

Mechanics of Dividends

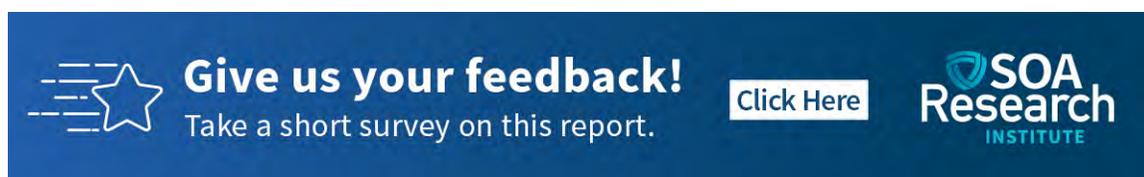




Mechanics of Dividends

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Mechanics of Dividends

Section 1: Introduction

This paper concerns policyholder dividends on traditional participating life insurance products in regulatory contexts similar to those in the United States and Canada. This paper also touches on annuity products. It was prepared for use in the educational curriculum of the Society of Actuaries. Dividend actuaries seeking references to writings on policyholder dividends to refresh their perspective may also find it useful.

Contingencies such as interest rates, mortality, or expense are important to many types of insurance and are manageable for a moderate amount of time by the traditional insurance technique of pooling and relying on the law of large numbers to produce aggregate results near expected levels. One challenge to this approach is managing the risk of such contingencies over longer periods of time as the overall levels of interest, mortality or expense rates may change materially. Broad changes in interest, mortality or expense rates do not apply independently to different contracts and may produce aggregate results far different from those originally expected. One method to managing this risk is offering a mechanism for policyholders to participate in the company experience which may supplement long duration guarantees by providing consumers some upside in comparison to conservative long duration guarantees. While there is a need for guarantees on long duration insurance contracts, some products may offer mechanisms for consumers to participate in the insurer's actual cost as it emerges and, in doing so, reduce the charges for policyholders while providing more upside potential.

One traditional approach to limiting guarantees is to guarantee premium rates to be paid by the policyholder for the length of the contract at a high enough level to be sufficient over conditions within a fair amount of uncertainty, but to offset the extra cost by letting the policyholders "participate" in the experience of the insurer by paying them nonguaranteed "dividends" after seeing what experience emerges. This traditional approach of paying dividends on participating contracts defines the intended scope of this paper. Other forms of non-guaranteed elements, mentioned briefly at the end of this paper, are outside the scope of this paper.

"Par" dividend-paying policies are often issued primarily by mutual companies, and policies with other forms of "non-guaranteed elements" are often issued primarily by stock companies, but the full statement of reality is more complicated and is beyond the scope of this paper. The paper focuses simply on par policies paying dividends, and unless indicated otherwise by the context, any reference to insurance policies means participating insurance policies.

- Whole life insurance (including variations with limited premium payment periods or with limited benefit periods ending with an endowment benefit) is the predominant form of par business with non-zero dividends. It is rare to see a material amount of dividends on term life insurance, annuities, or health insurance (such as disability income insurance, long term care insurance, or medical & surgical insurance)
- Products within the scope of this paper tend to be whole life insurance which are designed to pay dividends in nontrivial amounts, which should be distinguished from "nominally par" business, which may be legally participating but on which the expected dividends are either zero or some fixed scale.
- As described in section 3.2.2, the types of products within the scope of this paper should be distinguished from other types of products with other forms of nonguaranteed elements.
- Indeed, this paper ignores the relatively rare case of products designed with both traditional dividends and other forms of nonguaranteed elements. In such cases, while there may be interesting legal and theoretical complexities not covered in this paper, this paper may be a useful starting point for understanding the *dividend* concepts in such a product.

Section 2: How Dividends Work

Conceptually, dividends are variously described as “the return of the part of premium paid for the policy that was not needed” or “the distribution of surplus no longer needed to be retained by the insurer”. The concept ties an aggregate, insurer-level perception and judgment to individual amounts allocated to the individual policies. In the United States and Canada, the allocations among individual policies are frequently said to be according to the Contribution Principle in concept but within practical limits. The Contribution Principle can be defined as an ideal for the allocation of aggregate divisible surplus among policies to be in proportion to what, or at least reflect the proportion that, the policies, as part of their experience factor classes, are considered to have contributed to divisible surplus. Some challenges with, and interpretations of, the Contribution Principle are discussed in the balance of this paper.

2.1 PROCESS TO SET DIVIDENDS

2.1.1 DECLARATION BY BOARD, AFTER RECOMMENDATION BY MANAGEMENT AND/OR DIVIDEND ACTUARY

- Conceptually, first the Board of Directors determines an aggregate amount of distributable surplus (also called “divisible surplus”). This will reflect the Board’s business judgement balancing being cost competitive (by returning unneeded surplus to policyholders as soon as possible) against the future needs for surplus (to absorb unusual losses, to afford accelerating new business strain, or to reassure the public if industry solvency became a subject of concern). Additional input to this business judgement may be the anticipated reactions of rating agencies and regulators to the trends in earnings and surplus, which are affected by the amount of dividends paid.
- The Board then authorizes its allocation among policies, with consideration given to a dividend scale recommended by insurer management and/or the dividend actuary.
- The allocation of the aggregate amount of divisible surplus relies heavily on the dividend actuary setting formulas that can be programmed and put into production for individual calculation and payment of dividends to individual policies.
- In practice, there may be an interactive development looking at both the “size of the pie” and “slicing up the pie”, involving the Board, management and the dividend actuary to different degrees at different stages and at different levels of detail, as different influences are balanced.
- Normally the bulk of the dividends are being paid on policies that have been in force for several years, so a natural way for the Board and the dividend actuary to communicate as they develop the next year’s dividend scale, both in aggregate and in allocation, is to work from the prior year, analyzing the natural change from the change in business in force, analyzing what experience changes are important for different blocks within the business in force, and analyzing the effects of possible changes in the dividend scale.
- The final intended allocation is documented as a dividend scale, adopted by the Board.

2.1.2 DISTRIBUTION TO INDIVIDUAL POLICIES ACCORDING TO DIVIDEND SCALE ADOPTED

For most companies, dividends are available at the policy anniversary, to be paid or credited according to the dividend option selected by the policyholder. (See text box nearby for discussion of dividend options.) Dividends are generally credited annually, not less frequently, for reasons of both competition and statutory requirements of some states.

The dividend scale used on a particular policy anniversary is updated from the prior scale according to whether the policy anniversary falls before or (on or) after a specified date such as January 1, April 1 or May 1.

The dividend for any particular policy is calculated according to the dividend scale, usually expressed in a form that can be handled by the administrative system, whether table-driven (per-face-amount-unit of basic policy or paid-up additions) or formulaic.

Off-anniversary, likely pro-rata, dividends may be paid on policy termination by death, and sometimes for other terminations such as surrender or nonforfeiture events. These are distinct from any “termination dividends” that are less related to the annual dividend formula and that are beyond the scope of this paper (beyond their brief mention at the end of this paper).

Most companies try to incorporate the coming dividend into the premium notice for the premium due on the policy anniversary. This puts time pressure on knowing a month or two in advance the dividend scale that will become effective for policies with policy anniversaries on or just after the effective date of a revised dividend scale.

2.2 PAYMENT OPTIONS

Most permanent life insurance policies enumerate several available options regarding how dividends are paid to the policyholder, and insurers will sometimes have other specialized options available administratively. Par term life insurance policies and par annuity policies will have fewer dividend options: omitting those that do not make sense because they would not coordinate well with the basic policy coverage periods and types. The more common dividend options are:

- Cash
- Reduction of billed premium (applying the dividend to pay as much premium as possible, with any excess using an alternative option)
- Purchase of paid-up addition (for coverage period matching basic policy’s coverage period)
- Purchase of paid-up addition parallel to basic policy’s coverage, including final endowment
- Purchase of one-year term insurance addition
- Left on deposit in a dividend accumulation fund earning some interest rate (perhaps in a structure of a guaranteed minimum interest rate plus some nonguaranteed excess interest dividend)

Examples of additional dividend options supported administratively as automated programs and created to serve specialized markets, to support particular sales concepts, or to complement unique product designs could include:

- Combinations of paid-up additions and term additions shifting over time to achieve a targeted layer of additional coverage (sometimes packages of this sort are referred to as “economatic” in the United States or as “enhancement” in Canada)
- Programs of applying early year dividends to purchase paid up additions or credit to the dividend accumulations account, followed by years of using (i.e., surrendering) these funds to offset billed premiums. Ideally these surrenders in future years, in combination with future then current dividends, are sufficient to fully offset future billed premiums after some point in time. Sometimes packages of this sort are referred to as “premium offset”. (“Vanish”, an early alternative description is now generally prohibited because the outcome is not guaranteed but the terminology might mislead a consumer to think otherwise.) While the nonguaranteed nature of dividends should be explained in any illustration, it may be particularly important to disclose the non-guaranteed nature of such a premium paying method so that consumers understand the risk that nonguaranteed dividends result in nonguaranteed “premiums net of offsets”.
- Combinations of dividend use, along with particular patterns of using policy loans to achieve desired cash flows, and possibly desired effects under applicable tax law. (At one time in the United States, packages of this sort were referred to as “minimum deposit” but fell out of favor after the tax law was changed.)

