupee terms. However, if the dollar weakens to Rs 45, the returns would fall to Rs 18 lakh, a loss of Rs 2 lakh.

But if the person had sold a 12 month futures contract at the spot price of Rs 50, amounting to $200,000, and the dollar did fall to Rs 45, he could cover the transaction by buying the dollar and make good the loss incurred in the international market.

The upfront payment will be 1.75 per cent of $200,000 or $3,500. Of course, in case the rupee weakens to say 47, the losses in the futures market would be made up by profits in the international market. Thus the investor is safeguarded against both a rise and a fall in currency, thereby ensuring safe returns.

Figure 1.2.1 shows the near month movement chart for February 2013.

FIGURE 1.2.1: NEAR MONTH MOVEMENT CHART AS ON FEBRUARY 2013
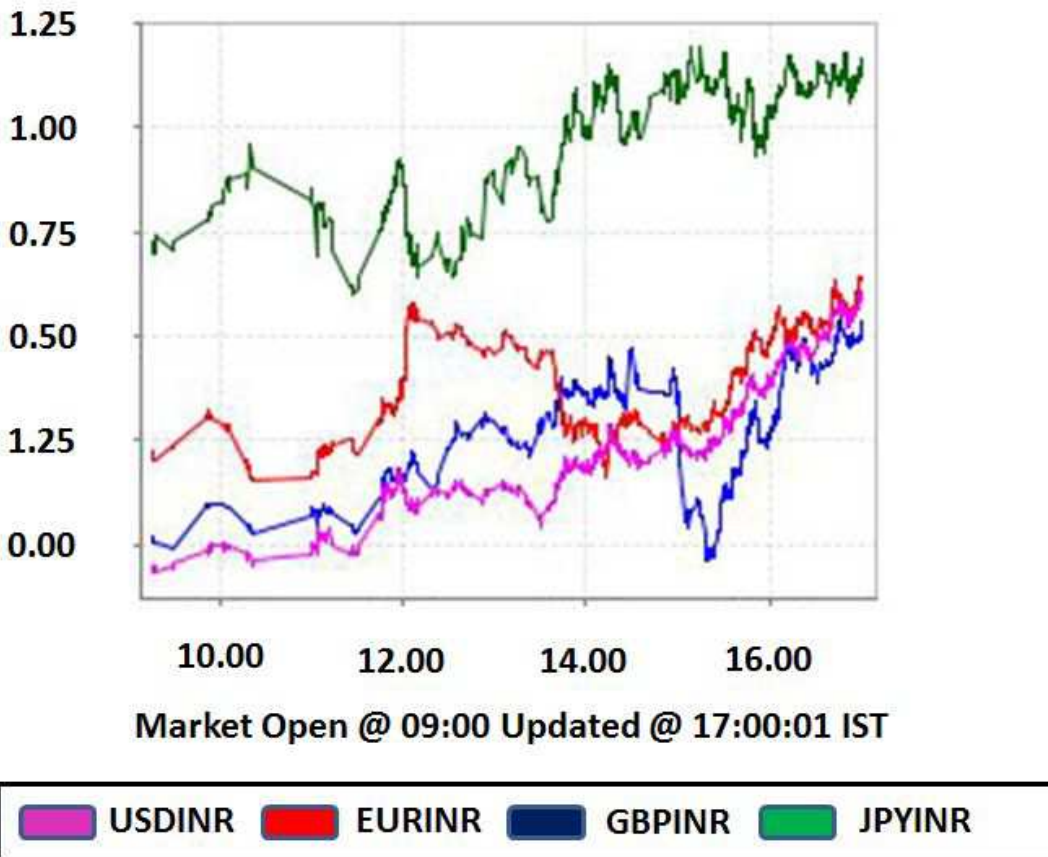
Source: NSE

2. LITERATURE REVIEW

Chatrath, Ramchander and Song (1996) explicitly examines the relationship between level of currency futures trading and the volatility in the spot rates of the British pound, Canadian dollar, Japanese Yen, Swiss Franc, and Deutsche Mark. The researchers provide strong evidence on the causality between futures trading volume exchange rate volatility, as it is found out that the trading activity in futures has a positive impact on conditional volatility in the exchange rate changes, with a weaker feedback from the exchange rate fluctuations to the futures volatility.

Bhargava and Malhotra (2007) focuses on trading in futures on four currencies over the time period of 1982-2000. The authors find evidence that day traders and speculators destabilize the market for futures. Furthermore it is inconclusive whether offsetting volatility stabilizes or destabilizes the market. Exchange rate movements affect expected future cash flow by changing the home currency value of foreign cash inflows and outflows and the terms of trade and competition. On one hand, some models (Grundy and McNichols, 1989; Holthausen and Verrecchia, 1990; Kim and Verrecchia, 1991) show that informed traders prefer to trade large amounts at any given price and hence size is positively related to the quality of information and is therefore correlated with price volatility. On the other hand, some other models (Kyle, 1985; Admati and Pfeiderer, 1988) indicate that a monopolist informed trader may disguise his trading activity by splitting one large trade into several small trades. Thus, trade size may not necessarily convey adverse information.

