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Attorneys for Receiver
THOMAS HEBRANK

UNITED STATES DISTRICT COURT

CENTRAL DISTRICT OF CALIFORNIA

SECURITIES AND EXCHANGE COMMISSION,

Plaintiff,

v.

PACIFIC WEST CAPITAL GROUP, INC.; ANDREW B CALHOUN IV; PWCG TRUST; BRENDA CHRISTINE BARRY; BAK WEST, INC.; ANDREW B CALHOUN JR.; ERIC CHRISTOPHER CANNON; CENTURY POINT, LLC; MICHAEL WAYNE DOTTA; and CALEB AUSTIN MOODY (dba SKY STONE),

Defendants.

Case No. 2:15-cv-02563-FMO (FFMx)

RECEIVER'S EX PARTE MOTION FOR LIMITED AUTHORITY TO USE PWCG TRUST RESERVE FUNDS TO COVER UNFUNDED INSURANCE POLICY PREMIUM PAYMENTS; MEMORANDUM OF POINTS AND AUTHORITIES

Ctrm.: 6D
Judge: Hon. Fernando M. Olguin

TO ALL PARTIES AND THEIR ATTORNEYS OF RECORD:

PLEASE TAKE NOTICE that Thomas C. Hebrank ("Receiver"), the Court-appointed receiver for the PWCG Trust, will and hereby does move the Court on an *ex parte* basis for an order granting him limited authority to use funds held in PWCG Trust's existing reserves to pay unfunded insurance policy premium payments.

This motion is made pursuant to Local Rule 7-19. This relief is being sought on an *ex parte* basis because (a) there are insurance policies included in PWCG Trust that will lapse starting on March 9, 2018, if premium payments are not made and (b) there are insufficient reserve funds currently available to make the required payments for these policies. Without the requested relief, PWCG Trust, and therefore the investors, will permanently lose the right to recover approximately $117,306,573 in death benefits from these policies when they mature, representing almost half of the outstanding policy death benefits. As discussed below, these losses are expected to grow as more and more reserves are exhausted. At present, the Receiver does not have any other cash resources available to pay these policy premiums. As such, the Receiver seeks this emergency relief in order to maintain the status quo and avoid the significant loses that will occur if these premium payments are not made.

The Receiver provided notice of the motion to counsel of record for all parties on March 1, 2018. As of the filing of this motion, the Receiver has been advised as follows by counsel concerning their position on the motion:

> The Securities and Exchange Commission does not oppose the motion.
>
> Defendants Pacific West Capital Group, Inc. and Andrew B. Calhoun, IV do not oppose the requested relief.
>
> Defendant Andrew Calhoun, Jr. does not oppose the motion.
>
> Defendants Brenda Christine Barry, BAK West, Inc., Eric Christopher Cannon, Century Point LLC, and Caleb Austin Moody (dba Sky Stone) do not intend to oppose the motion.

The Receiver has also provide notice to investors by posting the motion on the website established for the receivership (www.ethreeadvisors.com/cases/pwcg/)[1] and by emailing a copy to all investors for whom an email address is contained in PWCG Trust's records.

Pursuant to Local Rule 7-19, the names, addresses, email addresses, and telephone numbers of counsel for the parties are:

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[1] A letter was mailed to all investors by the Receiver on February 22, 2018, directing them to the website for further updates regarding the receivership. Investors can also subscribe to receive direct email updates.

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Dated: March 1, 2018

ALLEN MATKINS LECK GAMBLE MALLORY & NATSIS LLP

By: */s/ David Zaro*
DAVID R. ZARO
Attorneys for Receiver
THOMAS HEBRANK

MEMORANDUM OF POINTS AND AUTHORITIES

I. INTRODUCTION

Immediately upon his appointment on February 16, 2018, the Receiver began taking steps to implement the Court's Judgment as to Defendant PWCG Trust. Dkt. No. 145. During his initial investigation into the life insurance policies held by PWCG Trust, and based upon communications with Trustee Mills, Potoczak & Company ("MPC"), the Receiver has learned there are life insurance policies held by PWCG Trust with premium payments due starting on March 9, 2018, for which there are insufficient reserve funds tied to those specific policies to make the required payments. Other than the reserve funds, the Receiver does not have any other cash available to fund the receivership including, but not limited to, the policy premiums.