All such dividend options help make par life insurance policies very flexible vehicles to serve the policyholder's individual needs, but it is important to remember and remind others that dividends are not guaranteed, so illustrated uses of dividends are illustrations of how the product mechanics can be used based on a set of assumptions, but are not projections, and certainly not guarantees, of what dividends will be, nor how a policy will perform in an uncertain future.

2.3 TYPES OF DIVIDEND METHODS AND TYPES OF DIVIDEND FORMULAS

Three principal sources of earnings available for dividends on life insurance are differences between actual experience and assumed experience with regard to mortality, investment and expense. Thus, the patterns of dividends often reflect the patterns of these sources in combination: mortality gains may ultimately decline as the net amount at risk declines, investment gains may grow as the investment base grows, and the expense gain or loss may depend on expense management and allocation.

The following Figures illustrate how these sources of earnings can be related to the growth in funds or reserves on a block of business.

Figure 1 illustrates the growth of reserves (or funds) over the lifetime of a persisting whole life insurance policy. Assuming a constant face amount insured, the difference (i.e., the net amount at risk) declines as the reserve grows.

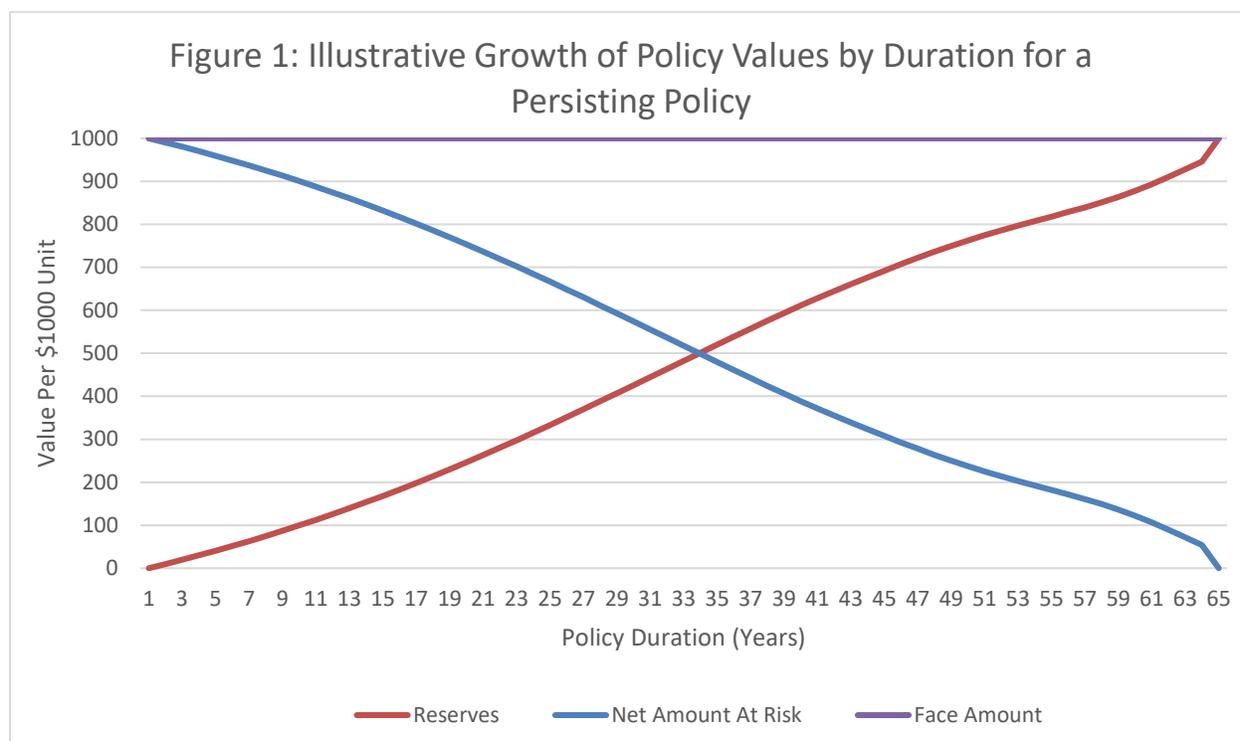
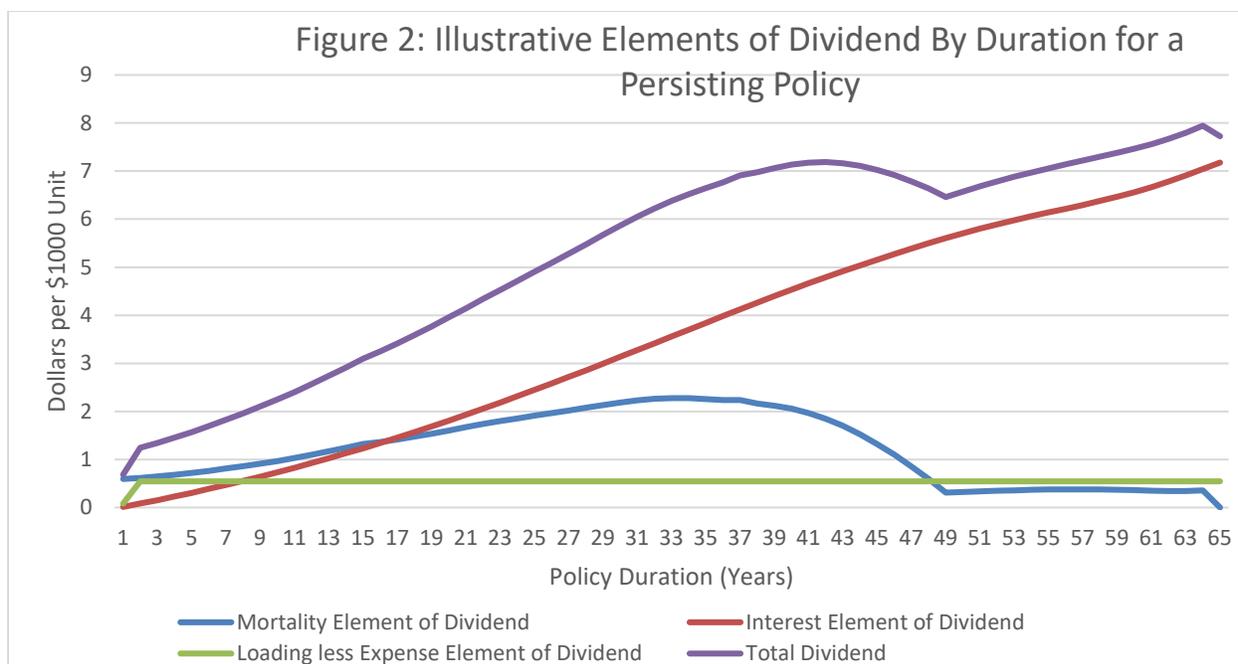


Figure 2 illustrates the patterns of the elements of the dividend on the policy in Figure 1. The three principal elements illustrated are (a) an interest element (in proportion to the reserve of Figure 1), (b) a mortality element (applying a difference in mortality rates to the net amount at risk of Figure 1), and (c) a third element distributing an amount related to premium loading minus expenses. The sum of the three elements produces the total dividend illustrated.



The example runs to the end of the mortality table for the particular life. At that point, the net amount at risk and the mortality element of the dividend fall to zero.

However, there are various methods used by different companies to allocate dividends. These different methods, described generally below, seek a balance of equity (at least in a broad sense), practicality, and the possibility of reasonable consistency over time.

2.3.1 COMMON DIVIDEND METHODS

Contribution Method

The Contribution Method seeks to directly reflect the major sources of gain, often in a three-factor formula recognizing mortality, investment earnings, and expense (but potentially adding other factors for other sources of gain and loss in specific situations).

While there may be some averaging over time for certain aspects (e.g., mortality, expense, or capital gain experience), the method tends to distribute some share of gains as earned.

To make the method manageable, the Dividend Actuary may choose to determine distributions according to the Contribution Method using simplifications, for example, such as using ultimate mortality in the mortality factor while recognizing the difference between select and ultimate mortality to help offset and amortize acquisition expenses that otherwise would be charged in the expense factor.

Updating the dividend scale on policies in force for changes in experience since issue under the Contribution Method can be relatively simple, in concept, to the extent experience factors (less explicit margins) are used directly in the dividend formula.

