Original Research

Assessing the Financial Viability of Livestock Insurance in Karnataka

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Abstract

To provide protection mechanism to the farmers and cattle rearers against any eventual loss of their animals due to death, Government of India (GOI) introduced the livestock insurance scheme during the years 2005-06. Under the scheme, high yielding cattle and buffaloes were insured at maximum of their current market price. Government incentivized farmers in terms of subsidy upto 50 per cent in the premium amount. Yet only 2 per cent of the milch animals in Karnataka state were insured till 2013-14. A sample of 120 farmers were collected from Bengaluru rural district of Karnataka. A simple random sampling technique was adopted to select sample at village level whereas state, district and taluks were selected purposively. The paper analyzed the aspect whether the livestock insurance was loss making proposition to the farmers or insurance companies or both. The study observed that the overall claim amount to premium amount collected ratio was found to be 0.93 and 0.89 for National Livestock Insurance Scheme in Karnataka and BAMUL group cattle insurance respectively, indicating the financial viability of livestock insurance in the study area.

Key words: Claim-Premium Ratio, Claim Settlement, Group Cattle Insurance, National Livestock Insurance, Premium Per Animal

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Introduction

Livestock sector is contributing 25.6 per cent (2017-18) to the agriculture Gross Domestic Product (GDP) in the country. In the livestock sector, milk group alone accounts for 67 per cent of the total value of output. Majority of small, marginal and landless farmers are engaged in the activities of livestock sector. Among small farmers, livestock is generating half of income and the substantial percentage of farmers wealth is represented by livestock (Sharma, 2010). Loss or death of livestock poses a considerable risk which affects the farmers' net worth and income which renders livestock production especially dairying, a risky business.

The morbidity losses account for 97.64 per cent of the total animal loss and rest 2.36 per cent is due to mortality of animals (Singh *et al.*, 2013). With the increasing value of dairy animals and rising cost of production, the magnitude of risk has further increased. The livestock farmers are having less coping strategies as compared to the crop farmers, to secure against economic losses in production and loss or death of animal. Under such circumstances, livestock insurance is one of the important risk mitigating strategies in this sector. The crop and livestock insurance are one of the important means of protection to farm incomes and living standards against unavoidable risk and uncertainty, especially when used in conjunction with organized marketing, proper price supports, financial and extension facilities (Kohn, 1966). Taking into account the importance of livestock to poor farmers, the livestock insurance is available at subsidize premium rate to the beneficiaries. In spite of the efforts made by the government to incentivize farmers in terms of subsidy in the premium collected, the number of milch animals insured are very low. Only 2.8 per cent of the milch animals were insured during the period from 2006-07 to 2015-16 under National Livestock Insurance Scheme. The highest number of animals were insured in Tamilnadu (14 lakhs) followed by Andhra Pradesh (13 lakhs) and Karnataka (9.3 lakhs).

The livestock insurance scheme is being implemented in states by State Department of Animal Husbandry or State Livestock Development Board (SLDB). The Chief Executive Officer of the State Livestock Development Board will be responsible for execution and monitoring of the livestock insurance scheme. He is also empowered to decide upon the insurance company (s) and the terms and conditions. More than 80 per cent of livestock insurance is provided by four public insures viz., New India Assurance Company (NIAC), National Insurance Company (NIC), United India Insurance Company (UIIC) and Oriental Insurance Company (OIC). Many other private players like Bajaj alliance and TATA AIG have also enter the livestock insurance to provide service in the sector. The livestock insurance in India is mainly associated with the cattle, buffaloes, sheep and goat etc. The amount of premium collected depends on animal species, breed of the animal, age of the animal, lactation level, present milk yield and expected lactation yield and current market value of the animal. Basic risk covered by livestock insurance is death of animal due to accident or illness and diseases. The scheme does not cover loss due to injury, theft, permanent total disability, pollution, any kind of natural calamities and war etc.

