New Perspectives on Age-Old Controversies About Buying Whole Life Or Term And Investing The Difference[+]

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Summary

Inadequate information and flawed explanations play a key role in the continuation of the controversy regarding when term or cash-value life insurance provides the superior value and the reasons or sources of the advantage. Using straightforward equations, this article's analysis brings clarity to the subject. This new financial modeling approach to examine these alternative products could foster a transforming understanding of the different types of life insurance. This understanding then provides a perspective for assessing current life insurance marketing practices. In highlighting the many and far-reaching consequences of existing information shortcomings, this article offers fertile implications for life insurance marketing, purchasing, and regulation in the future. It concludes with a call for improved policy disclosure.

Introduction

A leading mutual fund company that recently began marketing life insurance states, "Term life insurance is the most cost effective and least

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expensive life insurance product available."[1] In contrast, a large life insurer states, "[T]he cumulative costs of term over the course of several decades may well bypass that of a comparable whole life plan."[2] Clearly, these two advisers' contradictory statements are intended to make prospective buyers reach different conclusions about the attractiveness of buying whole life. Is one adviser right and the other wrong? Are they both somehow right? Or, do their statements need to be qualified? Moreover, are their statements emphasizing cost relevant and appropriate, given that for most individuals after-tax cost is a more important criterion? Quite simply, the controversy between buying term and investing the difference (BTID) and whole life remains because of inadequate understanding of the two alternate approaches. The importance of this controversy is difficult to exaggerate because the controversy is ever present in the heart of the crucible where selling really occurs. It therefore presents paramount marketing and disclosure issues.

Comparing Whole Life with Buying Term and Investing the Difference

Everyone knowledgeable of the controversy between whole life and BTID is acquainted with actuary M. Albert Linton's pioneering, useful work on the subject.[3] For readers unacquainted with Linton's analysis, it is a side-by-side presentation of the two alternatives where equal outlays are made to the two alternatives and the two alternatives are managed so that both produce the same total proceeds upon death. Determination of which alternative provides the better value is then readily made by comparing the living benefits of the two alternatives, that is, the policy's cash-value and the BTID's side-fund. Any qualitative differences between the two alternatives, Linton addressed separately, and the same will be done here. (Appendix 1 contains a sample Linton analysis and additional explanatory details.)

Linton's approach, however, can be and often has been misleadingly manipulated, such as when comparisons have been based on undisclosed different investment returns, dissimilar cash values, and significantly unequal death benefits. More important, Linton's analysis typically does little to convey an understanding of why the alternative with illustrated

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1. Statement found on the Vanguard Insurance Web site at: www.usho2.com/learning_basics.asp, November 2002.

2. Statement found on the New York Life Web site at: www.newyorklife.com/NYL2/Article/0,1234,8925-10-2,00.html, November 2002.

3. M. Albert Linton was a former Chief Actuary for Provident Mutual and a past President of the Society of Actuaries.

superior performance is better. Unfortunately, informational vacuums facilitate misunderstanding and misrepresentations, and as readers well know, the life insurance marketplace has suffered from such.

This article introduces an analytical approach that clarifies the controversy by using financial modeling equations that highlight the important variables and relationships. Specifically, the after-tax values of both the BTID and the permanent cash-value policy alternatives are analyzed to identify the factors that result in one alternative's value exceeding that of the other. Only after such identifications have been made, can one begin to truly understand why one alternative can be better. In highlighting the different factors, factors that some advocates on both sides of the controversy routinely ignore, this approach reflects Peter Drucker's admonition (1974) that, "The most important thing in communication is to hear what isn't being said," by leaving no material factor unaddressed.

Gaining Conceptual Understanding from Equations

The after-tax future value of the BTID alternative's side-fund[4] equals the future value of the payments minus the future value of the term costs minus the future value of the taxes on the side-fund. Each expression in this equation is simply the future value of a particular stream of values, whether the stream is one of payments, term costs, or taxes on the side-fund. Algebraically, this can be written as:

(A) AT FV of BTID = FV(Payments) - FV(TermCosts) - FV(TaxesSF).

These future values are based on the assumption of a homogeneous investment environment, that is, one where investment returns are a constant rate across all years and all products.[5] Additionally, three other simplifying assumptions have also been made: First, the BTID alternative grows without

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4. The side-fund is where the annual differences between the whole life and the term premiums are invested for asset accumulation. This could be any investment chosen by the insured.

5. The assumption of a constant rate of return prevents the analysis from becoming a comparison of different investment performances. The objective of this analysis, after all, is to understand the intrinsic differences between these alternatives. Given that there is no reason for either alternative to have an innate investment performance advantage, this assumption is justified. In everyday, real-world cases though, comparison between alternatives with different investment performances are made. But in such circumstances, that comparison is not simply one between two alternatives, but rather is a comparison where the two alternatives are assumed to have different investment performances.

Table 1
Summary of Buying Term and Investing the Difference
Scenario: Healthy 39 year-old male; Side-Fund ROR = 8%; Tax Rate = 28% Deferred

Years	Amount Available for Investment and Insurance	Term Costs	Net Annual Invested Difference	Annual Earnings	Annually Paid Taxes	Total Side-Fund Value (includes untaxed appreciation)	Taxes on Untaxed Appreciation	After-Tax Side-Fund	Life Ins. Benefits
1	12,000	616	11,384	911	0	12,295	255	12,040	700,000
2	12,000	669	11,331	1,890	0	25,516	784	24,732	700,000
3	12,000	726	11,274	2,943	0	39,733	1,608	38,125	700,000
4	12,000	787	11,213	4,076	0	55,021	2,750	52,272	700,000
5	12,000	855	11,145	5,293	0	71,459	4,232	67,228	700,000
6	12,000	928	11,072	6,603	0	89,134	6,080	83,053	700,000
7	12,000	1,005	10,995	8,010	0	108,140	8,323	99,816	700,000
8	12,000	1,088	10,912	9,524	0	128,576	10,990	117,586	700,000
9	12,000	1,176	10,824	11,152	0	150,552	14,113	136,439	700,000
10	12,000	1,269	10,731	12,903	0	174,185	17,725	156,460	700,000

