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The Upside to Higher Persistency in LTC Insurance—Effects of Anti-Selection After Policy Issue

By John L. Timmerberg

A lower level of voluntary lapses—or higher persistency—is a topic of interest or concern for long term care insurance (LTCI) profitability and pricing. The pricing of LTCI is lapse-supported, meaning that voluntary lapse rates below expectations can lead to profit concerns. But the flip side to high persistency is fewer opportunities for policyholder anti-selection against the company. Higher persistency should result in improvements in experience as measured by policy year loss ratios and attained age claim cost levels.

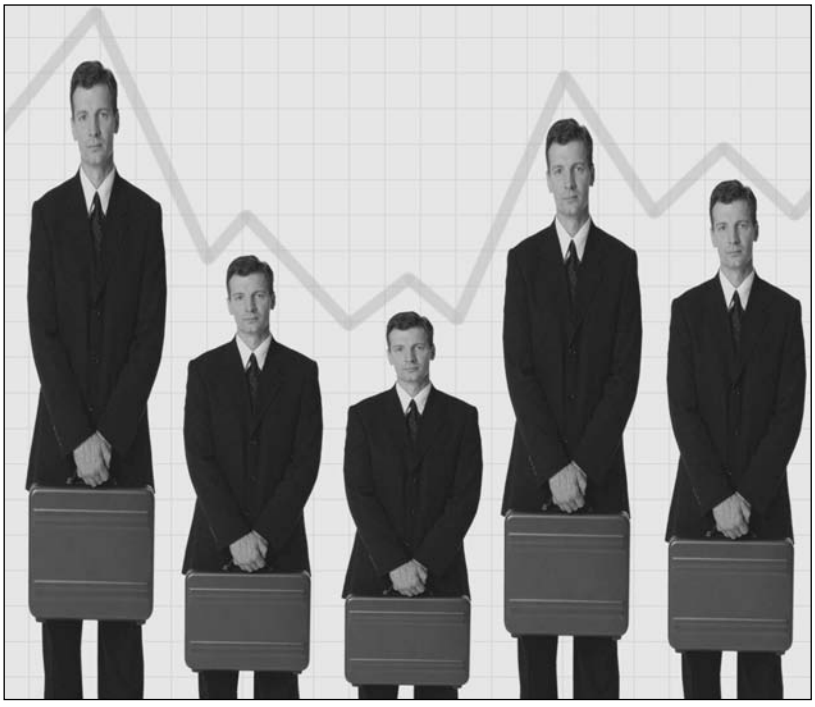
In this article, I discuss policyholder anti-selection (after issue), develop a fairly simple model to demonstrate the impact on attained age claim costs, and then compare results for three scenarios. Then I look at the variation in anti-selection between higher and lower levels of lapses and one scenario includes the impact of additional event-specific lapses. I demonstrate that when pricing products today in a lower lapse rate environment, actuaries may consider using favorable adjustments to their claim costs if using historical experience available from a higher lapse rate environment, all other factors held constant.

I credit William F. Bluhm's article "Cumulative Antiselection Theory," which is the foundation or inspiration for many of the ideas presented here.

Anti-selection in Action

When using the term anti-selection, I am referring to the ability and tendency of LTCI policyholders to make decisions regarding whether or not they will voluntarily lapse their policy that reflect their superior knowledge as to their health status and potential future claim utilization. Generally, policyholders who lapse may have made the personal prediction that their benefit utilization will be low. Therefore, lapses tend to remove the healthiest policyholders from the pool. This impacts the remaining pool, resulting in higher policy year loss ratios and higher attained age claim costs, as compared to the performance that would exist in the absence of these lapses.

For example, I suggest that a policyholder who purchased their policy seven or eight years ago, and has since experienced two falls or a diagnosis of emerging Alzheimer's disease and lives alone is much less likely to lapse their policy as compared to a policyholder who has few health concerns, remains active and lives with their spouse. In addition to the policyholder's knowledge regarding their current health status or potential future ADL (activity of daily living) deficiencies, benefit utilization could be impacted by the presence of a spouse, the presence of family nearby or other informal support services, relative accessibility of formal services, regional variations, the willingness of the policyholder to accept the services or benefits available under



their policy and other factors. It is possible that the presence of a spouse or other factors compete with health status as a primary indicator of future utilization. Although there are many factors that affect future benefit utilization, I will use the term "health status" to indicate the combination of all policyholder-specific factors that affect benefit utilization.

