

# A Study of “Claims and Benefits Paid by Selected Private Sector Life Insurance Companies” by Using One Way ANOVA

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## Abstract

Insurance sector in India has grown fast as one of the major drivers and witnessed enormous growth in the recent past. In India insurance sector has classified in to two categories viz., Public sector and Private sector, wherein Life Insurance Corporation (LIC) is sole public sector insurance company. Insurance companies provide various types of risk covers; risk related to life is one of them where payment of claim is guaranteed either on death or on maturity whichever is earlier. The total market size of the insurance sector in India is projected to touch US\$350-400 billion by 2020. Present paper is focused on the study of claims and benefits paid by life insurance companies in private sector. Five private life insurance companies have been selected. Study is based on the secondary data which are collected from the annual reports of all selected companies. Time period of five years, i.e., from 2012-13 to 2016-17, has been covered. Statistical tool F-test or ANOVA is used for testing the hypothesis. Data are analyzed manually without using any software and research paper will provide some important findings and suggestions to the companies for their better performance.

**Keywords:** ANOVA, Claims, Life Insurance, Private Insurance Companies

## Introduction

Insurance sector is playing a significant role in the development of economy. Insurance inculcates the habit of saving among the people and provides funds as per the requirement of general public, business enterprises and

even to the government. Indian insurance sector is very strong with the mixture of public and private sectors. The total market size of the insurance sector in India is projected to touch US\$350–400 billion by 2020. Life insurance sector is fastest growing sector in India since 2000 as the government allowed private players and FDI up to 26% and recently the Cabinet approved a proposal to increase it to 49%. Life insurance companies cover risk related to life. Insured pays premium and payment of claim is guaranteed either on death or maturity, whichever is earlier.

## Claims and Benefits Paid

There are various benefits which life insurance companies are paying to their policyholders as per Schedule 4 of Revenue account. These benefits or insurance claims include: (1) Claims by death, (2) Claims by maturity, (3) Annuities/Pension payments, and (4) Other benefits which include survival, surrender, interest on unclaimed amounts, money-back payments, discontinuance termination, withdrawals, waiver of premium, and health and vesting of pension policy. These are some gross benefits. If we deduct amount ceded in reinsurance, result will be net benefits paid. In present paper, gross benefits are taken into consideration without considering the amount ceded in reinsurance.

## Literature Review

- **Viswanadham P (2005)** studied claims settlement procedure of Life Insurance Corporation (LIC) of India and concluded that LIC should provide effective service in claim settlement. It should create trust in the mind of policyholders by providing them transparent grievance redressal procedure. Satisfied

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customer will be a brand ambassador for a company; so, claim settlement should be given more importance.

- **Kalani, Salunkhe and Ahirrao (2013)** examined claim settlement ratio of LIC with other insurance companies in India. Study observed that there are possibilities of fraud in the procedure of claim settlement but if policyholders use proper precautions, they will protect themselves from fraud. LIC is providing better services and D-mat may improve transparency and efficiency in claim settlement.
- **Ashturkar P.B. (2014)** studied the claim settlement performance of life insurance business in India and made comparative study of public and private life insurance companies. He concluded that LIC has maintained higher percentage of claim settlement ratio and hence increased its market size.
- **Lalithchanadra B. N. and Kumari T. Lavanya (2015)** reviewed the trends in total individual death claims during the study period, analyzed the claims paid and claims settlement ratio of both LIC and private players, and estimated the benefit amount due ratio for the individual death claims to be paid by both LIC and private insurers. They concluded that claim settlement ratio is not 100% and policyholders must go through 15-day-free-look-period. Hence, both the ratios are playing important role in purchasing the policies.

## Objectives of the Study

The main objectives of the study are:

- To compare the claims and benefits paid by selected private life insurance companies under study period,
- To evaluate the efficiency of private sector life insurance companies under study,
- To interpret the statistical results drawn out from the research and evaluate the usefulness of this study, and
- To suggest measure on the basis of the study results.