11	12,000	1,375	10,625	14,785	0	199,596	21,865	177,731	700,000
12	12,000	1,490	10,510	16,808	0	226,914	26,571	200,343	700,000
13	12,000	1,624	10,376	18,983	0	256,273	31,887	224,387	700,000
14	12,000	1,773	10,227	21,320	0	287,820	37,856	249,964	700,000
15	12,000	1,945	10,055	23,830	0	321,706	44,529	277,177	700,000
16	12,000	2,135	9,865	26,526	0	358,096	51,956	306,141	700,000
17	12,000	2,338	9,662	29,421	0	397,179	60,194	336,985	700,000
18	12,000	2,556	9,444	32,530	0	439,153	69,302	369,851	700,000
19	12,000	2,786	9,214	35,869	0	484,236	79,345	404,891	700,000
20	12,000	3,031	8,969	39,456	0	532,662	90,393	442,269	700,000
21	12,000	3,299	8,701	43,309	0	584,672	102,520	482,152	700,000
22	12,000	3,597	8,403	47,446	0	640,520	115,805	524,716	700,000
23	12,000	3,937	8,063	51,887	0	700,470	130,333	570,137	700,000
24	12,000	4,319	7,681	56,652	0	764,804	146,196	618,608	700,000
25	12,000	4,748	7,252	61,764	0	833,820	163,490	670,331	700,000
26	12,000	5,225	6,775	67,248	0	907,843	182,319	725,524	700,000
Totals	312,000	55,296	256,704	651,139					

investment related expenses; second, it grows tax deferred; and third, a single tax rate is used. (That is, the tax rate on the investment income is the same whether the returns are capital gains or ordinary income, as they would be on the gain on surrender of a permanent, cash-value policy.) Later sections of this article address relaxation of these last three assumptions. Table 1 shows the relevant data for buying term and investing the difference of a standard BTID illustration, and Table 2 shows the future values of the variables in the above equation.

Whole Life Contains Term Insurance

While whole life and term are routinely represented as two different types of life insurance, whole life contains term insurance. Indeed, all cash-value life insurance, whether labeled whole life or universal or variable - the latter two modifications that reflect premium flexibility and/or investment variation from traditional whole life policies - contains term insurance. In this analysis, in fact, a variable universal policy has been used in lieu of a traditional whole life policy because its structure facilitates comparison. In particular, Universal Life's Option B death benefit where total proceeds equal cash-value plus a constant initial face amount avoids the complexities arising from a traditional whole life policy's fluctuating at-risk amount. (Such whole life complexities and other possible qualitative differences between life insurance products, such as renewal rights, are best addressed separately, and that is done in a section below.) In addition, the prospectus accompanying this particular variable universal life policy discloses detailed relevant cost information, thereby sparing readers the distraction of an explanation of the reverse engineering necessary to calculate the approximate costs of a traditional whole life policy.[6] Use of this variable universal policy, again, merely facilitates this presentation, and in no way limits the applicability and conclusions of this analysis.

Standard illustrated values for this permanent policy are shown in Table 3, together with supplemental data showing surrender taxes, after-tax values, and detailed annual costs. Similar to the above expression for the after-tax value of the BTID alternative, this permanent policy's after-tax surrender value can be represented algebraically as:

(B)   AT FV Perm. Pol = FV(Payments) - FV(TermCosts) - FV(ExtraCosts) - FV(TaxesPP)

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6. Reverse engineering merely involves rewriting the following standard formula for year-end cash-value to solve for costs. To the extent that policy reserves differ from policy cash-values, actual costs differ from such formula-calculated costs. However, given that a policy's reserves and cash-value typically become equal by the fifteenth or twentieth year, the sum of any such cost differentials becomes zero. Year-end cash-value = (prior year ending cash-value + premium - cost) * (1+ dividend rate).

Table 2
Future Values of Table 1 BTID Components

Years	FV of Payments	FV of Term Costs	FV of Taxes	FV of After-Tax Side-Fund
1	$12,960	$665	255	$12,040
2	$26,957	$1,441	784	$24,732
3	$42,073	$2,340	1,608	$38,125
4	$58,399	$3,378	2,750	$52,272
5	$76,031	$4,572	4,232	$67,228
6	$95,074	$5,940	6,080	$83,053
7	$115,640	$7,500	8,323	$99,816
8	$137,851	$9,275	10,990	$117,586
9	$161,839	$11,287	14,113	$136,439
10	$187,746	$13,561	17,725	$156,460
11	$215,723	$16,130	21,865	$177,731
12	$245,944	$19,029	26,571	$200,343
13	$278,579	$22,306	31,887	$224,387
14	$313,825	$26,005	37,856	$249,964
15	$351,891	$30,186	44,529	$277,177
16	$393,003	$34,906	51,956	$306,141
17	$437,403	$40,224	60,194	$336,985
18	$485,355	$46,202	69,302	$369,851
19	$537,144	$52,908	79,345	$404,891
20	$593,075	$60,413	90,393	$442,269
21	$653,481	$68,809	102,520	$482,152
22	$718,720	$78,199	115,805	$524,716
23	$789,177	$88,707	130,333	$570,137
24	$865,271	$100,468	146,196	$618,608
25	$947,453	$113,633	163,490	$670,331
26	$1,036,209	$128,366	182,319	$725,524

Table 3
Summary of Permanent Policy Values
Scenario: Healthy 39 year-old male; Compounding Rate = 8%; Tax Rate = 28%

Years	Amount Available for Investment and Insurance Policy Premium	Term Costs	Extra Costs	Internal Cash-Value Growth	Annual Taxes	Policy Cash-Value	Taxes If Surrendered	After-tax Policy Value	Life Ins. Benefits*
1	12,000	616	655	858	0	11,588	0	11,588	700,000
2	12,000	669	674	1,780	0	24,025	7	24,018	700,000
3	12,000	726	695	2,768	0	37,372	384	36,988	700,000
4	12,000	787	717	3,829	0	51,697	1,035	50,662	700,000
5	12,000	855	740	4,968	0	67,070	1,979	65,090	700,000
6	12,000	928	766	6,190	0	83,566	3,238	80,327	700,000
7	12,000	1,005	793	7,501	0	101,269	4,835	96,434	700,000
8	12,000	1,088	822	8,909	0	120,268	6,795	113,473	700,000
9	12,000	1,176	854	10,419	0	140,657	9,144	131,513	700,000

10	12,000	1,269	888	12,040	0	162,540	11,911	150,629	700,000
11	12,000	1,375	924	13,779	0	186,021	15,126	170,895	700,000
12	12,000	1,490	962	15,646	0	211,215	18,820	192,395	700,000
13	12,000	1,624	1,003	17,647	0	238,234	23,026	215,209	700,000
14	12,000	1,773	1,047	19,793	0	267,207	27,778	239,429	700,000
15	12,000	1,945	1,093	22,094	0	298,262	33,113	265,149	700,000
16	12,000	2,135	1,143	24,559	0	331,544	39,072	292,471	700,000
17	12,000	2,338	1,196	27,201	0	367,210	45,699	321,511	700,000
18	12,000	2,556	1,253	30,032	0	405,434	53,041	352,392	700,000
19	12,000	2,786	1,314	33,067	0	446,400	61,152	385,248	700,000
20	12,000	3,031	1,379	36,319	0	490,309	70,087	420,223	700,000
21	12,000	3,299	1,449	39,805	0	537,366	79,902	457,464	700,000
22	12,000	3,597	1,524	43,540	0	587,784	90,660	497,125	700,000
23	12,000	3,937	1,603	47,540	0	641,784	102,420	539,364	700,000
24	12,000	4,319	1,687	51,822	0	699,601	115,248	584,353	700,000
25	12,000	4,748	1,776	56,406	0	761,483	129,215	632,268	700,000
26	12,000	5,225	1,870	61,311	0	827,699	144,396	683,304	700,000
Sums	312,000	55,296	28,827	599,823					

Note: Policy's Gross Rate of Return on Insurance Assets = 8%. Tax Rate=28%.