Materials and Methods

Karnataka state was purposively selected to conduct present study in the year 2017-18 on the basis of better performance of livestock insurance and contribution of state to the dairy sector. Karnataka is the 9th largest state in cattle and buffalo population in the country, accounting for 4.3 per cent of the total population (Livestock census, 2012). State has received funds of about ₹ 1943 lakhs under the National Livestock Insurance Scheme from GoI during the period from 2005-06 to 2013-14 (*Indiasat.com*). Among southern

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states, Karnataka ranks third in terms of number of animals insured (9.3 lakhs) and premium amount collected under National Livestock Insurance Scheme. Group Cattle Insurance was launched by Bengaluru Co-operative Milk Union in the year 2006-07. BAMUL milk union covers four talukas viz., Devanahalli, Doddaballapura, Hosakote and Nelamangala. Under this scheme, premium is subsidized to the extent 50 per cent and it is borne by the BAMUL milk union. Under BAMUL group cattle insurance, 1.2 lakh animals were insured with total premium amount of ₹7266.13 lakhs during 2005-06 to 2017-18. The time series data on number of animals insured, premium collected, number of claims lodged and number of claims settled etc., were collected from State department of Animal Husbandry for National Livestock Insurance Scheme during the period from 2005-06 to 2013-14 and Bengaluru Co-operative Milk Union (BAMUL) for Group Cattle insurance during the period from 2006-07 to 2017-18. It is to be mentioned that the above received data was according to the availability of livestock insurance data for the districts which were covered under livestock insurance.

Bengaluru rural district was purposively selected from the state for the study, as Bengaluru rural district ranks second in terms of livestock insurance next to Kolar district in Karnataka. Under BAMUL group cattle insurance, 11 lakh animals were insured with total premium amount of Rs 7266.13 lakhs. From Bengaluru rural district, Doddallapura taluk was purposively selected which is having highest number of animals insured (24,536) during the year 2017-18 (Source: BAMUL, 2017-18). Another taluk, Devanahalli was purposively selected as it is undertaking pilot project on insuring all the animals in that taluk. From the selected talukas, two villages were randomly selected from each taluk. From Devanahalli taluk, Jalagi and Bettenehalli and from Doddaballapura taluk, Kodigehalli and Nagasandra villages were selected. The last stage of sampling process involved selection of respondents from each village who have adopted livestock insurance. For the present study, the information was gained from 120 farmers those who adopted livestock insurance. The ultimate units were selected randomly. The farmers who had adopted livestock insurance as measure of risk coverage were classified taluk wise.

Considering the various benefits of the livestock insurance especially to the small and marginal farmers, this paper studied the various claim premium ratios of livestock insurance scheme. The scheme was considered financially viable, if the amount of premium collected was more than the amount of claim paid. The total premium amount consisted of premium amount paid by the farmers and the premium paid by the government. To be financially viable, claim amount to premium collected ratio should be less than one for any company or scheme and less than 80 per cent in the long run, considering the normal profit margin and cost of implementation, which was decided in consultation with insurance agencies involved in livestock insurance for viability of the scheme. No company would like to engage in a business which does not earn any kind of dividend to its efforts. Besides estimating the claim to premium ratio, total claims settled to total claims lodges ratio and total claims lodged to total animals insured ratios in absolute terms were also

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calculated. The hypothesis was that claims settled to claims lodged ratio should be higher and claims lodged to animal insured ratio should be lower for the overall sustainability of the livestock insurance scheme.

Results and Discussion

The first section of the paper discusses growth in animals insured and premium collected followed by claims settled, claim lodged and claim amount paid per animal. Then, the ratios as mentioned above have been discussed to draw the conclusion.

Animals Insured and Premium Collected

The perusal of Table 1 shows the total animal insured and premium collected under National Livestock Insurance Scheme in Karnataka during 2006-13.

