

## Empirical Analysis of Demerger: Evidence from Event Study



**Seema Singhal**  
Associate Professor,  
Deptt. of Commerce,  
MDSG Girls College,  
Ambala, Haryana

### Abstract

Among one of many objectives of demerger is to create wealth/value of the firm. To evaluate the analysis of Demerger Event Study Methodology is used. It has been used to examine the impact of demerger announcements in Indian Corporate Sector companies on shareholders' value of demerged company. The analysis of Demerger through Event Study Methodology is a way to examine that demerger has created shareholders wealth after demerger. A major motivating factor for demerger is the beliefs that reverse synergy may exist. Divestitures, spin-offs, and equity carve-outs are basically a "downsizing" of the parent firm. Several research studies have analyzed the impact of demerger by examining the effect on the stock prices. On the last decades, we have seen a large number of companies that reduced their size by demerged one or more divisions. The popularity of Demergers as divestiture instrument varies widely across different countries. We can conclude that two companies got significant positive abnormal returns and created significant shareholder wealth. The third company has significant positive abnormal returns but created insignificant shareholder wealth.

**Keywords:** Event Study, Shareholder Wealth, Clean Window, Announcement Date, Stock Market Factor, Event Window, Cumulative Abnormal Returns, Run up, Window.

### Introduction

To evaluate the analysis of Demerger Event Study Methodology is used. It has been used to examine the impact of demerger announcements in Indian Corporate Sector companies on shareholders' value of demerged company. The analysis of Demerger through Event Study Methodology is a way to examine that demerger has created shareholders wealth after demerger.

### Objectives of the Study

Besides providing a detailed view of de-merger practices in corporate sector in India, the study under consideration intends to achieve the following objectives.

1. To study the outcome of de-merger i.e. to measure the impact of de-merger on the corporate entity performance including its impact on shareholders;
2. To study whether demerger leads to abnormal returns to the shareholders around the date of announcement; and

### Scope of the Study

The sample companies for the present study have been selected in two stages. First, demerged companies during 1996 to 2006 were taken from Prowess 3.1; a database developed by Centre for Monitoring Indian Economy. Subsequently the companies whose announcement date of demerger is not given were left out.

In the second stage those companies were excluded whose Stock Price Data for two years before announcement of demerger and two years after the announcement is not available. This exercise leaves me with a sample of 3 demerged companies which I have taken for my research work. The list of demerged companies was identified first from Bombay Stock Exchange (BSE) and National Stock Exchange web sites then finally from Prowess 3.1.

### Sources of Data

Besides reputed books and journals, the study is based on data taken from Prowess 3.1; a database developed by Centre for Monitoring Indian Economy (CMIE), company reports and Capitaline data basis. Web sites like bseindia.com, nseindia.com, moneycontrol.com, indiainfoline.com have also been extensively consulted.

## Research Methodology

The first objective of this part is to discuss in detail the methodology used for the research. Before conducting actual research work, the researcher prepares a full detail of information about the overall work to be done. This enables the researcher to save time and energy and to conduct the study step-wise and systematically. Such sequential steps adopted by the researcher in studying a problem with certain objectives are called research methodology. Discussion of research methodology at this stage is appropriate as it has a direct bearing on the collection, analysis, interpretation of the data and reporting of results about various aspects of phenomenon under study. Accordingly the following issues have been discussed.

## Analysis and Interpretation

As it is evident from chapter plan the whole analysis is divided into three main sections namely financial position based analysis, stock market data based analysis and event study based analysis. The research tools used are as under:

1. Mean
2. Standard Deviation
3. Coefficient of Variation
4. Regression
5. F-test
6. T-test
7. Event Study

## Statistical Techniques Used

In order to analyze the data, student's t-test is used to evaluate the statistical significance of differences in paired means of financial variables computed for two sample groups, namely pre-demerger period and post demerger period. Pre and post demerger average ratios are calculated to measure the improvement in financial position. Then their significance is tested with the help of t- test and p- value.

## Review of literature

**Lundh (2007)** in his project concluded that spinoffs are an increasing phenomenon on the Swedish stock market. He had observed 17 pre-spinoff companies that become 34 post- spin off companies which continued to be traded on the stock market. In this report one can read about factors that trigger spinoffs as well about the short and medium term risk and return that spinoffs yield. He compared the spinoff company and the parent company in the post-spinoff scenario it can be concluded that the company who is performing the best is also the riskier alternative and the spinoff performs better than the parent company in eleven out of seventeen times. There is also a correlation between risk and return-when higher return is observed it also brings higher risk, and it holds true in all samples except one.