* As mentioned in the text, total proceeds upon death would be equal to the Life Insurance Benefit plus the Policy's Cash-Value.

Table 4
Future Values of Table 3 Permanent Policy

Years	FV of Payment	FV of Term Costs	FV Extra Cost	Cash Value	FV Taxes	Future After-Tax Value
1	$12,960	$665	$707	$11,588	0	$11,588
2	$26,957	$1,441	$1,492	$24,025	7	$24,018
3	$42,073	$2,340	$2,361	$37,372	384	$36,988
4	$58,399	$3,378	$3,324	$51,697	1,035	$50,662
5	$76,031	$4,572	$4,390	$67,070	1,979	$65,090
6	$95,074	$5,940	$5,568	$83,566	3,238	$80,327
7	$115,640	$7,500	$6,870	$101,269	4,835	$96,434
8	$137,851	$9,275	$8,308	$120,268	6,795	$113,473
9	$161,839	$11,287	$9,895	$140,657	9,144	$131,513
10	$187,746	$13,561	$11,645	$162,540	11,911	$150,629
11	$215,726	$16,130	$13,574	$186,021	15,126	$170,895
12	$245,944	$19,029	$15,700	$211,215	18,820	$192,395
13	$278,579	$22,306	$18,039	$238,234	23,026	$215,209
14	$313,825	$26,005	$20,613	$267,207	27,778	$239,429
15	$351,891	$30,186	$23,443	$298,262	33,113	$265,149
16	$393,003	$34,906	$26,553	$331,544	39,072	$292,471
17	$437,403	$40,224	$29,969	$367,210	45,699	$321,511
18	$485,355	$46,202	$33,719	$405,434	53,041	$352,392
19	$537,144	$52,908	$37,836	$446,400	61,152	$385,248
20	$593,075	$60,413	$42,352	$490,309	70,087	$420,223
21	$653,481	$68,809	$47,306	$537,366	79,902	$457,464
22	$718,720	$78,199	$52,736	$587,784	90,660	$497,125
23	$789,177	$88,707	$58,686	$641,784	102,420	$539,364
24	$865,271	$100,468	$65,203	$699,601	115,248	$584,353
25	$947,453	$113,633	$72,337	$761,483	129,215	$632,268
26	$1,036,209	$128,366	$80,144	$827,699	144,396	$683,304

(Note: Both Perm. Pol. and PP are used as suffixes to refer to the permanent policy and its related variables.)

Two notes must be made about Equation B, and Table 4 that summarizes these future values. First, the annual costs incurred in this permanent policy have been bifurcated into components labeled TermCosts and ExtraCosts. For purposes of simplifying the presentation and its math, the TermCosts for the permanent policy are assumed to be equal to the TermCosts for BTID's term policy. Later when this simplifying assumption is relaxed it will be recognized as having been immaterial to the results of this analysis as any differences in the annual costs of the two alternatives could be incorporated in the variable ExtraCosts. Second, this additional variable (ExtraCosts), which could be positive, negative, or zero, would most likely under current normal operations for durations of less than 20 years be positive because of whole life's larger commissions, premium taxes, and asset management expenses. (Other related cost issues are considered below in more detail.)

To understand the differences in the after-tax values of these two alternatives (BTID and the permanent policy), one can calculate the differences between Equations A and B. Alternatively, setting Equation A equal to Equation B enables one to solve for the implicit conditions of equality between their after-tax values. This latter approach is conceptually and mathematically easier to present and can be subsequently re-formatted, as shown below, to explain differences in after-tax values. Consequently, when Equation A is set equal to Equation B, basic algebra simplifies it to the following:

(1)   FV(TaxesSF) = FV(ExtraCosts) + FV(TaxesPP),
which can be rewritten as:

(2)   FV(TaxesSF) - FV(TaxesPP) = FV(ExtraCosts)

Given the assumption that the Side-Fund grows tax-deferred, then the future value of the taxes on the Side-Fund, like the future value of the taxes on the permanent policy, is simply the tax rate multiplied by the gain at the end of the coverage duration. So, Equation 2 can be rewritten as:

(3)   Tax Rate * (Gain on Side-Fund - Gain on Perm. Policy) =
FV(ExtraCosts)

The "Gain on Side-Fund" can be represented as (CV + FV(ExtraCosts) - Sum(PMT) + Sum(TermCosts)). To see this, recall that the Side-Fund's greater value than the policy's cash value (CV) is attributable to the future value of the ExtraCosts, which are not incurred under the BTID alternative.

Secondly, recall that BTID's cost basis is not equal to the total sum of payments, but rather is equal to that total less the dollars expensed for term insurance, hence the adjustment to its cost basis and correspondingly to its gain.[7] In contrast, the "Gain on Perm. Policy" is simply (CV - Sum(PMT)). After substituting into Equation 3 and condensing the expression, we reach Equation 4, which simplifies into Equation 5.

(4)   TaxRate * (FV(ExtraCosts) + Sum (TermCosts))= FV (ExtraCosts)

(5)   Tax Rate * Sum(TermCosts) = (1-TaxRate) * FV(ExtraCosts)

Equation 5 offers an insightful perspective; when the conditions specified hold, the after-tax values of the BTID and permanent policy alternatives are equal. In other words, Equation 5 shows that when the disadvantage of BTID (the equation's left side) equals the disadvantage of the permanent policy (the right side), the consumer would receive equal after-tax value from these two alternatives. On the other hand, when the value on the left side of Equation 5 is smaller than the right side, it means that the after-tax value of the BTID approach is actually larger because comparatively less was deducted from it. (Its disadvantages, if you will, are smaller.) Alternatively, if the value of the right side of Equation 5 is smaller, then the after-tax value of the cash-value policy would be larger as its cost would be less than under the BTID. One practical implication of Equation 5 is that knowing, for example, the value Sum(TermCosts) one can readily solve for the maximum future value of the (ExtraCosts) that determines whether or not the cash-value policy provides a greater value upon surrender.

Clearly, Equation 5 indicates that the comparative after-tax cost advantage of these alternatives is always an empirical question. Smaller insurance costs do not invariably imply smaller net after-tax costs - the type of costs most individuals care most about. Given that the after-tax cost is equal to the cost less the tax benefits or savings associated with the incurred costs, the after-tax future value of the cost[8] of the above permanent policy is equal to: FV(TermCosts) + FV(ExtraCosts) - (Tax Rate * Sum(TermCosts)).