Table 1: Total animal insured and premium collected under livestock insurance in Karnataka during 2006-13

Name of scheme	Year	Total animal insured (Numbers)	Total premium collected (₹ in lakhs)	Premium collected per animal per year (₹)
National Livestock Insurance Scheme	Total (2006-2013)	259577 (100)	2030.28 (100)	1170.66
	CAGR (in %)	13.74	14.16	-

Figures in the parentheses indicate percentage of the total animal insured and premium collected

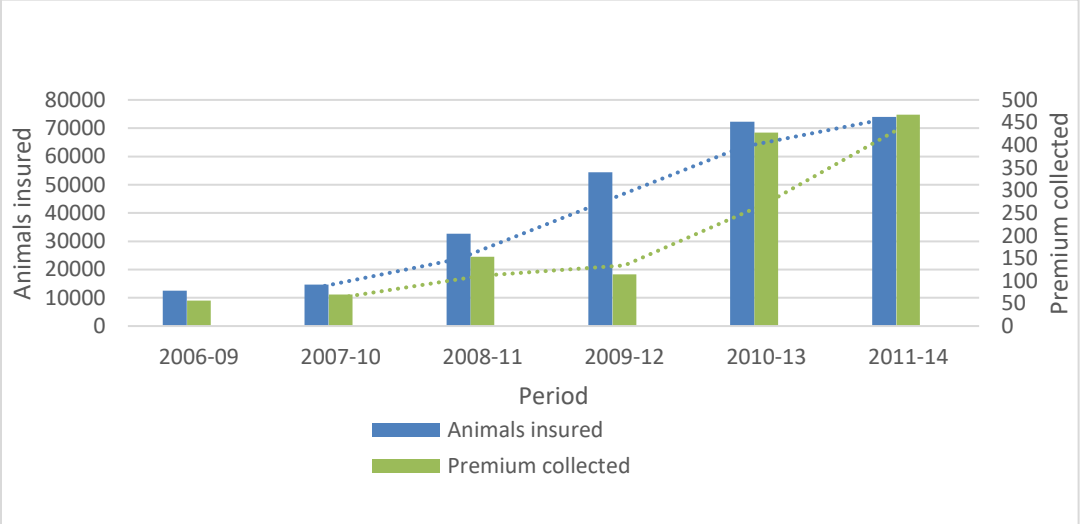

Fig. 2: Triennium averages of animals insured and premium collected under livestock insurance in Karnataka during 2006-13

The premium amount collected was also calculated per animal. It could be observed from the table that the total animals insured in a span of eight years were 2.59 lakhs and premium amount was ₹ 2030.28 lakhs registering CAGR of 13.74 per cent in animals insured and CAGR of 14.16 per cent in premium collected. The average premium collected per animal per year was ₹ 1170.66. Fig. 2 shows the triennium averages of

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number of animals insured and premium collected in Karnataka during 2006-13 under National Livestock Insurance Scheme. It indicates that from 2009 number of animals insured and premium collected increased in the state because number of districts covered under the scheme increased from eight to fourteen districts.

The perusal of Table 2 shows the total animal insured and premium collected under BAMUL group cattle insurance in Karnataka during 2006-17. The premium amount collected was also calculated per animal. It could be observed from the table that the total animals insured in a span of twelve years were 11.2 lakhs and premium amount was ₹ 7266.13 lakhs registering CAGR of 8.01 per cent and CAGR of 13.53 per cent in animals insured and premium collected respectively. The average premium collected per animal per year was ₹ 648.82. The premium collected per animal per year was low in case of BAMUL Group Cattle Insurance compared to National Livestock Insurance Scheme in Karnataka, depending on the value of sum insured of the animal and premium rate charged by the insurance companies. Fig. 3 indicates that the annual growth rates for number of animals insured and premium collected during the period from 2006-07 to 2017-18. Fig. 4 indicates the triennium averages for number of animals insured and premium collected under BAMUL group cattle insurance during 2006-17.

Table 2: Total animals insured and premium collected under BAMUL group cattle insurance during 2006-17

Name of scheme	Year	Total animal insured (Numbers)	Total premium collected (₹ in lakhs)	Premium collected per animal per year (₹)
Group Cattle Insurance	Total (2006-2017)	1119884 (100)	7266.13 (100)	648.82
	CAGR (in %)	8.01	13.53	-

Figures in the parentheses indicate percentage of the total animal insured and premium collected

Claims Settled and Claim Amount Paid

It can be observed from the Table 3 that, out of 13577 claims lodged 11832 claims were settled with total claim amount paid was ₹ 1895.19 lakhs to the claimants under National Livestock Insurance Scheme during the period 2006-13. The average amount of claim paid per animal was ₹ 16017.49. Number of claims lodged increased at CAGR of 7.8 per cent while number of claims settled grows at a CAGR of 6.78 per cent. The total claim amount paid registered a CAGR of 24.18 per cent.