Experience Premium Method

Company practices vary in the application of the Experience Premium Method. One approach distributes dividends as the sum of two terms: (a) an investment return in excess of a conservatively low interest rate, plus

(b) the difference between a proxy for the gross premium and an “experience” premium calculated using experience mortality and expense assumptions combined with the conservatively low interest rate.

The Experience Premium Method can be preferred for either of two characteristics: (a) its investment factor is likely positive and thus increasing with fund growth even if earned investment returns are low, and (b) it levels out mortality and expense gains over the life of the policy, simplifying the calculation of annual dividend (in part by discouraging the updating of mortality and expense factors).

In effect, the premium difference term in the dividend formula gives up some of its value to increase the investment term since both use the conservative interest rate.

Updating the dividend scale on policies in force for changes in experience since issue under the Experience Premium Method can be relatively simple because only the investment experience factor (less an explicit margin) is updated in the dividend formula.

Asset Share Method

The Asset Share Method seeks to achieve more equitable treatment of policies by duration by building an asset share model that first develops an anchor duration fund (say, at the 20th year) for representative cells defined by issue age, underwriting class (such as gender and smoking habit), size band or other distinctions to be made in the premiums and dividends. The asset share uses best estimate assumptions not only for mortality, interest and expenses, but also for select period mortality, persistency, taxes, capital gains, and/or possibly other features of gain or loss.

The actuary develops a dividend scale for the years after issue up to that anchor duration that produces an acceptable pattern of asset shares (in relation to developing reserves or cash values), for each of the representative cells. These need to be developed ultimately for all possible cells, whether modeled or not, so the dividend scales developed for the representative cells are expressed in terms of parameters (such as reserve, net amount at risk, premium, etc.) and fitted (interpolated or extrapolated) to cover all possible issue cells. While the resulting formulas may resemble the form of a three factor Contribution Method formula, the factors will not represent the earnings from that source, but rather will represent just what is needed to reproduce a dividend formula designed to result in a certain pattern of asset shares. Similarly, the factors will be rather different from the best estimate experience factors used as input to the asset share.

Updating the dividend scale on policies in force for changes in experience since issue can be complicated under the Asset Share Method. The concept is to adjust dividends to return to the targeted pattern of asset shares based on a hindsight development of actual asset shares with regularly updated inputs as actual experience emerges to supersede original assumptions, year by year.

Fund Method

The Fund Method seeks to recognize the development of funds by first developing a pattern of target funds from issue to the anchor duration (e.g., 20th year) expressed as a standard reserve plus an amount (“A”) growing over time. The amount A would grow to a target surplus at the anchor duration, while including a negative component to represent unamortized acquisition expenses which declines to zero over that initial period. The Fund Method does not contain steps to develop dividend scales, neither to produce a desired pattern of asset shares for individual model cells, nor to reproduce such dividend scale for fitting to other issue cells. However, like the Asset Share Method, the Fund Method does use best estimate assumptions not only for mortality, interest and expenses, but also for select period mortality, persistency, taxes, capital gains, and/or possibly other features of gain or loss.

The dividend under the Fund Method is the fund at the beginning of the year, plus premium and interest on the fund, less claims, commissions, taxes, expenses and the target fund at the end of the year. One supposes some attention during product development is paid to the resulting pattern of dividends expected, and the pattern of amount A development over time may be crafted to some degree to allow a steadier pattern of dividends, if necessary.

Given the focus on the pattern of fund in relation to reserves, it may be somewhat easier to develop consistent rules (to define the target funds) that apply across different plans of insurance in the case of the Fund Method than to develop consistent rules (to solve for dividend scales to produce desirable patterns of asset shares) in the case of the Asset Share Method. The preference for the Fund Method over the Asset Share Method at some insurers may also arise from a belief that the intermediate steps of developing dividend scales can be arbitrary while adopting a form appearing misleadingly similar to the Contribution Method.

Updating the dividend scale on policies in force for changes in experience since issue can be complicated under the Fund Method if the actuary does not want to incorporate experience directly without some smoothing and without some recognition that the fund at the start of the year may have differed from the target fund. Projected future dividends on the policies in force may be volatile. The concept is that dividends are adjusted in full to return to the targeted pattern of funds based on a hindsight development of actual funds with regularly updated inputs as actual experience emerges to supersede original assumptions, year by year.

There will be variations of the methods described above, especially as one considers dividend management on business in force. For example, developments affecting new business may encourage complicating changes in the dividend formula applied to existing business. Another example arises when an insurer tries to maintain consistency among various blocks of business with respect to their lifetime contributions to surplus in relation to their lifetime contributions to risk exposure. Rather than observing only a direct calculation of dividends, the insurer may monitor a ratio of accumulated (and anticipated) actual profits (after dividends) to a comparable accumulation of risk charges or risk exposures, adjusting the dividends as needed to stay near target ratios. In all these calculations under any method, actual experience is expressed in terms of experience factors input to a model, and is not simply expressed as an accumulation of actual cash flows for two reasons: (a) it is not practical to create and track a gain and loss exhibit separately for each model cell, and (b) it would prevent the pooling mechanism of insurance.

The methods described above take into account the emergence and crediting of actual experience in various ways with respect to the timing of such experience. The hindsight development embedded in the Asset Share and Fund Methods may be useful in the demonstration of whether inforce policies are “self-supporting” as defined in the NAIC illustration regulation.

2.3.2 ILLUSTRATIVE DIVIDEND FORMULAS

Table Driven Dividend Formulas use formulas like those below to calculate all needed (or even all possible) dividends per unit and save them in tables of unit dividend which some types of administrative systems and new business systems are designed to use. In such a system, the “unadjusted” dividend for a given policy will be the sum of the products of unit dividends for the applicable plan and parameter (such as issue age, duration, underwriting classification, etc.) times the numbers of the various types of units composing the policy (e.g., basic face units, rider units, paid up addition units, etc.). In certain situations, the insurer may have programmed some adjustment to the unadjusted dividend in the administrative system rather than rederive, validate and load a full set of revised dividend tables.

Other administrative systems and new business systems are designed to calculate the dividends for a given policy from first principles, again using formulas like those below. Rather than accessing large tables of unit dividends

already calculated according to formulas such as those below, the administrative system accesses tables of inputs to calculate a dividend for a specific policy at specified durations according to formulas like these:

Three factor formula (Contribution Method or Asset Share Method formula)

$$\text{Dividend } x, t = (q - q'')(Face - Res\ x, t) + (i'' - i)(Res\ x, t - 1 + NPx) + (Exp\ x, t - Exp''x, t)$$

where:

Dividend x, t = dividend at end of policy year t for policy defined by x (where x may be issue age and other characteristics identifying its place in experience factor classes as explained below);

$(q - q'')$ = excess (positive or negative) of reserve valuation mortality rate over mortality rate used to distribute surplus for x, t ; q'' is not equal to precise insurer experience in the year (which we call q') because the insurer may use industry experience or average its own experience over a few years;

$(Face - Res\ x, t)$ = excess of Face Amount insured over the reserve at the end of policy year t , which we recognize as the net amount at risk as illustrated in Figure 1 above;

$(i'' - i)$ = excess (positive or negative) of interest rate i used to distribute surplus over reserve valuation interest rate; i'' is not equal to precise insurer experience in the year (which we call i') because actual investment experience cannot be completely determined until the end of the year, and because insurers prefer to operate and communicate in terms of interest rates in increments such as five basis points or more;

$(Res\ x, t - 1 + NPx)$ = initial reserve at start of policy year t , after the valuation net premium has been added to the reserve held at the prior year end;

$(Exp\ x, t - Exp''x, t)$ = excess (positive or negative) of expense allowance (essentially the loading: gross premium minus valuation net premium) over the allocated expense charged for policy year t ; Exp'' is not equal to precise insurer expense experience in the year (which we call Exp') because actual expense experience cannot be completely determined until the end of the year.

The experience factors q'' , i'' and $Exp''x, t$ may also differ from actual experience because the insurer may seek to retain some profit margin from that risk or to reconcile aggregate dividends to aggregate divisible surplus.

