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MICROINSURANCE PROGRAM FOR TRADE UNION MEMBERS IN CAMBODIA: PRICING AND FINANCIAL PROJECTIONS

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In a previous paper (Almazan, Pang-Rey, & Suan, 2007), the authors designed a microinsurance program for trade union members in Cambodia. This paper aims to define the acceptable range of benefits and contributions for the members if they decide to enroll themselves in the said program. The contributions and benefits will be determined using actuarial methods to make sure that the proposed premium rates can cover both the costs and the benefits committed by the microinsurance program. To determine the feasibility of the program, we will examine future cash flows, where future actuarial liabilities are computed using actuarial techniques. Capitalization, reinsurance and investment of reserves will likewise be discussed.

Keywords: actuarial pricing, Cambodia, financial projections, microinsurance

I. INTRODUCTION

A trade-union based microinsurance program has the fundamental objective of providing mutual aid and assistance; care for and relief of the sick, disabled, elderly, the needy among union members, their families and other community members. It also intends to adopt plans and programs that will advance members' and beneficiaries' welfare and economic well-being (Almaza, Pang-Rey & Suan, 2007, p.76). The program must likewise be relevant to the needs and conditions of the group, that is, the product should be specific to the kind of risks faced by the group and the mode of payment preferred by the group.

Microinsurance is defined as a financial arrangement to protect low-income people against specific perils in exchange for regular premium payments proportionate to the likelihood and cost of the risk involved (Churchill, 2006, p.12). The word "micro" in microinsurance may mean small but that pertains to the small benefits and small premiums, and surely not for the risks involved. One can even certainly say that the target market of microinsurance has a higher risk than those of conventional insurance. For this reason, the need for actuarial techniques to measure the risks involved is certainly indispensable.

Despite the importance of actuarial analysis, there are relatively few papers that deal with the actuarial aspects of microinsurance. Those which do, usually talk about pricing only in general terms. This is because pricing not only depends on the

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specific product considered by an organization but also on the makeup of the target group. Many microinsurance providers do not even employ actuarial techniques in pricing their products. Consequently, premiums are often priced far too low to cover claim settlements, overhead expenses and reserves. Low premiums may make a product affordable and marketable, but it clearly endangers the sustainability of a program.

This weakness must be addressed before a microinsurance program for trade union members in Cambodia is instituted. In this paper, we present a pricing model that utilizes actuarial methods to calculate rates for a certain range of benefits that is affordable to the target market which at the same time does not compromise the viability of the project. Also included are financial projection of cash flows for the first six years of the program's implementation, and the identification of resources and opportunities both within and outside the union that may be employed to generate capital for the inception of the program. Reserves and reinsurance are likewise discussed as these are essential components of any insurance scheme.

II. THEORETICAL FRAMEWORK

Actuarial analysis is a vital aspect of any insurance operation. These methods are used to assess "how much" risk is being absorbed by an insurance company when an individual joins the company's pool of policyholders. In this section, we will present a general framework for computing premiums and projecting cash flows for a specific microinsurance benefit package.

Actuarial Terminologies and Notations

The definitions, notations and terminologies in the table below are based on Actuarial Mathematics by Bowers, Hickman, Nesbitt, Jones & Gerber (1997). Throughout this section, (x) is read as "a person aged x".

Net Premiums

Pricing insurance products requires a deep knowledge of modeling techniques and different mathematical tools. Generally, pricing is done either on a per individual basis or by group. Premiums for individual contracts are calculated based on the age and the specific risks faced by an individual. These entail detailed underwriting and sometimes, a thorough medical examination. Group insurance pricing, on the other hand, is not based on an individual's age and specific risks involved, but rather on the combined characteristic of a group. As a consequence, the same premium is charged to members regardless of age and other risk considerations.

Group insurance pricing has the following underwriting principles: insurance is incidental to the group, the flow of persons through the group, and the automatic determination of benefits. Incidental to the group means that the group was formed not because of insurance. This is to avoid adverse selection. The flow of persons through the group is a necessary factor so that the "old" are replaced steadily by the "young". Automatic determination of benefits means that there is only one set of benefits for the whole group. Avoiding individual underwriting makes the product more cost-efficient by minimizing administrative costs.

Table 1
Actuarial Terminologies and Notations

Notation/Terminology	Meaning/Formula
i	Effective rate of interest for a time period, usually one year.
v	Present value of 1 due at the end of the effective interest period, usually one year, that is, $v = \frac{1}{1+i}$.
$\ddot{a}_{\overline{n}\|}$	Present value of an annuity certain which pays 1 at the beginning of each year for n years. The formula is: $\ddot{a}_{\overline{n}\|} = \frac{1-v^n}{iv}$.
$\ddot{s}_{\overline{n}\|}$	Accumulated value a year after the last payment of an annuity certain which pays 1 at the beginning of each year for n years. The formula is given by: $\ddot{s}_{\overline{n}\|} = \frac{(1+i)^n - 1}{iv}$.
$T(x)$	The future lifetime of (x). $T(x) = X - x$ where X is the random variable representing a newborn's-age at-death
$K(x)$	The curtate-future-lifetime random variable whose discrete density function is $P(K(x) = k) = {}_kp_x\, q_{x+k}$, k = 0, 1, 2, … It represents the number of completed future years lived by (x).
l_x	Represents the number of expected number of survivors to age x from a cohort of l_0 newborns.
${}_tq_x$	The probability that (x) will die within t years or $P(T(x) \le t)$, $t \ge 0$. In terms of l_x, ${}_tq_x = \frac{l_{x+t} - l_x}{l_x}$
${}_tp_x$	Equal to $1 - {}_tq_x = \frac{l_{x+t}}{l_x}$.
$q_x^{(n)}$	Probability of death due to a natural cause before reaching age x +1 for (x).
$q_x^{(d)}$	Probability of death due to an accident before reaching age x +1 for (x).
$q_x^{'(h)}$	Utilization rate for hospitalization within a year of issue for (x).
$q_x^{'(s)}$	Rate that a person aged x will be disabled before age x+1.
Decrement	Refers to termination from a given status.
Net annual premium (*NAP*)	Defined to be the annual premium needed to cover pure benefits contingent to events like death and other decrements.
Gross annual premium (*GAP*)	Defined as *NAP* plus loadings.

Usually, group insurance pricing is used for the computation of microinsurance premiums. This is because the target market has the characteristics of a group. It also helps to achieve the objective of having a simple and easily understood insurance policy.

For a starting microinsurer, the factors essential to pricing are the following: the makeup of the product, the size of the group, the profile of the group, the representative age of the group, projected expenses, current policies and regulations on microinsurance, marketing strategies, competition, population statistics and existing life tables since the organization has no experience data. Established microinsurance groups have their own experience data and these give them a better perspective in pricing. Also, they have the advantage of having information on renewal rates and default rates, claims experiences and other transactions, and a more accurate estimate of expenses and projected income.