Fig. 4 indicates the triennium averages of number of claims lodged and number of claims settled in Karnataka during 2006-13. It can be observed that more difference was found between number of claims lodged and number of claims settled in the year 2008-11 to 2009-12, which could be due to late intimation or delayed submission of required documents related to animal death to the insurance companies by the beneficiaries. Death of animal after vaccination will not be considered for claim settlement or it may be due to death of animal due to accident or negligence of owner. From the study it was found that, more number of claims were lodged increased after 2010-11, because number of districts covered to insure animals

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increased from eight districts to fourteen districts by Karnataka State Department of Animal Husbandry, Dairying and Fisheries which in turn may increase the number of claims lodged in the state. It infers that number of animals insured in the state increased which is indicated by increased number of districts under livestock insurance.

Table 3: Claim ratios of National Livestock Insurance in Karnataka during 2006-13

Name of scheme	Year	Total number of claims lodged	Total number of claims settled	Total claim amount paid (₹ in lakhs)	Claim amount paid per animal per year (₹)
National livestock insurance scheme	Total (2006-2013)	13577 (100)	11832 (100)	1895.19	16017.49
	CAGR (in %)	7.8	6.78	24.18	-

Figures in the parentheses indicate percentage of the total claims lodged and total claims settled

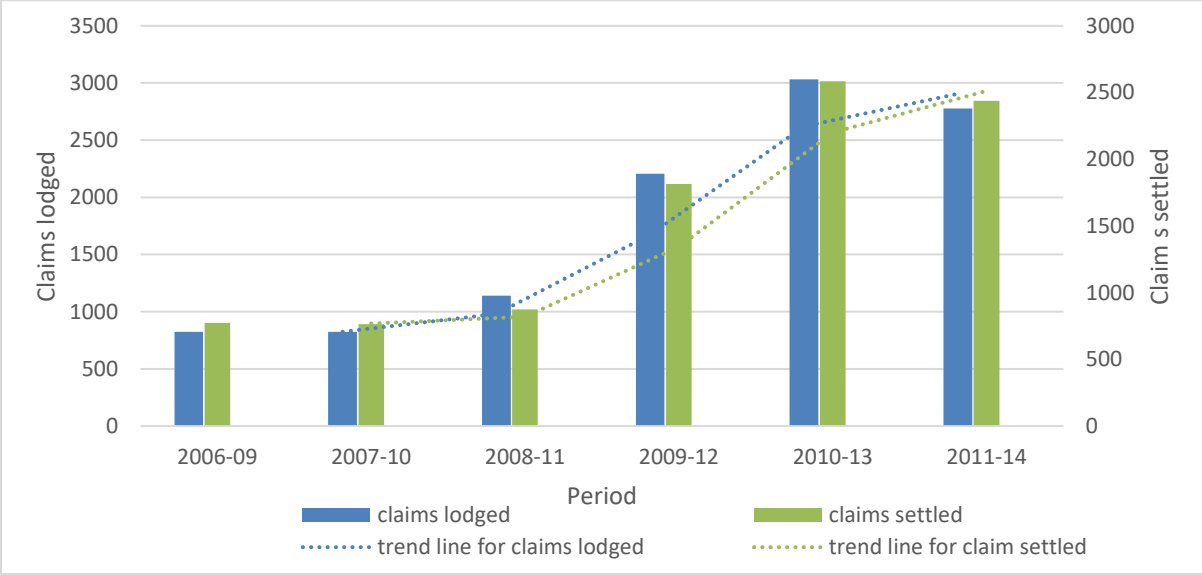

Fig. 4: Triennium averages of claims lodged and claims settled under livestock insurance in Karnataka during 2006-13