## Research Methodology

In order to conduct the research, data have been taken from the annual reports of private sector insurance companies

(from the websites of the respective insurance companies) viz., Birla Sun life insurance, Aviva life insurance, SBI life insurance, Bajaj Allianz life insurance, and HDFC Standard life insurance company. Time period of five financial years has been covered, i.e., from 2012-13 to 2016-17. Four ratios have been taken into consideration viz., ratio of claims by death to total claims and benefits paid; ratio of claims by maturity to total claims and benefits paid; ratio of annuity & pension payments to total claims and benefits paid; and ratio of claims by others (which includes survival, surrender, interest on unclaimed amounts, money-back payments, discontinuance termination, withdrawals, waiver of premium, and health and vesting of pension policy) to total claims and benefits paid. Statistical tool ANOVA (with  $\alpha = 0.05$ ) has been used in order to evaluate the results. Data are analyzed manually without using any software.

## Hypotheses

For the hypothesis testing, *F*-test or ANOVA is applicable which means analysis of variances. Where the sample is subdivided amongst more than two groups, at that time ANOVA is used. Various ratios are tested under the following hypotheses.

### (1). Ratio of Claims by Death to Total Claims and Benefits Paid

**Null Hypothesis (Ho):** There is no significant difference between ratio of claims by death to total claims and benefits paid in selected life insurance companies under the study.

**Alternative Hypothesis (Ha):** There is significant difference between ratio of claims by death to total claims and benefits paid in selected life insurance companies under the study.

### (2). Ratio of Claims by Maturity to Total Claims and Benefits Paid

**Null Hypothesis (Ho):** There is no significant difference between ratio of claims by maturity to total claims and benefits paid in selected life insurance companies under the study.

**Alternative Hypothesis (Ha):** There is significant difference between ratio of claims by maturity to total

claims and benefits paid in selected life insurance companies under the study.

### (3). Ratio of Annuity & Pension Payments to Total Claims and Benefits Paid

**Null Hypothesis (Ho):** There is no significant difference between ratio of annuity & pension payments to total claims and benefits paid in selected life insurance companies under the study.

**Alternative Hypothesis (Ha):** There is significant difference between ratio of annuity & pension payments to total claims and benefits paid in selected life insurance companies under the study.

### (4). Ratio of Other Benefits to Total Claims and Benefits Paid

**Null Hypothesis (Ho):** There is no significant difference between ratio of other benefits to total claims and benefits paid in selected life insurance companies under the study.

**Alternative Hypothesis (Ha):** There is significant difference between ratio of other benefits to total claims and benefits paid in selected life insurance companies under the study.

## Analysis and Interpretation

In this section, we will analyze the different ratios and interpret our results.

**(1). Ratio of claims by death to total claims and benefits paid:** It is the proportion of death claims which have been settled by the insurance company from amongst the total claims and benefits paid by the insurance company.

**Table 1: Ratio of Claims by Death to Total Claims and Benefits Paid (in percentage)**

Name of the Insurance Companies	Years					
	2012-13	2013-14	2014-15	2015-16	2016-17	Average
Birla sun life insurance	8.27	8.92	9.05	7.55	8.11	8.38
Aviva life insurance	4.91	5.27	6.84	6.00	5.35	5.674
SBI life insurance	5.35	5.96	7.06	11.08	11.36	8.162
Bajaj Allianz life insurance	6.10	7.61	8.90	16.46	15.79	10.972
HDFC standard life insurance	4.78	5.73	4.26	4.81	6.31	5.178
Formula : (Amount paid under death claims / Total claims and benefits paid) x 100						