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7. In substituting Sum(Pmt) - Sum(TermCosts) for the Side-Fund's cost basis, the sign in front of Sum(TermCosts) becomes positive through the operation of subtracting a negative.

8. There are alternative formulas of net after-tax costs that incorporate cash-value appreciation. Some such formulas, however, are actually prohibited because of their failure to reflect the time value of money. Other possible formulations legitimately incorporate additional tax-related effects that cash-value policies provide. The formula used in this article, while being a maximum future value after-tax cost, would nonetheless appear to be acceptable to all various marketplace participants regardless of any personal preference between term and cash-value policies they might have.

More directly, the difference between the two alternatives can be calculated and the advantage of one alternative's after-tax value vis-à-vis the other's can be expressed. That is:

(6)   A-T Adv. of Perm Pol. = (Tax Rate * Sum(TermCosts)) – ((1-Tax Rate) * FV(ExtraCosts)), and

(6A)   A-T Advantage of BTID = ((1 - TaxRate) * FV(ExtraCosts)) - (Tax Rate * Sum(TermCosts))

There is, however, one exception to the usefulness/applicability of Equations 5 and 6. When the Sum(Pmt) exceeds the CV, the equations overstate the permanent policy's after-tax value because the full tax savings arising from the deductible cost-basis are not realized/available. Over such durations though, the cost-effectiveness of such a permanent policy is not a very challenging, real-world question. For the BTID alternative shown in Tables 1 and 2 and the permanent cash-value policy shown in Tables 3 and 4, Table 5 shows the values of Equation 6 at four selected durations, including an explanation of the necessary adjustment to the equation in year 1 where Sum(Pmt) exceeds the CV.

Incorporating Additional Real-World Assumptions

Different Tax Rates and Deferrals

Equation 6 can be expanded to address comparisons where the BTID's Side-Fund does not grow tax-deferred, and where different tax rates are applied to the two different products/alternatives. Tax deferral enables one to benefit from returns earned and kept on the temporarily retained taxes until they are finally paid. As many analysts have pointed out, tax-deferral is effectively an interest-free loan; the after-tax benefit or value of which equals the applicable after-tax earnings that arise during the period such deferred tax payments are retained. Consequently, without complete tax deferral, the after-tax future value of the Side-Fund is reduced by the after-tax earnings that could have been earned on such tax payments over the duration they would have otherwise been retained within the permanent policy. (This intuitive but complex concept is demonstrated and further explained in Appendix 2.) The effect of different tax rates can be expressed as the product of the taxable gain and the difference between the tax rates on the Side-Fund (trsf) and on the surrendered permanent policy (trpp). The result of expanding Equation 6 to include tax-deferral and different tax rates is:

Table 5
Applying Equation 6 to Values from Table 2 and Table 4

Years	A After-tax Advantage of Permanent Policy Obtained by subtracting Table 2 from Table 4 values	B Sum Term Costs from Table 2	C 28% Tax Rate * Sum Term Costs	D FV ExtraCost from Table 4	E (1-28% TaxRate) * FV(ExtraCosts)	F After-Tax Advantage of Permanent Policy Obtained by Equation 6
1	(452)	616	172	707	509	*(337)
5	(2,138)	3,653	1,023	4,390	3,161	(2,138)
15	(12,028)	17,326	4,851	23,443	16,879	(12,028)
25	(38,063)	50,071	14,020	72,337	52,083	(38,063)

Note: In Year 1, the $115 difference between Column A and Column F equals the 28% tax rate multiplied by the amount ($412) by which the Sum(Pmt) exceeds the CV.

Note: Column C minus Column E equals Column F.

(7)   AT Adv. PP = (trsf * Sum(TermCost)) + (AT Value of Foregone Earnings on Previously Paid Taxes[9]) + ((CV – Sum(Pmt))* (trsf-trpp)) - ((1-trsf) * FV(ExtraCosts))

An alternative version of Equation 7 that uses the Side-Fund's gain instead of the policy's gain, an approach some find intuitively more appealing, is contained in Appendix 3.

Equation 7 makes clear the implications of different tax rates and limited deferral privileges. As such, it can be useful in both personal financial and public policy discussions regarding financial products' tax rates and privileges. For example, Equation 7 confirms the following intuitive conclusions: 1) when the tax rate on the Side-Fund is less than the tax rate on the surrendered policy (when trsf < trpp), the permanent policy's attractiveness is reduced; and 2) when the BTID's Side-Fund has some tax-deferral privileges the comparative attractiveness of the whole life policy is also reduced.

Real-World Expenses of BTID Alternative

Investment management costs and investment sales loads were omitted from the above presentation of the BTID alternative. Such costs, of course, have an impact. To account for such, the above equation can be readily modified by having the ExtraCost variable become a Net ExtraCost variable. It should be noted, as was mentioned above about the prior variable, this new Net ExtraCost variable can be either positive or negative.

Different Term Costs

The above equations can also be modified to reflect different term costs. Differences in policy renewal and conversion privileges, among other factors, can lead to differences in product mortality costs. Furthermore, the above original equal cost assumption ordinarily becomes invalid as the duration of coverage increases because of term policyholders' lower persistency and greater anti-selection tendencies. However, working in the other direction to fortify the original equal cost assumption is lapse enhanced pricing apparent in many level premium term policies. Rewriting Equation 6 to incorporate different "term" costs for the Term policy (TermCostsT) and for the Permanent Policy (TermCostsPP) makes clear the

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9. Given this expression's empirical nature - that is, it is a function not only of tax rate, but also of specific deferral rules - it has been expressed conceptually, not mathematically with variables.

implications of whichever alternative has the more favorable term costs.

(6DTC) A-T Advantage of PP = (Tax Rate * Sum(TermCostsT)) - ((1 - TaxRate) * FV(ExtraCosts)) - ((1 - TaxRate) * (FV(TermCostsPP) - FV(TermCostsT))).[10]

Qualitative Differences

There can be qualitative differences between the cash-value policies and the BTID alternative. Cash-value policies can contain additional features or privileges not found in the BTID alternative, as can the more flexible BTID alternative. For example, cash-value policies provide rights to use dividends to increase coverage via additions, loan privileges, and lifetime minimum rate of return guarantees on reserves. This observation implies that the above financial analysis, as was true of the Linton analysis, needs to be supplemented with comparisons of qualitative differences. To the extent that these differences are valuable, the comparative performance revealed by the above equations is not by itself definitive.