It can be observed from the Table 4 that, out of 18350 claims lodged 17162 claims were settled with total claim amount paid was ₹ 6511.56 lakhs to the claimants under BAMUL group cattle insurance during the period 2006-17. The average amount of claim paid per animal was ₹ 28023.59. The amount of claim paid per animal per year was higher in case of BAMUL Group Cattle Insurance compared to National Livestock Insurance Scheme in Karnataka, because higher amount of premium paid according to the value of sum insured of the animal in case of BAMUL Group cattle insurance. Number of claims lodged increased at CAGR of 11.72 per cent while number of claims settled grows at a CAGR of 9.48 per cent. The total claim amount paid registered a CAGR of 9.19 per cent per annum. Fig 5 indicates the triennium averages of claims lodged and claims settled under BAMUL group cattle insurance during 2006-17. It infers that period

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2012-15 having highest number of claims lodged and claims settled, was due to increased number of animals insured in the period.

Table 4: Claim ratios of BAMUL group cattle insurance during 2006-17

Name of scheme	Year	Total number of claims lodged	Total number of claims settled	Total claim amount paid (₹ in lakhs)	Claim amount paid per animal per year (₹)
Group cattle insurance	Total (2006-2017)	18350 (100)	17162 (100)	6511.56	28023.59
	CAGR (in %)	11.72	9.48	9.19	-

Figures in the parentheses indicate percentage of the total claims lodged and total claims settled

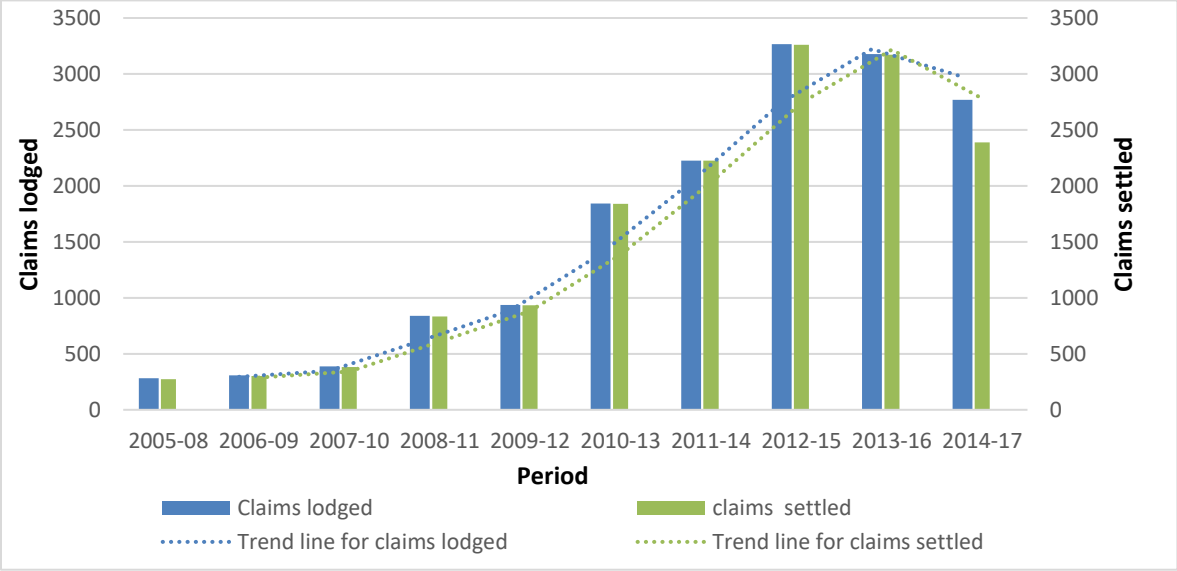

Fig. 5: Triennium averages of claims lodged and claims settled under BAMUL group cattle insurance during 2006-17

Claim Ratios

Two types of claim ratios were calculated. One was the ratio of number of claims lodged (CL) to number of animals insured (AI) which indicates proportion of animals' facing risk and the extent to which the insurance can work as shield against financial loss. Lower the ratio, better is the financial viability of livestock insurance. Another was the ratio of number of claims settled (CS) to number of claims lodged (CL) and this ratio should be higher for long run sustainability of livestock insurance. It measures the performance of livestock insurance institutions working in the study area and accuracy of the farmers' claims. It is also a broad indicator of livestock insurance in the study area.