There are many types of microinsurance products. We will limit our actuarial analysis to a bundled package that includes disability, health and life coverage. The assumed product has a term of one year and can be renewed yearly. The benefits are as follows:

- A benefit of B if death is due to a natural cause and death occurs to the insured within a year after issue of policy.
- A benefit of $2B$ if death is due to an accident and death occurs to the insured within a year from issue of policy.
- A maximum hospitalization benefit of $\tilde{B}$. The hospitalization benefit can be claimed only once per year.
- A maximum disability benefit of $2B$ if disability occurs within a year after issue.

To price this package, we first define the loss random variable L to be the present value of benefits minus the present value of premiums. The NAP is based on the equivalence principle which states that the expectation of the present value of an insurer's loss is zero or

$$E(L) = 0$$

(Bowers et al., 1997, p. 170). For instance, consider an n-year term insurance issued to (x) whose premiums are paid at the beginning of the year and whose benefit of 1 is paid at the end of the year of death if the insured dies with n years. The loss random variable L is given by:

$$L = v^{K+1} - NAP \times \ddot{a}_{\overline{K+1}|}$$

for $K = 0, 1, 2, \ldots, n-1$, and

$$L = -NAP \times \ddot{a}_{\overline{n}|} \quad \text{for } K = n, n+1, \ldots$$

(Bowers et al., 1997, p.183).

If $n = 1$, then:

$$E(L) = vq_x - NAP\,.$$

The microinsurance model that we want to price is a one-year term, yearly renewable policy. To be more conservative, we will assume that claims due to death occur in the middle of the year on the average. Let $(NAP)_{ND}$ be the present value of premiums due to death by natural causes. Following the same principle as above, we have:

$$(NAP)_{ND} = Bv^{1/2}q_x^{(n)}\,.$$

Assuming that the death, disability and hospitalization decrements are independent of each other and that all decrements occur in the middle of the year on the average, the total NAP for the product that we want to price is:

$$NAP = v^{1/2}\left[B\left(q_x^{(n)} + 2q_x^{(a)} + 2q_x^{'(s)}\right) + \tilde{B}q_x^{'(h)}\right].$$

Gross Premiums

Suppose that a policyholder who is still alive at the end of the year is also entitled to other benefits like the Membership Equity Value (MEV). In this paper, we define the MEV to be the refund of a percentage $\bar{c}$ of the death-by-natural-cause component of gross premiums paid plus accumulated interest. Also, for simplicity, we will assume that the total expenses incurred in a year can be charged as a percentage c' of gross premiums and are paid at the beginning of the year.

Using the equivalence principle, the gross premium for the death by natural component, denoted by $(GAP)_{ND}$, is now computed using the equation:

$$(GAP)_{ND} = (NAP)_{ND} + \bar{c} \times (GAP)_{ND} \times p_x + c' \times (GAP)_{ND}$$

This gives us:

$$(GAP)_{ND} = \frac{(NAP)_{ND}}{1 - \bar{c} \times p_x - c'}.$$

The gross premiums for the benefits that do not have the MEV loading can be computed using the general formula

$$(GAP)_{Benefit} = \frac{(NAP)_{Benefit}}{1 - c}$$

where c is the total loading factor. The total *GAP* is just the sum of each $(GAP)_{Benefit}$.

Coverage for additional lives added to the policy of a primary member will be assumed to continue until the end of the year of death of the primary member. Hence, the formulas for *NAP* and *GAP* also apply for additional lives.

Reserves

Reserve is the actuarial present value of future liabilities less the actuarial present value of future premiums (Garand & Wipf, 2006, p.261). Reserves are maintained to comply with regulation and to ensure the availability of funds whenever claims are made. They are posted as a liability in the balance sheet.

Since the proposed product has a term of only one year, the benefit reserve due to death, disability and hospitalization is zero. This means that at the end of the term of the policy, all these liabilities claims must have already been paid. Accordingly, the reserves in this study represent only the pool of funds consisting of the MEV of the members. We will call this the Equity Reserve. The mortality and interest rates used in the computation of net premiums will also be used in the computation of the Equity Reserves.

To compute the expected total equity reserve at the end of year one, we use the formula:

End of year 1 equity reserve = Expected number of surviving policyholders at the end of year 1 $\times \bar{c} \times (GAP)_{ND} \times (1+i)$.

The end of year equity reserve for succeeding years is calculated in much the same manner. To compute the total equity reserve for the second year for instance, we have:

End of year 2 equity reserve = (Expected number of surviving policyholders at the end of year 2 from year 1 enrollees $\times \ddot{s}_{\overline{2}|}$ + *Expected number of surviving policyholders at the end of year 2 from year 2 enrollees* $\times \ddot{s}_{\overline{1}|}$*)* $\times \bar{c} \times (GAP)_{ND}$.

Cash Flows

We will look at the expected future cash flows of a microinsurance program to determine its potential long-term financial viability. Assuming that claims occur in the middle of the year, the one-year cash flow

shall be computed according to the following principles:

- *Fund at the beginning of the year = Fund at the end of the previous year + Subsidy + Premium income – Expenses – Equity paid*
- *Fund in the middle of the year* = (*Fund at the beginning of the year*) $\times (1+i)^{1/2}$ - *Expected claims*
- *Fund at the end of the year* = (*Fund in the middle of the year*) $\times (1+i)^{1/2}$ *= Reserves (Equity + Contingency) + Surplus*

Like the reserves, the total claims in the middle of the year are projected actuarially. For example, the value of the total death-by-natural-cause claims in the middle of the year is equal to:

Total number of policyholders at the beginning of the year $\times (NAP)_{ND} \times (1+i)^{1/2}$.

If the number of policyholders is large enough, the program may generate surplus from operating expense loadings. Other possible sources of surplus are: mortality and interest rate surplus, investment profits and unclaimed MEV.

III. PRICING THE PROPOSED MICROINSURANCE PRODUCT FOR CAMBODIA'S TRADE UNION MEMBERS

The Proposed Product: A Family Oriented Insurance Service

Almazan et al. (2007) proposed a family-oriented life insurance program for Cambodia's trade union members. A mutual benefit association (MBA) was recommended to manage the program. The relevant details of the proposed product are shown in Table 2.

Table 2
Basic Design of the Microinsurance Program

Terms	Features
Types of members	There are two types of members: regular and associate. The regular member is responsible for the payment of premiums and has voting rights. Associate members, e.g. the wife and children of a primary member, have no voting rights to the MBA.
Events covered	• On account of an accident: - Death of an insured person - Permanent (total or partial) disability of an insured person • On the death of an insured person due to natural causes • Hospitalization of an insured person
Covered persons	• The names mentioned in the membership application form are all insured persons and shall be covered to receive benefits as stipulated under the contract. • All members of the household/family may be registered as insured persons by a regular member provided they are related to the

Terms	Features
	regular member of up to second degree of consanguinity and are between 1 to 75 years old.
Age limit	Regular membership may be conferred on persons between the ages of 18 to 60 years. However, members and insured persons may be covered until the age of 75 years.
Types of beneficiary	• There are two kinds of beneficiary, the primary beneficiary and the secondary beneficiary. • The primary beneficiary is the regular member/policyholder who is entitled to all benefits under the insurance cover while the secondary beneficiary is a person listed as beneficiary in the event of death of the regular member as insured person.
Member's equity value	A member completing his membership with regular and continuous payments for at least three (3) consecutive years is entitled to a refund of his Membership Equity Value (MEV) if he voluntarily withdraws from the program. The MEV shall be equivalent to 35% of $(GAP)_{ND}$ paid plus accumulated interest.

