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## **Model of Cremation Aid Association System for Bank for Agriculture and Agricultural Cooperatives (BAAC) clients, Thailand**

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**Kaekoon, N.<sup>1\*</sup>, Thungwa, S.<sup>2</sup>, Jaroenjiratraku, S.<sup>3</sup>, Wettayaprasit, P.<sup>4</sup> and Kiatpathomchai, S.<sup>5</sup>**

<sup>1</sup>Tropical Agricultural Resource Management Programme, Faculty of Natural Resources, Prince of Songkla University, Hat Yai Campus, 90110 Thailand; <sup>2,4</sup>Faculty of Natural Resources, Prince of Songkla University, Hat Yai Campus, 90110, Thailand; <sup>3,5</sup>Faculty of Economics, Prince of Songkla University, Hat Yai Campus, 90110, Thailand.

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**Abstract** Bank for Agriculture and Agricultural Cooperatives (BAAC) has supported for Cremation Aid Association (CAA) System for BAAC clients since 1980. However, several of such associations are facing problems of financial loss. This study is trying to create the model of cremation aid association system for BAAC clients to solve problems of financial loss of those associations. The model proposed is an attempt to increase more welfares for BAAC clients and their families and build stability and sustainability for the associations as well. In addition, BAAC will receive benefits from deposits, expansion of client-base, and more earnings from fees. Clients and their families will have better life quality that will contribute to the stability of the whole society.

**Keywords:** conceptual model, cremation aid association, Bank for Agriculture and Agricultural Cooperatives (BAAC), social welfare

### **Introduction**

Cremation Aid Association (CAA) has been established officially in Thailand since 1974 with the objectives of providing funeral expenses and supporting families of died members (Department of Public Welfare, 2002). In 2012, there were 3,452 Cremation Aid Associations of several organizations in Thailand (Office of Women's Affairs and Family Development, 2012). Also, 546 associations of CAA of BAAC were included in those of 3,452 which were accounted for 15.82% of all associations since the establishment of BAAC in 1980.

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\* **Coressponding author:** Kaekoon, N.; **Email:** [Nuttasitkaekoon@gmail.com](mailto:Nuttasitkaekoon@gmail.com)

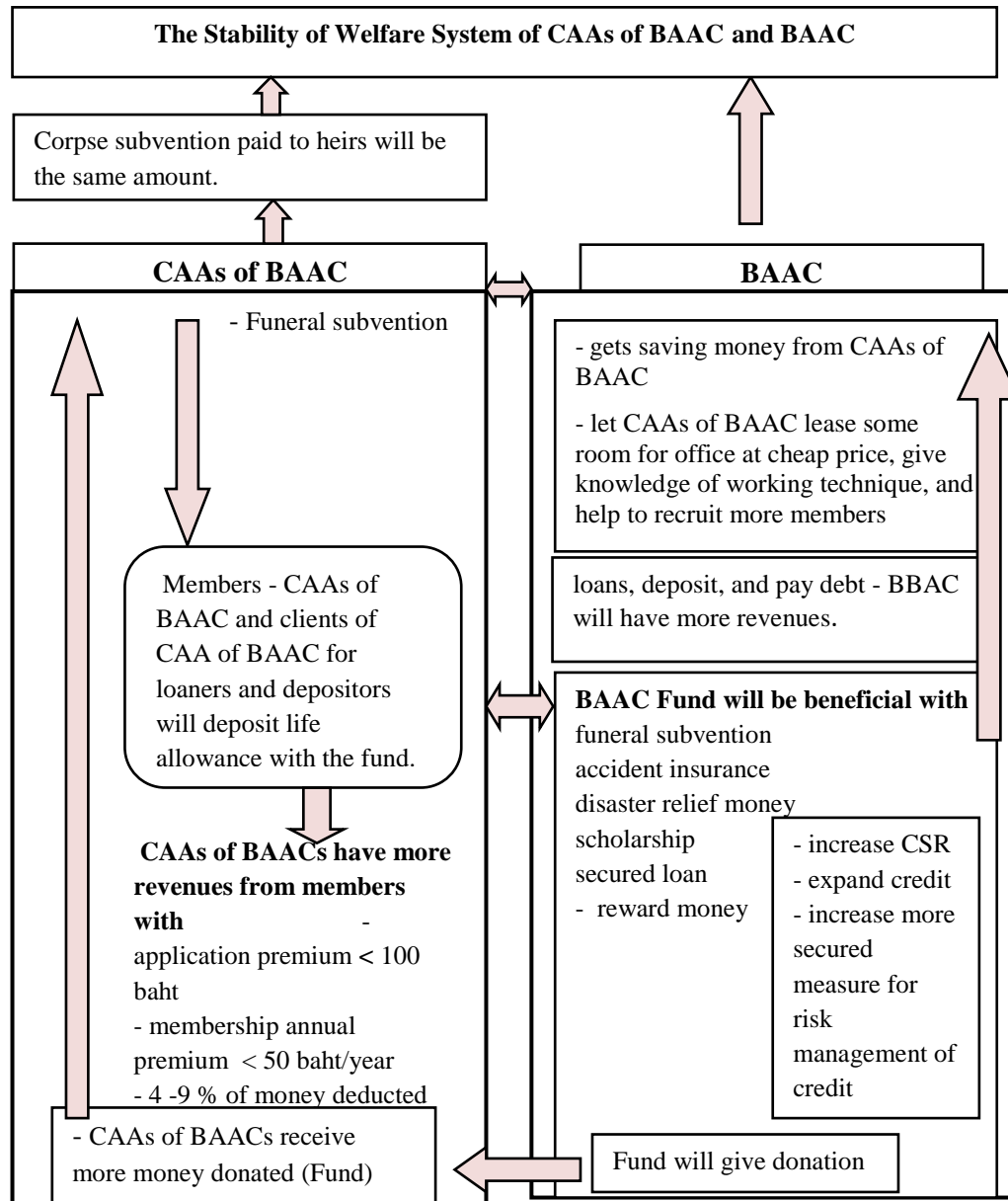
The study of performance outcomes of CAAs of BAAC during 2008 – 2013 found that 43 CAAs had problems with higher expenses than revenues. Such problems caused damage to CAAs that brought to losing of creditability among members and affected incomes, assets, stability, and sustainability. The real reason is that the present format of CAA has some limitation by law that CAA will not be allowed to seek benefits to compensate for the increasing expenses. Also, the financial management for major revenues of CAAs like that of life insurance system gives not much earnings. All capitals of CAAs must be invested in terms of saving money with only one welfare to pay for corpse benefits for members when they died. CAAs tend to have more expenses with many causes. Many CAAs also lack of efficient management that cause higher expenses than revenues. Young male and female members of CAAs also quit from CAAs because of increasing of advanced corpse premium every year. A large number of members cannot afford to pay for such premium. Heirs of died members will not receive the right amount of welfare for corpse benefits as it should be as before.