Specifically, although there is approximately $8.6 million in reserve funds held by PWCG Trust, these reserve funds are presently allocated to specific policies. During the months of March, April, and May 2018, there are a total of 26 policies with insufficient reserves to make required premium payments and the death benefits for these policies total $117,306,573, representing almost half of the outstanding policy death benefits. The Receiver has determined and believes it is in the best interest of all investors that these death benefits be preserved. In order to preserve the policy value, the Receiver seeks authority to borrow approximately $435,000 from the reserves to pay the policy premiums.

Many of the policies held by PWCG Trust have previously exhausted their reserves. The additional layers of reserves, known as the secondary reserve and tertiary reserve, were also exhausted. Therefore, for more than a year prior to the Receiver's appointment, "cash calls" were sent to investors to collect the amounts necessary for PWCG Trust to make the premium payments. However, insufficient funds were collected from investors, so there are insufficient reserves to make the required premium payments ("Unfunded Premium Payments"). These policies will

lapse starting on March 9, 2018, if the payments are not made. If these policies lapse, PWCG Trust, and therefore the investors, will lose the right to receive the death benefits from them.

As discussed below, it appears that over time the vast majority of policies will face this same problem. As such, those investors who have interests in policies that have some reserves left will be in the same position as those investors with an interest in the 26 policies at issue here.

Rather than seeking *ex parte* relief on a weekly or monthly basis as policies are about to lapse, the Receiver requests authority to use reserve funds allocated to other policies on a short-term basis to make these Unfunded Premium Payments during the months of March, April, and May 2018. The Receiver will borrow from policies that have the largest existing reserves so as to avoid putting any additional policies at risk of being unable to make their own premium payments. The Receiver expects to be in a position to propose a long-term, comprehensive means of addressing Unfunded Premium Payments in the next 90 days, having had sufficient time by then to analyze the insurance policies, reserve funds, financial transactions, and investor interests in PWCG Trust so as to present a proposal that treats all investors and creditors as fairly and equitably as possible.

II. BACKGROUND FACTS

A. Policy Reserves Shortfalls

Although the Receiver continues to gather information necessary to fully understand the acquisition of insurance policies, sale of fractionalized interests in them to investors, and the use of reserve funds, the Receiver understands that when policies were acquired by PWCG Trust and fractionalized interests in them were sold to investors, a specific amount was allocated as the reserve to be used to fund premium payments. Although these reserves were deposited into one bank account, they were separately accounted for and allocated to each policy on a ledger. Declaration of Thomas Hebrank filed herewith ("Hebrank Declaration"), ¶ 2.

The reserves set aside for many policies, however, were insufficient and therefore have been exhausted, with premium payments continuing to come due. Hebrank Declaration, ¶ 3. In fact, as insurance expert Professor Daniel Bauer found, in light of Pacific West's failure to set aside adequate reserves based on realistic life expectancies, the total reserves are not adequate as to the vast majority of policies. Professor Bauer's expert report and exhibits were attached to the Parties' Joint Evidentiary Appendix in Support of Cross Motions for Summary Judgment and Partial Summary Judgment at Tab No. 101. Dkt. No. 106-103. A copy of Professor Bauer's expert report and exhibits is attached hereto as Exhibit A as well for ease of reference.

As alleged in the SEC's Complaint, starting in 2012, Defendants Pacific West Capital Group, Inc. ("Pacific West") and Andrew B. Calhoun, IV ("Calhoun") funded the shortfalls necessary to make premium payments on some of these policies and, by doing so, were able to avoid (a) using the Secondary Reserve and Tertiary Reserve, which they had represented to investors had never been touched, and (b) making "cash calls" to investors to fund their shares of the shortfalls. SEC Complaint, Dkt. No. 1, ¶¶ 62-64.

At some point in time, Pacific West and Calhoun stopped covering the shortfalls themselves. In August 2015 Pacific West instructed PWCG Trust, through MPC as Trustee, to make cash calls on investors to pay their shares of the total necessary to cover the shortfalls. Some investors paid cash calls and some did not. Pacific West treated the fractionalized interests of investors who did not pay in response to cash calls as "forfeited," meaning ownership of the interests reverted back to Pacific West. Hebrank Declaration, ¶ 4.