The product features and the different types of packages will be discussed fully in the next subsection.

Benefits

The proposed product gives coverage for a year and can be renewed yearly. All values in this section are in Cambodian Riel (KHR). Six main packages, namely plans A to F, were determined based on how much premium the intended market can afford and the benefits they want to be included in the program (Almazan et al., 2007). The tables below give the corresponding benefit contingent on a certain decrement and their corresponding membership agreements. The design and terms of membership agreement are patterned after the Partnership Mutual Benefit Association's program, an MBA based in the Philippines (PMBA, 2004).

Table 3
Death Due to Natural Causes of an Insured Person Aged Between 15 and Before 65

Package Type	A	B	C	D	E	F
Benefit (in KHR)	90,000	100,000	150,000	200,000	250,000	300,000

If premium contributions have been paid for two or more consecutive years, full benefit will be given. If the period is less than two years, a benefit proportional to the number of monthly premiums paid will be given, that is, proportional benefit = (no. of months paid/24 months) x full benefit amount.

Table 4
Death Due to Accident[1] of an Insured Person
Aged Between 15 and Before 65

Package Type	A	B	C	D	E	F
Benefit (in KHR)	180,000	200,000	300,000	400,000	500,000	600,000

Claimed benefits or advance payments because of permanent disability preceding death due to the same accident shall be deducted thereof from the maximum accidental death benefit of the insured.

Table 5
Permanent Disability[2] of an Insured Person Due to an Accident
from the Age of 15 and Before 65 (see Appendix A for the Table of Disabilities)

Package Type	A	B	C	D	E	F
Benefit (in KHR)	180,000	200,000	300,000	400,000	500,000	600,000

In case of 100% disability, the membership ceases with the benefit payment for the insured person. In case of partial disability, the cover for the insured person can be continued if premium contributions are paid regularly.

Table 6
Death of an Insured Person Between Ages 1 and 14;
or of Insured Person Between Ages 66 and 75 years

Package Type	A	B	C	D	E	F
Funeral assistance: 1-14 y.o. (in KHR)	18,000	20,000	30,000	40,000	50,000	60,000
Funeral assistance: 65-75 y.o. (in KHR)	27,000	30,000	45,000	60,000	75,000	90,000

For cases where death is by a natural cause: If premium contributions have been paid for two or more consecutive years, full payment will be given. If the period is less than two years, a benefit proportional to the number of month's premiums paid will be given, that is, proportional benefit = (no. of months paid/24 months) x full benefit amount.

Death benefits will not be paid for the following: suicide and/or willful attempt to die, accidents while engaged in hunting, accidents while engaged in motor races, contagious diseases, accidents while engaged in a robbery and/or any illegal activity, acts against the state, willful or intentional accidents.

Table 7
Hospitalization[3] of Insured Persons Between the Ages 1 and 75

Package Type	A	B	C	D	E	F
Benefit per day (in KHR)	630	700	1050	1400	1750	2100

Benefit is paid only for an insured person if hospitalization is due to illness or accident. Benefit is payable once in 12 consecutive months only for one event subject to a maximum of 15 days per insured person. Repeat claims for the same event (except accidents) will be entertained once in two years only. An event is defined as an illness, accident, pregnancy or miscarriage. A hospitalization claim can be made only after completing 6 months of continuous membership. If a member failed to pay the premium in a regular and consecutive manner, the hospitalization benefit shall be computed as follows: proportional benefit per day = (no. of months paid/12 months) x benefit per day.

Gross Premiums

To determine the gross premiums for the benefits described in the previous subsection, we use the formulas in Section II and the assumptions given below.

In the absence of experience data, mortality rates are based on the World Health Organization's Life Table for Cambodia for the year 2006 (Appendix B). However, The WHO life table gives the mortality rates in terms of four and five-year age-increments. We use the uniform distribution of deaths assumption to come up with the mortality rates at each age. Under this assumption,

$$l_{x+t} = \frac{(n-t)l_x + tl_{x+n}}{n}, \; 0 \le t \le n \, .$$

As mentioned earlier, the premiums are computed according to the principles of group insurance. The representative age for primary members is 43 years old. The average number of children of primary members, aged 1-14 years old, is 4.5. The representative age for the children of primary members is 8 years old. These figures are based on the survey we conducted on the formal and informal workers of Cambodia in 2007.

The effective rate of interest assumed throughout the computations is 6%. This rate is based on the 91-day Treasury Bills issued by the Ministry of Economy and Finance (MEF) of Cambodia (www. asianbondsonline.adb.org). The loading factors are found in Appendix C.

Table 8 gives a summary of the gross premiums, adjusted for monthly contributions, for each of the benefits given in the previous subsection. The members may choose from a variety of plan types per package to better suit the needs of their family. The plan types are classified as follows; household couple with no children, one parent with own children, household couple with own children and single person. A member can also add several insured persons under his/her membership provided they are related to the member of up to 2nd degree of consanguinity. Table 9 gives us the complete set of total monthly gross premiums for the plan types designed for the program.

Table 8
Table of Monthly Gross Premiums per Package and Decrement (in KHR)

Code	Package Type	A	B	C	D	E	F
	Monthly Contribution: Natural Death Component						
1	Household couple with no children	536.41	596.01	894.02	1192.03	1490.03	1788.04
2	One parent with own children (1-14 years old)	730.58	811.75	1217.63	1623.51	2029.38	2435.26
3	Household couple with own children (1-14 years old)	960.95	1067.72	1601.58	2135.44	2669.30	3203.16
4	Single person (18-60 years old)	306.04	340.05	510.07	680.09	850.12	1020.14
5	For every additional person (15-65 years old) an additional fee of:	230.37	255.97	383.95	511.93	639.92	767.90
6	For every additional person (66-75 years old) an additional fee of:	594.22	660.24	990.36	1320.49	1650.61	1980.73
	Riders						
7	Accidental Death and Disability of an insured person (15-65 years old), additional fee per person:						
	primary member	38.85	43.17	64.75	86.34	107.92	129.50
	secondary member	34.97	38.85	58.28	77.70	97.13	116.55
8	Hospitalization of an insured person, additional fee per person:						
	1-14 years old	183.57	203.97	305.96	407.94	509.93	611.91
	(primary member) 15-65 years old	163.18	181.31	271.96	362.61	453.27	543.92
	(secondary member) 15-65 years old	146.86	163.18	244.76	326.35	407.94	489.53
	66-75 years old	183.57	203.97	244.76	326.35	407.94	489.53

Table 9
Table of Total Monthly Gross Premiums per Package and Plan Type (in KHR)

HH Code	Package Type	A	B	C	D	E	F
		Monthly Contributions					
1	Household couple w/o children	920	1023	1534	2045	2556	3068
2	One parent w/ own children (1-14 y.o.)	1759	1954	2931	3908	4885	5862
3	Household couple w/ own children (1-14 y.o.)	2171	2412	3618	4824	6030	7236
4	Single Person (18-60 y.o.)	508	565	847	1129	1411	1694
5	For every additional person (15- 65 y.o.), an additional fee of	412	458	687	916	1145	1374
6	For every additional person (66- 75 y.o.), an additional fee of	778	864	1235	1647	2059	2470

IV. FINANCIAL PROJECTIONS

To evaluate the feasibility of the proposed program, we now examine the projected cash flows for the first six years of the program's implementation. The factors that are essential in the financial projections are: the interest rate assumption, projected premium income, estimated expenses, projected claims, target membership enrolment, withdrawal rates, and end-of-year equity reserves. The interest rate assumption for the investment of funds should match that of the one used for pricing premiums. The premium income is based on the values found in Table 9 in the previous section. The equity reserves and projected claims shall be computed using the formulas in Section II. The target membership enrolment is needed to compute the projected premium income and equity reserves.