By way of illustration, the table below shows the components of the dividends illustrated in Section 2.3

Table 1. Illustrative Projected Dividend Calculation for Selected Policy Years

Policy Year <i>t</i>	Face	Res <i>x,t</i>	<i>q-q''</i>	NP <i>x</i>	Res <i>x,t-1</i>	<i>i''-i</i>	Exp <i>x,t</i> - Exp'' <i>x,t</i>	Dividend Components			Total Dividend
								Mortality	Interest	Expense	
1	1000	0.00	0.000592	1.6172	-	0.0075	0.081	0.592	0.012	0.081	0.684
2	1000	9.63	0.000620	10.8959	0.00	0.0075	0.545	0.614	0.082	0.545	1.240
3	1000	19.61	0.000658	10.8959	9.63	0.0075	0.545	0.645	0.154	0.545	1.344
4	1000	29.94	0.000700	10.8959	19.61	0.0075	0.545	0.679	0.229	0.545	1.453
5	1000	40.62	0.000749	10.8959	29.94	0.0075	0.545	0.719	0.306	0.545	1.570
6	1000	51.66	0.000802	10.8959	40.62	0.0075	0.545	0.760	0.386	0.545	1.691
7	1000	63.06	0.000865	10.8959	51.66	0.0075	0.545	0.810	0.469	0.545	1.824
8	1000	74.83	0.000928	10.8959	63.06	0.0075	0.545	0.858	0.555	0.545	1.958
9	1000	86.97	0.001001	10.8959	74.83	0.0075	0.545	0.914	0.643	0.545	2.102
10	1000	99.51	0.001075	10.8959	86.97	0.0075	0.545	0.968	0.734	0.545	2.246
11	1000	112.42	0.001162	10.8959	99.51	0.0075	0.545	1.031	0.828	0.545	2.404
12	1000	125.73	0.001257	10.8959	112.42	0.0075	0.545	1.099	0.925	0.545	2.568
13	1000	139.44	0.001358	10.8959	125.73	0.0075	0.545	1.169	1.025	0.545	2.738
14	1000	153.55	0.001467	10.8959	139.44	0.0075	0.545	1.241	1.128	0.545	2.914
15	1000	168.07	0.001589	10.8959	153.55	0.0075	0.545	1.322	1.233	0.545	3.100
16	1000	183.01	0.001669	10.8959	168.07	0.0075	0.545	1.364	1.342	0.545	3.251
17	1000	198.34	0.001766	10.8959	183.01	0.0075	0.545	1.415	1.454	0.545	3.414
18	1000	214.05	0.001875	10.8959	198.34	0.0075	0.545	1.474	1.569	0.545	3.588
19	1000	230.11	0.001993	10.8959	214.05	0.0075	0.545	1.535	1.687	0.545	3.767
20	1000	246.51	0.002127	10.8959	230.11	0.0075	0.545	1.603	1.808	0.545	3.955
30	1000	425.83	0.003804	10.8959	407.04	0.0075	0.545	2.184	3.135	0.545	5.863
40	1000	611.30	0.005292	10.8959	593.76	0.0075	0.545	2.057	4.535	0.545	7.137
50	1000	762.71	0.001361	10.8959	749.88	0.0075	0.545	0.323	5.706	0.545	6.574
60	1000	877.62	0.002956	10.8959	863.55	0.0075	0.545	0.362	6.558	0.545	7.465
61	1000	893.28	0.003300	10.8959	877.62	0.0075	0.545	0.352	6.664	0.545	7.561
62	1000	910.42	0.003845	10.8959	893.28	0.0075	0.545	0.344	6.781	0.545	7.671
63	1000	928.38	0.004802	10.8959	910.42	0.0075	0.545	0.344	6.910	0.545	7.799
64	1000	946.04	0.006580	10.8959	928.38	0.0075	0.545	0.355	7.045	0.545	7.944
65	1000	1000.00	0.010000	10.8959	946.04	0.0075	0.545	0.000	7.177	0.545	7.722

In this illustrative dividend scale, the policy is a whole life \$1,000 face amount unit issued to a male nonsmoker age 35 during the 1980 CSO/4.5% reserve era. Reserves are on the CRVM, so the first-year net premium is essentially the valuation mortality cost that year. The mortality rates q'' used in the distribution are percentages of the 1980 CSO: 65% during policy years 1-15, increasing by 1% per year to 99% in policy years 49 and later. The interest rate used in the distribution is 5.25%, to be compared to the 4.50% valuation interest rate. After analyzing the gross premium versus valuation net premium ("loading"), the various expenses and other effects, the insurer decides to set the third factor at 5% of valuation net premium. As suggested above in section 2.3.1, changing the Contribution Method dividend scale after issue for a change in experience may be as direct as updating experience factors used in the dividend formula. If interest rate i'' being distributed declined by 25 basis points starting in policy year 10 (against a fixed valuation interest rate i), then the interest component in year 10 would decrease from \$0.734 to \$0.489 = (0.0050)(86.97+10.8959), and the total dividend would decrease by the same \$0.245 difference.

Experience Premium formula

$$\text{Dividend } x, t = (i'' - i''')(EPRes'''x, t - 1 + EP'''x) + (GPx - EP'''x)$$

where

Dividend x, t = dividend at end of policy year t for policy defined by x (where x may be issue age and other characteristics identifying its place in experience factor classes as explained below);

$(i'' - i''')$ = excess of interest rate (i'') used to distribute surplus over the conservatively low interest rate (i''') used to define and calculate the experience premium; i'' is not equal to precise insurer experience in the year (which we could call i') because the insurer will seek to retain some profit margin from the investment risk, because actual investment experience cannot be completely determined until the end of the year, and because insurers often prefer to operate and communicate in terms of interest rates in increments such as five basis points or more;

$(EPRes''x, t - 1 + EP''x)$ = initial reserve at start of policy year t defined consistent with the basis for the experience premium, after such experience premium has been added to the reserve held at the prior year end; the experience premium reserve is not the valuation reserve, but rather is a natural reserve calculated with the same mortality, expense and interest assumptions as used to calculate the experience premium;

$(GP x - EP''x)$ = excess (positive or negative) of gross premium minus experience premium for policy defined by x (where x may be issue age and other characteristics identifying its place in relevant experience factor classes).

Fund Method formula

$$Dividend\ x, t = (Fund\ x, t - 1 - Fund\ x, t) + GP\ x + (i'')(Fund\ x, t - 1 + GPx) - q''(Face) - Exp''x, t - other\ benefits\ and\ expenses\ such\ as\ commissions\ and\ taxes$$

where

Dividend x, t = dividend at end of policy year t for policy defined by x (where x may be issue age and other characteristics identifying its place in experience factor classes as explained below);

$(Fund\ x, t - 1 - Fund\ x, t)$ = a charge (that is, a negative) for the growth in the target fund from the end of the prior year (at $t-1$) to the end of the current year t ;

$GP\ x$ = gross premium as modeled for x ;

(i'') = interest rate (i'') used to distribute surplus; i'' is not equal to precise insurer experience in the year (which we could call i') because the insurer will seek to retain some profit margin from the investment risk, because actual investment experience cannot be completely determined until the end of the year, and because insurers often prefer to operate and communicate in terms of interest rates in increments such as five basis points or more;

$(Fund\ x, t - 1 + GPx)$ = required fund at start of policy year t , after the gross premium has been added to the required fund at the prior year end

$-q''(Face)$ = death benefit charged, which is calculated as Face Amount insured times the mortality rate (q'') used to distribute surplus for x, t ; q'' is not equal to precise insurer experience in the year (which we call q') because the insurer will either use industry experience or average its own experience over a few years, and it may seek to retain some profit margin from the mortality risk;

$-Exp''x, t - other\ benefits\ and\ expenses\ such\ as\ commissions\ and\ taxes$ = expenses and other benefit charged in policy year t .

Underlying these formulas are the concepts of:

- policy factors: values set by the product for premiums, cash values, face amount, policy loan interest rate
- experience factors: rates of mortality (and possibly morbidity), premium persistency, expense, commissions, taxes, investment income, policy termination, reinsurance, and – for the Experience Premium Method – experience premiums
- experience factor class: a grouping of policies for which dividends are determined by using the same value or set of values for a particular experience factor

A particular policy will belong to the combination of several experience factor classes, one defined for each of the experience factors applicable to its operation and risks.

The Canadian education note (CIA, Dividend Determination for Participating Policies, January 2014, Document 214008) identifies pricing assumptions as a type of policy factor. In a regulatory context that would enforce it, this would make sense because these assumptions would help define the permanent contribution to surplus expected as actual dividends are set or revised.

2.4 DIVIDEND FRAMEWORK

A dividend scale, among other things, represents an allocation of aggregate divisible surplus among different generations of policies and different kinds of policies that, in the dividend actuary’s judgment, is equitable. It is important to have a well-thought-out dividend framework, the structure by which the insurer allocates divisible surplus among participating policies, because it will be looked at from many angles. First, the actuary will need to be able to explain dividend patterns in a single year’s dividend scale along the different dimensions of insurance plan, issue age, policy duration, underwriting class (gender, smoking habit, etc.), size, additional features, etc. The pattern along the dimension of policy duration can be particularly important because the current dividend scale is normally used as a basis for illustrating how dividends in the future may operate for the same policy at its future policy durations. Further, the actuary may need to explain patterns, or at least changes, among dividend scales over time for a series of years, as well as how and why actual dividend scales have differed from illustrated dividend scales. Such illustrations may have been based on a dividend scale anticipated at issue date or may have been based on dividend scales at later durations when the policy was already in force. To manage all these potential comparisons, it is essential to have a dividend framework that is consistent over time:

- with respect to the assignment of policies to experience factor classes,
- the method of allocating income and costs to calculate the experience factors, and
- the structure of the formulas or other methods of using experience factors.