Nuttasit *et al.*, (2014) described that solutions should be made at CAAs. CAAs should increase corpse premium to attract attention of recent members and new members for the reason of increasing more revenues. However, there is regulation by law that CAAs with more than 10,000 members can collect annual premium only 20 baht/corpse. Collecting higher annual premium to draw attention for more members in the future is impossible because of limitation regulated by law. Then such limitation of earning more revenues should be rectified by proposing the model for this welfare system. The model proposed will enhance the increasing of more corpse annual premiums and other various welfares for both alive and died members. Also, this model will draw more attention from members and families and will strengthen CAAs under the relevant laws. BAAC, members of CAAs, and CAAs will be the three major parts of this model.

This model will have the following conditions. (1) Applying for membership under this model, any applicants must be recent members of CAAs. This condition expects more supports and attempts to draw more attention for the increasing of new applicants to let CAAs earn more revenues. (2) The funds will donate some money to CAAs and will provide some welfares paid for members such as accident insurance, scholarships for children, disaster relief, secured loan, cash sweepstakes, etc.

From the aforementioned discussion above, several things are needed to be figured out. Those are (1) the proper rate of corpse premium paid by members to CAAs, (2) the proper rate of funeral subvention or corpse benefits for heirs of died members, and (3) proper welfares such as accident insurance

for both alive and died members, scholarships for children, disaster relief, cash sweepstakes, secured loan to loan money for business, etc. In order to analyze for the financial feasibility of these funds, authors has designed and proposed a model to solve the problems of benefit loss of CAAs as Figure 1.



**Figure 1.** The model that leads to the stability of welfare system of CAAs of BAAC proposed by the authors.

## Objectives

1. To find out proper rate of corpse subvention that members will due for the fund, proper rate of corpse subvention that heirs will receive when members died, and proper welfares.
2. To analyze the financial feasibility of this fund for the model designed in order to solve profit loss of CAAs.

## Materials and methods

1. Delimitation: This study covered 546 CAAs situated in Thailand. Secondary data received from the Institute for Population and Social Research at Mahidol University (Institute for Population and Social Research, Mahidol University, 2010) were used to estimate the changing of future population while entering each period of passing-away rate. Mathematics of Life Insurance (Amphol Thamcharoen, 2010) and data received from Thai Mortality Table 2009 Year 2011 of the Office of Insurance Commission (OIC) were also used for the analysis of financial feasibility for the model designed of this fund.

2. Creating the model of welfare system that will lead to the stability of CAAs by using the calculation of formula for life insurance annuity net premium according to the principle of mathematics of life insurance (Amphol Thamcharoen, 2010). The analysis will be as following.

2.1) Building Actuarial Life Table Year 2011 by specifying the interest rate at 2.5% per year by using data received from Thai Actuarial Life Table Year 2008 of OIC. Normally, Actuarial Life Table will be separated into 2 main tables by gender classification. Both tables will compose of 6 columns for ages, number of alive people ( $l_x$ ), present value of living allowance when age at x years old ( $D_x$ ), present value of total living allowance for a range of age x to w - 1 years old ( $N_x$ ), present value of money paid for the died members at a range of age x to x + 1 years old ( $C_x$ ), and present value of total money paid for thedied members at a range of age x to w - 1 years old ( $M_x$ ). Formula for this calculation is as following.

(1) present value of living allowance when age at x years old

$$D_x = V^x l_x \dots \dots \dots (1)$$

(2) present value of total living allowance for a range of age x to w - 1 years old

$$N_x = D_x + D_{x+1} \dots + D_{w-1} \dots \dots \dots (2)$$

(3) present value of money paid for the died members at a range of age x to x + 1 years old

$$C_x = V^{x+1} \dots d_x \dots \dots \dots (3)$$

(4) present value of total money paid for the died members at a range of age x to w - 1 years old

$$M_x = C_x + C_{x+1} \dots + C_{w-1} \dots \dots \dots (4)$$

Let

$$V^x = \text{present value of money in year of } x = \frac{1}{(1+i)^x}$$

$l_x$  = number of alive people at age x years old

x = age when money is paid

i = rate of interest per installment

$d_x$  = number of died people at a range of age x to x + 1 years old

W = ages without alive people when male W = 100 and female W = 100

(This means that for male  $l_{100} = 0$  and for female  $l_{100} = 0$ .)

From the equations above, finding out values of variables  $D_x$ ,  $N_x$ ,  $C_x$ , and  $M_x$  can be calculated from the Actuarial Life Table Year 2011.

2.2) Calculating method by specifying period of guarantee will be used for the analysis of rate of corpse subvention. This method is the same as collecting advanced corpse subvention of CAAs. For paying the insurance annuity premium, let  $A_x$  be life insurance annuity net premium. Then the calculation will be used by assigning values from the Actuarial Life Table Year 2011 of item (2.1) by the equation as following.

$$A_x = \frac{C_x}{D_x} \dots \dots \dots (1)$$

If let S be corpse subvention per member that will be paid as an amount of sum insured (which is specified from all average rates of subvention that heirs will receive from died members of CAAs during the accounting years of 2008 - 2012) and R be rate of insurance annuity net premium, the equation will be  $R = SA_x$ . Rates received by the equation will be different and varied according to member ages. This will be difficult to collect such of proper rates of insurance annuity net premium because of a large number of members. Normally, for the type of fund or project that gives compensated benefits equally, understandable and manageable methods of Uniform Rate or Flat Rate

will be used for such convenient collection (Arak Prommanee and Suchada Cheecharoen, 1999). Such proper rates of R can be calculated by 2 methods as following.