It can be observed from the Table 5 overall CL/AI ratio was 0.052 which indicates that the number of claims lodged were only 5.2 per cent of the total animals insured. This ratio also shows the risk factor that determines the rate of premium. The CL/AI ratio 0.016 to 0.08 in the study area. It was observed 1.6 per cent in Haryana during 2014 (Singh, 2015). The overall CS/CL ratio was 0.871 indicating that about 87 per

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cent of the claims lodged were settled which was substantially very high ratio and showed that livestock insurance was working effectively in the study area. The ratio varied from 0.75 to 0.99 in the study area. CS/CL ratio was observed 0.869 in Haryana during 2014 (Singh, 2015). Results indicate that livestock insurance scheme is performing better in the state of Karnataka with significant number of claims settled out of the claims lodged and with lower number of claims lodged to animal insured.

Table 5: Claim ratios of livestock insurance in Karnataka during 2006-13

Name of Scheme	Total animal insured (AI)	Total claim lodged (CL)	Total Claim settled (CS)	CL/AI Ratio	CS/CL Ratio
National livestock insurance scheme	259577 (100)	13577 (100)	11832 (100)	0.052	0.871

Figures in the parentheses indicate percentage of the total animals insured, total claims lodged and total claims settled

It can be observed from the Table 6 overall CL/AI ratio was 0.014 which indicates that the number of claims lodged were only 1.4 per cent of the total animals insured. This ratio also shows the risk factor that determines the rate of premium. The ratio varied from 0.69 to 3.1 in BAMUL group cattle insurance. The overall CS/CL ratio was 0.92 indicating that about 92 per cent of the claims lodged were settled which was substantially very high ratio and showed that livestock insurance was working effectively in the study area. The ratio varied from 0.97 to 0.99 in BAMUL group cattle insurance.

Table 6: Claim ratios of BAMUL group cattle insurance during 2006-17

Name of Scheme	Total animal insured (AI)	Total claim lodged (CL)	Total Claim settled (CS)	CL/AI Ratio	CS/CL Ratio
Group cattle insurance	119884 (100)	18350(100)	17152 (100)	0.014	0.92

Figures in the parentheses indicate percentage of the total animals insured, total claims lodged and total claims settled

Claim Amount to Premium Amount Ratio

The financial viability of the insurance scheme was assessed from the claim amount to premium collected ratio. To be financially viable, this ratio should be less than one for any scheme or company in the short run and to be less than 80 per cent in the long run considering the normal profit margin and cost of implementation of the scheme. The perusal of Table 7 shows the amounts of premium collected and claims paid during the period of eight years (2006-13) along with claim amount to premium amount collected ratios for Karnataka. The overall claim amount to premium collected ratio was found to be 0.93 which means that the number of claims paid was 93 per cent of the premium collected indicating the financial viability of scheme as ratio tends to be less than one. The claim amount to premium ratio was 2074 indicating the non-viability in Gujarat (Mishra, 1994). Fig. 6 indicates the pattern of claim to premium ratio during the period 2006-13 in Karnataka and there seems to be no reason for lacking its widespread success and implementation. The claim amount to premium amount ratio was found to be 0.48 in Haryana (Singh, 2015).

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Table 7: Claim amount to premium collected ratio of livestock insurance in Karnataka during 2006-13

Name of Scheme	Total Premium collected (₹ in lakhs)	Total claim amount paid (₹ in lakhs)	Claim amount to Premium ratio
National livestock insurance scheme	2030.28 (100)	1895.19 (100)	0.93

Figures in the parentheses indicate percentage of the total premium collected and total claim amount paid