The concepts of experience factor class and dividend framework are key to understanding the phrase “considered to have contributed” in the definition of the Contribution Principle given in the first paragraph of section 2: “The Contribution Principle can be defined as an ideal for the allocation of aggregate divisible surplus among policies to be in proportion to what, or at least reflect the proportion that, the policies, as part of their experience factor classes, are considered to have contributed to divisible surplus.”

2.5 RECOGNITION OF POLICY ACTIVITY

If practical and material, many insurers’ dividend calculations reflect policyholder choices and policy activity that would distinguish the profitability of one policy from an otherwise identical policy. Examples include:

- The choice to use dividends (or to pay premiums on “drop-in premium” riders) to buy paid-up additions creates additional coverage and normally additional profit from both mortality experience and investment experience, so dividend formulas commonly add dividend terms from the paid-up additions coverage to dividend terms from the basic policy.
- The choice to leave dividends on deposit (sometimes referred to as “dividend accumulations”) creates additional profit from investment experience if the interest rate guaranteed is not higher than current rates, so some dividend formulas add a term for excess interest on dividend accumulations.
- The choice to use riders (for a temporary life coverage, for accidental death, for disability, etc.) that create additional coverage will create additional gain or loss. Some dividend formulas may reflect an explicit term for these gains or losses, but it is not common. An alternative could be to incorporate any gain or loss on riders into the base policy experience factors such as interest or expense used to calculate dividends, either explicitly or implicitly.
- Insurers sometimes make an offer to policyholders to amend (or “update”) existing policies for reasons including allowing policyholders to gain advantage from more sophisticated underwriting standards, revised regulations, or to mitigate emerging tax problems. If the policyholder accepts the offer to update, the profitability of the policy can be different from what it otherwise would have been, and the dividend formula could recognize the revised policy status via the establishment of a new dividend factor class. Normally, the actuary will have estimated how the dividend would change so that that information could be included in the offer to amend.
- A dividend formula may recognize the utilization (vs non-utilization) of a policy option such as policy loans or the presence (vs absence) of an optional feature or rider that affects profitability. The recognition of one of these options or features may increase or decrease dividends explicitly for some policyholders, which in turn may decrease or increase the amount of divisible surplus available to be distributed to other policyholders. There are currently differing opinions across the industry about whether particular options or features should be recognized in the dividend formula, and if so, how. A discussion of the merits of each opinion is beyond the scope of this paper.

2.6 HANDLING ONE-TIME CHANGES

Because various audiences, including policyholders, may compare a current dividend to the *prior year* dividend or may anticipate *future* levels of dividends in relation to the current level, even if this expectation may be erroneous, the actuary needs to consider how to handle one-time changes in the dividend paid, often related to a one-time change in the aggregate divisible surplus. Such changes may be either temporary or permanent.

Examples of temporary changes could include

- Large capital gains or losses not expected to be regular events but large enough to affect the aggregate amount of distributable surplus for a time (Capital gains amortized into surplus through a mechanism such as the IMR in the United States, which spreads income over years, generally do not create a change of this sort.)
- Severe mortality losses from a catastrophe (epidemic, war, terrorism, etc.) creating a temporary spike in mortality rates but which is not expected to be a normal condition in the future
- Temporary spike or absence of surrender/lapse rates
- Major release of liability from litigation or tax audit resolved in the insurer’s favor
- Major loss in litigation (or tax dispute) which must be paid, or reserved for, beyond affordable annual effects accrued thereafter
- Retroactive accrued liability established, or released, because of a change in law, regulation or court decision

In contrast, examples of permanent changes could include

- Experience factors (mortality rates, interest rates, expense rates, etc.) change to new levels, which seem likely to continue
- Reinsurance costs on existing business change for future years
- Change in tax law will affect yearly earnings or how dividends are treated for tax obligation, or both
- Additional obligations are created for additional reporting and disclosures (increasing insurer expenses, benefits to be granted, or reserves (or surplus) to be accumulated
- The Board and the actuary decide the dividend framework needs to be revised, shifting the allocations of the relative distributions to be more equitable, which will increase the dividends for some, while reducing dividends for others.
- The Board changes the growth in aggregate divisible surplus by less (or more) than what is explained by changes in experience because the desired retained surplus has been re-evaluated in the context of enterprise risks, new business strain, competition, or rating agency standards.

The first questions to consider when making a one-time change are:

- Which policyholders should the one-time change apply to? Depending on the genesis of the change, it may not be appropriate to reflect for all policyholders.
- If the one-time change will be permanent, can the insurer afford to moderate, and would it want to moderate, the abruptness of any discontinuity by spreading the change in aggregate divisible surplus over a few years?
- If the one-time change will be temporary, can the insurer afford to moderate, and would it want to moderate, the abruptness of any discontinuity by spreading the change (and its reversal at the end of the temporary period) in aggregate divisible surplus over a few years?
- If the one-time change is a decrease for some or all policies, does the insurer have the administrative capacity to handle various forms of smoothing the discontinuities at decreases for individual policies, such that formulas that involve pegging, substitution, or other techniques are available for consideration?

Pegging is a process in which a reduction in dividend scale is mitigated by “pegging” the dividend paid (e.g., by continuing to pay the policy’s last dividend received under the earlier scale, or a percentage of the prior dividend) until the dividends on the reduced new scale grow with duration to exceed the pegged dividend floor for the individual policy. Substitution is a process in which a scale illustrated at issue would actually still be paid in the first few years after issue even if the current scale had been changed just after issue. For permanent life insurance without large single premiums, the pattern of the dividend scale is normally rising rapidly in early years, so subsequent switching to the new reduced scale is not a visible discontinuity, even as the first few dividends are paid as illustrated.

Another means to smooth the pattern of a dividend scale is to use the Experience Premium Method dividend formula, discussed in section 2.3.1.

Other important questions to consider when a temporary one-time change is made are:

- How to communicate with policyholders and other important audiences about the temporary change, especially its impermanence, further emphasizing the non-guaranteed nature of dividends.
- What to include in illustrations for new sales and in illustrations for business in force, especially for durations after the temporary period?

- What dividends to reflect in projections of the future in models used for asset adequacy testing of reserves, self-support testing of illustrations, embedded value reports, etc.

2.7 CONSTRAINTS AND CONTEXT

2.7.1 ALLOCATION BASED ON PAST CONTRIBUTIONS, BUT WITH AN EYE TO THE FUTURE

Conceptually, par dividends are a distribution of gains earned historically, both in aggregate (surplus is accumulated historically) and in individual cases (per the Contribution Principle). However, the Board is considering what surplus needs to be retained for the future as it decides what is distributable now, so when applying the Contribution Principle, the dividend actuary may reasonably choose to define a policy's contribution to divisible surplus in a way that recognizes what is needed for the future. Said another way, in some situations actuaries may choose to interpret and apply the Contribution Principle over an extended period of time, rather than annually.¹

2.7.2 RELATIONSHIPS BETWEEN EXISTING BUSINESS IN FORCE AND NEW BUSINESS

Given that insurance works well when risks are pooled over a large number of policies, insurers normally analyze experience and establish experience factors with appropriate blending of experience from many issue years, both business in force and new business. The experience factor could be mortality or expenses or interest rates, and important distinctions would be made in experience factors when deriving values for the different experience factor classes, including those that produce differences between older business and recent business. In Canada, experience factor classes should be established at issue and would not be expected to change. In the United States, experience factor classes are part of the dividend framework, but the dividend framework and experience factor classes may be updated over time in light of changing conditions. While an explanation of how the distinctions in experience factors may be made is beyond the scope of this paper, here is a brief description of the kinds of distinctions made while still making use of pooled experience.

For example, mortality experience may be pooled, but the number of identical lives at the same issue age, duration, underwriting class, etc. may be too few to produce statistically credible mortality results. Hence, the actuary will create an experience mortality table graduated over age and duration, or modify some existing mortality tables, to reflect relationships among issue ages, durations, underwriting classes, underwriting eras, etc. that reflect the actuary's judgment of how to mix credible experience with expectations for areas where the experience is less credible. The mortality expectations for new business normally start with the mortality experience on existing business, and while the actuary may evaluate expected changes in mortality because of trends or known changes in underwriting, markets, or products, the actuary should be aware of any regulatory constraints on introducing mortality assumption differences between existing business and new business with respect to new business illustrations.