#### Method 1

(1) Use data related to age structure of CAA members (data of BAAC clients of both loaner members and depositor members collected at dated December 31, 2012). Ages were ranged from 20 years old - 60 years old. Let mean value of each age range be X for the equation  $R = SA_x$  to calculate the value of rate of insurance annuity net premium of each age range.

(2) Let R (rate of insurance annuity net premium) from item (1) time by number of members of each age range. Then the answer will be the amount of advanced corpse premium that each member of each age range will pay to the funds.

(3) Bring the total number of amount of advanced corpse premiums paid by members of each age range from item (2) divided by the total number of members of CAAs of item (1). Then the answer will be the rate of advanced corpse annuity premium called the uniform rate or the flat rate.

#### Method 2

(1) Use data related to age structure of CAA members (data of BAAC clients of both loaner members and depositor members collected at dated December 31, 2012). Ages were ranged from 20 years old - 60 years old and more than 60 years old. Let mean value of each age range be represented value to find age proportion to the total number of members of each age range. Add the answers received from calculation of age ranges to find an average value of age proportion of total members. Then let answer of average age of total members be X in the equation  $R = SA_x$  to calculate and find the rate of insurance annuity net premium of total members. The value received will be the rate of advanced corpse annuity premium called the uniform rate or the flat rate.

Therefore, take adjusted digit to be the hundreds values of advanced corpse annuity premiums received from the calculation of Method 1 and Method 2 for comparing the values of advanced corpse annuity premiums. Either of Method 1 or Method 2 that gives the higher value of advanced corpse annuity premium will be used to reduce the risk of benefits loss in the future. The advanced corpse annuity premium received will be the proper rate that each member will due to the fund per year.

2.3) Analyzing income, expenses, and welfare cost for this model can be calculated by the equation as following.

(1) Analyze income and expenses will be calculated by the equation as following.

Income (I) = Rate of advanced corpse annuity premium deposited (R) x Total number of members (M)

Total expenses (TE) = {(M x D) x S} + G + E

Then  $P = I - TE$

For the equation, let

I = Income

TE = Total Expenses

P = Profit

R = Rate of advanced corpse annuity premium deposited

M = Total members participated

S = Corpse subvention per member

D = Death rate of Thai population during 2015 – 2025

G = Gift or cash donation

E = Other expenses such as expenses for public relations and documents which will not exceed 1% of income.

(2) Calculating of net profit (NP) by taking profit (P) from item (1) to separate into 2 portions. Portion 1 is  $\geq 70\%$  of profit plus accumulated fund (if any). NP will be provided as loan for members with the rate of MRR interest (7% per year recently). This means that portion 1 will be welfare for secured loan. Portion 2 is  $< 30\%$  of profit will be reserved for managing of primary welfare system. This portion will not exceed 30% of NP by using the 51<sup>st</sup> Regulation of BAAC related to depositing of life allowance of farmers and family of farmers as the following equation.

$$NP = P + (P_1 \times MRR) + \{NP_1 - (A + C + ND + ES)\}$$

Let

NP = Net Profit

$P_1$  =  $\geq 70\%$  of Profit (P) + accumulated fund

MRR = Minimum Retail Rate

$NP_1$  =  $\leq 30\%$  of Net Profit (NP)

A = Accident Insurance by using the same rate of annuity premium per member as BAAC uses to handle accident insurance for its clients times by the total members of CAAs.

C = Money allocated for cash sweepstakes once a year by using the same cash sweepstakes allocation regulation as BAAC lotto.

ND = Money allocated to members for the occurrence of natural disaster within 1 year by using the 55<sup>th</sup> Regulation of BAAC related to funding to relieve problems of members encountering natural disaster.

ES = Money allocated for Educational Scholarship within 1 year by using the 54<sup>th</sup> Regulation of BAAC related to funding for society and environment.

#### 2.4) Analyzing the feasibility for the investment of this model at fund level

To let this fund have stability, then there will be 3 types of scenario analysis for members who are going to participate this fund. Scenario (1) is a situation of the worst case when there will be members participating in this fund for 25%. Scenario (2) is a normal case when there will be members participating in this fund for 50%. Scenario (3) is a situation of the best case when there will be members participating in this fund for 75%. These will be used for financial analysis (Bank for Agriculture and Agricultural Cooperatives, 2014) by calculating from the following equation.

$$P = (R \times M) - TE$$

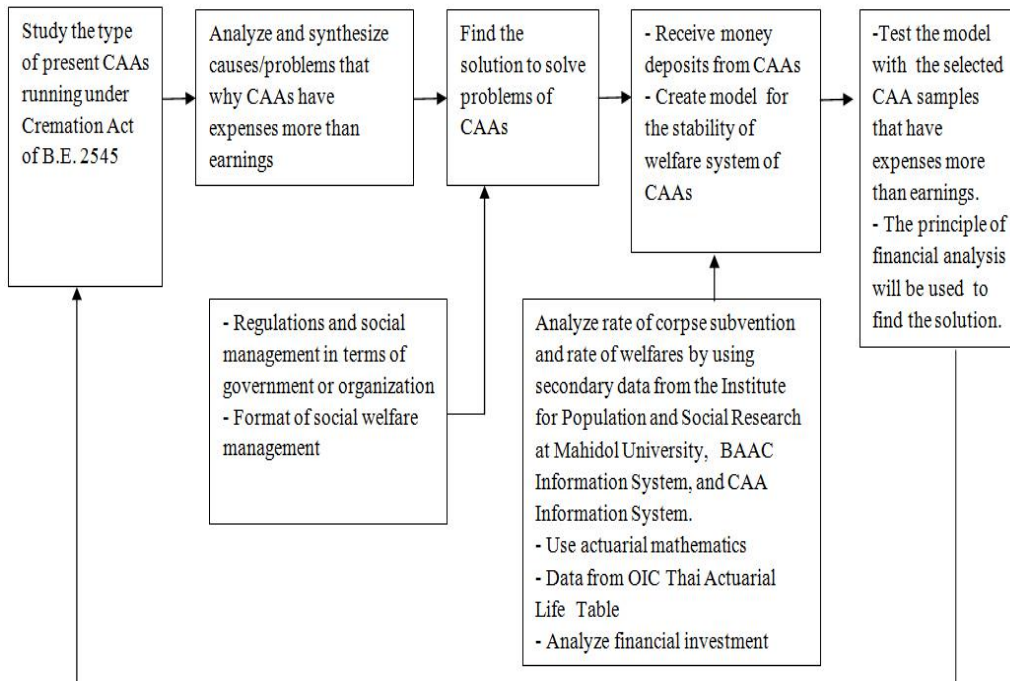
When M = Number of members participating in this fund of any scenarios (25% of members, 50% of members, and 75% of members)