Then, in July 2017, Pacific West purportedly sold certain of the forfeited investor interests to Cook Street Master Trust, which is managed by an investment firm called BroadRiver Asset Management ("BroadRiver"). Under the Agreement, a copy of which is attached to the Hebrank Declaration as Exhibit A, BroadRiver

paid $1.5 million to Pacific West to acquire the forfeited investor interests, which collectively have the right to receive over $28 million in death benefits. Hebrank Declaration, ¶ 5.

According to BroadRiver's principal, it has since paid an additional approximately $875,000 to fund premium payments for the forfeited interests it acquired in July 2017, as well as additional forfeited interests acquired when investors subsequently failed to meet cash calls. Due to the acquisition of additional forfeited interests since July 2017, BroadRiver now claims to hold forfeited interests entitling it to approximately $32 million in death benefits. As discussed below, to the detriment of the investors, BroadRiver has been acquiring more and more forfeited investor interests, and potentially the right to receive a greater and greater share of the total death benefits for policies held by PWCG Trust. Hebrank Declaration, ¶ 6.

B. The SEC Complaint

The SEC's Complaint, which was filed over a year before BroadRiver began acquiring forfeited investor interests, alleges that Pacific West and Calhoun, in selling fractionalized interests in insurance policies, told investors that (a) in the three-tiered reserve system established by Pacific West, the second and third tiers of reserves had never been touched, (b) cash calls had never been made for investors to fund premium payments, and (c) insurance policies in PWCG Trust were selected because, in Pacific West and Calhoun's estimation, they would mature in four to seven years, despite the fact that life expectancies of the insureds were years longer. SEC Complaint, Dkt. No. 1, ¶¶ 16-46, 61-92. The SEC further alleged that Pacific West and Calhoun misrepresented and omitted material facts in selling fractionalized interests to investors, including failing to disclose that Pacific West had funded premium payments for policies where the primary reserve had been exhausted, misrepresenting the amount of policy premiums on the disclosures forms provided to investors, failing to disclose that such premiums would increase

substantially over time, and failing to disclose that only a small percentage of policies held by PWCG Trust had actually matured in the seven years following their purchase. *Id.* at ¶¶ 75-79, 83. The SEC also alleges that Pacific West and Calhoun had no reasonable basis to believe the insurance policies acquired would actually mature in four to seven years. *Id.* at ¶¶ 30, 81. Pacific West and Calhoun have denied these allegations. Dkt. No. 62.

C. Expert Report of Professor Daniel Bauer

The SEC engaged Insurance and Risk Management Professor Daniel Bauer of Georgia State University[2] to perform an analysis of the sale of fractionalized interests in life insurance policies by the Defendants and the reserves set up by Defendants and held by PWCG Trust, including how the reserves were calculated, whether they are adequate, and the accuracy of various representations made by Defendants. Professor Bauer's expert report and exhibits were attached to the Parties' Joint Evidentiary Appendix in Support of Cross Motions for Summary Judgment and Partial Summary Judgment at Tab No. 101. Dkt. No. 106-103.

In his report, Professor Bauer makes a number of findings that help explain the shortfalls from the reserves held by PWCG Trust, including:

- Although it is standard in the life settlements industry to use actuarially-based life expectancy estimates for the insured in setting premium reserve periods, Pacific West did not do so for policies held by PWCG Trust. Pacific West also did not use standard analytical tools to evaluate the length of its primary reserve periods. Bauer Expert Report, Dkt. No. 106-103, ¶¶ 10, 53-61, 89-98.
- Pacific West set premium reserve periods that were significantly shorter than the life expectancies of the insureds for the policies held by

[2] The Receiver understands that since issuing his expert report, Professor Bauer has left Georgia State University and is now the Dai-ichi Life Insurance Company Endowed Chair in Actuarial Science and Risk Management at the University of Alabama, Culverhouse College of Commerce.

PWCG Trust. As a result, PWCG Trust's insurance policies are maturing much more slowly than the premium reserve periods. On average, only 28.9% of the policies held by PWCG Trust have matured within the premium reserve periods, which is an extremely low average for the industry. *Id.* at ¶¶ 12, 99-102.