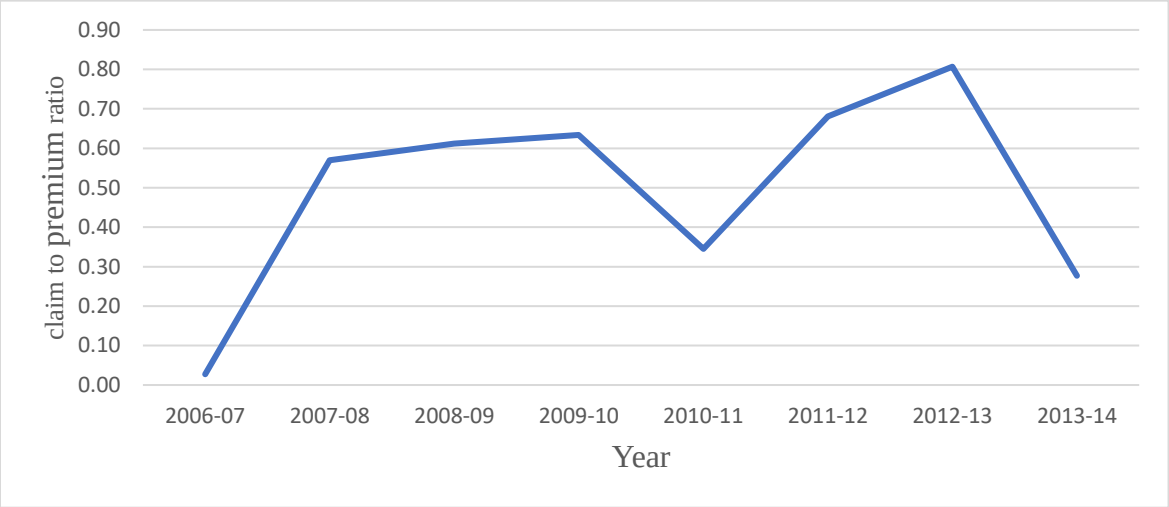

Fig. 6: Annual growth pattern of claim amount to premium amount ratio under livestock insurance in Karnataka during 2006-13

The perusal of Table 8 shows the amounts of premium collected and claims paid during the period of twelve years (2006-17) along with claim amount to premium amount collected ratios for BAMUL group cattle insurance. The overall claim amount to premium collected ratio was found to be 0.93 which means that the number of claims paid was 93 per cent of the premium collected indicating the financial viability of scheme as ratio tends to be less than one. The claim amount to premium ratio was 2074 indicating the non-viability in Gujarat (Mishra, 1994). Fig. 7 indicates the pattern of claim to premium ratio under BAMUL group cattle insurance during the period 2006-17 and there seems to be no reason for lacking its widespread success and implementation.

Table 8: Claim amount to premium collected ratio of BAMUL group cattle insurance during 2006-17

Name of Scheme	Total Premium collected (₹ in lakhs)	Total claim amount paid (₹ in lakhs)	Claim amount to Premium ratio
Group Cattle Insurance Scheme	7266.13 (100)	6511.56 (100)	0.89

Figures in the parentheses indicate percentage of the total premium collected and total claim amount paid

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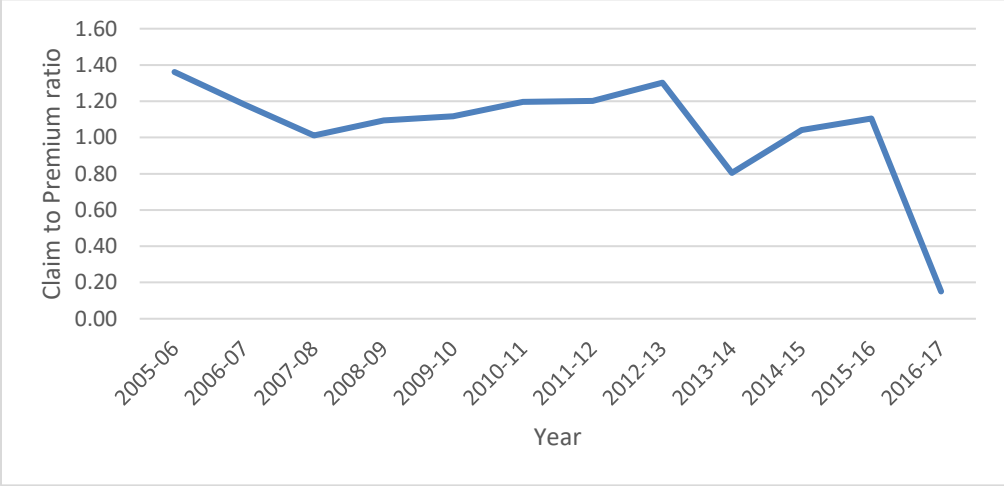