#### 2.5) Analyzing the feasibility of using this model at CAA level

The analysis for the feasibility of using this model to solve the problem of CAAs is carried on by selecting CAAs from 4 regions by the technique of Purposive Sampling and Convenience. One CAA with gaining profit and another with losing profit were selected from each region for the total selection of 8 CAAs. Scenarios were formed as if the fund gave donation some money to each CAA upon the number of members of each CAA. Analyzing for the cash-flow scenarios of members was classified into 3 types of scenario. Scenario (1) is a situation of the worst case when there will be members participating in this fund for 25%. Scenario (2) is a normal case when there will be members participating in this fund for 50%. Scenario (3) is a situation of the best case when there will be members participating in this fund for 75% (Pornphrom Phromhitorn, 2008). If this model will be able to solve the



problem of CAAs that have more expenses than profits to have profits and those that have profits will get more benefits, then this means that this model created will be able to build stability of welfare system for CAA members of BAAC clients. The conceptual framework of this study can be depicted as figure 2.



**Figure 2.** The conceptual framework for the analysis and synthesis of the model created for the stability of welfare system of CAAs of BAAC clients

## Results

The results for the analysis of rate of corpse subvention, amount of money heir should receive when each member died, and proper welfare to specify conditions according the 51<sup>st</sup>, 54<sup>th</sup>, and 55<sup>th</sup> Regulations were the followings.

### *Characteristics of model for the stability of welfare system of CAAs and guidelines to apply for membership of this model*

#### **Depositing of life allowance**

Analyzing the rate of depositing of life allowance needed to know the exact amount of corpse subvention per member (S) that would be money paid for insurance benefit. Calculation for the rate of corpse subvention per member is decided by the rate of subvention that heir will receive when each CAA member died during the accounting years 2008 - 2012 (Table 1).

**Table 1.** Calculation for the average rate of corpse subvention per member

<b>Conditions</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>
Member died (per case)	88,200	89,349	94,552	98,575	101,257
Subvention paid to heir (Million baht)	9,158	9,037	9,810	10,535	16,533
Average corpse subvention per member (S) (baht)	103,832	101,143	103,752	106,873	163,278

Average corpse subvention per member calculated during 2008 -2011 was about 100,000 baht, but was about 160,000 baht in 2012. The reason was that there were some CAAs that lost benefits in 2011. Those with lost benefits were assembled in 2012 along with the measure of increasing subvention to urge members to keep on their membership status. This was an attempt to draw attention for new applicants to apply for the membership of CAAs as well. Then 100,000 baht for corpse subvention per member (S) was used for this proposition with increasing the amount of welfare for 50,000 baht when any member died with the cause of accident.

1) Analyzing the rates of corpse subvention, authors calculated such rates for each of age range by 2 methods as following.

Method 1: Using rates of subvention shown in Table 2, authors took R value (rate of annuity net premium) timed by the number of members of each

of age range. Each answer would be equal to an amount of corpse subvention that members of each age range would due to the fund. The total of corpse subvention members paid to the fund for 4,770,341,853.45 baht divided by the total number of 4,864,408 CAA members would give an answer for the rate of advanced corpse annuity premium deposited. Calculating by this Method 1 would give the rate of advanced corpse annuity premium for an average at 980 baht.

**Table 2.** Calculation for the rate of corpse annuity premium for each of age range

Average ages of members	Amount of members (case)	$C_x$	$D_x$	S (baht)	$R = S^x(C_x/D_x)$ (baht)	Amount of money = R - Amount of members
23	43,531	1,601.68	550,472.70	100,000	290.96	12,665,973.86
28	105,865	1,729.37	478,583.71	100,000	361.35	38,254,537.26
33	308,060	1,698.68	414,879.09	100,000	409.44	126,132,290.56
38	618,423	1,779.68	358,416.21	100,000	496.54	307,072,493.87
43	928,546	1,930.29	308,096.08	100,000	626.52	581,753,656.31
48	1,023,326	2,247.35	262,544.93	100,000	855.99	875,955,122.97
53	982,480	2,750.71	220,428.26	100,000	1,247.90	1,226,031,930.20
58	854,175	3,386.16	180,493.82	100,000	1,876.05	1,602,475,848.43
<b>Total</b>	<b>4,864,408</b>			<b>100,000</b>	<b>980.66</b>	<b>4,770,341,853.45</b>

Method 2: Finding average proportion for ages of members and let the answer of average age represent by X in the equation  $A_x = \frac{C_x}{D_x}$  to calculate the rate of annuity net premium of all members by the equation  $R = SA_x$ . The answer received was an average rate of corpse annuity premium equal to 1,154 baht.

Both answers of rate of corpse annuity premium from Method 1 and Method 2 were adjusted digit to be the hundreds values which adjusted values were 1,000 baht and 1,200 baht, respectively. Both values of corpse annuity premiums were compared. Then the higher value of advanced corpse annuity premium of either Method 1 or Method 2 would be used as an answer to reduce the risk of benefits loss in the future. The answer of corpse annuity premium received will be the proper rate that each member will due to the fund per year that is equal to 1,200 baht with the corpse subvention for 100,000 baht that hire will receive after the individual member died.