**Veld and Merkoulouva (2008)** in their research reviewed the literature on the factors that influence the wealth effects associated with the announcements of corporate spin-offs. They used meta-analysis to summarize the findings of 26 event studies on spin-off announcements. They found a significantly positive average abnormal return of 3.02% during the event window. Returns are higher

for larger spin-offs, for divestments that are tax or regulatory friendly and for spin-offs that lead to the divestiture of a non-related division. They also found that spin-offs that were later completed were associated with lower abnormal returns than non-completed spin-offs. They overviewed studies on the long-run stock price performance of spin-offs. Even though early studies found a long-run superior performance, this effect was no longer found in later studies that use more refined statistical tests.

**Ramakrishnan (2008)** indicated that the long-term post-merger performance of 414 mergers between 1993 and 2005. He has carried out statistical analyses of financial data pertaining to 87 pairs of merged firms. These mergers took place in the period 1996 to 2002. It is found that the merged firms demonstrate improvement in long-term financial performance after controlling for pre-merger performance, with increasing cash flow returns post merger, at an annual rate of 4.3%. This improved operating cash flow return is on account of improvements in the post-merger operating margins of the firms, though not of the efficient utilization of the assets to generate higher sales. Increase in market power also appears to be driving gains through mergers in India. As far as wealth gains on merger announcement are concerned, only the shareholders of the acquired firms appear to be enjoying significant positive share price returns of 11.6%. The shareholders of the acquiring firms and the combined firms do not seem to be witnessing any significant change in returns. With regard to the strategic factors affecting long-term post-merger financial performance, related mergers seem to be performing 5.4% lower than unrelated mergers. Both the transfer of corporate control from the acquired firm to the acquiring firm, and the business health of the acquired firm are positively related to the long-term post-merger performance of the firms. In the case of mergers where there is a transfer of management control, none of these three groups of shareholders witnesses any abnormal returns on announcement of the merger. The wealth gains to acquired firm shareholders on announcement of a merger are positively influenced by the relative size and the pre-merger performance of the acquired firm. The transfer of corporate control from the acquired firm to the acquiring firm is negatively associated with these abnormal share price returns. The level of industry-relatedness of the acquired and the acquiring firms, the method of payment for the acquired firm and the business health of the acquired firm do not appear to be playing a role in affecting the share price returns to the acquired firm shareholders, on announcement of a merger.

**Anand and Singh (2008)** they used event study methodology to analyze five mergers in Indian Banking Sector to capture the returns to shareholders as a result of the merger announcement during the period of 1999 to 2005. They explored the short-term shareholder wealth effects of the Indian Bank mergers. The merger of Times Bank with HDFC Bank (1999), The Bank of Madura with the ICICI Bank (2000), the ICICI Ltd. with ICICI Bank (2001), the

Global Trust Bank (GTB) with the Oriental Bank of Commerce (OBC) (2004), and the Bank of Punjab (BOP) merger with the Centurian Bank (2005) have been studied. The findings of the study were in agreement with the European and the US bank mergers and acquisitions except for the fact that the value to the shareholders of the bidder banks has been destroyed in the US context. From the study, it emerged that merger announcement in the Indian banking industry has positive and significant shareholders' wealth affect both for the bidder and target banks.

Mann and Kohli (2008) they empirically evaluated the synergistic gains from bank mergers by dividing them into two categories of forced mergers and market driven mergers. The empirical results indicated that markets had reacted negatively to the announcement of forced mergers while the reaction has been positive to that of market driven mergers. In line with market expectation, forced mergers had not added any value to both the balance sheet and profitability variable of merged banks have not added any value to market driven mergers had not immediately improved the profitability of merged banks, but they had improved the balance sheet variables of merging banks and had provided these banks an edge over the competitors in terms of geographic dispersion, influence in new regions where the merging entity lacked presence and extended product portfolio and thus provided a better vehicle for growth.