- Pacific West miscalculated and underfunded the amounts necessary to pay policy premiums during the premium reserve periods it set, exacerbating the underfunding of the reserves. *Id.* at ¶¶ 13, 103-110.
- The second and third tiers of reserves established by Pacific West (known as the secondary and tertiary reserves) are very small in relation to the premiums owed on the policies and insufficient to cover the shortfalls from premium reserves. *Id.* at ¶¶ 15, 118-134.
- The policies held by PWCG Trust, which total 133 and were purchased between 2004 and 2015, began to reach the end of their premium reserve periods in 2011, and, by February 2012, Pacific West was covering shortfalls from premium reserves itself. In December 2014, Pacific West instructed PWCG Trust to start drawing on the secondary reserve. In August 2015, Pacific West instructed PWCG Trust to start making investor cash calls. The secondary and tertiary reserves were depleted as of February 2016. *Id.* at ¶¶ 132-133.
- As of 2017, there were 77 policies that had reached the end of their premium reserve periods. It is estimated that the number will go up to 82 in 2018, 94 in 2019, and 110 in 2020. *Id.* at Exhibit 5.

Accordingly, Professor Bauer's analysis shows the reserves held by PWCG Trust are substantially underfunded and woefully insufficient to keep the policies in force through their maturities. This explains the need for immediate short-term relief to prevent policies from lapsing. As noted above, the Receiver is continuing to gather and analyze information about the policies, the reserves, and the investor

interests in order to present a long-term means of addressing Unfunded Premium Payments. The Receiver plans to present his proposal to the Court within the next 90 days.

D. Unfunded Premium Payments Coming Due

As reflected in the Schedule of Unfunded Premium Payments attached to the Hebrank Declaration as Exhibit B, there are 26 policies with premiums coming due during March, April, and May 2018 for which the reserves currently available are insufficient to make the required payments. The total amount needed to cover the shortfalls is approximately $435,000. The death benefits associated with these policies total $117,306,573 and there are 134 investors[3] who would lose their fractionalized interests in the policies (and therefore, the right to share in the death benefits) if PWCG Trust were to proceed under the existing arrangement with BroadRiver. Hebrank Declaration, ¶ 7.

III. ARGUMENT

"The power of a district court to impose a receivership or grant other forms of ancillary relief does not in the first instance depend on a statutory grant of power from the securities laws. Rather, the authority derives from the inherent power of a court of equity to fashion effective relief." *SEC v. Wencke*, 622 F.2d 1363, 1369 (9th Cir. 1980). The "primary purpose of equity receiverships is to promote orderly and efficient administration of the estate by the district court for the benefit of creditors." *SEC v. Hardy*, 803 F.2d 1034, 1038 (9th Cir 1986). As the appointment of a receiver is authorized by the broad equitable powers of the court, any distribution of assets must also be done equitably and fairly. See *SEC v. Elliot*, 953 F.2d 1560, 1569 (11th Cir. 1992).

[3] The schedule shows a total of 170 investors who have not paid cash calls, but 36 of them are in policies for which there are currently sufficient reserves to make the required premium payments.

District courts have the broad power of a court of equity to determine the appropriate action in the administration and supervision of an equity receivership. See *SEC v. Capital Consultants, LLC*, 397 F.3d 733, 738 (9th Cir. 2005). The Ninth Circuit explained:

> A district court's power to supervise an equity receivership and to determine the appropriate action to be taken in the administration of the receivership is extremely broad. The district court has broad powers and wide discretion to determine the appropriate relief in an equity receivership. The basis for this broad deference to the district court's supervisory role in equity receiverships arises out of the fact that most receiverships involve multiple parties and complex transactions. A district court's decision concerning the supervision of an equitable receivership is reviewed for abuse of discretion.

Id. (citations omitted); see also *CFTC v. Topworth Int'l, Ltd.*, 205 F.3d 1107, 1115 (9th Cir. 1999) ("This court affords 'broad deference' to the court's supervisory role, and 'we generally uphold reasonable procedures instituted by the district court that serve th[e] purpose' of orderly and efficient administration of the receivership for the benefit of creditors."). Accordingly, the Court has very broad discretion in the administration of receivership estate assets.

Here, the Receiver requests limited authority to use existing policy reserves allocated to other policies held by PWCG Trust to pay the Unfunded Premium Payments coming due in March, April, and May 2018. It is important to note that all of these funds have been and currently are held in a single bank account, so no account transfers are necessary, only journal entries on the PWCG Trust ledger. Without such relief, the applicable policies will lapse and PWCG Trust, and therefore the investors, will lose the right to receive $117,306,573 in death benefits when the policies mature.