For financial projection purposes, we will additionally assume that the selected insurance product or plan purchased by the unions for their members is standardized and is identified as "Plan 4F". The plan entails a monthly premium contribution of KHR 1694 for single persons, 18 – 60 years old. The withdrawal rate is assumed to be stable at around 10% per annum.

Target Membership Enrolment

The projected number of enrollees by federation per year for the next six years is shown in Table 10.

Table 10
Estimated Number of Enrollees per Federation per Year (Ibid.)

Federation	Membership		Target Enrollees per Year					
	No. of Affiliates	Total Members	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
CCTUF	8	2,000	200	260	390	624	998	1,597
CFBW	16	1,970	197	256	384	615	983	1,573
CCAWDU	43	40,000	4,000	5,200	7,800	12,480	19,968	31,949
FTUWKC	66	24,893	2,489	3,236	4,854	7,767	12,427	19,883
CITA	24	1,500	150	195	293	468	749	1,198
IDEA	2	530	53	69	103	165	265	423
CICA	1	175	18	23	34	55	87	140
CTSWF	16	2,250	225	293	439	702	1,123	1,797
Total	176	73,318	7,332	9,531	14,297	22,875	36,600	58,561

In Table 10, we assume that the federations will enroll at least 10% (7,332) of their total declared membership in Year 1. The expected net increase of enrollees is 30% by Year 2, 50% by Year 3, 60% by Years 4, 5 and 6.

Estimated Expenses

Operating expenses include general costs, cost of personnel, depreciation expenses of office equipment, third-party services, training and meeting costs, and monitoring and evaluation costs. Appendix D shows the budget requirement for the first year. This is also the minimum initial capital outlay required to start-up the program. A 10% inflationary increase annually is assumed for the next 5 years for items 1, 2 and 4 to 6. Appendix E shows a summary of the projected operating expenses for the first six years.

Cost of personnel

The first year cost of personnel services for a staff of seven (7) is estimated to be around USD 20,476 or KHR 84.3 million. The annual cost includes a 13th month pay for all staff concerned. The other legally mandated benefits which include Social Security are approximately 10% of the total payroll cost (see Appendix D, Schedule 1).

General cost

The first year general cost of the proposed MBA is estimated to be around USD 12,753 or KHR 52.5 million. It includes expense items like transportation, supplies, communication, utilities, maintenance, taxes and bank charges (See Appendix D).

Procurement of equipment, furniture and fixtures

The proposed MBA will need to procure the necessary equipment, furniture and furnishings to support its day-to-day operations. These assets are enumerated with their estimated cost in Appendix D, Schedule 2. The total cost is USD 13,503 or KHR 55.6 million. Computers, their peripherals and the insurance software comprise the biggest part of the procurement expense. The cost of equipment is depreciated over a period of 5 years.

Procurement of services

The project intends to tap the following professional services: Actuarial Advisor, External Audit and IT support. These services may cost approximately USD 11,484 per year or KHR 47.3 million. The biggest cost item for this portion is obviously actuarial and IT services. These services are critical to maintain the financial integrity and growth of the proposed MBA.

Training and meeting costs

The Training and Meeting costs will be the funds allocated for the use of the MBA leadership and staff in organizing orientation and training programs for trade unions and other groups including possible workshops & conferences of members and leadership. The other important elements included in this portion of the budget are expenses for general assemblies and board meetings. The total budget for this is USD 15,250 or KHR 62.8 million on the first year.

Evaluation cost

Program evaluation can be carried out by the MBA (internal evaluation) or by an independent expert (external evaluation), during and after its implementation. The projected cost of travels, meetings, and workshops necessary to evaluate the program is USD 2500 or KHR 10.3 million on the first year.

Projected Income, Break-Even Point and Estimated Subsidy Required

Losses will be experienced on the first five years of operation, during which, costs will substantially exceed the 35% portion of premium allotted for expenses. However, at the start of the 6th year, with increased number of membership and reduction in operating costs relative to the premiums, a positive income shall be realized. The break-even point is estimated to be reached by the 6th year when expenses are now below the 35% of premium contributions. The details are shown in Appendix E.

As a non-profit organization, the MBA is not expected to generate a net income. Whatever surplus that may be generated from premiums reserved for claims and equity shall be allocated to either the equity reserve or the contingency reserve. The contingency reserve is a fund reserve against unusual and unexpected conditions that may occur, e.g., a catastrophe.

The initial capital can come from the contributions of the participating federations and the MBA's operational income or a donor's support from an international network like BWI. For purposes of projection, it will be assumed that the second method of financing is employed - financing through a donor support.

It must be pointed out, however, that this support should decrease correspondingly based on this assumed projection for a six-year period. Given the above financial projections, any donor support that will be mobilized for this project must be maintained for at least five years and will entail deploying a total of USD 226,009 or KHR 930.25 million. The duration of the support will imply that any donor must be firmly committed to this initiative on the long haul until the program reaches its projected financial growth and stability on the sixth year. Table 11 shows the projected cash flows of the MBA for the first six years.

Table 11
Cash Flows (USD)

	Year 1	*Year 2*	*Year 3*	*Year 4*	*Year 5*	*Year 6*
BOY:						
Fund at EOY of Previous Year (A1)	0	10,532.83	24,856.62	46,886.46	80,612.29	134,842.51
Premium Income (A2)	36,201.83	47,059.41	70,591.59	112,945.56	180,712.89	289,145.57
Subsidy (A3)	55,293.36	51,539.54	49,954.26	42,446.44	26,775.55	0
Operating Expenses (A4)	67,964.00	68,010.34	74,661.31	81,977.39	90,025.06	98,877.51
Agents' Commissions (A5)	5,430.27	7,058.91	10,588.74	16,941.83	27,106.93	43,371.83
Equity Paid (A6)	0	0	0	1,838.29	3,004.22	4,965.69
Fund at BOY (A7 = A1 + A2 + A3 – A4 – A5 – A6)	**18,100.91**	**34,062.54**	**60,152.41**	**101,520.95**	**167,964.51**	**276,773.04**
MOY:						
Fund at BOY + Interest Earned ($B1 = A7 \times (1+i)^{1/2}$)	18,636.03	35,069.53	61,930.70	104,522.22	172,930.05	284,955.28
Natural Death Claims (B2)	2,847.86	3,701.98	5,553.17	8,884.99	14,215.98	22,745.96
Accidental Death and Disability Claims (B3)	1,068.80	1,389.36	2,084.11	3,334.55	5,335.28	8,536.59
Hospitalization Claims (B4)	4,488.98	5,835.31	8,753.27	14,005.10	22,408.16	35,853.67
Fund at MOY (B5 = B1 – B2 – B3 – B4)	**10,230.39**	**24,142.88**	**45,540.16**	**78,297.58**	**130,970.62**	**217,819.06**
EOY:						
Fund at MOY + Interest Earned ($C1 = B5 \times (1+i)^{1/2}$)	**10,532.83**	**24,856.62**	**46,886.46**	**80,612.29**	**134,842.51**	**224,258.45**