### **Target groups**

From the analysis of figures in Table 2, the results received could be used to specify the target groups. Applicants who would like to apply for the memberships should be farmers or members of farming family with qualifications speculated by regulations of CAAs. Applicants should have ages more than 20 years old but not more than 60 years old. In the first year, the target group of this working would cover 4.86 million members of CAAs with ages not more than 60 years (there would be 6.54 million members in 2013). For the next year, this study projected that there would have applicants applied for 25% of all CAA members with ages not more than 60 years old for 1.22 million applicants. Then this study also projected that applicants would increase 10 % per year.

### **Depositing time**

One who intends to apply for membership has to continuously deposit life allowance throughout one's life. The reason was from the analysis indicated that the dead ages in 2005 was 70 years old which was different from the new applicants at age 20 years old. These could be described that there would be depositing life allowance for 50 years multiplied by rate of corpse annuity premium for 1,200 baht and also multiplied by rate of 24 - month fixed deposit interest of BAAC for 2.40 % that was equal to 1,440 baht. Then the fund will be able to take the interest to pay for the rate of corpse annuity premium. If members would like to deposit life allowance only once, members have to deposit an amount of 60,000 baht. Members have to continuously deposit life allowance throughout ones' lives that members will get more benefits while comparing with receiving 100,000 baht of corpse subvention when some member died (Table . 3).

**Table 3.** Age levels of death in Thailand for years 2005 - 2025

<b>2005</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>
67.9 years old	69.1 years old	70.2 years old	71.1 years old	71.9 years old

### **Privileges and welfares received for CAA members**

1) If any member died for any course of accident, heir will receive more benefits for 50,000 baht by using the rate of annuity premium for 25 baht per case. This will be the same rate as that of BAAC which BAAC will do group accident insurance for its clients with the insurance partner of contract company multiplied by the total number of CAA members.

2) To extend more opportunity for member without secured loan, any member will be able to use his life allowance as the secured loan to loan from BAAC for an amount not more than 80,000 baht. This loan will let

member have better living quality with more farming lands and creating careers to earn more incomes for oneself and family.

3) There will be providing scholarships every year. From the analysis of future cash flow situation of members participated with this fund model (10 years ahead) by using annuity rate for 2 baht per case multiplied by the total number of all CAAs.

4) There will be supporting for some disaster cases such as debt payments delaying, debt moratorium, interest rate decreasing, and aid. These will also further connect to crop insurance of members. From the analysis of future cash flow situation of members participated with this fund model (10 years ahead) by using annuity rate for 2 baht per case multiplied by the total number of all CAA members.

5) There will be cash sweepstakes every year to help solving for debt problems of members by without depositing annuity life allowance with this project throughout ones' lives. Members will still have all welfares provided by using the rate of annuity premium for 10 baht multiplied by the total number of all CAA members. Then amount of money paid for the debt will be speculated by the average number of all debts owed by minor farmer members of CAAs.

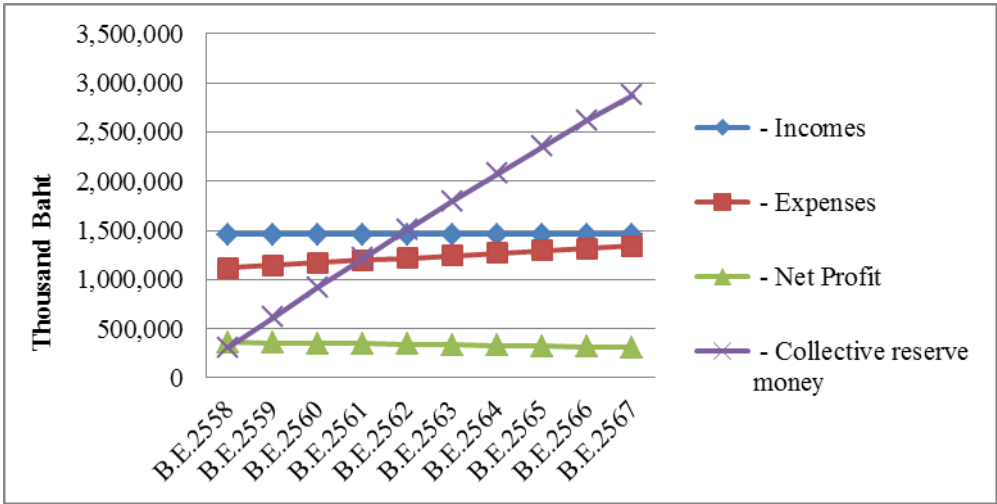
#### **Benefits that CAAs and BAACs will receive from the fund**

The fund will donate to CAAs for 10 baht per case per year (or with proper rate). The donation will be used for managing expenses of documents prepared when some members died, following the depositing of corpse allowance of members, doing public relations, and receiving applicants applied for membership to the fund. Members of the fund are the same people as members of CAAs. These will let CAAs have more earnings and will lead to the participation of stakeholders of BAACs for further building strengthen and stability for CAAs. BAACs will have more benefits from the expansion of client-base, deposits, and more earnings from fees. Such of those benefits will also contribute to building loyalty of clients and managing credit risk for BAACs for the stability and sustainability of BAACs.

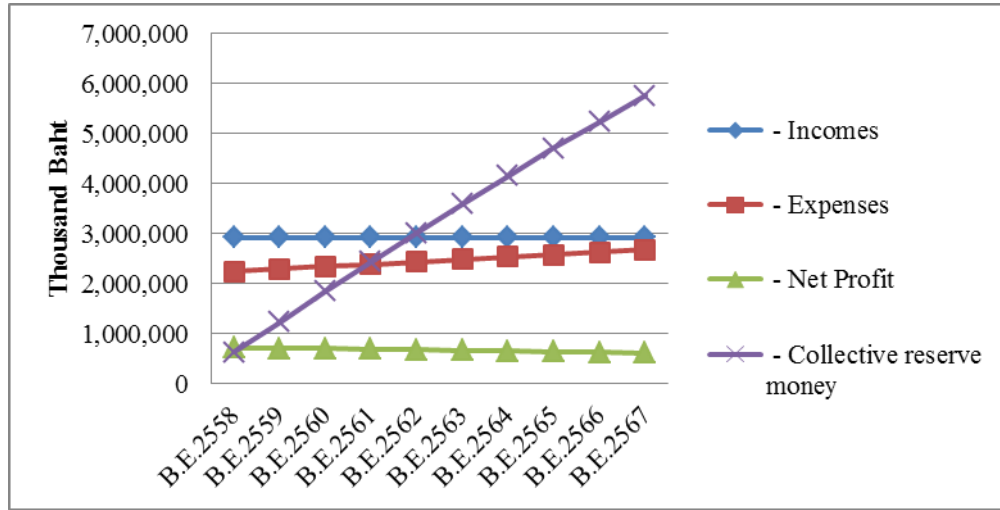
#### ***Analysis of the investment feasibility***