3. OBJECTIVES

PART A

1. To analyse the critical changes in the daily value of Rupee compared to the Dollar, Euro and Pound respectively for the 13 month time period of *January 2012 – January 2013*.
2. To study the offering insights into currency future derivatives market in India.

PART B

Toanalyse NSE, BSE and MCX data across two parameters – price and volume of transactions for the 13 month time period of *January 2012 – January 2013*.

4. RESEARCH METHODOLOGY

Till January 2010, RBI had permitted futures only on the USD-INR rates. Exchange traded currency futures have since been expanded to the Euro, Pound and Yen pairing since January 2010.

Consideration set: USD-INR, EUR-INR, and GBP-INR pairing. Secondary data has been used.

Data source: RBIDataWarehouse; NSE, BSE, MCX reports.

Study period: January 2012 – January 2013 (*for daily changes in values of currency rates pairings*); January 2012 – January 2013 (*for NSE – BSE – MCX comparison*)

Software Used: SPSS 20.0; MS Excel 2010

4.1 HYPOTHESIS

For normal distribution of currencies

H_0: The currencies pairs are normally distributed.

H_1: The currencies pairs are not normally distributed.

For correlation between indexes

H_0: There is low correlation between the three indexes – NSE, MCX, and BSE.

H_1: There is high correlation between the three indexes – NSE, MCX, and BSE.

5. ANALYSIS

5.1 PART A: ANALYSIS OF DAILY VALUE OF RUPEE W.R.T. DOLLAR, EURO AND POUND

Tables 5.1.1, 5.1.2, and 5.1.3 show the descriptive statistics for the value of rupee based on daily observations of exchange rate w.r.t. dollar, euro, and pound.

The number of observations differs slightly every month (ranging between 17 – 21) because number of working days differs every month; holidays; and other activities like bank closing at end of quarter.

Negative means in Jan-12, Feb-12, July-12, Sep-12, and Jan-13 (*USDINR*); Jan-12, July-12, Sep-12, and Jan-13 (*EURINR*);Jan-12, Sep-12, and Jan-13 (*GBPINR*) can be seen from Tables 5.1.1, 5.1.2, and 5.1.3 respectively.

Implication: These negative means are an indication of decreasing exchange rate from beginning of the month to the end of the month. In other terms rupee is appreciating and the dollar is at discount in 5 out of 13 months; rupee is appreciating and the euro is at discount in 4 out of 13 months; and rupee is appreciating and the pound is at discount in 3 out of 13 months.

TABLE 5.1.1: DESCRIPTIVE STATISTICS OF DAILY CHANGES IN THE VALUE OF RUPEE W.R.T. DOLLAR (MONTH WISE) JANUARY 2012 – JANUARY 2013

PERIOD	NO. OF OBSERVATIONS	MEAN	S.D.	MIN.	MAX.	SKEWNESS	KURTOSIS
Jan-12	20	-0.1808	0.2427	-0.5895	0.2235	-0.0208	-1.2350
Feb-12	18	-0.0329	0.2095	-0.4037	0.3550	0.0475	-0.6977
Mar-12	19	0.1054	0.2845	-0.5583	0.5468	-0.7442	0.4089
Apr-12	17	0.1150	0.2424	-0.3060	0.5615	0.2164	-0.7092
May-12	21	0.1663	0.4099	-0.5617	1.0455	-0.1990	-0.1461
Jun-12	20	0.0196	0.3912	-0.6105	0.8160	0.4900	-0.5879
Jul-12	21	-0.0011	0.4506	-1.0175	0.6128	-0.6124	-0.3443
Aug-12	20	0.0119	0.2551	-0.6115	0.3455	-0.8612	0.2813
Sep-12	18	-0.1532	0.3675	-0.7530	0.3590	-0.2816	-1.4012
Oct-12	19	0.0702	0.3641	-0.4500	0.7485	0.3853	-0.7513
Nov-12	18	0.0415	0.3339	-0.6755	0.5940	-0.3848	0.1127
Dec-12	19	0.0114	0.1887	-0.3783	0.3863	0.0340	-0.0272
Jan-13	21	-0.0735	0.2847	-0.6963	0.4305	-0.1534	-0.2324

Source: Computed Output

TABLE 5.1.2: DESCRIPTIVE STATISTICS OF DAILY CHANGES IN THE VALUE OF RUPEE W.R.T. EURO (MONTH WISE) JANUARY 2012 – JANUARY 2013

PERIOD	NO. OF OBSERVATIONS	MEAN	S.D.	MIN.	MAX.	SKEWNESS	KURTOSIS
Jan-12	20	-0.1860	0.3896	-0.9400	0.4100	-0.4437	-0.6037
Feb-12	18	0.0711	0.4523	-0.8275	1.0338	0.0101	0.1946
Mar-12	19	0.1458	0.3714	-0.7777	0.6140	-1.0914	0.9540
Apr-12	17	0.1252	0.3424	-0.4860	0.6950	-0.2065	-0.9377
May-12	21	0.0004	0.4941	-1.2810	0.6677	-0.9869	1.1708
Jun-12	20	0.0889	0.3685	-0.7437	0.6395	-0.1736	-0.1306
Jul-12	21	-0.0942	0.4618	-1.3680	0.5735	-1.0953	1.4239
Aug-12	20	0.0674	0.2621	-0.3855	0.7824	0.9723	1.7452
Sep-12	18	-0.0859	0.4513	-1.0585	0.5890	-0.2725	-0.4626
Oct-12	19	0.1244	0.3099	-0.3365	0.7130	0.2653	-1.0903
Nov-12	18	0.0654	0.4231	-0.8800	0.7340	-0.6428	0.0992
Dec-12	19	0.0621	0.3713	-0.8975	0.6285	-0.7672	1.0070
Jan-13	21	-0.0118	0.5083	-0.6955	0.9710	0.7527	-0.3375