BOY = Beginning of the Year, MOY = Middle of the Year, EOY = End of the Year

Reserves

The table below shows the projected equity and contingency reserves. These are reflected as liabilities in the balance sheet and as such, the program should have the assets to match these reserves. The next table shows how the funds in Table 11 are allocated in terms of reserves and surplus.

Table 12
Reserves and Surplus (USD)

	Year 1	*Year 2*	*Year 3*	*Year 4*	*Year 5*	*Year 6*
Fund at EOY	10,532.83	24,856.62	46,886.46	80,612.29	134,842.51	224,258.45
Change in equity reserve		9,017.36	13,241.79	21,002.53	33,429.64	53,323.18
Total equity reserve at EOY	7,230.03	16,247.40	29,489.18	50,491.72	83,921.35	137,244.54
Change in contingency reserve		5,306.42	8,788.06	12,723.29	20,800.58	33,629.91
Total contingency reserve at EOY	3,302.80	8,609.22	17,397.28	30,120.57	50,921.16	84,551.07
Surplus = Fund at EOY – Reserves	0	0	0	0	0	2,462.84

The surplus at the end of Year 6 comes from the savings on operating expense loadings at the beginning of Year 6 plus accumulated interest (2323.44×1.06). This surplus may be allocated as contingency reserve.

V. FINANCIAL MANAGEMENT

The financial success of a microinsurance scheme not only relies in using appropriate pricing methods but also on the financial planning performed during the inception of the program. These other vital financial factors that must also be considered are: capitalization, investment of reserves and reinsurance.

Capitalization

As we have seen in Section IV, a heavy capital outlay is needed in the first few years of operation of the project. We propose two ways of generating capital for the program. One is that the unions will provide share capital in the mutual which is similar to the practice of cooperatives. The second is the provision of a seed capital by a donor partner.

In the first option, the participating federation can become members of the MBA and put its share capital in the mutual. A share capital is defined as the money paid or required to be paid for the conduct of the mutual's operations. The method of issuing the share certificates may be prescribed in the by-laws of the MBA. Cooperative practice would dictate that the share capital of the member federations earn interest, but no federation shall own or hold more than 20% of the total share capital of the MBA.

A variant of this option is the placement of the federation shares in a "Member's Equity Fund (MEF)". An MEF is a special fund created solely for interested organized groups like trade unions, cooperatives or microfinance (MFIs) groups to participate in the microinsurance business of a mutual via equity financing.

Either way, there should be a 20% ceiling on the number of shares a participating federation can own. The principle behind this is based on one of the universally accepted principles of cooperatives that there should be "limited interest on capital"[5].

In the context of cooperativism or mutualism, interest on a member share capital is limited so that no person (or organization) - especially those with money- can have an overwhelming equity in the mutual. This prevents the domination of the mutual's affairs by wealthy members at the expense of poorer members and the mutual as a whole.

However, to encourage larger subscription in shares by the participating unions, the dividend will have to be reasonably attractive, depending on the prevailing market conditions in Cambodia. A balanced approach could be to allow dividends of not more than 2% on the rate of interest being paid by banks on long-term deposits.

Unlike its cousins in the cooperative movement like the Cambodian Credit & Savings Federation (CCSF) which can start with a beginning capital sourced from the share capital of the members, a mutual like the PMBA does not have a source with which to start off a micro-insurance program, hence, the second option which involves accessing external financial support. The proposed MBA's initial capital requirements may be subsidized by a donor like the Building & Wood Workers International (BWI), a global union federation grouping free and democratic unions with members in the building, building materials, wood, forestry and allied sectors, or its allied solidarity groups with the understanding that it will gradually be reduced as the MBA reaches its "break-even" point. In the meantime, the proposed MBA saves all its earnings from the premium and other fees and allows it to grow until such when external support completely stops.

Investment of Reserves

The program must meet its promise of protection by safeguarding its financial standing rigidly. The basic principles that should govern investment policy are safety, yield, and liquidity. Safety aims to ensure maintenance of members' funds, yield to maximize the funds, and liquidity, to ensure the availability of funds when needed.

In general, a microinsurance program should follow the regulatory requirement of the country of operation. In the case of Cambodia, policies on the investment of reserves are expected to be part of the country's evolving Sub-Decree on Microinsurance. In the meantime, in the absence of this sub-decree, we propose that the microinsurance program invest its reserves in low risk government treasury bills.

Solidarity Type of Reinsurance

The constitution and by-laws of the new entity that will manage the union's microinsurance program should require the entity to acquire a reinsurance policy. This is to protect itself from losses that may lead to bankruptcy. Reinsurance will further guarantee that the program will be able to pay its obligations to its members in times of need, especially during large scale disasters. In this regard, the unique experience of the PMBA is instructive and it would be favourable if the program can negotiate a similar arrangement.

Pierik (2003) has written about the PBMA reinsurance model. He says that many mutuals in the Philippines and in other parts of the world would have difficulty starting up without financial support for there is no starting capital. During the first few years of its existence, the mutual will not be in a position to build up adequate reserves. Even in later years, after the mutual has started to pay its own way, a calamity may occur for which the mutual's funds may be insufficient. As a consequence, a Dutch reinsurer, the Interpolis Re, working together with the Agriterra (a peasant solidarity group), developed a combined financing and reinsurance model for the PMBA along the following lines: for the first five years, the

administrative costs of running a microinsurance program will certainly be higher than the standard 35% of the total gross premium. This is because the program lacks the critical mass of member-policyholders required to make it financially viable. To address this financial gap at the initial stages of development of the program, a donor partner like Agriterra will subsidize the said financial deficiency to enable the microinsurance program of the PMBA to build sufficient resources to support its operation and pay for any benefit claims in the course of its work. Interpolis Re, a partner reinsurer, will at the same time supply a reinsurance cover for the mutual with a quota share[6] of 100%. What this translates to is that all amounts the mutual must pay for death and disability are fully compensated by reinsurance up to a set maximum per event and per year. In other words, even in the face of weak financial reserves in the beginning years of the mutual, the PMBA for example, had the capability to compensate any benefit claims especially in the event of a catastrophe. In return, the PMBA pays 20% of its premium income per year to Interpolis Re for this reinsurance cover.