Fig. 7: Trend of claim to premium ratio of BAMUL group cattle insurance during 2006

Conclusion

The study concludes that livestock insurance scheme has functioned effectively by settling about 87 per cent of the insurance claims on an average and was, also, found financially viable in the short and long run in the state. The overall ratio of claims lodged to animal insured was found to be 5.23 per cent indicating that only 5.23 per cent of the claims lodged among the insured animals. The overall claim amount paid was only 93 per cent of the premium collected indicating long term financial viability of the scheme and there seems to be no reason for lacking its widespread success and implementation of National Livestock Insurance Scheme in Karnataka.

BAMUL group cattle insurance scheme has functioned effectively by settling about 92 per cent of the insurance claims on an average and was, also, found financially viable in the short and long run in the state. The overall ratio of claims lodged to animal insured was found to be 1.4 per cent indicating that only 1.4 per cent of the claims lodged among the insured animals. The overall claim amount paid was only 89 per cent of the premium collected indicating long term financial viability of the scheme and there seems to be no reason for lacking its widespread success and implementation. Government should take initiatives to provide better veterinary services so that incidence of animal death can be reduced thereby, reducing the claim to premium ratio which would help in making livestock insurance more financially viable in the study area.

References

1. Akter, S. Brouwer, R., and Choudhury, S. *et al*., (2008). Is there a commercially viable market for crop insurance in rural Bangladesh?, *Mitig Adapt Strateg Glob Change*, 14, 215–229.
2. Government of Karnataka. (2015). State and District Domestic Product of Karnataka. Directorate of Economics and Statistics, Bengaluru.
3. Government of India. (2014) 19th Livestock census-2012. Department of Animal Husbandry, Dairying and Fishery, Ministry of Agriculture, New Delhi.

 DOI 10.5455/ijlr.20191103100059

4. Hazell, B.R. (1992). The appropriate role of agricultural insurance in developing countries, *Journal of International development*, 4(6), 567-581.
5. Kohn, P. (1966). Crop and livestock insurance with special reference to developing countries. *Journal of World Agriculture Economics and Rural Sociology*, 8 (5), 4598.
6. Mishra, P. K. (1994) Crop insurance and crop credit: Impact of the comprehensive crop insurance scheme on cooperative credit in Gujarat, *Journal of International development*, 6(5), 529-567.
7. Mohanty, B.K. and Kesarwani, S. (2012). A perspective of crop insurance in India approaches & challenges, *Journal of Economics, Commerce and Research*, 2(2), 25-33.
8. Nair, R. (2010). Crop Insurance in India: Changes and Challenges, *Economic & Political Weekly*, 14 (6), 73-81.
9. Raju, S.S. and Chand, R. (2008). A Study on the Performance of National Agricultural Insurance Scheme and Suggestions to Make It More Effective, *Agricultural Economics Research Review*, 21: 11-19.
10. Sharma, A. (2010). Livestock insurance: Lessons from the Indian experience. Institute for Financial Management and Research. Centre for Insurance and Risk Management. http://www.ifmr.co.in/wpcontent/uploads/2011/03/Livestock_Insurance_Anupama.pd.
11. Singh, B. and Verma, M.A. (2013). Estimation of economic losses due to foot and mouth disease in India. *The Indian Journal of Animal Sciences*. 83 (9): 964-970.
12. Singh, S.P. Chandel, B.S. and Horo, A. (2018). Is that high claims plug widening of livestock insurance? - A case study of Haryana, *Indian Journal of Economics and Development*, 12(1a), 525-530.
13. Vyas, V. S. and Singh, S. (2006). Crop Insurance in India: Scope for Improvement, *Economic and Political weekly*, 41 (43), 4584-4594.

DOI 10.5455/ijlr.20191103100059