Source: Computed Output

TABLE 5.1.3: DESCRIPTIVE STATISTICS OF DAILY CHANGES IN THE VALUE OF RUPEE W.R.T. POUND (MONTH WISE) JANUARY 2012 – JANUARY 2013

PERIOD	NO. OF OBSERVATIONS	MEAN	S.D.	MIN.	MAX.	SKEWNESS	KURTOSIS
Jan-12	20	-0.2255	0.4141	-1.0300	0.4900	-0.0244	-0.7169
Feb-12	18	0.0002	0.4756	-1.0488	0.7820	-0.4979	0.0463
Mar-12	19	0.1869	0.3809	-0.7552	0.5940	-1.2800	1.0059
Apr-12	17	0.2614	0.4101	-0.5121	1.1961	0.7162	1.1592
May-12	21	0.0725	0.5545	-0.9950	1.3075	0.0651	0.4554
Jun-12	20	0.1013	0.5478	-0.8802	0.8653	-0.6188	-0.8944
Jul-12	21	0.0124	0.5579	-1.3682	0.8283	-0.7946	0.3553
Aug-12	20	0.0505	0.2529	-0.4219	0.5312	-0.1163	-0.3099
Sep-12	18	-0.1262	0.5344	-1.1659	0.6217	-0.4983	-0.6472
Oct-12	19	0.1007	0.4465	-0.8621	0.8351	-0.4548	-0.1212
Nov-12	18	0.0397	0.4810	-0.9688	0.8997	-0.5984	0.4118
Dec-12	19	0.0554	0.4119	-0.6294	0.9654	0.2782	-0.0313
Jan-13	21	-0.2382	0.5139	-1.2142	0.9424	0.4125	0.1013

Source: Computed Output

Table 5.1.4 shows summation of Skewness and Kurtosis distribution based on Tables 5.1.1, 5.1.2, and 5.1.3.

We can see from Table 5.1.4 that there is positive skewness in Feb-12, Apr-12, Jun-12, Oct-12, and Dec-12 (*USDINR*); Feb-12, Aug-12, Oct-12, and Jan-13 (*EURINR*); Apr-12, May-12, Dec-12, Jan-13(*GBPINR*). These distributions have a right tail and the negative skewness in the rest of the months means that the distribution has a left tail. USDINR has negative skewness in 8 out of 13 months while EURINR and GBPINR have negative skewness in 9 out of 13 months.

Implication: Negative skewness indicates tail on the left side of the probability density function is longer than the right side and the bulk of the values lie to the right of the mean. This points towards frequent small gains and few extreme losses. Positive skewness represents frequent small losses and few extreme gains.

USDINR, USDEUR, and USDGBP all lean towards negative skewness in substantially more months than positive skewness, and this shows that there is a higher likelihood for frequent small gains and fewer extreme losses.

Table 5.1.4 also shows kurtosis values. USDINR has positive values in 3 out of 13 months while EURINR and GBPINR have positive values in 9 out of 13 months each.

Implication: Positive kurtosis is leptokurtic while the negative values are platykurtic. The leptokurtic values are a sign of lesser risk of extreme outcomes. This shows that USDINR shows higher risk of extreme outcomes in more months than EURINR and GBPINR.

TABLE 5.1.4: SUMMATION OF SKEWNESS AND KURTOSIS VALUES

PERIOD	USD - INR				EUR - INR				GBP - INR			
	SKEWNESS		KURTOSIS		SKEWNESS		KURTOSIS		SKEWNESS		KURTOSIS	
	POSITIVE	NEGATIVE	POSITIVE	NEGATIVE	POSITIVE	NEGATIVE	POSITIVE	NEGATIVE	POSITIVE	NEGATIVE	POSITIVE	NEGATIVE
Jan-12		-0.0208		-1.2350		-0.4437		-0.6037		-0.0244		-0.7169
Feb-12	0.0475			-0.6977	0.0101		0.1946			-0.4979	0.0463	
Mar-12		-0.7442	0.4089			-1.0914	0.9540			-1.2800	1.0059	
Apr-12	0.2164			-0.7092		-0.2065		-0.9377	0.7162		1.1592	
May-12		-0.1990		-0.1461		-0.9869	1.1708		0.0651		0.4554	
Jun-12	0.4900			-0.5879		-0.1736		-0.1306		-0.6188		-0.8944
Jul-12		-0.6124		-0.3443		-1.0953	1.4239			-0.7946	0.3553	
Aug-12		-0.8612	0.2813		0.9723		1.7452			-0.1163		-0.3099
Sep-12		-0.2816		-1.4012		-0.2725		-0.4626		-0.4983		-0.6472
Oct-12	0.3853			-0.7513	0.2653			-1.0903		-0.4548		-0.1212
Nov-12		-0.3848	0.1127			-0.6428	0.0992			-0.5984	0.4118	
Dec-12	0.0340			-0.0272		-0.7672	1.0070		0.2782			-0.0313
Jan-13		-0.1534		-0.2324	0.7527			-0.3375	0.4125		0.1013	