Whole Life Modifications

This financial modeling approach of the controversy concludes with the product with which it originally began. Traditional whole life policies with their irregular at-risk amounts and variations between reserves and cash values raise additional analytical challenges, but nothing that cannot be incorporated with another variable. These unique whole life characteristics merely require determining the differences in annual at-risk amounts between the term and whole life policies. When the costs of such differences are then reflected in an extra risk cost variable (ExtRskCst), Equation 6 can be modified (derivation is in Appendix 3) as follows:

(6WL)   A-T Advantage of WL = (taxRate * Sum(TermCosts)) + (taxRate * Sum(ExtRskCst)) + ((1-taxRate) * FV(ExtRskCst)) - ((1-taxRate) * FV(ExtraCosts))

Marketplace Implications

This analysis puts the focus on the performance factors in this age-old controversy, and in so doing, produces a number of implications. First, it clarifies the two inherent advantages cash-value policies' tax privileges

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10. Derivation of Equation 6DTC with different TermCosts is in Appendix 3.

create - the often-mentioned tax deferral on cash-value appreciation and the often-overlooked comparatively enlarged cost basis enjoyed upon surrender.

Second, it shows that term proponents' claims of lower costs do not necessarily mean lower after-tax costs. This unexpected conclusion might be surprising to many consumers. It would seem categorical claims of cost superiority and even general discussions of costs that omit after-tax considerations would be materially incomplete or inadequate. If Drucker's admonition is as true as it seems to be, such omissions are serious.

Third, this analysis highlights a major factor, the possible extra costs of cash-value policies, about which buyers need to be informed. In highlighting these particular costs, it calls attention to any and all costs. This re-emphasizes the need for disclosure of additional information regarding policy costs if either side in the controversy is to document properly its claims of lower costs.

Fourth, the analysis also provides insight into discussions regarding whether or not cash-value life insurance can be described as being comprised of an investment component. Clearly, any financial product whose future value depends upon the compounded value of a stream of payments involves an investment. While failures to represent cash-value policy's insurance costs are misleading, discussions of such policies should–in fact, to be complete, must–contain information about their investment characteristics.

But perhaps the most important consequences of this analysis could be the broad perspective it provides and renewed interest it might focus upon the functioning of the life insurance marketplace. The quotes in the introduction were but samples of life insurance marketing information. Admittedly, informational problems can, and indeed do, exist in many markets. Claims of superiority, generalizations, and conceptual sales aids are a natural and necessary part of every sales process. All such claims, concepts, etc., can be–in fact, need to be–ranked on spectrums measuring their relevance, completeness, accuracy, and implications. The extent to which problematic sales presentations occur is a function of the quality of the information in the marketplace. To assess the functioning of the life insurance marketplace, consideration of other standard sales presentations is a natural next step.

Reviewing the Marketplace

No attempt has been made to survey the tens of thousands of sales presentations that are made every week. Rather, two very widely used presentations are described. Term proponents often assert that insurers confiscate a policy's cash-value at death, raising a troubling specter of loss. Routinely, such presentations continue, after reiterating comparisons of

premiums to compare costs, to conclude that all of these extra costs and losses suffered by policyholders enormously enlarge insurers' profits. In contrast, whole life proponents routinely use an analogy of buying versus renting to compare whole life and term, often pointing to whole life's level premiums to suggest that it has non-increasing costs. Renting is disparaged in many ways, such as "throwing money down a drain" at an ever-increasing rate. Either explicitly or implicitly, whole life is represented as avoiding these problems. When the sale is on the line, as only those who have extensive experience in the marketplace know, these are the types of dataless claims and insipid concepts upon which agents rely and buyers decide.

That these presentations, like those at the beginning of the article, support opposing views, does not mean that consumers are able to correctly sort and evaluate such information. After all, if these sales presentations were ineffective, it is unlikely they would still be so popular. Furthermore, the absence of sales presentation materials that address the material factors in the controversy suggest decisions are being made based on non-substantive factors. While the above analogy and purported confiscation are at variance with this article's equations and analysis, and have drawn criticism from Belth and other authorities, determination of whether or not such presentations are accurate, sufficiently clear and complete, and unlikely to mislead is a regulatory function.

Insurance regulation is unquestionably a difficult job. There are inevitably questions about the wisdom of objectives and methods, not to mentions questions regarding the enforceability of commandments and prohibitions given the countless selling settings. In a recent study regarding the efficacy of various product disclosure regulation, Kirsch (2002) states that Formisano's 1981 study, although 20 years old, still provides good reason to question the efficacy of life insurance disclosure. Continuing further to illustrate the real world challenges regulators face, Kirsch cites Kahneman and Tversky's research (1981) that showed individuals respond differently to precisely equivalent messages that are posed or framed differently. In particular, one finding of their research, that individuals make irrational choices to avert recognizing and/or accepting losses or inevitable costs, could be significant in evaluating the above popular presentations. While regulations obviously cannot prevent all the myriad possible problems, it is apparent that the tools regulators use to structure the marketplace are critically important.

Currently, a primary tool for life regulators is the "Life Insurance Buyer's Guide."[11] A review reveals that neither the tax privileges of cash-value policies, nor an explanation of their implications, are mentioned in the

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11. This is a standard guide developed by the NAIC and adopted by many states.

guide. Regarding policy cost, the guide notes, it is "the difference between what you pay and what you get back," stopping short of providing a means of assessing cash-value policies' annual costs or instructing on how to compare multi-year streams of costs. With respect to the buyer's natural goal of finding the best value, the guide, while acknowledging that the interest-adjusted indexes "have their shortcomings," still counsels to "look for policies with low-cost index numbers."

Approximately 10 years ago, however, the American Academy of Actuaries recommended that the indexes be discontinued, observing that they are merely derived from illustrations that have never been intended to be relied on as credible projections (1992). Furthermore, the indexes cannot be used to compare dissimilar policies, precisely the type of comparisons most often needed. Another inherent flaw with the indexes arises from their combining investment results and insurance costs into one measurement. This complex combination is not useful to consumers in answering their natural questions regarding the worthiness or value of a policy with respect to the two dimensions (investment performance and insurance costs) about which they care.

Call to Improve Policy Disclosure

Having begun analyzing an age-old controversy consumers face, this article, after highlighting the informational shortcomings that exacerbate this problem, must therefore conclude addressing the industry's own age-old controversy regarding policy disclosure. Calls for greater disclosure, regardless of the subject, merit, or intention, are innately provocative. Those making such calls, such as Belth and Hunt in the life insurance industry, are seen by many like the Vatican of the Middle Ages saw Copernicus and Galileo. We know though, and have now seen again, that without good information, serious misunderstanding and misrepresentation occur.