The results for the analysis of the investment feasibility of this fund model by specifying the analysis of cash flow situation of members participated with the fund model in the next 10 years could be classified into 3 scenarios. Scenario (1) was a situation of the worst case when there will be members participating in this fund for 25%. Scenario (2) was a normal case when there will be members participating in this fund for 50%. Scenario (3) was a situation of the best case when there would be members participating in this fund for

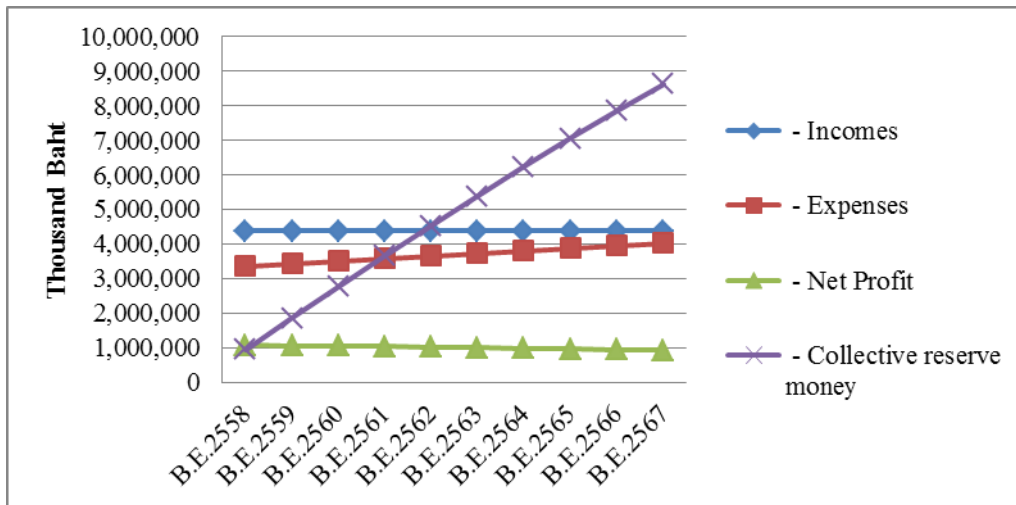
75% of all CAA members with ages not more than 60 years old (4.86 million members). Members calculated from Scenario 1 to Scenario 3 were 1.22 million members, 2.43 million members, and 3.65 million members, respectively. The results also indicated that Scenario 1 to Scenario 3 would have average net benefits per year for 335 million baht, 670 baht, and 1,005 million baht, respectively. According to the scenarios, collective reserve money would also increase consecutively from year 1 to year 10 for 9 times of yearly collective reserve money for 2,878 million baht, 5,756 million baht, and 8,634 baht, respectively. The analysis of all 3 scenarios gave the same directions of answers. This can be concluded that this fund model will be able to solve the problems of lost benefit CAAs. The fund will have stability to provide welfares for farmers and family to have good living quality and will contribute for the stability and sustainability of BAACs as well. Details are shown by Figure 3 to Figure 5.



**Figure 3.** Analysis of cash flow of model that leads to the stability of welfare system of CAA members at 25%



**Figure 4.** Analysis of cash flow of model that leads to the stability of welfare system of CAA members at 50%



**Figure 5.** Analysis of cash flow of model that leads to the stability of welfare system of CAA members at 75%

### *Analysis for the feasibility of employing this model at CAA level*

The results for the feasibility of donating money to CAAs for 10 baht per a case per year of the model by speculating the analysis of cash flow situation of participating members with this fund model in the next 10 years could be classified into 3 scenarios as item 4.2. The analysis of cash flow for the next 10 years could be concluded as following.

1. Khlongthom CAA for loaners had 11,074 members with earnings of 621,231 baht, expenses of 640,714 baht, and lost profits of 19,483 baht. If members apply for the membership at 25% of all total members of CAA, CAA will receive donation 27,685 baht, and problem of lost profits will be solved in 1 year with having profits at 8,202 baht.

2. Phu Khiao CAA 1 for loaners had 15,930 members with earnings of 1,672,949 baht, expenses of 1,687,532 baht, and lost profits of 14,583 baht. If members apply for the membership at 25% of all total members of CAA, CAA will receive donation 39,825 baht, and problem of lost profits will be solved in 1 year with having profits at 25,242 baht.

3. Lom Sak CAA for depositors and loaners had 14,411 members with earnings of 1,429,298 baht, expenses of 1,571,222 baht, and lost profits of 141,924 baht. If members apply for the membership at 50% of all total members of CAA, CAA will receive donation 72,055 baht and problem of lost profits will be solved in 2 years with having profits at 2,186 baht.

4 Ayutthaya CAA 2 for depositors had 3,841 members with earnings of 1,063,869 baht, expenses of 1,188,734 baht, and lost profits of 124,865 baht. If members apply for the membership at 75% of all total members of CAA, CAA will receive donation 28,808 baht, and problem of lost profits will be solved in 5 years with having profits at 19,173 baht.

5. Nam Nao CAA for depositors, Chaiyaphum CAA for depositors and loaners, Ayutthaya CAA 2 for loaners, and Na Thawi CAA for depositors and loaners are CAAs that already have profits which contribute to having more profits and stability.

The results of analysis for the feasibility of solving problems of lost profit CAAs indicated that such problems would be solved within 1 year or 2 years. However, the solution will rely on the number of members applied for the CAA membership as details in Table 4.