Vyas Pavak (2015) examines that the demergers and the announcement period price

reaction of demergers during the year 2012-2014. He studied total 51 demergers of companies listed in India and tried to establish that demergers results into abnormal returns for the shareholders of the parent company. Using event study methodology the authors have analyzed the security price performance of the announcement day effect 10 days prior to the announcement to 10 days post demerger announcement. He found significant out-performance of the security over the benchmark index post demerger announcement ranging from 1.74% average abnormal return for a demerger announcement to 0.16% average abnormal return 10 days following the announcement.

Padmanabhan P.A (2018) analysed that demergers are emerging as one of the important forms of corporate restructuring. While there is extensive literature on demergers abroad, there is limited literature on demergers in the Indian context. he studied the impact of demerger announcements on shareholders' wealth is analysed using event study. He took demerger announcements made by 63 companies spread over 11 years from 2003 to 2014 . He applied Two different models, namely, mean-adjusted returns model and market model. Log returns are used in the study. The efficiency of the Indian stock market is also tested in the study. The results show positive abnormal returns during the event window under both mean-adjusted returns model and market model. The results also indicate that the Indian stock market exhibits semi-strong form efficiency.

**Cumulative Abnormal Average Returns (CAARs) for Window (-1, 0)<sup>48</sup>**

Study	Sample Size	Time Period	Methodology	CAARs (-1,0)
Alexander, et al.(1984)	53	1964-73	Mean adjusted returns	0.17%
Rosenfeld (1984)	62	1969-81	Mean adjusted returns	2.33%
Jain(1985)	1,062	1976-78	Portfolio-based adjusted returns	0.53%
Klein(1986)	202	1970-79	Market-model residuals	0.725
Hite, et al.(1987)	55	1963-81	Market-model residuals	0.69% (-50,-5)
Hearth and Zaima (1984)	58	1979-81	Market-model residuals	8.74% (-50,-5)
Hirschey and Zaima (1989)	64	1975-82	Market-model residuals	1.64%

In the review of literature it is found that the studies has mainly concentrated on the issues as conceptualized into the motives for Demergers, their empirical investigation of demerger, examination of financial characteristics of demerged firms and performance measure of demerged firms using share price data and accounting data.

### Event Study

Event study start with hypothesis that particular event affects the value of a firm. The hypothesis that the value of the company has changed will be translated in the stock showing abnormal return. Coupled with the notion that the information is readily impounded into prices, the concept of abnormal returns (or performance) is the central key of the event study methods.

### Window Period and Clean Period Data

Seiler (2004) explained that event study is composed of three frames.

1. Estimation Window (- 240 to -41)
2. The Event Window (-40 to +40)
3. Post Event Window (41 to 240)

### Estimation Window

The estimation window is used to determine the normal behaviour of the stock market factors. Most often used formulae is  $R_{it} = \alpha + \beta R_{mt}$  to determine the normal window. The estimation window is also used to determine the normal behaviour of stock's return with respect to a market of industry index. The estimation of the stock's return in the estimation window is required to define a model of normal behaviour. This estimation window is used to calculate risk and return of demerged companies.

## Event Window

The event window often starts a few days before the actual event day. The length of the event window is centered on the announcement and is normally one, three, five, ten, fifteen, twenty-five and forty days. This procedure enables the researcher to investigate present leakage of the information.

## Post Event Window

It is used to investigate longer-term company performance following the announcement of the event such as demerger and merger. It is to measure the long term impact of the event. The post event window can be as short as one month and as long as several years depending on the event. The event window in the research has been taken from -40 days to the date of announcement to 40 days. The clean period data for the demerged company has been taken as 200 days before -40 days window and 200 days after the 40 days window period.

Window Period	Clean Period	
	Before Demerger	After Demerger
-40 to 40 days	-240 days to -41 days	41 days to 240 days

The share price data and market index (BSE 200) has been taken from Prowess 3.1 the database Software developed by CMIE and from National stock Exchange.