Financial product disclosure means nothing without disclosure of the costs borne or the price paid, and explanations of other material factors. While disclosure is often resisted, it is important to remember only practices that are unjustified or unnecessary become unsustainable when disclosed. For example, higher prices can be sustained to the extent valuable differences are recognized as such by consumers. Data show, however, that differences in distribution compensation are the fundamental factor in the cost differences between whole life and the BTID alternative. It is commonly asserted that such extra costs are more than compensated for by the product's tax privileges. That argument overlooks the implications of economic theory and observations of other tax privileged products such as IRAs and Section 529 Plans: Firms in a competitive market cannot extract value from buyers for a non-proprietary, free input. Tax privileges are a non-

proprietary, free input. The commonly advanced argument to try to justify the larger compensation on cash-value policies falls on its head when confronted by economic theory and real competitive markets. The appropriation of the tax privilege, in fact, attests to the information problems in the life insurance marketplace and demonstrates its consequent current failure to function in an economically competitive manner.

There are, nonetheless, reasons for optimism. Problems arising from poor information, while challenging, can be solved. Indeed, the above analytical approach has identified pertinent factors that warrant additional disclosure. Furthermore, it could be argued that the industry's insurers who have joined IMSA have already demonstrated their commitment to provide such improved information. IMSA members vow to treat consumers as they themselves would like to be treated. This affirmation of the golden rule cannot be reconciled with policy disclosure short of information regarding costs borne or price paid and other material factors. Given life insurers ongoing evolution into financial services, and the financial community's current commitment to disclosure and transparency, the marketplace implications of the above financial modeling approach seem very timely.

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Appendix 1

Table A1 presents a Linton analysis of a whole life policy with a BTID alternative. Columns on the left-hand side show the equal outlays made for the two alternatives; that is, Column 1 lists the whole life annual premium and Columns 2 and 3 show the allocation of the same total annual amount between the term policy and the side-fund. The right-hand columns provide information on the total proceeds upon death. That is, Column 8 shows the whole life policy's death benefit and Column 7 shows the amount of term insurance purchased, such that when combined with the side-fund's value from the end of the prior year provides the same total upon death. Columns 5 and 6 show the whole life policy's non-guaranteed and guaranteed cash-values. Column 4 shows the after-tax value of the side-fund. Comparisons are then made between the values in columns 4, 5 and 6 to assess the comparative attractiveness of the alternatives.

Appendix 2

Tables A2 shows a scenario of limited tax deferral and a tax rate on the side-fund (trsf) of 18 percent. The illustrated tax-deferral scheme assumes taxes are paid at the end of six years, an arbitrarily chosen scheme with no impact on the logic of this analysis. (For example, the first year growth of $911 compounds for another five years, reaching $1,338 on which taxes of $241 are paid in year six.) That is, any other tax payment scheme can be handled by the same equations below.

Notice that at the end of year 6 taxes of $241 were paid. Consequently, in year 7 the reduction in potential after-tax value of the side-fund (apart from the reduction due to the inevitable tax payment) equals the investment growth that otherwise would have occurred on such less taxes, or in numeric terms (241 * 8% * (1 - the 18% tax rate)) or $16.

As shown in Table A3, the sums of the four separate components of Equation 7 equal the actual differences between these alternatives for all years in which the cash value exceeds the total premiums. (And, as explained above, when the cash value is less than the total premiums, Equation 7 under-calculates the disadvantage by the difference between the cash value and the total premiums multiplied by the policy's tax rate (412 * 28%) or $115.

Table A1

A Linton Analysis Comparison of Whole Life with a BTID Alternative

Scenario: Healthy 39 year-old male; $700,000 of coverage; dividends buy paid-up additions

BTID details: ART until Age 75 with Difference Invested at 5.5% (28% tax rate)

	1	2	3	4	5	6	7	8
					Permanent Policy Cash Surrender Values			
Year	Annual Premium Outlay	Term Policy Payment*	Annual Difference*	Difference Compounded at A/T Rate	Total*	Guar.	Amount of Term Purchased*	Amount of Whole Life's Death Benefit*
1	12,462	488	11,974	12,448	493	0	688,026	700,000
2	12,462	530	11,932	25,345	10,917	9,394	677,424	701,804
3	12,462	571	11,891	38,711	22,214	19,040	668,132	705,368
4	12,462	632	11,830	52,543	34,445	28,973	660,246	710,787
5	12,462	679	11,783	66,873	47,677	39,179	653,620	717,946
6	12,462	726	11,736	81,722	62,147	49,672	648,288	726,897
7	12,462	774	11,688	97,109	77,943	60,438	644,710	738,120
8	12,462	824	11,638	113,054	95,162	71,505	642,911	751,659
9	12,462	881	11,581	129,570	113,912	82,866	642,801	767,436
10	12,462	948	11,514	146,671	134,285	94,535	644,420	785,504
11	12,462	1,023	11,439	164,371	156,417	106,512	647,686	805,796
12	12,462	1,102	11,360	182,690	180,356	118,804	652,660	828,391

**13	12,462	1,198	11,264	201,635	206,233	131,383	659,148	853,103
14	12,462	1,311	11,151	221,213	234,204	144,242	667,278	880,064
15	12,462	1,444	11,018	241,427	264,394	157,360	677,141	909,372
16	12,462	1,598	10,864	262,282	296,958	170,723	688,789	941,080
17	12,462	1,774	10,688	283,779	331,992	184,317	702,311	975,280
15	12,462	1,990	10,472	305,903	369,568	198,156	717,656	1,011,907
19	12,462	2,263	10,199	328,620	409,870	212,261	734,686	1,050,788
20	12,462	2,619	9,843	351,866	453,077	226,625	753,494	1,091,957
@60	12,462	3,083	9,379	375,550	499,440	240,121	774,223	1,135,468
@65	12,462	7,706	4,756	495,571	785,047	308,917	944,783	1,421,477
@76	12,462	0	12,462	653,935	1,843,930	456,204	0	2,422,527

Notes:

1. Term outlays are based on an annually renewable term policy term to age 75
2. The term policy payment in Column 2 is based on the amount shown in Column 7.
3. Amounts in Column 7 are for illustrative purposes only. Changes in amounts are subject to company practice.
4. The term outlay exceeds the permanent policy outlay in year 29.

* Non-guaranteed illustrated values and benefits include dividends. Dividends assume no loans; loans may reduce dividends. Illustrated dividends reflect current claim and expense experience and dividend interest rate, and are not estimates or guarantees of future results. Dividends actually paid may be larger or smaller than those illustrated This illustration does not recognize that, because of interest, a dollar in the future has less value than a dollar today.