Now what makes this reinsurance model different from the usual commercial reinsurance arrangement is that if the total claims incurred in a given year are less than 20%, the difference is paid back to the PMBA. Interpolis Re deducts only 5% of the reinsurance premium for its administration costs. This special facility means that theoretically a mutual can show a surplus immediately after being set up and can use this to build up an additional general reserves which can be used by the mutual when the donor eventually withdraws it support after a given period of gestation time.

This reinsurance model could be described as "solidarity reinsurance." However, this reinsurance arrangement will be gradually steered toward a more commercial arrangement by the partner reinsurer until such time that the partner mutual matures operationally and financially (see Table 13).

Table 13
Reinsurance Arrangement of the PMBA

	2002-2005	*2006*
Type	Quota share	Quota share
Events Covered	Death: Natural > 2 yrs	Death: Natural > 2 yrs
	Death: Accident	Death: Accident
	Permanent disability	Permanent disability
Cover	100% quota share w/ maximum of USD 3,000/risk	90% quota share w/ maximum of USD 3,000/risk
Annual limit	Min: USD 37,500; Max: USD 112,500	Min: USD 37,500; Max: USD 205,000
Premium	20% of gross premium	30% of gross premium
Experience refund	95% of positive balance less claims	70% of positive balance less claims

Source: PMBA; USD 1 = PHP48.67 (as of 30 April 2009).

VI. CONCLUSIONS AND RECOMMENDATIONS

Different packages and plans for the proposed microinsurance program for trade union members in Cambodia were described and their corresponding premiums were calculated using actuarial methods. Moreover, financial projections for the next six years, based on Plan 4F, were constructed. Lower premiums will mean that it will take longer to reach the break-even point. Note that the rates computed for the various packages are applicable only under the assumptions used on the calculations

The sustainability of the program heavily relies on several assumptions. One of these is that costs should be as low as possible, maintained at no higher than 35% of premium contributions exclusive of a commission level of not more than 15% for all institutional members and other groups promoting or marketing the MBA's insurance products. Another is that investment yields should be maintained at no lower than 6% which can be achieved by investing in low-risk government investment instruments. Membership withdrawals should be kept stable at around 10% per annum. Likewise, the premium collection should be efficiently managed. Additionally, adequate reinsurance coverage should be maintained throughout the lifespan of the MBA. If these assumptions are maintained, then the microinsurance program is feasible and has the potential to grow and serve the target constituency.

As stated in Almazan et al. (2007), a donor organization like the BWI may be needed to provide the starting capital for the operation of the MBA with the proviso that this financial support will decrease and eventually terminated as the income and reserves of the MBA increase.

We also suggest that the program should be integrated by trade unions into their members' benefit package under their collective bargaining agreement (CBA). It is highly recommended that the employers of the unionized establishments are encouraged to shoulder a part of the premium as an additional benefit under the CBA.

Upon issuance of a microinsurance law by Cambodia's Ministry of Economy and Finance (MEF), steps must be taken to ensure compliance with the provisions of the said law to avoid any legal complications in the future, and to maintain credibility and transparency.

To enlarge the membership or 'market base' of the MBA, the trade unions should include the families of the respective policyholders. The program should likewise be opened to non-trade union constituencies like microfinance institutions, cooperatives, NGOs, and other viable people's organizations and solidarity groups. This is necessary in order to achieve the economies of scale required at the quickest possible time.

Finally, actuarial monitoring and financial evaluation should also be conducted regularly when the program is already in operation. Product design and pricing should be reviewed actuarially at least every 2 years. However, it is highly recommended that after the first six months of operation of the MBA, the product design and pricing, acceptability, and claims experience must be reviewed by an actuary and underwriter for further fine tuning. In this regard, a microinsurance organization should invest on a good database software. From the onset, the microinsurance program of the MBA should be managed with the support of a good computerized management information system. This is an expensive investment in the initial stages of the MBA's development but this will definitely bring down the cost of the MBA in the long term. Constant monitoring of the data bank gives assurance that correct projections and rates are computed and accurate reports of the organization's financial condition are made.

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NOTES

[1] For the purpose of this study, an 'accident' shall mean the occurrence of an unforeseen, fortuitous and unexpected external event which occurred independently of the will of man during the Period of Insurance which shall inflict immediate bodily injury, damage on the insured person whose nature and location can be medically diagnosed.

[2] For the purpose of this study, a 'disability' is defined as permanent total or partial loss of function of any part or organ of the body of the insured person.

[3] For the purpose of this study, hospitalization' is defined where the insured person is confined in a hospital for at least 24 hours as an in-patient under the care of a legally qualified and registered physician or surgeon.

[5] The principle of limited interest on capital has been revised in the new cooperative principles to read 'member economic participation' (FAO, 1998).

[6] Quota share is one form of reinsurance agreement whereby the ceding company is bound to cede and the reinsurer is bound to accept a fixed proportion of every risk accepted by the ceding company. The reinsurer shares proportionally in all losses and receives the same proportion of all premiums as the insurer less commission. A quota share often specifies a monetary limit over which the reinsurer will not accept to be committed on any one risk, in the case of the PMBA this is 100% of each and every risk not to exceed $3,000 for any one risk from 2002-2005 (FAO, 1992: p. 19).

REFERENCES

Almazan, R. (2005). Microinsurance and mutual benefit associations as a solidarity based social protection system for the informal fector: The PAKISAMA mutual experience. *CSWCD Development Journal 2005 Issue*, 106-157.

Almazan, R., Pang-Rey, M. & Suan, I. (2007). Designing a microinsurance program for trade union members in Cambodia. *Philippine Management Review*, *14*(1), 54-92.

AsianBondsOnline. Cambodia>>Market Structure>>Instruments. *Asian Development Bank*. Retrieved 29 April 2009, from http://asianbondsonline.adb.org/cambodia/structure/instruments.php.

Bowers N.L., Hickman, J. C., Nesbitt, C. J., Jones, D. A., & Gerber, H. U. (1997). *Actuarial mathematics (2nd edition)*. Schaumburg, Illinois: Society of Actuaries.

Brown W., & Churchill C. (1999*). Part I: Primer on insurance principles and products. Providing insurance to low-income households*. Washington: USAID.

BWI (2005). *Congress report 2005 BWI strategy plan 2005 - 2009 motions & resolutions*. 22nd Congress of the IFBWW and Founding Congress of the BWI, Buenos Aires, BWI.

BWI:Asia-Pacific (2006). *Asia Pacific Regional action plan & targets 2009*. BWI Regional Planning Workshop, Langkawi, BWI Asia-Pacific.

Byoung-Jo Chun, A. H., Sharma, A. & Zhang, X. (2001). *Key Issues in Financial Sector. Cambodia: Financial Sector Blueprint for 2001 - 2010*. Phnom Penh: ADB.

Caringal, R. (2005). *Market Feasibility Research for Microinsurance Products & Services*. RIMANSI Publication. Manila: RIMANSI.

CCSF (2007). *CCSF Annual Report 2006*. Battambang: CCSF.