## Estimating CAR Using the Market Model

Fama and MacBeth (1973) market model assumes that all interrelationships among the returns on individual assets arise from a common market factor that affects the return on all assets. The following model generates the expected returns on individual assets. In order to capture the systematic abnormal price movements that are interpreted as prima facie evidence of market's reaction to announcement of an event (firm demerger in this case), the risk and market adjusted variant of standard event study methodology which is better known as the market model has been employed, and it is depicted as follows:

$$R_{jt} = \alpha_j + (\beta_j * R_{mt}) + \epsilon_{jt}$$

t = -240 to -41 (estimation window/period)

The residual return has been calculated for each security by deducting actual return on a particular day during the study period 40 day's window under market model from the predicted returns, as follows:

$$r_{jt} = R_{jt} - (\alpha_j + \beta_j * R_{mt})$$

Where  $r_{jt}$  = Abnormal Return for company stock j at time t

$R_{jt}$  = Actual Return for company stock j at time t

$\alpha_j$  = The intercept term which measure the return over a particular period not explained by market or ordinary least squares (OLS) estimate of the intercept of the market model regression.

$\beta_j$  = Measures the risk of the security or the sensitivity of firm j's return to that of market or ordinary least squares (OLS) estimate of the slope of the market model regression.

$R_{mt}$  = The return on the BSE 200 index on the day t.

$\epsilon_{jt}$  = The unsystematic component of firm j's return. Furthermore, the daily average abnormal returns ( $AR_t$ ) of demerger announcement in a 40 days window are estimated for demerged company by taking arithmetic average of the residual returns of respective companies of that group.

$$AR_t = \frac{\sum r_{jt}}{N}$$

$AR_t$  = Average abnormal returns of demerger announcement

N = Number of firms in the sample.

The reason for averaging across firms is that stock returns are noisy but the noise tends to cancel out when averaged across a large number of firms. Therefore, more firms in the sample, the better ability to distinguish the effect of an event. The cumulative average returns (CAR) of demerger announcement in a 40 days window are estimated for demerged companies by submission of the average abnormal returns ( $AR_t$ ) in the respective window

$$CAR = \sum_{t=-40}^{40} AR_t \quad t = -40 \text{ to } 40$$

Where CAR = Cumulative Average Abnormal Returns of demerger announcement.

$$t\text{-statistics of Abnormal Returns} = \frac{r_{jt}}{S(r_j)}$$

Where  $S(r_j)$  = Standard deviation of residual of company j for the clean period.

$$t\text{-statistics of Average Abnormal Returns} = \frac{AR_t}{S(AR)}$$

Where  $S(AR)$  = Standard deviation of average abnormal returns of demerged company during clean period.

$$t\text{-statistics of CAR} = \frac{CAR}{S(AR)\sqrt{t}}$$

Where t = respective window period.

## Statistical Significance of Event Returns

The null hypothesis that there are no abnormal returns associated with the demerger announcement needs to be statistically tested. The statistical significance of the daily residual returns of each company ( $r_{jt}$ ), daily average abnormal returns ( $AR_t$ ) of demerged and cumulative abnormal return (CAR), has been examined using the t- statistic. If the estimated value of t-statistic is greater than 1.64 but less than 1.96, it is significant at 10% level. If estimated value of t statistics is greater than 1.96 and less than 2.58, it is significant at 5% level. If its value exceeds 2.58, it is significant at 1% level. In the event of the t-statistic being significant, it implies that there are abnormal returns associated with the demerger

announcements in India. The results of the event study using market model with respect to company demerger announcement are as under.

### Sample Selection and Period of Study

To analyze the impact of demerger announcement on the shareholder wealth these 3 Demergers in the Indian Corporate Sector during the period 1997 to 2005 have been studied. The detailed information about the demerged companies is given in Table 1.

### Event Definition and Date of Announcement

For the purpose of this study the first date of media announcement of the demerger has

been taken as the event date (day zero). Table 1 enumerates the date of announcement of the Demergers. The first possible date when the news of the demerger was made public has been used. The same has been obtained from PROWESS 3.1; the data based software developed by Center for Monitoring Indian Economy (CMIE)., web sites of Securities and Exchange Board of India (SEBI), Bombay Stock Exchange (BSE) and National Stock Exchange (NSE).Table 1 shows the abbreviation of the companies used in the study and their first media announcement date.

**Table 1**  
**Event Date of Announcement of Demerged Companies**

Sr. No.	Company Name	Company Name	First Media Announcement date
1.	CEAT LTD	CEAT	MAY 18, 1999
2.	CROMPTON GREAVES LTD	CROMPT	JULY 7, 2000
3.	DABUR INDIA LTD	DABUR	AUGUST 9, 1999

Table 2 gives the date wise data used for clean and window periods for the demerged companies.