Sources: Annual Reports of respective life insurance companies

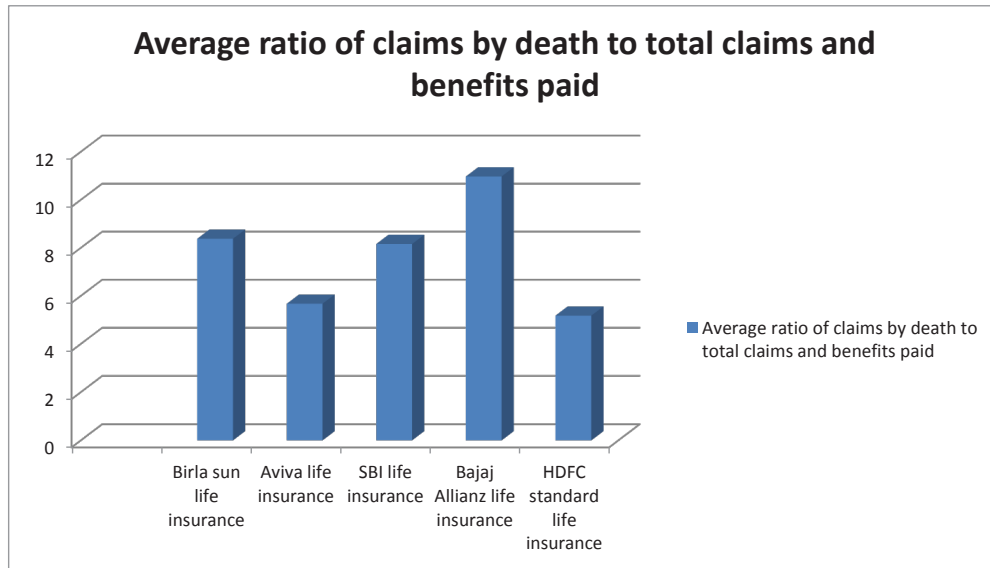
**Table 2: F-test one-way ANOVA for Ratio of Claims by Death to Total Claims and Benefits Paid**

Source of Variation	Sum of Square	Degree of Freedom	Mean Sum of Square	$F_c$	$F_t$	P-Value	Result
Between Groups	47.8014	4	11.9503	1.23616	2.866081	0.327395	Ho Accepted,
Within Groups	193.3468	20	9.6673				
Total	241.1481	24					

**Findings:** It is clear from Table 1 that selected private sector insurance companies are providing death claims on an average of 5.17% to 10.97% of their total claims during research period. Table 2 shows that  $F_c = 1.23616$  and  $F_t = 2.866081$  which means calculated value is less than table value ( $F_c < F_t$ ) and  $p$ -value is 0.327395 which is greater than alpha value, i.e., 0.05. So, in this case,

null hypothesis is accepted and alternative hypothesis is rejected.

Diagram 1 shows that Bajaj Allianz is on top with highest average ratio of claims by death to total claims followed by Birla Sun life and then SBI life insurance. Aviva life insurance and HDFC Standard life insurance companies are lagging behind.



**Diagram 1: Average Ratio of Claims by Death to Total Claims and Benefits Paid**

**(2). Ratio of Claims by Maturity to Total Claims and Benefits Paid:** Maturity claim arises when the policy completes the term selected. It is the proportion of

maturity claims which have been settled by the insurance company from amongst the total claims and benefits paid by the insurance company.

**Table 3: Ratio of Claims by Maturity to Total Claims and Benefits Paid (in percentage)**

Name of the Insurance Companies	Years					Average
	2012-13	2013-14	2014-15	2015-16	2016-17	
Birla sun life insurance	0.70	1.58	1.29	11.73	7.91	4.642
Aviva life insurance	4.16	5.89	4.01	5.19	10.92	6.034
SBI life insurance	16.10	27.28	22.83	24.90	17.01	21.624
Bajaj Allianz life insurance	2.78	7.18	6.07	9.22	22.09	9.468
HDFC standard life insurance	2.03	4.31	8.22	9.50	12.34	7.28

Formula : (Amount paid under maturity claims / Total claims and benefits paid) x 100

Sources: Annual Reports of respective life insurance companies

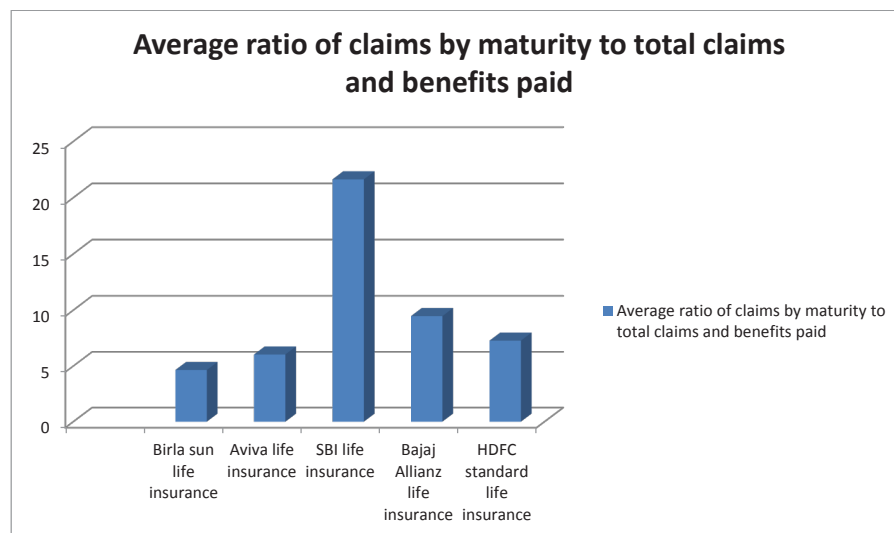
**Table 4: F-test one way ANOVA for Ratio of Claims by Maturity to Total Claims**