Source: Computed Output

5.1.1 KOLMOGOROV – SMIRNOV TEST

The Kolmogorov–Smirnov test (K-S test) is a nonparametric test for the equality of continuous, one-dimensional probability distributions that can be used to compare a sample with a reference probability distribution (one-sample K–S test), or to compare two samples (two-sample K-S test). The K-S test tries to determine if two datasets differ significantly.

The test is used to verify if the empirical data has a normal, scaled-t, hyperbolic, NIG or GH distribution. The KS-test has the advantage of making no assumption about the distribution of data. Technically speaking it is non-parametric and distribution free. The K-S test statistic quantifies a distance between the empirical distribution function of the sample and the cumulative distribution function of the reference distribution, or between the empirical distribution functions of two samples.

The null distribution of this statistic is calculated under the null hypothesis that the samples are drawn from the same distribution (*in the two-sample case*) or that the sample is drawn from the reference distribution (*in the one-sample case*). In each case, the distributions considered under the null hypothesis are continuous distributions but are otherwise unrestricted.

As seen from calculation of standard error and kurtosis statistic (*Table 1 – Table 3*)[2], the distribution is normal in all cases. The Kolmogorov test results in Tables 5.1.1.1, 5.1.1.2, and 5.1.1.3 also clearly shows that the distribution is in fact normal in every case.

Hence, null hypothesis that the currency pairs are normally distributed is accepted.

TABLE 5.1.1.1: ONE-SAMPLE KOLMOGOROV SMIRNOV TEST FOR USDINR

		Jan_2012	Feb_2012	Mar_2012	Apr_2012	May_2012	Jun_2012	Jul_2012	Aug_2012	Sep_2012	Oct_2012	Nov_2012	Dec_2012	Jan_2013
N		20	18	19	17	21	20	21	20	18	19	18	19	21
Normal Parameters a,b	Mean	-.1808	-.0329	.1054	.1150	.1663	.0196	-.0011	.0120	-.1532	.0702	.0415	.0114	-.0735
	Std. Deviation	.24265	.20952	.28453	.24243	.40994	.39120	.45056	.25509	.36749	.36408	.33390	.18871	.28465
Most Extreme Differences	Absolute	.169	.091	.105	.129	.155	.151	.144	.135	.205	.111	.153	.154	.071
	Positive	.169	.079	.068	.129	.121	.151	.087	.096	.109	.111	.122	.154	.071
	Negative	-.148	-.091	-.105	-.094	-.155	-.108	-.144	-.135	-.205	-.084	-.153	-.134	-.069
Kolmogorov-Smirnov Z		.754	.385	.456	.533	.710	.677	.658	.606	.868	.486	.648	.671	.324
Asymp. Sig. (2-tailed)		.620	.998	.986	.939	.695	.749	.779	.857	.438	.972	.796	.759	1.000
a. Test distribution is Normal.														
b. Calculated from data.														

Source: Computed Output

TABLE 5.1.1.2: ONE-SAMPLE KOLMOGOROV SMIRNOV TEST FOR EURINR

		Jan_2012	Feb_2012	Mar_2012	Apr_2012	May_2012	Jun_2012	Jul_2012	Aug_2012	Sep_2012	Oct_2012	Nov_2012	Dec_2012	Jan_2013
N		21	19	20	18	22	21	22	21	19	20	19	20	22
Normal Parameters a,b	Mean	66.3986	65.0936	66.5269	68.1617	69.6991	70.3087	68.2520	68.8750	70.1263	68.7522	70.3665	71.6555	72.1286
	Std. Deviation	1.59128	.65901	1.07466	.94039	.57884	.88627	.69189	.60006	.99237	1.03684	.91176	.88769	.51458
Most Extreme Differences	Absolute	.196	.115	.181	.256	.131	.110	.197	.138	.147	.151	.188	.196	.138
	Positive	.196	.071	.181	.256	.131	.110	.197	.138	.129	.141	.188	.104	.117
	Negative	-.161	-.115	-.141	-.155	-.086	-.103	-.092	-.127	-.147	-.151	-.109	-.196	-.138
Kolmogorov-Smirnov Z		.900	.500	.811	1.084	.614	.506	.924	.631	.642	.677	.818	.878	.649
Asymp. Sig. (2-tailed)		.393	.964	.527	.190	.845	.960	.361	.821	.805	.749	.515	.424	.793
a. Test distribution is Normal.														
b. Calculated from data.														