Another example concerns the reflection of expenses underlying the dividend scale. Expense drivers may be related to policy size, product complexity, underwriting standards, and other aspects for which allocation decisions need to be made and which will affect the allocations between older business and recent business (and will normally affect new business illustrations). Using expense allocation methodologies that are consistent from year to year, absent a conscious decision to take a different view, is a helpful component of a dividend framework used for existing business and new business. In Canada the expense allocation methodology is required by the Insurance Companies

¹ In the United States, ASOP No. 15 provides "Section 3.1 Contribution Principle—The actuary should use the contribution principle in determining dividends unless, in the actuary's professional judgment, a different basis is preferable, reasonable, and appropriate. *The actuary may apply the contribution principle annually or over an extended period of time.*" [emphasis added]

Act to be approved by the Board. Further, the Act requires that the method be such that the actuary of the insurer can (and does) opine annually that the method is fair and equitable.

A final example concerns the reflection of investment income rates in the dividend scale. Different insurers may have different philosophies for distinguishing investment experience factor classes, whether by product portfolio, investment generation, or other. These different philosophies may produce dividend differences between existing business and new business, and the direction of the differences may depend on movements in market interest rates.

2.7.3 EFFECT ON REGULATORY/STATUTORY LIABILITIES

- Dividends credited in the past but not taken in cash will remain on the insurer's balance sheet as liabilities, such as reserves for paid-up additions.
- Once declared for payment in the following calendar year, a dividend apportionment liability for the full dividend is normally held as a US statutory liability, which can be viewed as conservative to the extent profits are being earned between the date when the liability is established and the date when it is paid.
- Because future dividends are not ordinarily guaranteed, they do not ordinarily affect US statutory liabilities, but asset adequacy testing would reflect anticipated dividends in the future. In contrast, statutory liabilities in Canada are defined in such a way that future dividends *are* included in the calculation of reserves.

2.8 CASE STUDIES IN INCREASING OR DECREASING THE DIVIDEND SCALE

2.8.1 MIXED EXPERIENCE

Suppose an insurer has been reporting increasing earnings (after dividends) in its whole life insurance line of business. The investment portfolio earned rate is steadily increasing as new assets are invested at new money rates varying from month to month (sometimes varying even week to week), but generally at rates higher than the current portfolio rate. Mortality had jumped up, especially at older attained ages, for a few years during the pandemic, but mortality experience has returned somewhat closer to pre-pandemic levels, albeit actual-to-expected ratios continue to vary from year to year (and more so from quarter to quarter). There is concern that some insureds now have impaired health from "long covid" after-effects, but the long-term mortality impact is unclear. Persistency experience has remained essentially unchanged. There is expense pressure from inflation appearing following the pandemic and from new public health and safety procedures, but the insurer is working hard to manage expenses downward. Surplus ratios have been steady, adequate to maintain ratings from rating agencies. The field force reports that some competitors have increased their dividend scales, having their most visible effects in the arena of new sales, so the insurer's field force hopes that its ongoing sales efforts will be supported by an improved dividend scale that can be illustrated. Even if the insurer increases its dividend scale in the amounts being considered, the insurer does not anticipate sales results will be much higher than those of recent years.

The insurer's actuary and management conclude that no reductions to the mortality or expense components of the dividend scale are desirable because such reductions would be in uncertain (but relatively small) amounts and disproportionately expensive to implement. Rather, the increase in the interest component of the dividend scale will be restrained to distribute only some of the increase in interest rate, offsetting some of the drag from marginally worse mortality and expenses by using a dividend interest rate rounded down to the next ten basis points.

The actuary affirms that the revised dividend scale continues to satisfy regulatory self-support tests for illustration of new business (and for business in force in where required), is unlikely to cause problems in asset adequacy tests of regulatory reserves (nor in other financial reports), and satisfies internal procedural diligence requirements. The

actuarial report is written, a Board resolution authorizing the change is adopted, changes in administrative and new business systems are tested and implemented, announcements are made to the field force and the public, and work begins anew to be ready for the next dividend cycle.

2.8.2 DETERIORATING EXPERIENCE

Suppose an insurer has been reporting flat to decreasing earnings (after dividends) in its whole life insurance line of business. A prior capital gain in the investment portfolio has mostly amortized, and new assets continue to be invested at new money rates varying from month to month (sometimes varying even week to week), but generally at rates lower than the current portfolio rate, so the portfolio average earned rate for this calendar year is now projected to be 14 basis points below that used the last time the dividend scale was revised (both rates reflecting the effects of the amortization of the prior capital gain in the investment portfolio). For a few years during the pandemic, mortality had been higher than prior recent experience, not only at older attained ages but also especially at attained ages 25-34 and also at durations 11-15. In most recent 18 months, mortality experience has returned somewhat closer to pre-pandemic levels, albeit actual-to-expected ratios continue to vary from year to year (and more so from quarter to quarter). There is concern that some insureds now have impaired health from “long covid” after-effects, but the long-term mortality impact is unclear. Persistency experience has remained essentially unchanged. There is expense pressure from inflation appearing following the pandemic and from new public health and safety procedures, but the insurer is working hard to manage expenses downward. Surplus ratios have declined slightly but are currently adequate to maintain ratings from rating agencies. The field force does not report that any competitors have decreased their dividend scales, and there are unverified reports of two competitors that may increase their dividend scales modestly. The insurer’s field force states that this would be an unfavorable time to reduce the dividend scale (and the insurer’s competitive position and the ability to recruit new agents). The insurer anticipates sales results will not be much lower than those of recent years, even if dividends are reduced, given the general economic environment with its low interest rates.

The insurer’s actuary and management conclude that no reductions to the mortality or expense components of the dividend scale are desirable because such reductions would be in uncertain (but relatively small) amounts and disproportionately expensive to implement. (This insurer uses the Experience Premium Method on only a small block of business in force, and on that block, this conclusion is automatic.) Furthermore, an increase in the mortality charged at particular problem points (durations 11-15 or attained ages 25-34) would affect policies in the future different from the policies that had had the poor experience in the past because the policies have progressed to later durations and older attained ages.

The insurer’s actuary and management decide to recommend to the Board to reduce the dividend scale by 15 basis points on the investment base used in the dividend scale for both new business and business in force. (This statement is meaningful for an insurer using any of the dividend calculation methods illustrated in section 2.3.2.) Because the insurer had delayed taking any action in the prior year until results were clearer, management decides not to recommend to the Board that the insurer peg the dividend scale, even though that would smooth the transition. However, they do decide to recommend substitution transition for policies issued within the past two years, paying the dividend scale as originally illustrated on the policy anniversary in the coming calendar year.

The actuary affirms that the revised dividend scale continues to satisfy regulatory self-support tests for illustration of new business (and for business in force in where required), is unlikely to cause problems in asset adequacy tests of regulatory reserves (nor in other financial reports), and satisfies internal procedural diligence requirements. The actuarial report is written, a Board resolution authorizing the change is adopted, changes in administrative and new business systems are tested and implemented, announcements are made to the field force and the public, and work begins anew to be ready for the next dividend cycle.

2.9 INSURERS OF POLICIES WITH DIVIDENDS

While par policies are the primary products of most mutual life insurers, a great deal of participating business exists also in stock life insurance companies. There are four primary historical situations leading to this.

1. Especially before the advent of other forms of non-guaranteed element life insurance, a number of stock insurers issued par business within a par branch, and some of that business persists today.
2. When a large number of mutual life insurers in the United States and Canada converted to become shareholder owned stock life insurance (primarily over the years 1986 to 2006, although this demutualization activity has continued since then), their existing business in force was par, so they made provisions to reassure their existing par policyholders that the business would continue to participate reasonably. In most of the larger cases, this reassurance took the form of a “Closed Block” mechanism, which we will discuss below in section 3.1.4.
3. Some demutualized insurers, especially in Canada, have continued to offer participating insurance policies for sale.
4. Not every conversion from a mutual life insurer in the United States was to a shareholder owned company. Some converted to become part of a Mutual Insurance Holding Company structure, where the holding company owning the shares was itself mutual, whose members were the policyholders in the subsidiary that had been mutual. Technically, the converted mutual was a stock company, so its product offerings may have changed at that time. If the determination of dividends on older business would no longer be linked to the dividends illustrated on new business (if any), the existing policyholders could have been concerned that support for the best possible dividends previously provided by competitive forces would have weakened. To mitigate this concern, several of the new mutual insurance holding company insurers in their conversions provided reassurance to the existing par policyholders in the form of Closed Block mechanisms or otherwise.

Besides mutual life insurers and stock life insurers, other corporate forms of organization may be able to issue par life insurance or annuities, such as fraternal benefit organizations, not-for-profit organizations, and charitable organizations. However, differences, if any, among the par life insurance products from different types of organizations are beyond the scope of this paper.

Section 3: Considerations

3.1 DIFFERENT CONCEPTS OF “FAIR AND EQUITABLE” MAY ARISE FROM DIFFERENT PERSPECTIVES

Boards and actuaries seek to achieve allocations of dividends that they sense are fair and equitable (or similar standards). Different concepts of “fair and equitable” may arise from different perspectives, so the Board and the actuary may want to have a clear concept of what is appropriate for the branch of business and the insurer.