Churchill C. (ed.) (2006). *Protecting the Poor: A Microinsurance Compendium*. Geneva: ILO. Retrieved from http://www.munichre-foundation.org/StiftungsWebsite/Projects/Microinsurance/2006Microinsurance/Microinsurance_Compendium.htm.

Churchill C., Liber D., McCord, M. J. & Roth J. (2003) *Making Insurance Work for Microfinance Organizations: A Technical Guide to Developing and Delivering Microinsurance*. Geneva: ILO. Retrieved from http://www.ilo.org/public/english/employment/finance/download/micro/minsure.pdf

CIA (2008). Cambodia: CIA.

EIC (2006). *Cambodia at a Glance*. Phnom Penh: ILO.

EIC (2006). *Handbook on Decent Work in the Informal Economy in Cambodia*. Phnom Penh: ILO.

FAO (1992). *Glossary of Terms of Agricultural Insurance and Rural Finance*. W. D. Fiona Walker, Julian Roberts, Richard Meyer, Derek Mayer. Rome: FAO. Retrieved from http://www.fao.org/docrep/007/ad713e/AD713E17.htm#ch17.

FAO (1998). Share Capital. *A study of cooperative legislations in selected Asian and Pacific countries*. Thailand: FAO Regional Office for Asia and the Pacific.

Garand, D. and Wipf, J. (2006). Risk and financial management. In C. Churchill (Ed.), *Protecting the Poor – A Microinsurance Compendium*. Geneva: ILO. Retrieved from http://www.munichre-foundation.org/NR/rdonlyres/8DAE1108-5760-4870-98E3-68C19C60AC37/0/Part3Microinsuranceoperations.pdf

GRET (2006). *SKY Health Insurance Program*. GRET, GRET.

GRET (2007*). GRET "SKY" Health Insurance Program in Cambodia*.

IFBWW (2005). *Building a United Global Trade Union Movement in Construction, Wood and Forestry*. IFBWW, 22nd World Congres, Buenos Aires.

ILO (2006). *Cambodia: Women and Work in the Garment Industry*. J. Makin. Phnom Penh: ILO.

In Meantra (2008). *Micro Insurance Development in Cambodia*. A Microinsurance Forum: Making Microinsurance Work for the Formal & Informal Sector Workers, La Parranda Hotel, Phnom Penh. March 2008.

Maniebo, E. (2007). *Micro-Insurance Products: An Overview*. Seminar on Microinsurance Products, Economics & Finance Institute of the MEF, RIMANSI.

McCord, M. (2001). *Microinsurance: A Case Study of an Example of the Provider Model of Microinsurance Provision*. MicroSave.

Merrick, A. (2001). *Developing Disaster Insurance in Cambodia*. EACSM, East Asia Pacific Region, The World Bank.

National Bank of Cambodia. *Exchange Rates, National Bank of Cambodia*. Retrieved 29 April 2009, from http://www.nbc.org.kh/more-exchange.asp.

NIS (2005). *Cambodia Demographic and Health Survey 2005 (CDHS 2005).* Retrieved 30 April 2009, from http://statsnis.org/SURVEYS/CDHS2005/CDHS2005.htm.

Paguman Singh, H.-K. K. (2005). *Report to the Government on Employment Injury Insurance in Cambodia: Legislation, Financing and Administration*. Bangkok: ILO Sub-regional Office for East Asia.

Pak Sereivathana, Biallas M. (2007). *Cambodia: Financial Sector Diagnostic*. Phnom Penh: IFC-MPDF.

Patel, S. (2002). *Insurance and Poverty Alleviation*. Cheschire: ICMIF.

Pierik, G. (2003). *Micro-Insurance in Developing Countries*. Tilburg: Interpolis Re.

PMBA (2004). *KAPAMILYA Membership Agreement.* PMBA, 08/27/2004.

PMBA (2005). *By-Laws of the Pakisama Mutual Benefit Association.* PMBA, 08/26/2005.

PMBA (2007). *KAISAKA Group Insurance Agreemen*t. PMBA, 03/30/07.

Postlewaite, S. (2007). Micro-insurance for the Poor Coming to Cambodia. *Phnom Penh Post, Vol. 16*.

Rejda, G. E. (2008). *Principles of Risk Management and Insurance (10th Edition)*. Boston: Pearson/Addison Wesley.

Say Soeun, L. B. (2007). Cambodia's Insurance Industry Sharing the Growth. *Economics Today*. *Vol. 1*.

Tolentino, A. (2007). *Efficacy of International Trade Union Movement in Promoting Labour Rights: A Case Study on Union Organising in Angkor Wat Restoration Project Sites. Globalisation and Labour Rights*. Amsterdam: Institute of Social Studies. Diploma Course.

UK Cabinet Office (2004). The *Magenta Book*: Guidance Notes on Policy Evaluation
WB (2006). Cambodia: Halving Poverty by 2015? Poverty Assessment 2006. N. A. Indermit Gill. Phnom Penh: World Bank.

WB (2006). *Managing Risk and Vulnerability in Cambodia: An Assessment and Strategy for Social Protection*. Phnom Penh: World Bank.

Weber, D. A. (2004). *Health Insurance in Cambodia: Feasibility and Possible Project Approaches*. GTZ.

World Health Organization (2006). *Life Table for WHO Member States*. Retrieved 24 April 2009, from http://www.who.int/whosis/database/life_tables/life_tables.cfm.

APPENDIX A
Disability Benefits (PMBA, 2004)

In the event of permanent loss or function of:	***Percent of Benefit Payable***
One Arm or hand	75%
Thumb	25%
Index finger	15%
Every other finger	10%
Leg or foot	70%
Big toe	10%
Every other toe	3%
An eye	35%
Both eyes	100%
Hearing in one ear	25%
Hearing in both ears	60%
Smell and/or taste	10%
Brain injury resulting in incurable Imbecility or insanity	100%
A kidney	20%
The spleen	5%

APPENDIX B
Life Table for Cambodia for Both Sexes for the Year 2006 (WHO, 2006)

Age range	${}_nM_x$	${}_nq_x$	l_x	${}_nd_x$	${}_nL_x$	T_x	e_x
<1	0.06793	0.06485	100000	6485	95461	6198506	62.0
1-4	0.00471	0.01861	93515	1740	369884	6103046	65.3
5-9	0.00154	0.00765	91775	702	457118	5733161	62.5
10-14	0.00100	0.00496	91072	452	454232	5276043	57.9
15-19	0.00159	0.00794	90620	719	451304	4821811	53.2
20-24	0.00297	0.01476	89901	1327	446189	4370507	48.6
25-29	0.00362	0.01794	88574	1589	438900	3924317	44.3
30-34	0.00412	0.02040	86986	1774	430493	3485417	40.1
35-39	0.00500	0.02467	85212	2102	420802	3054924	35.9
40-44	0.00631	0.03105	83109	2581	409093	2634123	31.7
45-49	0.00832	0.04075	80528	3281	394438	2225029	27.6
50-54	0.01132	0.05504	77247	4251	375607	1830591	23.7
55-59	0.01625	0.07810	72996	5701	350727	1454984	19.9
60-64	0.02312	0.10927	67295	7353	318092	1104258	16.4
65-69	0.03559	0.16342	59942	9796	275219	786166	13.1
70-74	0.05650	0.24752	50146	12412	219699	510947	10.2
75-79	0.08962	0.36609	37734	13814	154134	291247	7.7
80-84	0.13967	0.51762	23920	12381	88646	137113	5.7
85-89	0.21242	0.69371	11539	8004	37682	48467	4.2
90-94	0.30742	0.79964	3534	2826	9193	10786	3.1
95-99	0.42805	0.85673	708	607	1417	1593	2.2
100+	0.57693	1.00000	101	101	176	176	1.7

APPENDIX C
Gross Annual Premium (*GAP*) for Death by Natural Causes

A. There will be a refund of equity value equivalent to 35% of the death-by-natural-cause component of gross premiums paid by a member if the member voluntarily withdraws from the program.