Source: Computed Output

TABLE 5.1.1.3: ONE-SAMPLE KOLMOGOROV SMIRNOV TEST FOR GBPINR

		Jan_2012	Feb_2012	Mar_2012	Apr_2012	May_2012	Jun_2012	Jul_2012	Aug_2012	Sep_2012	Oct_2012	Nov_2012	Dec_2012	Jan_2013
N		20	18	19	17	21	20	21	20	18	19	18	19	21
Normal Parameters a,b	Mean	-.2255	.0002	.1869	.2614	.0725	.1013	.0124	.0505	-.1262	.1007	.0397	.0554	-.2382
	Std. Deviation	.41414	.47558	.38088	.41011	.55446	.54781	.55791	.25286	.53441	.44653	.48097	.41187	.51388
Most Extreme Differences	Absolute	.119	.169	.178	.159	.149	.170	.177	.117	.146	.102	.111	.142	.149
	Positive	.119	.087	.143	.159	.149	.116	.072	.088	.083	.071	.106	.130	.149
	Negative	-.096	-.169	-.178	-.122	-.145	-.170	-.177	-.117	-.146	-.102	-.111	-.142	-.081
Kolmogorov-Smirnov Z		.532	.715	.774	.657	.685	.759	.810	.522	.620	.446	.470	.617	.682
Asymp. Sig. (2-tailed)		.940	.686	.586	.782	.737	.612	.528	.948	.836	.989	.980	.841	.741
a. Test distribution is Normal.														
b. Calculated from data.														

Source: Computed Output

It can be seen from Table 5.1.1.4 that the correlation value ranges between 0.764 for USDINR – EURINR to 0.934 for USDINR – GBPINR.

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[2] See Appendix

ABLE 5.1.1.4: CORRELATION FOR USDINR - EURINR – GBPINR

Correlations		USDINR	EURINR	GBPINR
USDINR	Pearson Correlation	1	.761[**]	.934[**]
	Sig. (2-tailed)		0	0
	N	264	264	264
EURINR	Pearson Correlation	.761[**]	1	.877[**]
	Sig. (2-tailed)	0		0
	N	264	264	264
GBPINR	Pearson Correlation	.934[**]	.877[**]	1
	Sig. (2-tailed)	0	0	
	N	264	264	264
**. Correlation is significant at the 0.01 level (2-tailed).				

Source: Computed Output

5.2 PART B: ANALYSIS OF BSE, NSE, AND MCX

Table 5.2.1 shows the month end price for the three indexes NSE (CNX NIFTY), MCX (Multi Commodity Exchange), and BSE (SENSEX) and the volume of trade contracts. Table 5.2.2 shows skewness and kurtosis values for the data.

Implication: Higher trading volume is an indication of higher level of speculation and hence there is a positive correlation between intra-day trading volume and higher degree of speculative motive behind trading of currency. Table 5.2.3 summarises the skewness and kurtosis values and the implications.

TABLE 5.2.1: BSE VS. NSE VS. MCX – PRICE AND VOLUME

	NSE		MCX		BSE	
	Price (Rs.)	Volume	Price (Rs.)	Volume	Price (Rs.)	Volume
Jan-12	5087.3	180791971	10769.35	34951833	17193.55	15662941
Feb-12	5385.2	251776075	11449.52	33412640	17752.69	21461250
Mar-12	5295.55	188926318	11538.88	32788973	17404.2	16647647
Apr-12	5248.15	137361978	11417.59	28118319	17318.81	10670000
May-12	4924.25	147023369	10558.22	34671822	16218.53	11359545
Jun-12	5278.9	144681959	10932.13	35489824	17429.98	10467619
Jul-12	5229	121478106	11136.69	31177743	17236.18	9558636
Aug-12	5258.5	131044153	11410.19	31779426	17429.56	10119500
Sep-12	5703.3	167398924	11734.1	34262400	18762.74	11359500
Oct-12	5619.7	131050460	11934.95	30743243	18505.38	8103500
Nov-12	5879.85	115019971	12034.22	32064560	19339.9	7317500
Dec-12	5905.1	120303114	12374.97	29290291	19426.71	8808421
Jan-13	6034.75	133711802	13030.49	31607221	19894.98	9174783

Source: Bloomberg

TABLE 5.2.2: BSE VS. NSE VS. MCX – PRICE AND VOLUME (SKEWNESS AND KURTOSIS)

	NSE		MCX		BSE	
	Price (Rs.)	Volume	Price (Rs.)	Volume	Price (Rs.)	Volume
Skewness	0.4044	1.7321	0.6392	-0.3491	0.4159	1.5181
Kurtsosis	-0.9716	3.2998	0.5353	-0.5162	-0.7552	1.9974

Source: Computed Output

TABLE 5.2.3: BSE VS. NSE VS. MCX – PRICE AND VOLUME (SKEWNESS AND KURTOSIS)

		POSITIVE		NEGATIVE	
SKEWNESS		Price	Volume	Price	Volume
		NSE, MCX, BSE	NSE, BSE	N.A.	MCX
Implication		*Frequent small drops and few sharp gains*		*Frequent small gains and few sharp drops*	
KURTOSIS		MCX	NSE, BSE	NSE, BSE	MCX
Implication		*Lesser risk of extreme changes*		*Higher risk of extreme changes*	

Source: Computed Output

Figures 5.2.1, 5.2.2, and 5.2.3 show the trend lines for the volume of contracts traded.