Source of Variation	Sum of Square	Degree of Freedom	Mean Sum of Square	Fc	Ft	P-Value	Result
Between Groups	235.224	4	58.806	0.9688	2.866081	0.446322	Ho Accepted,
Within Groups	1214.0021	20	60.7001				
Total	1449.2261	24					

**Findings:** It is clear from Table 3 that selected private sector insurance companies are providing maturity claims

on an average of 4.6% to 21.6% of their total claims during research period. Table 4 shows that  $F_c = 0.9688$  and  $F_t =$

2.866081 which means calculated value is less than table value ( $F_c < F_t$ ) and  $p$ -value is 0.446322 which is greater than alpha value, i.e., 0.05. So, in this case, null hypothesis is accepted and alternative hypothesis is rejected.



**Diagram 2: Average Ratio of Claims by Maturity to Total Claims and Benefits Paid**

Diagram 2 shows that SBI life insurance is on top with highest average ratio of claims by maturity to total claims followed by Bajaj Allianz and then HDFC Standard life insurance company. Aviva life insurance and Birla Sun life insurance companies are lagging behind.

**(3). Ratio of Annuity & Pension Payments to Total Claims:** These are the insurance products in which insured receives a series of future payments for his/her life time after retirement. This ratio is the proportion of annuity and pension payments which have been settled by the insurance company from amongst the total claims and benefits paid by the insurance company.

**Table 5: Ratio of Annuity and Pension Payments to Total Claims and Benefits Paid (in percentage)**

Name of the Insurance Companies	Years					
	2012-13	2013-14	2014-15	2015-16	2016-17	Average
Birla sun life insurance	0.006	0.012	0.06	0.07	0.09	0.0476
Aviva life insurance	1.74	15.67	10.42	15.72	3.44	9.398
SBI life insurance	0.91	1.09	1.54	1.79	1.59	1.384
Bajaj Allianz life insurance	0.04	0.12	0.16	0.34	0.30	0.192
HDFC standard life insurance	0.10	0.20	0.28	0.55	0.64	0.354

Formula : (Amount paid under annuity and pension payments/ Total claims and benefits paid) x 100

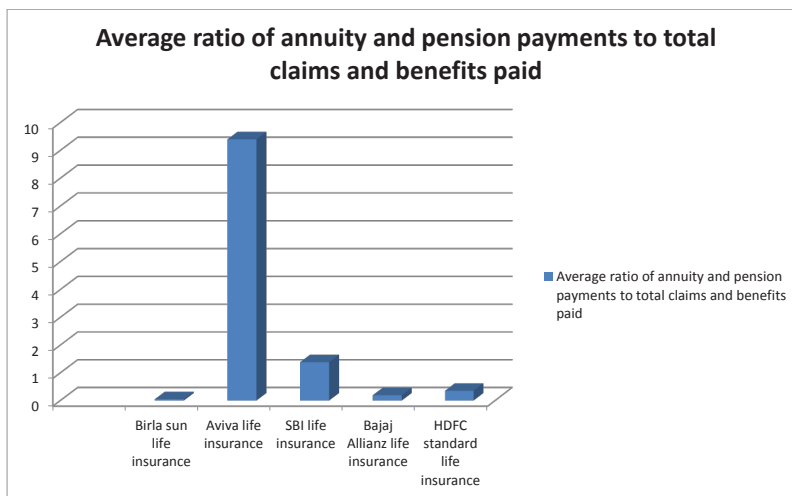
Sources: Annual Reports of respective life insurance companies