**Table 2**  
**Clean Period & Window Period Data for Demerged Companies**

Sr. No.	Name of Company	Data Available for Clean Period (-240 to -41)		Data Available for Window Period (-40 to 40)	
		Start Date	End Date	Start Date	End Date
1.	CEAT	May 25, 1998	March 11, 1999	March 12, 1999	July 12, 1999
2.	CROMP	July 22, 1999	May 11, 2000	May 12, 2000	Sept 5, 2000
3.	DABUR	Oct.22, 1998	June10, 1999	June11, 1999	Sept 28, 1999

### Summary Statistics of Demerged Companies

The summary statistics provides the detail of regression results for estimating the expected return during window period. Table 4 lists the summary statistics of demerged companies. In all we have calculated the following and tested their significance level.

1. Alpha ( $\alpha$ )
2. Beta ( $\beta$ )
3. Standard Deviation
4. t-statistics
5. CAR

The following table shows the summary statistics of demerged companies. These are calculated by using clean period data that is 200 days before -40 days window.

### Cumulative Abnormal Returns of Demerged Company

Table shows that the CAR of Ceat Ltd.; is positive, substantial and significant. As we move from 1 day to 2 day to 5 day window it has gone up from 8.6% to 12.5% and also statistically significant. CAR of 15-day window is 14.1% and it is continuously increasing to 22.1% and 92%. 40 day window shows highest results and statistically significant at 1% level of significance.

**Table 3**  
**Cumulative Abnormal Returns of Ceat Ltd**

Window	CAR	Days	t-statistics
CAR 1 Day Window	0.086***	03	1.802
CAR 2 Day Window	0.124**	05	2.013
CAR 5 Day Window	0.125	11	1.364
CAR 10 Day Window	0.041	21	0.326
CAR 15 Day Window	0.141	31	0.916
CAR 25 Day Window	0.221	51	1.119
CAR 40 Day Window	0.920*	81	3.696
Run up window			
(-1 Day)	0.057**	01	2.070
(-2 TO -1 Day)	0.055	02	1.394
(-5 TO -1 Day)	0.060	05	0.975
(-10 TO -1 Day)	-0.040	10	-0.461
(-15 TO -1 Day)	0.003	15	0.029
(-25 TO -1 Day)	0.221	25	1.599
(-40 TO -1 Day)	0.114	40	0.654
After announcement			

(+1 Day)	0.009	01	0.329
(+2 TO +1 Day)	0.050	02	1.279
(+5 TO +1 Day)	0.045	05	0.725
(+10 TO +1 Day)	0.062	10	0.706
(+15 TO +1 Day)	0.118	15	1.101
(+25 TO +1 Day)	0.157	25	1.136
(+40TO +1 Day)	0.785*	40	4.491

\*denotes Significant at 1% level, \*\* denote Significant at5%, \*\*\* denote Significant at10%

CAR in run up window is negative only 10 day before announcement otherwise one day before it is 5.7% and statistically significant at 5% level of significance. In this window 25 day before announcement shows highest CAR i.e. 22.4%. It after announcement is positive in +1, +5, +10, +15, and

+25 days after announcement but not statistically significant. CAR after 40 days is 78.5%, which is highest and statistically significant at 1% level. In nutshell we can conclude that CAR of Ceat Ltd.; got significant positive abnormal returns and created significant shareholder wealth.

**Table 4**  
**Cumulative Abnormal Returns of Crompton Greaves Ltd**

WINDOW	CAR	Days	t-statistics
CAR 1 Day Window	0.161**	3	2.242
CAR 2 Day Window	0.157***	5	1.686
CAR 5 Day Window	0.092	11	0.667
CAR 10 Day Window	0.066	21	0.347
CAR 15 Day Window	0.091	31	0.394
CAR 25 Day Window	0.134	51	0.450
CAR 40 Day Window	0.252	81	0.673
Run up window			
(-1 Day)	0.005	1	0.124
(-2 TO -1 Day)	0.023	2	0.390
(-5 TO -1 Day)	-0.007	5	-0.076
(-10 TO -1 Day)	-0.026	10	-0.198
(-15 TO -1 Day)	-0.033	15	-0.203
(-25 TO -1 Day)	0.134	25	0.643
(-40 TO -1 Day)	0.012	40	0.044
After announcement			
(+1 Day)	0.105**	1	2.534
(+2 TO +1 Day)	0.083	2	1.410
(+5 TO +1 Day)	0.048	5	0.517
(+10 TO +1 Day)	0.041	10	0.313
(+15 TO +1 Day)	0.073	15	0.453
(+25 TO +1 Day)	0.105	25	0.504
(+40TO +1 Day)	0.189	40	0.720