FIGURE 5.2.1: NSE VOLUME TREND LINE

NSE Volume of Trade Contracts
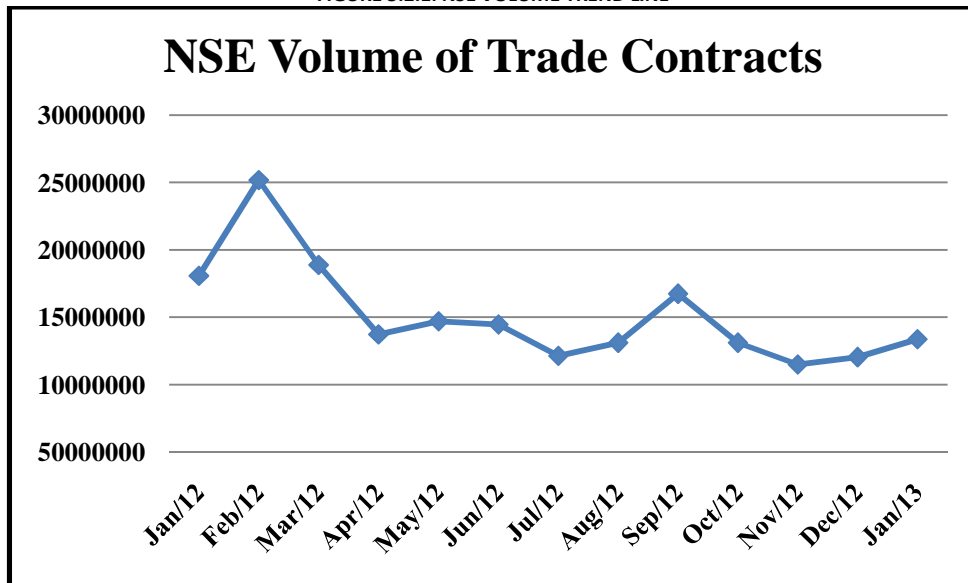
Source: NSE

FIGURE 5.2.2: MCX VOLUME TREND LINE

MCX Volume of Trade Contracts

Source: MCX

FIGURE 5.2.3: MCX VOLUME TREND LINE

BSE Volume of Trade Contracts

Source: MCX

FIGURE 5.2.4 SHOWS THE PRICE TREND LINE FOR THE THREE INDEXES

Source: Bloomberg

Table 5.2.4 shows the inter – index correlation. It can be seen that correlation values are very high.
Wetherefore reject the null hypothesis and accept the alternate hypothesis that there is significant correlation between the three indexes.