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The potential for policyholder anti-selection exists at each point during the life of a LTCI policy when a premium payment is due. The policyholder must decide whether or not they will pay the premium thus keeping the policy active, or not pay the premium and lapse the policy. And, if properly motivated, the policyholder may cancel the policy between premium payments. Special circumstances or events where one might expect additional event-specific lapses and policyholder anti-selection are as follows:

- a rate increase notification is received;
- the policyholder receives potentially unsettling news such as an insurance company ratings downgrade, sale, merger or exit from the LTC line of business;
- an increase in agent activity, with offers to replace policies with newer policies that may have higher benefit value per premium dollar;
- a communication regarding policyholder options as the result of a class action settlement, a regulatory intervention or some other unusual event that effects the policyholder's status; or
- a return of premium benefit (cash payable) matures and becomes payable.

The potential for policyholder anti-selection exists at each point during the life of a long-term care insurance policy when a premium payment is due.

In fact, additional policy lapses can occur at any point that the policyholder receives a communication reminding them that their policy exists and is still active.

The Model

To model the impact of anti-selection, I will discuss it in terms of the impact on the expected claim cost for one year. By claim cost, I am referring to the attained age claim costs which are measured as claims incurred per dollar of daily benefit amount exposed during the year, for a selected attained age. Attained age claims cost curves are used in both pricing and reserving (active life reserves) and increase rapidly with attained age, although with varying slopes depending on company experience and their interpretation of the data.

I start with the following equation for the year in which the lapse occurs:

$CC_k = (1.00\text{-}VLR_t)(HS_A)(CC_k) + (VLR_t)(HS_L)(CC_k)$,

with variables defined as follows:

VLR_t = voluntary lapse rate for policy duration t.
CC_k = claim cost for attained age k.
HS_A = average health status of continuing active policy for this year.
HS_L = average health status of lapsed policy for this year.

As motivation for the equation, please note that the potential benefit utilization is split into two parts: that for continuing policies and that which would have been contributed by policies that lapsed. By assuming some level of health status for the lapsed policies (HS_L) and using the appropriate voluntary lapse rate for duration t (VLR_t), we are able to calculate the health status for continuing active policies (HS_A) that brings the claim utilization total back into balance.

Assume $HS_L = 0.50$ and $VLR_t = 0.04$ and solve for HS_A, then ...

$1.00 = (1.00\text{-}0.04)(HS_A) + (0.04)(0.50)$

and $HS_A = 1.02083$, or 2.1 percent higher as a result of the lapses.

When assuming that $HS_L = 0.50$ in the calculation, we are indicating that the health status of the lapsed policy in the year that they lapse is one-half the overall expected rate of lapsed and continuing policies combined. We will call this a moderate level of health status differential. As another example, if $HS_L = 0.25$, that would indicate that the health status or expected benefit utilization rate of the lapsed policy is one fourth the overall expected rate of lapsed and continuing policies combined. We will call this a high level of health status differential.

The 2.1 percent increase calculated above is the impact of the anti-selection in the year of the lapse. In addition, we assume that the effect of this year's lapses continues to future years. In our examples, we assume that the effect continues but decreases 10 percent each year, running off within 10 years. As noted above, the difference in future claims is a reflection of a number of factors, some of which are quite stable and persistent. Thus, allowing the effect to run off over 10 years is reasonable. For each year, the cumulative impact of the anti-selection is the anti-selection for that year plus the multiplicative impact of prior years that are still running off. For example, in policy year three the effect includes the first year effect for policy year three, the second year effect from policy year two and the third year effect from policy year one.

Exhibit I

Policy Duration	Higher Lapse Rates No Events	Higher Lapse Rates Two Events	Lower Lapse Rates No Events
1	15.50%	15.50%	5.50%
2	9.50%	9.50%	4.00%
3	7.00%	7.00%	3.00%
4	5.00%	5.00%	2.50%
5	4.50%	8.50%	1.50%
6	4.50%	4.50%	1.50%
7	4.50%	8.50%	1.50%
8	4.50%	4.50%	1.50%
9	4.50%	4.50%	1.50%
10	4.50%	4.50%	1.50%
11+	4.50%	4.50%	1.50%

The Results

Exhibit I shows three voluntary lapse rate scenarios. "Higher Lapse Rates, No Events" is from a higher lapse rate era, possibly representative of LTCI policies issued in the early 1990s. Column two, "Higher Lapse Rates, Two Events" is from the same higher lapse rate era, but also includes two years where event-specific effects on the lapse rate increased it by 400 basis points each year (a premium rate increase in year five and an insurance company ratings downgrade in year seven, for example). Column three, "Lower Lapses, No Events" shows the expected lapse rate for policies being issued during a low lapse rate era, which could be reflective of today, and no events. Please see the "Long-Term Care Insurance Persistency Experience" joint study by the SOA and LIMRA for information on the differences in lapse rates over recent time periods.