\*denotes Significant at 1% level, \*\* denote Significant at5%, \*\*\* denote Significant at10%

Table 4 shows that the CAR of Crompton Greaves Ltd.; is positive, substantial and significant. 1 day and 2 day window shows positive and significant CAR i.e. 16.1% and 15.7% and also statistically significant. CAR of 15-day window is 9.1% and it is continuously increasing to 13.4% and 25.2%. 40 day window shows highest results and but not statistically significant. CAR in run up window is negative in 5, 10, 15 day before announcement otherwise one day before it is .5%. In this window 25 day before announcement shows highest CAR i.e. 13.4%. CAR

after announcement is positive in +5, +10, +15, +25, +40 days after announcement but not statistically significant. CAR after 40 days is 18.9%, which is highest but not statistically significant.

In nutshell we can conclude that CAR of Crompton Greaves Ltd. got insignificant positive abnormal returns in long window but significant in 1 and 2 day window and has created significant shareholder wealth.

**Table 5**  
**Cumulative Abnormal Returns of Dabur India Ltd**

WINDOW	CAR	Days	t-statistics
CAR 1 Day Window	0.073	03	1.189
CAR 2 Day Window	0.094	05	1.179
CAR 5 Day Window	-0.029	11	-0.250
CAR 10 Day Window	0.074	21	0.453
CAR 15 Day Window	0.180	31	0.908
CAR 25 Day Window	0.217	51	0.855
CAR 40 Day Window	0.389	81	1.217

Run up window			
(-1 Day)	0.013	01	0.353
(-2 TO -1 Day)	0.029	02	0.580
(-5 TO -1 Day)	-0.028	05	-0.348
(-10 TO -1 Day)	0.004	10	0.036
(-15 TO -1 Day)	0.116	15	0.842
(-25 TO -1 Day)	0.217	25	1.221
(-40 TO -1 Day)	0.127	40	0.566
After announcement			
(+1 Day)	0.048	01	1.354
(+2 TO +1 Day)	0.052	02	1.035
(+5 TO +1 Day)	-0.014	05	-0.180
(+10 TO +1 Day)	0.057	10	0.510
(+15 TO +1 Day)	0.051	15	0.373
(+25 TO +1 Day)	-0.015	25	-0.082
(+40 TO +1 Day)	0.249	40	1.110

\*denotes Significant at 1% level, \*\* denotes Significant at 5%, \*\*\* denotes Significant at 10%

Table 5 shows that the CAR of Dabur India Ltd.; is positive, substantial and but not significant. 1 day and 2 day window shows positive CAR i.e. 7.3% and 9.4%. CAR of 10-day window is 7.4% and it is continuously increasing to 18%, 21.7% and 38.9%. 40 day window shows highest results and but not statistically significant.

CAR in run up window is positive in 1, 5, 10, and 15 day before announcement. In this window 25 day before announcement shows highest CAR i.e. 21.7%. CAR after announcement is positive in +5, +10, +15, +25, and +40 days after announcement but not statistically significant. CAR after 40 days is 24.9% which is highest but not statistically significant.

#### Conclusion

In nutshell we can conclude that CAR of Dabur India Ltd. got insignificant positive abnormal returns and created insignificant shareholder wealth.

CAR of Ceat Ltd and CAR of Compton Greaves Ltd. Is positive, substantial and significant.. In nutshell we can conclude that CAR of Ceat Ltd.; got significant positive abnormal returns and created significant shareholder wealth. CAR of Crompton Greaves Ltd. got insignificant positive abnormal returns in long window but significant in 1 and 2 day window and has created significant shareholder wealth.

CAR of Dabur India Ltd.; is positive, substantial and but not significant. 1 day and 2 day window shows positive CAR i.e. 7.3% and 9.4% In nutshell we can conclude that CAR of Dabur India Ltd. got significant positive abnormal returns and created insignificant shareholder wealth.

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E: ISSN No. 2349-9443

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