TABLE 5.2.4: INTER INDEX CORRELATION

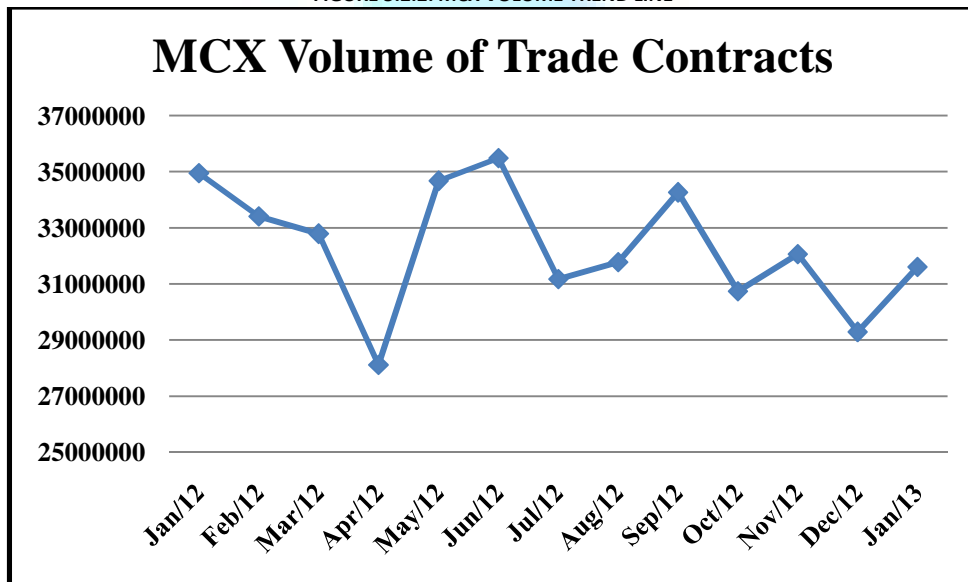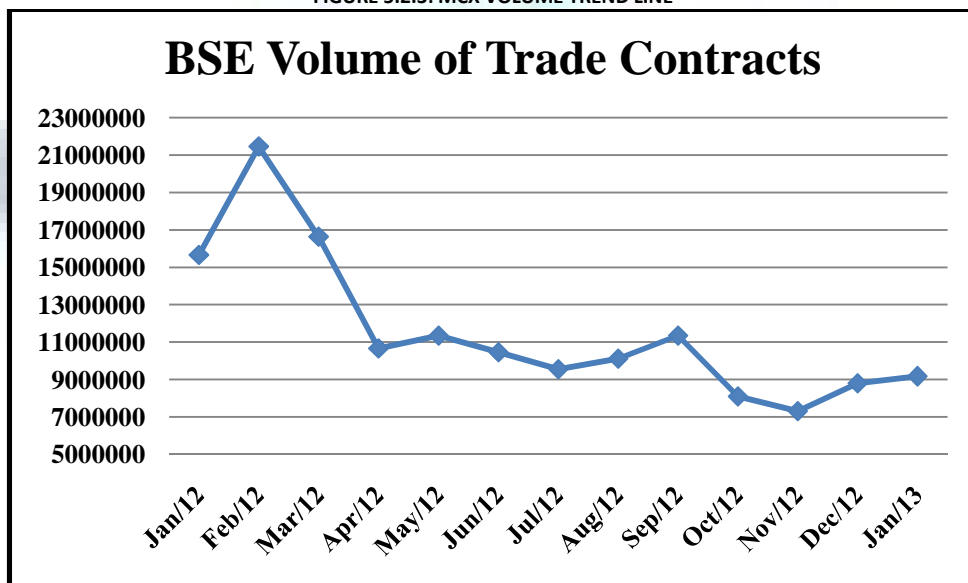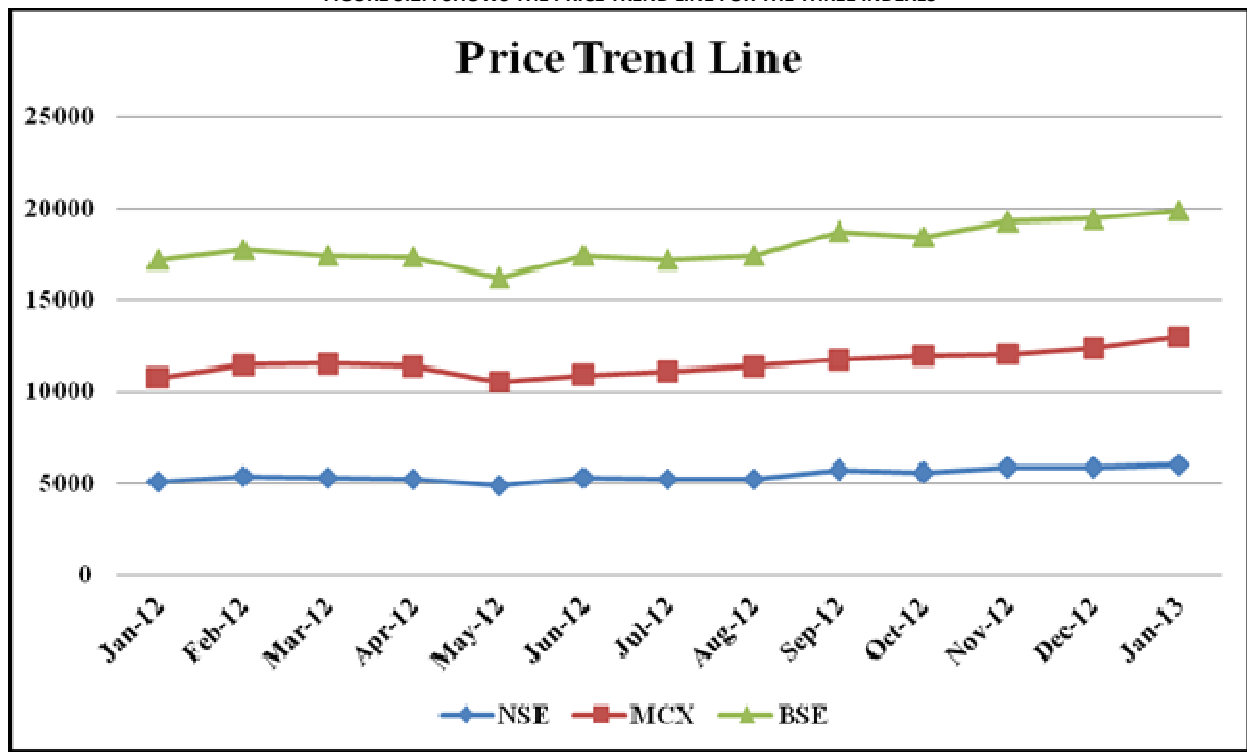| Correlations				
		Price_NSE	Price_MCX	Price_BSE
Price_NSE	**Pearson Correlation**	1	.941[**]	.995[**]
	Sig. (2-tailed)		.000	.000
	N	13	13	13
Price_MCX	**Pearson Correlation**	.941[**]	1	.933[**]
	Sig. (2-tailed)	.000		.000
	N	13	13	13
Price_BSE	**Pearson Correlation**	.995[**]	.933[**]	1
	Sig. (2-tailed)	.000	.000	
	N	13	13	13
[**]. Correlation is significant at the 0.01 level (2-tailed).				

Source: Computed Output

6.   FINDINGS AND CONCLUSIONS
1.   The currencies exhibit normal distribution based on both: a. kurtosis values and b. Kolmogorov – Smirnov test.
2.   Kolmogorov – Smirnov test as a goodness of fit test rejects the hypothesis of equal cumulative distribution functions (point wise) for the pre and post free-float period.
3.   There is high correlation between indexes.
4.   Volatility has led to instability in economy. Quality and enhancement is at a lower level. Volatility shocks in this period are too significant. We cannot rule out that currency trading will increase spot price volatility.
5.   The volumes have fallen during one year but currency derivatives market can withstand transaction charges and one will get a better picture if the time series correlation is spread over a longer period.
6.   Currency Market volatility will affect effectiveness to offset the profits and losses as they would depend on relative movement of two currencies.
7.   In day to day parlance the vast bulk of currency liquidity is intraday, meaning you buy now and you get out in 20 minutes. That is not hedging, but is trading and is speculation.