** The permanent policy cash value exceeds the difference compounded at 3.96% A/T rate in year 13.

Table A2
BTID Scenario similar to Table 1 But with Lower Tax Rate and Limited Tax Deferral
Summary of Investment and Insurance Values

Year	Amount Available for Investment and Insurance	Term Cost	Growth	Annually Paid Taxes	Side Funds Total Value (includes some untaxed Appreciation)	Untaxed Gain	Taxes on Untaxed Appreciation	Side Fund's After-Tax Value	Sum Term Costs	Life Ben
1	12,000	616	911	-	12,295	911	164	12,131	616	700
2	12,000	669	1,890	-	25,516	2,801	504	25,012	1,285	700
3	12,000	726	2,943	-	39,733	5,744	1,034	38,699	2,011	700
4	12,000	787	4,076	-	55,021	9,820	1,768	53,254	2,798	700
5	12,000	855	5,293	-	71,459	15,113	2,720	68,739	3,653	700
6	12,000	928	6,603	241	88,893	20,377	3,668	85,225	4,582	700
7	12,000	1,005	7,991	481	107,399	25,698	4,626	102,773	5,586	700
8	12,000	1,088	9,465	719	127,057	31,168	5,610	121,447	6,674	700
9	12,000	1,176	11,030	956	147,955	36,885	6,639	141,316	7,850	700
10	12,000	1,269	12,695	1,192	170,188	42,957	7,732	162,456	9,119	700

11	12,000	1,375	14,465	1,426	193,852	49,497	8,909	184,943	10,494	700,000
12	12,000	1,490	16,349	1,682	219,029	56,500	10,170	208,859	11,984	700,000
13	12,000	1,624	18,352	1,960	245,798	63,966	11,514	234,284	13,608	700,000
14	12,000	1,773	20,482	2,258	274,249	71,904	12,943	261,306	15,381	700,000
15	12,000	1,945	22,744	2,577	304,471	80,331	14,460	290,012	17,326	700,000
16	12,000	2,135	25,147	2,917	336,567	89,274	16,069	320,498	19,460	700,000
17	12,000	2,338	27,698	3,277	370,650	98,768	17,778	352,872	21,799	700,000
18	12,000	2,556	30,408	3,658	406,844	108,851	19,593	387,250	24,354	700,000
19	12,000	2,786	33,285	4,064	445,278	119,560	21,521	423,757	27,141	700,000
20	12,000	3,031	36,340	4,494	486,093	130,933	23,568	462,525	30,171	700,000
21	12,000	3,299	39,584	4,951	529,427	143,010	25,742	503,685	33,470	700,000
22	12,000	3,597	43,026	5,437	575,419	155,832	28,050	547,369	37,068	700,000
23	12,000	3,937	46,679	5,952	624,208	169,442	30,500	593,709	41,004	700,000
24	12,000	4,319	50,551	6,500	675,941	183,882	33,099	642,842	45,323	700,000
25	12,000	4,748	54,655	7,081	730,767	199,196	35,855	694,912	50,071	700,000
26	12,000	5,225	59,003	7,699	788,847	215,429	38,777	750,069	55,296	700,000
Tot./Ending	312,000	55,296	601,665	69,522	788,847			750,069	55,296	

Notes:
  1. Life Insurance Benefite is $700,000 in all years.
  2. Gross Investment Return equals 8%.
  3. Assumed Tax Rate equals 18%; tax deferred limited to 6 years.

Table A3
Using Equation 7 to Calculate the Advantage of the Permanent Policy
(7) AT Adv. PP = (trsf * Sum(Term)) = (trsf - trpp)) - ((1-trsf) * FV(ExtraCosts))
+ (AT Value of Foregone Earnings on Previously Paid Taxes) + ((CV-Sum(Pmt)) *

| Source of Information: | Table 2A | Table 4 | Calculated | Table 4 | E = a+b+c-d |
| | A | B | C | D | |
Year	After-Tax Advantage of Permanent Policy Obtained by subtracting values from Table 2A from those of Table 4	Term Cost Basis * Tax Rate on Side-Fund	Gain on Policy * Difference in Tax Rates	After-tax Future Value Forgone as a Result of Having Previously Paid Taxes	After-Tax Value of Extra Costs	Calculated Advantage of Permanent Policy over Side-Fund
1	(543)	111	41	-	580	*(428)
2	(994)	231	(2)	-	1,223	(994)
3	(1,711)	362	(137)	-	1,936	(1,711)
4	(2,592)	504	(370)	-	2,726	(2,592)
5	(3,649)	658	(707)	-	3,600	(3,649)
6	(4,898)	825	(1,157)	-	4,566	(4,898)
7	(6,339)	1,006	(1,727)	16	5,634	(6,339)

		SumTermCosts * trsf	(Cash-Value - PolicyBasis) *(trsf-trpp)	After-Tax FV of Taxes Paid	(1-trsf) FV(Extra Costs)	
8	(7,974)	1,201	(2,427)	64	6,813	(7,974)
9	(9,802)	1,413	(3,266)	164	8,114	(9,802)
10	(11,827)	1,641	(4,254)	334	9,549	(11,827)
11	(14,048)	1,889	(5,402)	597	11,131	(14,048)
12	(16,465)	2,157	(6,721)	973	12,874	(16,465)
13	(19,076)	2,449	(8,223)	1,491	14,792	(19,076)
14	(21,877)	2,769	(9,921)	2,178	16,903	(21,877)
15	(24,863)	3,119	(11,826)	3,068	19,223	(24,863)
16	(28,026)	3,503	(13,954)	4,199	21,773	(28,026)
17	(31,361)	3,924	(16,321)	5,611	24,574	(31,361)
18	(34,858)	4,384	(18,943)	7,351	27,650	(34,858)
19	(38,509)	4,885	(21,840)	9,471	31,025	(38,509)
20	(42,303)	5,431	(25,031)	12,026	34,729	(42,303)
21	(46,222)	6,025	(28,537)	15,081	38,791	(46,222)
22	(50,245)	6,672	(32,378)	18,705	43,244	(50,245)
23	(54,344)	7,381	(36,578)	22,976	48,123	(54,344)
24	(58,489)	8,158	(41,160)	27,979	53,466	(58,489)
25	(62,644)	9,013	(46,148)	33,808	59,316	(62,644)
26	(66,766)	9,953	(51,570)	40,569	65,718	(66,766)
Reference for Variable Used to Calculate Columns A through D		SumTermCosts * trsf	(Cash-Value - PolicyBasis) *(trsf-trpp)	After-Tax FV of Taxes Paid	(1-trsf) FV(Extra Costs)	

Appendix 3

Below are detailed derivations of formulas presented in the section "Incorporating Additional Real-World Assumptions." The derivations start by setting the after-tax values of the alternatives equal to each other, then using algebra to simplify the equations, and concluding by recasting the expressions in the equations to explain the after-tax advantages of the permanent, cash-value policy.

(Please note, in all the equations below, Term and TermCosts are used interchangeably.)