Exhibit II shows the anti-selection impact of the lapse rate scenarios with some variation in the anti-selection intensity as measured by the differential in health status. The first column shows the cumulative anti-selection impact for the "Higher Lapses, No Events" scenario along with moderate health status differential ($HS_L = 0.50$). Column two shows the cumulative anti-selective impact of the "Higher Lapses, Two Events" lapse rates, along with high health status differential ($HS_L = 0.25$). Column three shows the cumulative anti-selective impact of the "Lower Lapses, No Events" scenario along with moderate health status differential ($HS_L = 0.50$). The values shown in the table are the percentage increase in the claim costs resulting from the anti-selection brought about by both the underlying level of voluntary lapses and the additional anti-selection produced by the lapses resulting from events.

Column two shows the highest results, with anti-selection peaking at duration seven at 35.8 percent and leveling off at 21.2 percent for all durations, 17 and above. The anti-selection impact peaks at the year of the second event, which increased lapses by 400 basis points in that year. Column three shows the lowest results, with anti-selection peaking at durations four and five at 6.5 percent and levels off at 4.3 percent at duration 13. Clearly, the impact of anti-selection can vary widely, depending on the level of lapses, additional lapses due to events and the health status differential assumed.

As a potentially useful application, one can consider the development of a claim cost curve as starting from a theoretical curve that could exist if there were zero voluntary lapses. This "baseline" claim cost curve would be the lowest claim cost curve with all other curves resulting from non-zero lapses being at higher levels, all other factors held constant. To estimate the "baseline" claim cost curve, we take the values resulting from our actual experience and then divide by the factors resulting from our model. For example, if we had statistically credible claim cost values from results experienced as described by the heading in

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column two of Exhibit II, then we could divide our actual values by these factors to get back to the "baseline" claim cost curve. Now, when pricing under new lapse rate assumptions, such as those in column three of Exhibit II, we can take our "baseline" claim costs and multiply by the column three factors to create a set of expected claim costs resulting from this new lapse rate environment. This demonstrates that the new claim costs to be used to price under the scenario described by the column three headings are lower than those resulting from column two solely due to the difference in anti-selection, by the ratios of column three divided by column two (1.029/1.138 for duration one, for example). Of course, the claim costs would be adjusted for other product and underwriting differences between the column two era product and the column three era product.

Conclusion

Although the impact of anti-selection may be lower in today's environment of lower lapse rates and rate stability (implying that events that create additional lapses will be rare), anti-selection by LTCI policyholders should be considered when developing experience reports from historical data or selecting claim cost assumptions for pricing or reserving. Credible data from prior periods should be adjusted to reflect differences in lapse rates, including additional lapses resulting from events. The selection of the health status differential variable is an important consideration when modeling these effects, and actuaries should consider how they might best develop a credible estimate for this variable. ❋

Exhibit II

Policy Duration	Higher Lapse Rates No Events Moderate HS Differential	Higher Lapse Rates Two Events Higher HS Differential	Lower Lapse Rates No Events Moderate HS Differential
1	9.2%	13.8%	2.9%
2	13.9%	21.2%	4.8%
3	16.6%	25.6%	5.9%
4	17.7%	27.3%	6.5%
5	18.1%	32.2%	6.5%
6	18.2%	32.1%	6.4%
7	18.0%	35.8%	6.2%
8	17.5%	34.1%	6.0%
9	16.8%	32.1%	5.6%
10	15.8%	29.5%	5.2%
11	14.5%	26.5%	4.7%
12	13.9%	24.8%	4.5%
13	13.7%	23.7%	4.3%
14	13.7%	22.8%	4.3%
15	13.7%	22.0%	4.3%
16	13.7%	21.6%	4.3%
17	13.7%	21.2%	4.3%
18	13.7%	21.2%	4.3%
19	13.7%	21.2%	4.3%
20 +	13.7%	21.2%	4.3%

John L. Timmerberg, ASA, MAAA is president of Timmerberg & Associates, Inc., providing actuarial consulting specializing in long-term care insurance.