7.   FUTURE SCOPE FOR STUDY
Given the mixed empirical results between price and trading volume especially in emerging markets context, more empirical research from other emerging financial markets is needed to better understand the price-volume relationship. Very few studies have examined the price-volume relationship in Indian market.

8.   SUGGESTIONS
1.   Extending working hours may help to increase volume of currency futures.
2.   NRIs and FIIs will also participate in currency futures in India once market opens up.
3.   Greater trade and financial inflows from Eurozone and Japan can make standardized contracts possible.
4.   There has been a fall back in the volumes because of some stamp duty issues but the market is still very liquid but fortunately or unfortunately that is still largely speculative. To make it meaningful, RBI needs to make a few structural changes.

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10. APPENDIX

TABLE 1

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Descriptive Statistics USDINR									
Jan_2012	20	-.59	.22	-.1808	.24265	-.021	.512	-1.235	.992
Feb_2012	18	-.40	.36	-.0329	.20952	.048	.536	-.698	1.038
Mar_2012	19	-.56	.55	.1054	.28453	-.744	.524	.409	1.014
Apr_2012	17	-.31	.56	.1150	.24243	.216	.550	-.709	1.063
May_2012	21	-.56	1.05	.1663	.40994	-.199	.501	-.146	.972
Jun_2012	20	-.61	.82	.0196	.39120	.490	.512	-.588	.992
Jul_2012	21	-1.02	.61	-.0011	.45056	-.612	.501	-.344	.972
Aug_2012	20	-.61	.35	.0120	.25509	-.861	.512	.281	.992
Sep_2012	18	-.75	.36	-.1532	.36749	-.282	.536	-1.401	1.038
Oct_2012	19	-.45	.75	.0702	.36408	.385	.524	-.751	1.014
Nov_2012	18	-.68	.59	.0415	.33390	-.385	.536	.113	1.038
Dec_2012	19	-.38	.39	.0114	.18871	.034	.524	-.027	1.014
Jan_2013	21	-.70	.43	-.0735	.28465	-.153	.501	-.232	.972
Valid N (listwise)	17								

TABLE 2

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Descriptive Statistics									
Jan_12	20	-.94	.41	-.1860	.38957	-.444	.512	-0.604	.992
Feb_12	18	-.83	1.03	.0711	.45229	.010	.536	.195	1.038
Mar_12	19	-.78	.61	.1458	.37145	-1.091	.524	.954	1.014
Apr_12	17	-.49	.70	.1252	.34245	-.206	.550	-.938	1.063
May_12	21	-1.28	0.67	.0004	.49412	-.987	.501	1.171	.972
Jun_12	20	-.74	.64	.0889	.36849	-.174	.512	-.131	.992
Jul_12	21	-1.37	.57	-.0942	.46180	-1.095	.501	1.424	.972
Aug_12	20	-.39	.78	.0674	.26206	.972	.512	1.745	.992
Sep_12	18	-1.06	.59	-.0859	.45129	-.272	.536	-0.463	1.038
Oct_12	19	-.34	.71	.1244	.30985	.265	.524	-1.090	1.014
Nov_12	18	-.88	.73	.0654	.42310	-.643	.536	.099	1.038
Dec_12	19	-.90	.63	.0621	.37127	-.767	.524	1.007	1.014
Jan_13	21	-.70	.97	-.0118	.50825	.753	.501	-.337	.972
Valid N (listwise)	17								

TABLE 3

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Descriptive Statistics									
Jan_2012	20	-1.03	.49	-.2255	.41414	-.024	.512	-0.717	.992
Feb_2012	18	-1.05	.78	.0002	.47558	-.498	.536	.046	1.038
Mar_2012	19	-.76	.59	.1869	.38088	-1.280	.524	1.006	1.014
Apr_2012	17	-.51	1.20	.2614	.41011	.716	.550	1.159	1.063
May_2012	21	-1.00	1.31	.0725	.55446	.065	.501	.455	.972
Jun_2012	20	-.88	.87	.1013	.54781	-.619	.512	-.894	.992
Jul_2012	21	-1.37	.83	.0124	.55791	-.795	.501	.355	.972
Aug_2012	20	-.42	.53	.0505	.25286	-.116	.512	-.310	.992
Sep_2012	18	-1.17	.62	-.1262	.53441	-.498	.536	-0.647	1.038
Oct_2012	19	-.86	.84	.1007	.44653	-.455	.524	-.121	1.014
Nov_2012	18	-.97	.90	.0397	.48097	-.598	.536	.412	1.038
Dec_2012	19	-.63	.97	.0554	.41187	.278	.524	-.031	1.014
Jan_2013	21	-1.21	.94	-.2382	.51388	.412	.501	.101	.972

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