**Table 6: F-test one-way ANOVA for Ratio of Annuity and Pension Payments to Total Claims and Benefits Paid**

Source of Variation	Sum of Square	Degree of Freedom	Mean Sum of Square	$F_c$	$F_t$	$P$ -Value	Result
Between Groups	37.2098	4	9.3024	0.40383	2.866081	0.803624	Ho Accepted,
Within Groups	460.7153	20	23.0358				
Total	497.9251	24					

**Findings:** It is clear from Table 5 that selected private sector insurance companies are providing annuity and pension payments on an average of 0.047% to 9.39% of their total claims and benefits paid during research period.

Table 6 shows that  $F_c = 0.40383$  and  $F_t = 2.866081$  which means calculated value is less than table value ( $F_c < F_t$ ) and  $p$ -value is 0.803624 which is greater than alpha value, i.e., 0.05. So, in this case, null hypothesis is accepted and alternative hypothesis is rejected.



**Diagram 3: Average Ratio of Claims by Annuity & Pension to Total Claims**

Diagram 3: shows that Aviva life insurance is on top with highest average ratio of annuity & pension payments to total claims and benefits paid, followed by SBI life insurance and then HDFC Standard life insurance company. Bajaj Allianz and Birla Sun life insurance companies are lagging behind.

surrender, interest on unclaimed amounts, money back payments, discontinuance termination, withdrawals, waiver of premium, and health and vesting of pension policy. This ratio is the proportion of all such benefits mentioned above which have been paid by the insurance company from amongst the total claims and benefits paid by the insurance company.

**(4). Ratio of Other Benefits to Total Claims and Benefits Paid:** The term other benefits include survival,

**Table 7: Ratio of Other Benefits to Total Claims and Benefits Paid (in percentage)**

Name of the Insurance Companies	Years					
	2012-13	2013-14	2014-15	2015-16	2016-17	Average
Birla sun life insurance	91.02	89.49	89.60	80.65	83.89	86.93
Aviva life insurance	89.19	73.17	78.73	73.09	80.29	78.894
SBI life insurance	77.64	65.67	68.57	62.23	70.04	68.83
Bajaj Allianz life insurance	91.08	85.09	84.87	73.98	61.82	79.368
HDFC standard life insurance	93.09	89.76	87.24	85.14	80.71	87.188

Formula: (Amount paid under others benefits / Total claims and benefits paid) x 100

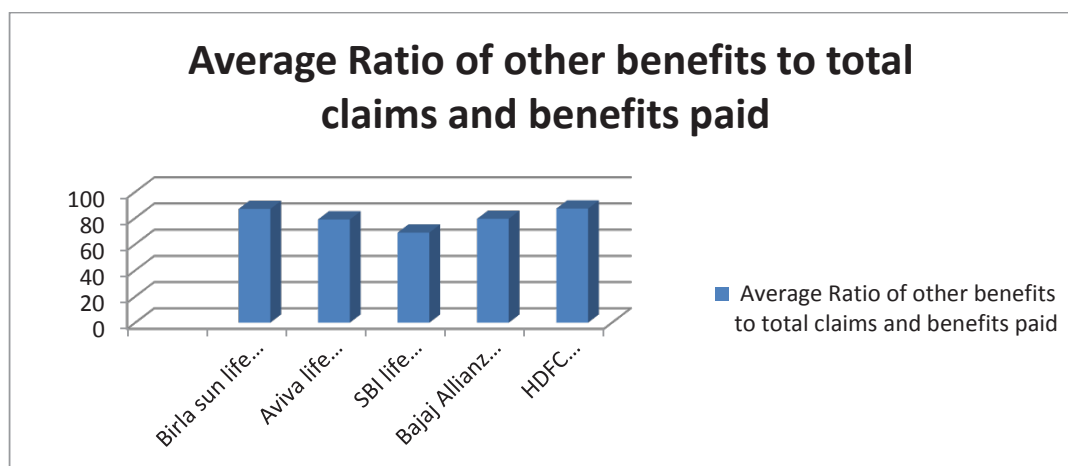
Sources: Annual Reports of respective life insurance companies