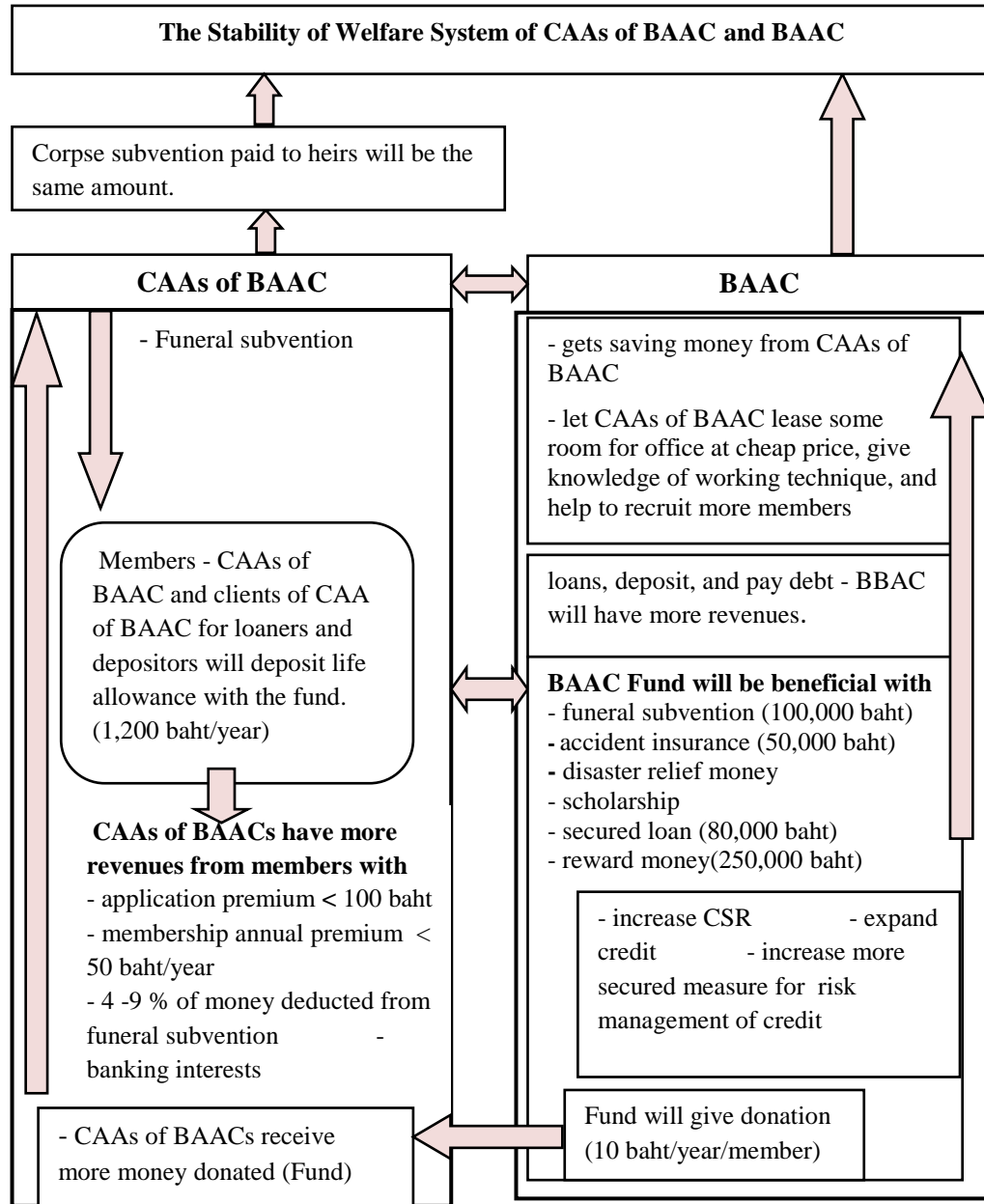


**Table 4.** Analysis of profits and loss of four CAAs located in Central, Southern, Northern and North East Region of Thailand.

Unit:1,000 baht

CAAs	Revenues	Expenses	Profit/Loss	10 baht / donation	Profit/Loss									
					B.E. 2558	B.E. 2559	B.E. 2560	B.E. 2561	B.E. 2562	B.E. 2563	B.E. 2564	B.E. 2565	B.E. 2566	B.E. 2567
<b>1. Lom Sak CAA for depositors and loaners with 14411 members (Northern)</b>														
25%	1,429.3	1,571.22	-141.92	36.03	-105.90	-69.87	-33.84	2.19	38.21	74.24	110.27	146.3	182.32	218.35
50%	1,429.3	1,571.22	-141.92	72.06	-69.87	2.19	74.24	146.3	218.35	290.41	362.46	434.52	506.57	578.63
75%	1,429.3	1,571.22	-141.92	108.08	-33.84	74.24	182.32	290.41	398.49	506.57	614.65	722.74	830.82	938.9
<b>2. Phu Khiao CAA 1 for loaners with 15,930 members (North East)</b>														
25%	1,672.95	1,687.53	-14.58	39.83	25.24	65.07	104.89	144.72	184.54	224.37	264.19	304.02	343.84	383.67
50%	1,672.95	1,687.53	-14.58	79.65	65.07	144.72	224.37	304.02	383.67	463.32	542.97	622.62	702.27	781.92
75%	1,672.95	1,687.53	-14.58	119.48	104.90	224.37	343.84	463.32	582.8	702.27	821.74	941.22	1,060.69	1,180.17
<b>3. Ayutthaya CAA 2 for depositors with 3,841 members (Central)</b>														
25%	1,063.87	1,188.73	-124.87	9.60	-115.26	-105.67	-96.06	-86.46	-76.85	-67.25	-57.65	-48.05	-38.44	-28.84
50%	1,063.87	1,188.73	-124.87	19.21	-105.66	-86.46	-67.25	-48.05	-28.84	-9.64	9.57	28.78	47.98	67.19
75%	1,063.87	1,188.73	-124.87	28.81	-96.06	-67.25	-38.44	-9.64	19.17	47.98	76.79	105.6	134.4	163.21
<b>4. Khlongthom CAA for loaners had 11,074 members (Southern)</b>														
25%	621.23	640.71	-19.48	27.69	8.20	35.89	63.57	91.26	118.94	146.63	174.31	202	229.68	257.37
50%	621.23	640.71	-19.48	55.37	35.89	91.26	146.63	202	257.37	312.74	368.11	423.48	478.85	534.22
75%	621.23	640.71	-19.48	83.06	63.57	146.63	229.68	312.74	395.79	478.85	561.9	644.96	728.01	811.07