B. Loading as Percentage of *GAP* for Primary Members

Tax	-	Tax Exempt
Administrative and Operating Expenses	-	35%
Agent's Commission	-	15%
MEV Loading Factor	-	35%

C. Loading as Percentage of *GAP* for Secondary Members

Tax	-	Tax Exempt
Administrative and Operating Expenses	-	30%
Agent's Commission	-	15%
MEV Loading Factor	-	35%

Gross Annual Premium (*GAP*) for Accidental Death, Hospitalization and Disability Riders

A. There will be no refund of equity value for contributions intended for the hospitalization, accidental death and disability riders.

B. Loading as Percentage of *GAP* for Primary Members

Tax	-	Tax Exempt
Administrative and Operating Expenses	-	35%
Agent's Commission	-	15%
Margin for Profit and Contingencies	-	5%

C. Loading as Percentage of *GAP* for Secondary Members

Tax	-	Tax Exempt
Administrative and Operating Expenses	-	30%
Agent's Commission	-	15%
Margin for Profit and Contingencies	-	5%

APPENDIX D
Summary of Projected Operating Expenses: Year 1 (in USD)

ITEMS	USD	KHR
PERSONNEL		
Salaries (See Schedule 1)	**20,476.4**	**84,280,862.4**
GENERAL COSTS		
Representation & Transportation Cost	5,000	20,580,000
Office Supplies	2,000	8,232,000
Postage, Telephone & Internet	1,500	6,174,000
Utilities	500	2,058,000
Rent	2,500	10,290,000
Repairs and Maintenance	535	2,202,060
Taxes & Licenses	410	1,687,560
Books & Periodicals	50	205,800
Bank Charges	258	1,061,928
	12,753	**52,491,348**
OASE Software	**6,000**	**24,696,000**
Depreciation Expenses	**1500.60**	**6,176,469.60**
CONTRACTS WITH 3RD PARTIES		
External Audit	1,500	6,174,000
Actuarial Advisor	3,000	12,348,000
Ad Arma OASE/ORACLE Support	5,653	23,267,748
Others	1,331	5,478,396
	11,484	**47,268,144**
TRAINING & MEETINGS		
BOD Meetings & Consultations	6,000	24,696,000
General Assembly	3,000	12,348,000
Seminars & Workshops	3,000	12,348,000
Staff Development	1,250	5,145,000
	13,250	**54,537,000**
MONITORING & EVALUATION	**2,500**	**10,290,000**
PROJECTED TOTAL EXPENSE	**67,964**	**279,739,824**

Exchange Rate

USD 1 = KHR4,116 (as of 28 April 2009)

APPENDIX D: Schedule 1
MBA Personnel Services (1 Year)

ITEM	Basic Monthly Salary	Benefits /4	Total Basic Monthly Pay	Annual Basic Pay	13th Month Pay /5	Total Compen-sation Package	No. Required	Total Annual Cost
General manager	300.00	30.00	330.00	3,960.00	300.00	4,260.00	1	4,260.00
Finance & administrative officer	248.00	24.80	272.80	3,273.60	248.00	3,521.60	1	3,521.60
Membership account officers/1	220.00	22.00	242.00	2,904.00	220.00	3,124.00	2	6,248.00
Marketing & claims specialist/2	220.00	22.00	242.00	2,904.00	220.00	3,124.00	1	3,124.00
Bookkeeper/ secretary	138.00	13.80	151.80	1,821.60	138.00	1,959.60	1	1,959.60
General utility clerk/3	96.00	9.60	105.60	1,267.20	96.00	1,363.20	1	1,363.20
							7	**20,476.40**

Where:

1/ Two (2) Membership account officers are in charge of promoting, educating, and maintaining membership of the MBA

2/ The Marketing & claims specialist will assist the Membership account officers in the continuing training of partners and other field agents; develop marketing materials; and develop, monitor incentive schemes, awards and contests; and process all claims application for approval

3/ Utility Clerk is an all-around person that will handle janitorial, messengerial, office maintenance and other routinary clerical work for the office.

4/ Benefits represent employee benefit such as social security or enrollment in MBA program and the like & is 10% of basic salary.

5/ 13th Month Pay represent year-end bonus for employees.

APPENDIX D: Schedule 2
Equipment and Furnishing

Item	No. of Units	Estimated Cost	
		KHR	USD
Computers & peripherals			
Desktop (5)	5	6,956,040	1,690
Server (1)	1	2,346,120	570
Networking	1	2,058,000	500
Wireless router	1	411,600	100
Network Laser Printers	1	617,400	150
Photocopying machine	1	5,145,000	1,250
Ring binder	1	1,234,800	300
Bundy clock	1	514,500	125
Telephone	2	592,704	144
Fax machine	1	205,800	50
Digital camera	1	806,736	196
Multimedia projector	1	3,288,684	799
Paper cutter	1	308,700	75
Desks & chairs	7	2,132,088	518
Conference table & chairs	1	411,600	100
Bookshelves	2	642,096	156
Steel cabinets	4	1,152,480	280
Air conditioner (2 HP)	1	2,058,000	500
OASE Software	1	24,696,000	6,000

APPENDIX E
Projected Operating Expenses and Income (in USD)

				Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Expenses:									
Local salaries				20,476	22,524	24,776	27,254	29,979	32,977
General costs				12,753	14,028	15,431	16,974	18,672	20,539
OASE software				6,000					
Depreciation expenses				1,501	1,501	1,501	1,501	1,501	1,501
Contracts with third parties				11,484	12,632	13,896	15,285	16,814	18,495
Training costs				13,250	14,575	16,033	17,636	19,399	21,339
Evaluation				2,500	2,750	3,025	3,328	3,660	4,026
Total operating expenses				67,963.60	68,009.90	74,660.83	81,976.85	90,024.48	98,876.87
Income									
Year	# of Policies	Plan	Mgt Fee %						
1	7,332	4.94	0.35	12,670.64					
2	9,531	4.94	0.35		16,470.80				
3	14,297	4.94	0.35			24,707.06			
4	22,875	4.94	0.35				39,530.95		
5	36,600	4.94	0.35					63,249.51	
6	58,561	4.94	0.35						101,200.95