**Table 8: F-test one way ANOVA for Ratio of Claims by Others to Total Claims**

Source of Variation	Sum of Square	Degree of Freedom	Mean Sum of Square	$F_c$	$F_t$	$P$ -Value	Result
Between Groups	602.1446	4	150.5362	1.95783	2.866081	0.140064	Ho Accepted,
Within Groups	1537.7856	20	76.8893				
Total	2139.9302	24					

**Findings:** It is clear from Table 7 that selected private sector insurance companies are providing other benefits on an average of 68.83% to 87.188% of their total claims and benefits paid during research period. Table 8 shows that  $F_c = 1.95783$  and  $F_t = 2.866081$  which means

calculated value is less than table value ( $F_c < F_t$ ) and  $p$ -value is 0.140064 which is greater than alpha value, i.e., 0.05. So, in this case, null hypothesis is accepted and alternative hypothesis is rejected.



**Diagram 4:** Average Ratio of Other Benefits to Total Claims and Benefits Paid

Diagram 4 shows that HDFC Standard life insurance is on top with highest average ratio of other benefits to total claims and benefits paid, followed by Birla Sun life insurance and then Bajaj Allianz life insurance company. There is slight difference between Bajaj Allianz life insurance and Aviva life insurance company. SBI life insurance company is lagging behind.

### Summary of Findings

Overall performance of companies can be judged with the help of Table 9. In this table, ranks are assigned to all insurance companies on the basis of its performance in respect to different claims. Ranks are assigned on the basis of highest average ratio, i.e., company with highest average ratio is assigned rank 1 and so on.

**Table 9:** Performance of All Selected Insurance Companies on the Basis of its Average Performance in All Ratios

Name of the insurance company	Ranks assigned in death claims	Ranks assigned in maturity claims	Ranks assigned in annuity & pension payments	Ranks assigned in others benefits
Birla sun life insurance	2	5	5	2
Aviva life insurance	4	4	1	4
SBI life insurance	3	1	2	5
Bajaj Allianz life insurance	1	2	4	3
HDFC standard life insurance	5	3	3	1

1. Birla Sun life insurance is on rank 2 in case of claims in death and other benefits and rank 5 in case of maturity claims and annuity & pension payments as compared to other companies.
2. Aviva life insurance is on rank no. 1 in case of annuity & pension payments while lagging behind in other ratios, i.e., rank no. 4 as compared to other

companies.

3. SBI life insurance is on rank no. 1 in case of maturity claims, rank no. 2 in case of annuity & pension payments, rank no. 3 in case of death payments, and rank no. 5 in case of other benefits as compared to other companies.
4. Bajaj Allianz life insurance is on rank no. 1 in case of

death claims, rank no. 2 in case of maturity claims, rank no. 3 in case of other benefits, and rank no. 4 in case of annuity and pension payments as compared to other companies.

5. HDFC Standard life insurance is on rank no.1 in case of other benefits, rank no. 3 in case of maturity

claims and annuity & pension payments, and rank no. 5 in case of death claims as compared to other companies.

As far hypotheses are concerned, we have following summarized findings:

Ratios	Significance level	Results
Claims by death to total claims and benefits paid	There is no significant difference between ratio of claims by death to total claims and benefits paid in selected life insurance companies under the study.	Hypothesis has been accepted.
Claims by maturity to total claims and benefits paid	There is no significant difference between ratio of claims by maturity to total claims and benefits paid in selected life insurance companies under the study.	Hypothesis has been accepted.
Annuity & pension payments to total claims and benefits paid	There is no significant difference between ratio of annuity & pension payments to total claims and benefits paid in selected life insurance companies under the study.	Hypothesis has been accepted.
Other benefits to total claims and benefits paid	There is no significant difference between ratio of other benefits to total claims and benefits paid in selected life insurance companies under the study.	Hypothesis has been accepted.

## Suggestions

As the study shows that percentage of other benefits is more as compared to other ratios in case of all companies. If a company is paying less claims in one ratio, obviously its share will be more in other ratios because total claims and benefits are divided into four ratios as shown in annexure. Life insurance business is a giant business in the world. But still, there is a large portion of untapped market and private players can take an advantage from it. Insurance companies should develop new products so that untapped market can be targeted accordingly.