3.1.1 UNCONSTRAINED PERSPECTIVE IS FUNDAMENTALLY RETROSPECTIVE

The simplest perspective would be that a mutual insurer Board and actuary want to return some part of earnings, and, rather than return it uniformly (as had been common in the United Kingdom) proportional either to face amount or to premium that was paid during some period of time, they would seek to allocate the aggregate distribution in proportion to how the various classes of business had contributed to earnings. This approach to allocate surplus comes from a purely retrospective perspective.

A variation of the purely retrospective perspective would be to use historical earnings reduced by annual risk charges to reflect the differences in relative risks taken by the insurer as it had insured different policies or product lines (historically).

A slightly less simple perspective would be to allocate the aggregate distribution in proportion to how the various classes of business had contributed to the distributable surplus, so if some business required more surplus to be retained for future uncertainty (and thereby reduced the amount of distributable surplus), then it would receive a smaller share of the current distribution. Known as the Contribution Principle, this approach is primarily retrospective, albeit adjusted for a perception of future risk.

3.1.2 PERSPECTIVE MAY BE BROADENED TO IMPROVE ABILITY OF INSURER TO SERVE THE PUBLIC

To serve the public well, the insurer needs to keep the pool healthy (that is, avoiding having all the “healthy lives” leave the pool for better prices elsewhere) and growing (by meeting competition to appeal to a larger number of lives). Thus, there can be some tension between continuing to use the prior dividend framework unchanged versus introducing distinctions that will benefit the “better lives” (who are, or could be, contributing more earnings) but not the others, who produce less earnings. If the change is not made, would inaction simply result in the better lives going elsewhere, and leaving the “worse lives” to receive the same or even lower dividend? For many years, competitive pressures have led to increasingly sophisticated dividend scales, better recognizing differences in contributions.

Thus, the concept of fairness and equity in some companies may reflect a perspective that takes into consideration one or more influences affecting the dividend scale adopted from time to time such as:

- competition
- consistency with new business
- sustainability of the dividend scale, or a change in dividend scale, into the future, given some view of future experience and/or a desire to minimize volatility in dividend payouts
- policyholder expectations
- avoidance of losses that would result from policyholder reactions
- avoidance of losses that would result from agent activity to replace policies
- regulator expectations
- balancing complexity with practicality, which often entails giving priority to first making the most important or the most cost-efficient dividend scale changes, and in the simplest way

Specifically in Canada, Policyholder Reasonable Expectations (“PRE”) are considered as part of determining whether dividend scales are fair and equitable. “PRE arises from the company’s communications in marketing materials, from information provided, from its administration practices and from general standards of market conduct.”²

3.1.3 PERSPECTIVE MAY BE BROADENED TO CONSIDER EXTERNAL CHALLENGES

External challenges that may affect whether or when to change a dividend scale could be

- sales illustrations vs illustrations of current dividend scale
- competition (especially to the extent new business is tied to the dividend scale)
- financial reporting and third-party ratings
- litigation and other risks
- perceptions or assertions by some policyholders that prior illustrations were prospective estimates (or even promises)
- external environment

Some constraints on how and when a dividend scale is revised could be

- regulator interrogatories (such as in US regulatory financial reporting) related to illustrations and policyholder treatment, and
- the record of action created by the need to revisit the same issues year after year. That is, if a problem has not been dealt with, postponing action to the next year, it may be that conditions will not have improved, so that the problem will have grown larger.
- Additionally, there could be unexpected crossfire from third party investors who may buy ownership of existing policies, whose interests can depend on whether they buy before versus after there is a change in the illustrated dividend scale.

The strongest defenses against complaints about the insurer’s dividend actions may be

- a consistent and documented dividend framework based on the contribution principle to allocate dividends equitably, and
- well documented actions by an informed Board exercising its business judgment rule, taking into account the considerations above.

In an environment like what is current in early 2022 (continued low interest rates and still in the COVID pandemic), the actuary may want to make projections to stress test the dividend capacity under future scenarios with persistently low (or negative) interest rates and/or increased mortality, if only to educate the Board.

3.1.4 PERSPECTIVE MAY NEED TO CONSIDER THE SPECIAL CIRCUMSTANCES OF A CLOSED BLOCK

In this paper, the terminology “Closed Block” refers not just to a product line no longer being issued, but more specifically to a formal dividend protection mechanism created (and formally approved by the regulator) as part of a conversion of a mutual insurer to be a stock insurer (whether then held by a mutual holding company or by third-party investors).³ For smaller blocks, the dividend protection mechanism may be simple and provide no discretion to the insurer to pay anything less than a formulaic dividend. For this paper “Closed Block” will refer to a dividend protection mechanism in which the insurer has some discretion to manage the dividend scale over time to reflect

² Canadian Institute of Actuaries’ Educational Note on Fairness Opinions Required under the Insurance Companies Act Pursuant to Bill C-57 (2005), paragraph 1.5.7

³ Closed Blocks resulting from a demutualization in Canada are subject to guideline E-16 of the Canadian regulator, OSFI.

emerging experience and avoid a tontine outcome. Reflecting the actual dividends paid, the experience (operating under defined operating rules) of the closed block of par business is tracked by adding (subtracting) insurance and asset cash inflows (outflows) to a portfolio of dedicated assets. The initial assets in the dedicated portfolio were determined as the amount necessary to fund the dividend scale at the time of conversion, assuming experience remains unchanged, again operating under the defined operating rules, so that the last dollar of assets in the fund is paid out with the termination of the last policy. In effect, the contribution to surplus implicit in the dividend scale with its underlying experience at the time of the creation of the Closed Block is excluded from the initial funding of the Closed Block, and the Closed Block dividends will be determined by the experience of the Closed Block thereafter, receiving the benefit of any improvements in experience and enduring the costs of any deterioration in experience.

As part of the conversion, the concept of participation is often transformed (a) from a general reliance over the long term on the insurer to reflect emerging experience in the dividend scale (b) to a more specific formula tracking a specified pool of assets with the admonition to pay out the last dollar to the last policy. Thus, the overriding consideration for the insurer may be to avoid tontines (positive or negative). The outcomes may include:

- Not surprisingly, revisions made in aggregate to the dividend scale could become a better tool for this purpose than would refinements within the dividend scale (depending on the situation).
- Given that a particular dividend scale was the basis for communications about protection of dividend expectations at the time of the creation of the Closed Block, it may make sense for ongoing revisions to be as simple as a uniform factor applied across all cells, maintaining the original relativity of dividends.
- The dividend scale on the Closed Block is disconnected from the dividend scale on new business. This tends to reduce the competitive pressure for an increasingly sophisticated dividend scale in the Closed Block, even if competition is forcing more sophisticated dividend scales in the new business marketplace.
- The expense of updating a sophisticated dividend scale in most cases falls not on the Closed Block policyholders, but rather it falls on the shareholders, because the Closed Block operating rules in most cases fixed the expenses to be charged, removing discretion and allocation judgments regarding expenses to be charged to the Closed Block. The shareholders and insurer management likely receive little or no benefit from updating a sophisticated dividend scale: not receiving thanks from those individuals who benefit from increased dividends, but receiving some complaints from those individuals who are disappointed by reduced dividends.

3.2 OTHER CONSIDERATIONS BEYOND THE SCOPE OF THIS PAPER

3.2.1 RELATED SUBJECTS AND CONSIDERATIONS NOT COVERED BY THIS PAPER

The many other related subjects and considerations concerning participating dividends, some of which are listed here, are beyond the scope of this paper, but are covered by the texts listed in the Appendix.