Derivation No. 1 with Different Tax Rates - Using Gain on Policy

1) FV(Pmt) - FV(Term) - FV(TaxesSF) = FV(Pmt) - FV(Term) - FV(ExtraCosts) - FV(TaxesPP)
2) FV(ExtraCosts) + FV(TaxesPP) = FV(TaxesSF)
3) FV(ExtraCosts) = FV(TaxesSF) - FV(TaxesPP)
4) FV(ExtraCosts) = (Trsf*(CV+FV(ExtraCosts) - Sum(Pmt) + Sum(Term)) - (Trpp * (CV - (Sum(Pmt)))
5) FV(ExtraCosts) = ((Trsf - Trpp)* (CV - Sum(Pmt))) + (Trsf * FV(ExtraCosts)) + (Trsf * Sum(Term))
6) ((1 - Trsf) * FV(ExtraCosts)) = ((Trsf - Trpp) * (CV - Sum(Pmt))) + (Trsf * Sum(Term))
7) After-tax Advantage of PP w/diff. tax rates = ((Trsf - Trpp) * (CV - Sum(Pmt))) + (Trsf * Sum(Term)) - ((1-Trsf) * FV(ExtraCosts))

Derivation No. 2 with Different Tax Rates - Using Gain on Side-Fund

1) FV(Pmt) - FV(Term) - FV(TaxesSF) = FV(Pmt) - FV(Term) - FV(ExtraCosts) - FV(TaxesPP)
2) FV(ExtraCosts) + FV(TaxesPP) = FV(TaxesSF)
3) FV(ExtraCosts) = FV(TaxesSF) - FV(TaxesPP)
4) FV(ExtraCosts) = (trsf *(CV+FV(ExtraCosts)- Sum(Pmt)+Sum(TermCosts)) - (trpp * (CV-Sum(Pmt)))
   Now subtract the following term (trpp * (FV(ExtraCosts) + Sum(TermCost))) from both sides, and then factor the right side as shown.
5) FV(ExtCsts) - (trpp * (FV(ExtCsts) + Sum(Pmt))) = (trsf-trpp) * (CV+FV(ExtCsts) -Sum(Pmt)+Sum(TermCosts))
6) ((1-trpp) * FV(ExtCsts)) - (trpp * Sum(TermCosts)) = (trsf-trpp) * (CV+FV(ExtCsts) -Sum(Pmt)+Sum(TermCosts))
7) AT Adv. of PP= (trpp * Sum(TermCosts)) + ((trsf-trpp) *

(CV+FV(ExtCsts) -Sum(Pmt)+Sum(TermCosts))) - ((1-trpp) *
(FV(ExtCsts))

(Note: (CV+FV(ExtCsts) -Sum(Pmt)+Sum(TermCosts))=Gain on the Side
Fund)

Derivation for Whole Life

Derivation for whole life where there are differences in annual at-risk
amounts. In particular, it is assumed that the at-risk amount for the whole life
policy decreases from its initial face amount; that is, cash-value builds faster
than paid-up additional coverage. In these formulas, the variable
FV(TermCosts) represents the costs for equivalent annual at-risk patterns in
both the BTID alternative and the whole life policy. The term policy's extra
at-risk is represented by the variable ExtRskCst.

1) FV(Pmt) - FV(TermCosts) - FV (ExtRskCost) - FV(TaxesSF) =
   FV(Pmt) - FV(TermCosts) - FV(ExtraCosts) - FV(TaxesPP)
2) - FV (ExtRskCost) - FV(TaxesSF) = - FV(ExtraCosts) - FV(TaxesPP)
3) FV (ExtRskCost) + FV(TaxesSF) = FV(ExtraCosts) + FV(TaxesPP)
4) FV(TaxesSF) - FV(TaxesPP) = FV(ExtraCosts) - FV (ExtRskCost)
5) Note: Tr = TaxRate
6) (Tr * Gain on SF) - (Tr * Gain on PermPol) = Unchanged Right-hand
   Side
7) Tr*(Gain on SF - Gain on PermPol) = Unchanged Right-hand Side
8) Tr *((CV + FV(ExtraCosts) - FV(ExtRskCost) - Sum(Pmt) +
   Sum(Term) + Sum(ExtRskCost)) - (CV - Sum(Pmt))) = Unchanged
   Right-hand Side
9) Tr * (FV(ExtraCosts)-FV(ExtRskCost) + Sum(TermCost) +
   Sum(ExtRskCost)) = FV(ExtraCosts) - FV (ExtRskCost)
10) ((1-Tr) * FV(ExtRskCost)) + (Tr * (Sum(Term) + Sum(ExtRskCost)))
    = (1 - Tr) * FV (ExtraCosts)
11) AT Adv WL = (Tr * (Sum(Term) +Sum(ExtRskCost))) + ((1 - Tr) *
    FV(ExtRskCost)) - ((1 - Tr) * FV(ExtraCosts))

Derivation with Different Term Costs: TermT and TermPP

1) FV(Pmt) - FV(TermT) - FV(TaxesSF) = FV(Pmt) - FV(TermPP) -
   FV(ExtraCosts) - FV(TaxesPP)
2) FV(TermT) + FV(TaxesSF) = FV(TermPP) + FV(ExtraCosts) +
   FV(TaxesPP)
3) FV(TermT) + FV(TaxesSF) = FV(TermPP) + FV(ExtraCosts) +
   FV(TaxesPP)

4) FV(TaxesSF) - FV(TaxesPP) = FV(TermPP) - FV(TermT) +
   FV(ExtraCosts)
5) (Tr*Gain on SF) - (Tr * Gain on PermPol) = Unchanged Right-Hand
   Side
6) Tr*(Gain on SF - Gain on PermPol) = Unchanged Right-Hand Side
7) Tr* ((CV + FV(ExtraCosts) + FV(TermPP) - FV(TermT) - Sum(Pmt) +
   Sum(TermT)) - (CV -Sum(Pmt))) = Unchanged Right-Hand Side
8) Tr*((FV(ExtraCosts) + FV(TermPP) - FV(TermT) +
   Sum(TermT))) = FV(TermPP) - FV(TermT) + FV(ExtraCosts)
9) (Tr * Sum(TermT)) = ((1-Tr) * (FV(TermPP) - FV(TermT))) +((1-Tr) *
   FV(ExtraCosts))
10) AT Adv. PP = (Tr * Sum(TermT)) - ((1-Tr) * (FV(TermPP)-
    FV(TermT))) - ((1-Tr)*FV(ExtraCosts))

Note: It is interesting that Equation 10 and Equation 11 from the above
whole life analysis are equal. The first expressions can be seen to be equal
by realizing that the sum of TermCosts and ExtRskCst (in Equation 11)
equal TermT (Equation 10). While the second expressions of Equations 11
and 10 look very different, multiplying Equation 10's second expression
twice by -1 converts it to (- (1 - Tr) * (FV(TermT) - FV(TermPP))).
Plugging this reworked expression back into the formula, we see that this
results in subtracting a negative, which changes it to addition, and that
(FV(TermT) - FV(TermPP)) is precisely what was meant by
FV(ExtRskCst) in equation 11 from the prior derivation above.