## Concluding Remarks

To uplift the economy of the country, financial sector is required to be developed. In this connection, the insurance sector, after banking, must be given priority to attain sustainability in financial sector. The smooth and efficient operation of insurance sector helps to reduce the risk of failure of an economy. Therefore, the performance of insurance sector has always been a source of interest for researchers to judge the economic condition of the country. And for this purpose "A study of claims and benefits paid" is an important aspect to judge the efficiency of an insurance company.

## Limitations of the Study

The study is based on secondary data collected from the secondary data source viz., the Internet and websites of the insurance companies concerned. Therefore, the quality of the study depends upon the accuracy, reliability, and quality of secondary data source. Moreover, gross benefits are considered in the study instead of net benefits because amount ceded in reinsurance has been ignored.

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[www.policyx.com](http://www.policyx.com)

## Annexure

**Table A: Ratios of Birla Sun Life Insurance Company**

<i>Ratios</i> \ <i>Years</i>	2012-13	2013-14	2014-15	2015-16	2016-17
Claims by death to total claims and benefits paid	8.27	8.92	9.05	7.55	8.11
Claims by maturity to total claims and benefits paid	0.70	1.58	1.29	11.73	7.91
Annuity & pension payments to total claims and benefits paid	0.006	0.012	0.06	0.07	0.09
Other benefits to total claims and benefits paid	91.02	89.49	89.60	80.65	83.89
Total (approximately)	100	100	100	100	100

Source: Annual report of Birla Sun life insurance company of respective years.

**Table B: Ratios of Aviva Life Insurance Company**

<i>Ratios</i> \ <i>Years</i>	2012-13	2013-14	2014-15	2015-16	2016-17
Claims by death to total claims and benefits paid	4.91	5.27	6.84	6.00	5.35
Claims by maturity to total claims and benefits paid	4.16	5.89	4.01	5.19	10.92
Annuity & pension payments to total claims and benefits paid	1.74	15.67	10.42	15.72	3.44
Other benefits to total claims and benefits paid	89.19	73.17	78.73	73.09	80.29
Total (approximately)	100	100	100	100	100

Source: Annual report of Aviva life insurance company of respective years.

**Table C: Ratios of SBI Life Insurance Company**

<i>Ratios</i> \ <i>Years</i>	2012-13	2013-14	2014-15	2015-16	2016-17
Claims by death to total claims and benefits paid	5.35	5.96	7.06	11.08	11.36
Claims by maturity to total claims and benefits paid	16.10	27.28	22.83	24.90	17.01
Annuity & pension payments to total claims and benefits paid	0.91	1.09	1.54	1.79	1.59
Other benefits to total claims and benefits paid	77.64	65.67	68.57	62.23	70.04
Total (approximately)	100	100	100	100	100

Source: Annual report of SBI life insurance company of respective years.

**Table D: Ratios of Bajaj Allianz Life Insurance Company**

<i>Ratios</i> \ <i>Years</i>	2012-13	2013-14	2014-15	2015-16	2016-17
Claims by death to total claims and benefits paid	6.10	7.61	8.90	16.46	15.79
Claims by maturity to total claims and benefits paid	2.78	7.18	6.07	9.22	22.09
Annuity & pension payments to total claims and benefits paid	0.04	0.12	0.16	0.34	0.30
Other benefits to total claims and benefits paid	91.08	85.09	84.87	73.98	61.82
Total (approximately)	100	100	100	100	100

Source: Annual report of Bajaj Allianz life insurance company of respective years.

**Table E: Ratios of HDFC Standard Life Insurance Company**

<i>Ratios</i> \ <i>Years</i>	2012-13	2013-14	2014-15	2015-16	2016-17
Claims by death to total claims and benefits paid	4.78	5.73	4.26	4.81	6.31
Claims by maturity to total claims and benefits paid	2.03	4.31	8.22	9.50	12.34
Annuity & pension payments to total claims and benefits paid	0.10	0.20	0.28	0.55	0.64
Other benefits to total claims and benefits paid	93.09	89.76	87.24	85.14	80.71
Total (approximately)	100	100	100	100	100

Source: Annual report of HDFC Standard life insurance company of respective years.