Authority of Board

- Court Decisions. In the United States, the leading New York court decisions regarding the legal rights of par policyholders, which give the primary discretion and authority to the Board, and not to policyholders, to determine both the aggregate and the allocation of any distribution or division of surplus
- Revised Targets. Earnings targets for pricing may involve contributions to surplus, perhaps in relation to evolving required capital or perhaps in relation to accumulating target retained surplus. The actuary usually wants to document if these targets change from one generation (or “pricing era”) to the next

Actuary’s Responsibility

- Dividend Actuary. Dividend actuary's responsibilities, including US Actuarial Standards of Practice No. 15 (Allocation of Dividends) and No. 24 (Illustration of Dividends), and responding to regulatory interrogatories
- Written Report. The dividend actuary should prepare a written report regarding the dividend scale pursuant to US ASOP No. 15 and No. 41 ("Communications") or pursuant to the Canadian Standards of Practice Subsection 2720

Experience Reflected

- Investment Income. Allocation of Investment Income: Portfolio Method, Investment Year Method, Investment Generation Method, Investment Segment Method, and treatment of policy loans (direct recognition at individual policy level versus pooled with non-loaned assets but reflecting possible distinctions by the policy form's level of fixed interest rate or variable loan rates)
- Reinsurance. Reflecting the cost or benefits of ceded reinsurance covering the policy, which may distinguish between reinsurance placed for the benefit of managing the product line versus reinsurance placed for the benefit of the insurer at a corporate-wide level.
- Taxes. Reflecting taxes that may be less unambiguously allocable to a policy, such as those in the United States in recent years that have been called the "equity tax", the "DAC-proxy tax", or transition rules. Taxes that do not relate to current gains or current premiums often present issues.
- Miscellaneous Gains. Treating gains from outside the whole life policy such as riders, other lines of business, subsidiaries, and new ventures, any of which that may have "borrowed", or relied on, the surplus of the par product line, which could have either delayed dividends or even put them at risk

Special Situations

- Revised Blocks. Dealing with subdivided blocks of business which have formed distinctions by electing (vs not electing) to be updated by amendment regarding the actuarial basis for premiums or cash values, such as moving to new underwriting classes upon proof (e.g., preferred nonsmoker)
- Acquired Blocks. Dealing with acquired blocks of business or with blocks brought together by a merger. As described above with respect to experience factor classes, it can be beneficial for experience to be pooled, but credible differences recognized, perhaps in a framework that pools the experience with fixed relationships established. There may be commitments regarding dividend treatment in the merger agreement or in the regulatory review.
- Demutualization Situations. Demutualization transactions tend to relate to dividends in several ways. Often there is a dividend protection mechanism established for the future dividends of policies in force at the time of conversion. The allocation of any compensation paid upon the conversion often involves consideration of some of the after-dividend gains on the policies, as encouraged in the United States by Actuarial Standard of Practice No. 37.

Complement to Annual Dividends

- Terminal Dividends. Terminal dividends are often a pattern of fixed dividends varying by policy year to be paid upon policy termination, which are established at the issuance of a policy distinct from a simple pro-rata share of the annual dividend paid upon death in the midst of a policy year. Terminal dividends may be explained as the release upon termination of some retained surplus held to fund required surplus because the insurer is released from the risk for which the surplus was required. Depending on the insurer and any regulations, terminal dividends will be paid upon surrender and possibly upon death.

3.2.2 OTHER FORMS OF NONGUARANTEED ELEMENTS

If only to be aware of competition to traditional par contracts, we mention other forms of nonguaranteed elements, which are outside the scope of this paper. Alternative approaches to providing, or improving upon, limited guarantees, can include the following:

adjusting the premiums (common on some (“indeterminate”) life insurance, on “guaranteed renewable disability insurance”, and on health insurance covering inflation-sensitive medical costs), or

adjusting the development of policyholder fund accounts within the policy (common on forms of life insurance and annuities that either credit “excess” – above the basic guaranteed -- interest rates, or that charge cost of insurance rates lower than the guaranteed maximum cost of insurance rates, or both), or

passing through both positive and negative investment performance from separate investment accounts on “variable” or “unit-linked” life insurance or annuities.

Similarly, products in some markets (such as group insurance and annuities, as well as much property and casualty insurance) limit risk by limiting the insured period to a short period such as a year, and then being able to change contractual terms year by year upon renewing the contract. While some of these short duration products may make payments called “dividends” or “experience refunds”, depending on whether the contracts are “participating” or “non-participating,” they too are outside the scope of this paper.

Section 4: Acknowledgments

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Appendix: References and Related Reading

Study Notes from the Society of Actuaries (which often include further references or excerpts)

Analysis and Distribution of Surplus (1974 Revision). 73-1-63

Analysis and Distribution of Surplus for Individual Insurance. 82-41-74, also published as 9I 4-1-74, including its appendices:

- (1) *New York Insurance Department Regulations and Letters*
- (2) *Chapter 12 Dividends: Life Companies* by Allen Mayerson, FSA (of Volume 3 of *Examination of Insurance Companies*)
- (3) *Excerpts from Proceedings of the Centenary Assembly of the Institute of Actuaries, Volume II, "Surplus Distribution Under Ordinary Insurance in the United States and Canada,"* by Edward W. Marshall, pages 280-281 and 286-288

dePalo A. Policyholder Dividends (1997). LPM 110-07

Textbooks covering ordinary insurance

Belth J. 1965. *Participating Life Insurance Sold in Stock Companies*. Published for the S.S. Huebner Foundation for Insurance Education, by R.D. Irwin.

Black K, H Skipper and K Black. 2015. *Life Insurance*. 15th edition. Lucretian LLC.

Claire D, L Lombardi, and S Summers. 2018. *Statutory Valuation of Individual Life and Annuity Contracts, Vol 1*. 5th edition (2018). ACTEX Publications. ISBN: 978-1-63588-494.-4. (section 12.3 in chapter 12 covers dividends)

Copeland CW. 2017. *McGill's Life Insurance*. American College Press.

Easton A and T Harris. *Actuarial Aspects of Individual Life Insurance and Annuity Contracts.*, 2nd Edition. Actex Publication Inc., New Hartford [chapter 10]

Maclean JB and EW Marshall. 1937. *Actuarial Studies No. 6: Distribution of Surplus*. The Actuarial Society of America.

Papers in Society of Actuaries journals

Cody, Donald D. 1981. An Expanded Financial Structure for Ordinary Dividends. *Transactions Society of Actuaries* XXX: 313-365

Jackson, Robert T. Some Observations on Ordinary Dividends. *Transactions Society of Actuaries* XI: 764-786 (and discussions by Art Cragoe, p. 797 and by H. B. Staley, p. 800)

Winter, Bert. Modern Applications of Gross Premium Valuation to Participating Insurance. *Transactions Actuarial Society of America*, XLIX, 8.

Canada

Canadian Institute of Actuaries' (CIA) Educational Note: Dividend Determination for Participating Policies -- Working Group on Dividend Determination (January 2014) Document 214008. <https://www.cia-ica.ca/publications/publication-details/214008> (This document is the source for the following information recorded to show analogs to New York Insurance Law cited below)

- *The Insurance Companies Act (ICA), section 456 requires the maintenance of separate and distinct accounts for participating and non-participating business. This is parallel to NY section 4233 cited below.*
- *Transfers to shareholders are limited by section 461 of the ICA. Under subsection 461 (c), the Appointed Actuary (AA) must opine that the payment to shareholders or transfer to the shareholders' account would not materially affect the company's ability to comply with its dividend or bonus policy or to maintain the level of dividends or bonuses paid to the company's participating policyholders. This is a different form of limitation but is the analog to NY section 4231.*
- *As noted in the report, there are requirements established in relation to experience factor classes, pricing assumptions as policy factors, and expense allocations.*

CIA Educational Note: Guidance on Fairness Opinions Required Under the Insurance Companies Act Pursuant to Bill C-57 (2005) (December 2011). document 211123. <https://www.cia-ica.ca/publications/publication-details/211123>

Canadian Life and Health Insurance Association Inc. (CLHIA) Guideline G6: Illustrations (2007). https://www.clhia.ca/web/CLHIA_LP4W_LND_Webstation.nsf/page/7B785D7C7342484C8525784F0058BD17!OpenDocument

Insurance Companies Act S.C. 1991, c. 47. <http://laws-lois.justice.gc.ca>

Office of the Superintendent of Financial Institutions (OSFI) Guideline E-16 Participating Account Management and Disclosure to Participating Policyholders and Adjustable Policyholders (November 2011)

United States

New York Insurance Law: Consolidated Laws of New York Chapter 28 Insurance Article 42 Life Insurance Companies and Accident and Health Insurance Companies and Legal Services Insurance Companies. Published 2014-09-22.

- *Section 4233 requires the annual report of the separation of balance sheet and summary of operations between the par branch and the shareholder branch (which is further subdivided by fully guaranteed contracts and contracts with Non-Guaranteed Elements other than dividends)*
- *Section 4231 limits the amount of profits that can be treated as "shareholder" profits and transferred out of the par branch annually*
- *Section 4219 limits the amount of par surplus that can be retained, forcing an insurer to increase the par dividend scale if accumulated par profits (net of profits transferred to shareholders) exceed a limit*

Actuarial Standard of Practice No. 15: Dividends for Individual Participating Life Insurance, Annuities, and Disability Insurance (US Actuarial Standards Board) http://www.actuarialstandardsboard.org/wp-content/uploads/2014/06/asop015_134.pdf

US NAIC Model Regulation. Life Insurance Illustrations Model Regulation (April 2001)

Actuarial Standard of Practice No. 24: Compliance with the NAIC Life Insurance Illustrations Model Regulation (US Actuarial Standards Board) http://www.actuarialstandardsboard.org/wp-content/uploads/2014/02/asop024_142.pdf

American Academy of Actuaries — Practice Note on illustrations https://www.actuary.org/sites/default/files/files/publications/Life_Illustrations_Practice_Note_February_2019_Updated.pdf