## Discussion



**Figure 6.** The model that leads to the stability of welfare system of CAAs of BAAC proposed by the authors.

The results of analysis concluded that the model shown in figure 6 could be implemented into practice because issues related were conferred to conditions and regulations of the 51<sup>st</sup> Regulation of BAAC related to depositing of life allowance of farmers and family of farmers. BAAC may establish "Farmer Life Allowance Fund (FLAF)" and let profits received from money deposited for life allowance allocate and put into to the FLAF for not more than 30% of incomes of each year (if available). The allocated money will be donation used to relieve problems of farmers and families or those encountering natural disaster or public hazard and also for those having less opportunity in the society. Working with this model will follow regulations and methods approved by the council and the 54<sup>th</sup> Regulation of BAAC related to funding for society and environment. These aim to provide and support the management of saving system and welfare system for the stability of living of farmers. These will also an attempt to provide and support farming institutes , community, and stakeholders to develop living quality of members that will lead to the sustainability of CAAs. The model created has objectives conferred to aforementioned regulations. From the analysis of this model at CAA level by the hypothesis that CAAs have stable expenses for 10 years with donations from the FLAF, the study indicates that this model will be employed to solve the problems of lost profits for those cases of scenarios as following. 1) The worst cases occurred with Phu Khiao CAA 1 for loaners and Khlongthom CAA for loaners will be solved within 1 year. 2) The problems of the normal case occurred with Lom Sak CAA for depositors and loaners will be solved within 2 years. 3) The problems of the best case occurred with Ayutthaya CAA 2 for depositors will be solved within 5 years. However, solving problems of lost profits for the short term or the long term of each CAA will depend on the amount of lost profits as well.

If the model proposed will be able to attract more attention of new applicants to apply for the membership to participate the fund (FLAF), CAAs will have more new members and more incomes that will contribute to the solution for lost profits within a short and rapid term. These will also lead to the reduction of amount due for the corpse annuity premium. Also, heir will still receive the same amount of corpse subvention when any member died. Heir will be able to deposit the difference portion as life allowance with the fund model to receive more welfares. BAAC will be able to concretely manage risks. For example, when any loaner member of CAA died, heir will receive an average of corpse subvention for 100,000 baht and receive more life allowance subvention for 100,000 baht. If member died in accident, heir will receive more subvention for 50,000 baht. In brief, when client member died, heir will receive for the total about 200,000 - 250,000 baht. These when comparing with the

bank, client will receive in total amount not more than 80,000 baht plus interest. This means that BAAC will be sure to be paid for the debt of an amount of 100,000 - 150,000 baht/case/year by loaner member. According to the information of BAAC clients, the study forecasts that there will be 4,864,000 clients with ages not more than 60 years at the rate of death for 0.9% for an average of 43,776 cases applying for the CAA membership (BAAC is expected to be paid for the debt for an average amount of 4,377 million baht per year from FLAF. From the information of CAAs for years 2008 - 2013, BAAC had been paid for the debt of 1,645 million baht by 6,569,663 loaner members.). Watcharin Kerdsawat (2002) studied the funeral management behaviors of people and found that most people used the services providing by the funeral business. The nearby temple would be often selected to arrange the funeral ceremony. The expenses of funeral arrangement would be high at 60,000 baht which quite relied much on the family incomes. Heir of died member received an average amount of corpse subvention for 100,000 baht and was able to pay for the funeral expenses and debt of the died member. In the case of using life allowance deposited as a secured loan, FLAF would help to manage the credit risk to protect damage that might occur to members in the future as well. FLAF would be able take the money waiting to pay for the corpse subvention to invest in the stock market of the Bank of Thailand (Thailand Securities Institute, 2012). Such of investment types might be bonds and debt securities that would give return for an average of 1.76%/year (Bank of Thailand, 2015). Then FLAF would have more stability.

Chaipat Siriratanakool (1998) found that Muangphon CAA in Khonkaen province had the best solution for problems by changing how to pay for the advanced corpse fee by deducting the fee from the saving accounts of members. However, Muangphon CAA had been found with the consecutively decreasing of profits during 2008 - 2012. For example, Muangphon CAA had profits for 330,230 baht in 2008, but 138,420 baht in 2008 (BAAC, 2013). To authors' knowledge at present, no related studies of such solution at Muangphon CAA have been found yet. Upon creating welfares for enhancing the living quality of farmers and consumers and developing the social institutes of local communities, private or government sectors always considered on the matters of costs, profits, worthiness, and limitations. Then the problems of people had never been solved, exactly. Peerasit Kamnuasilpa and others (2006) mentioned the whole image of pension system in this country had no system of government economic security to support farmers and family. Also on 27th May 2015, Anti-Money Laundering Office (AMLO) had received 6,000 complaint letters of government teachers from the whole country and was requested to examine the fraud on the Project of Cremation Aid for Teachers

and Educational Personnel which was demolished in equivalence to 5,000 million baht (Post Today, 2015). This model has already been analyzed for costs, profits, worthiness, and limitations for solving the problems of farmers and family. The model will have the sustainable working process by keeping the financial status of former members, building more incomes from new applicants applied for membership, and receiving donation to compensate with the increasing expenses. The model will give benefits when members deposit life allowance with FLAF or this is the proper rate of corpse fee deposited to the FLA. Heir will receive corpse subvention when any member died (FLAF will pay corpse subvention to the heir of the died member). CAAs will also provide welfares for members such as accident insurance, scholarships for children, disaster relief, secured loan, cash sweepstakes, etc.

If this created model is implemented, BAAC will be able to help farmers and reduce the burden of government sector in taking care of farmers and family members who are clients of BAAC (the total estimated number of married couples is 10 million people) when those lost the major rentier of the family, unexpectedly. The left-behind heir and family members will be able to live on with paid subvention and use this subvention to earn for a living and be welfares for oneself and family.

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