During the brief time since his appointment on February 16, 2018, the Receiver has considered several alternatives, but believes none of them adequately address the problem or are in the best interest of the receivership estate. One such possibility would be to borrow against the policies from an outside lender. Having

consulted with MPC, which has extensive experience in the administration of life settlements, the Receiver believes the interest rate for this type of loan would be very high. More important, it would take at least six to eight weeks to gather the necessary information and analysis (including engaging a life expectancy company) to provide to prospective lenders, which would be too late for the Unfunded Premium Payments coming due in March and April 2018. Hebrank Declaration, ¶ 8.

Alternatively, the Receiver considered whether it is possible to sell a small number of policies. However, this is not a viable option. First, the Receiver would need to analyze and select which policies to sell. Second, the Receiver would then need to assess and analyze the appropriate treatment of investors with fractionalized interests, and then, negotiate the sale itself. Under the best circumstances, such a sale would take at least 90 days to complete. Hebrank Declaration, ¶ 9.

Finally, the Receiver does not believe it is in the best interest of investors to allow BroadRiver to continue its purchase of fractional interests. Investors have made substantial investments in their fractionalized interests. According to the SEC's allegations, they did so believing the reserves would be sufficient and they would not be called on to fund premium payments. If investors are unable or uncertain about meeting cash calls, they should not necessarily lose their entire investment while generating a windfall for BroadRiver. This is particularly true if the facts regarding the reserves and the risk of having to pay policy premiums were misrepresented to investors, as the SEC alleges and Professor Bauer found in his report. Hebrank Declaration, ¶ 10.

For these same reasons, and because it is inequitable to have some investors continuing to put money into PWCG Trust and others not (when the treatment of investor claims and distribution of receivership estate assets has not yet been determined by the Court), the Receiver has temporarily suspended cash calls to investors. Although this action promotes the equitable treatment of all investors, it

would also result in investor interests being rapidly forfeited and transferred to BroadRiver if the Receiver does not have a means of making Unfunded Premium Payments from existing reserves. Hebrank Declaration, ¶ 11.

Having weighed the various alternatives, and in the interests of treating all investors as fairly and equitably as possible, the Receiver believes using existing reserves to make Unfunded Premium Payments coming due during March, April, and May 2018 is the best available course of action. The Receiver will borrow from policies with the largest existing reserves, such that those policies will not be put at any risk in terms of funding their own premium payments for at least the next year. Accordingly, the risk of harm posed to investors with fractionalized interests in those policies is minimal. Hebrank Declaration, ¶ 12.

Finally, as noted above, the Receiver expects to be in a position to propose a long-term, comprehensive means of addressing the issue of Unfunded Premium Payments in the next 90 days, having had sufficient time by then to analyze the insurance policies, financial transactions, and investor interests in PWCG Trust in order to present a proposal that treats all investors as fairly and equitably as possible. Hebrank Declaration, ¶ 13.

IV. CONCLUSION

Based on the foregoing, the Receiver requests authority to use existing reserve funds held by PWCG Trust to make Unfunded Premium Payments that come due during the months of March, April, and May 2018.

Dated: March 1, 2018

ALLEN MATKINS LECK GAMBLE MALLORY & NATSIS LLP

By: */s/ David Zaro*
DAVID R. ZARO
Attorneys for Receiver
THOMAS HEBRANK

EXHIBIT A

UNITED STATES DISTRICT COURT

CENTRAL DISTRICT OF CALIFORNIA

WESTERN DIVISION

Securities and Exchange Commission **Plaintiffs,** **v.** **Pacific West Capital Group, Inc.; Andrew B Calhoun IV; PWCG Trust; Brenda Christine Barry; BAK West, Inc.; Andrew B Calhoun Jr.; Eric Christopher Cannon; Century Point, LLC; Michael Wayne Dotta; and Caleb Austin Moody (dba Sky Stone)** **Defendants.**	Case No. 2:15-cv-02563 **EXPERT REPORT OF DANIEL BAUER**

CONTENTS

I. Qualifications

1. I am the New York Life Professor of Insurance and Associate Professor of Risk Management and Insurance in the Department of Risk Management and Insurance at the J. Mack Robinson College of Business of Georgia State University. I hold a Doctorate in Mathematics and a Diploma in Econo-Mathematics from Ulm University, both *summa cum laude*, and a Masters in Statistics from San Diego State University, where I studied as a Fulbright Scholar. I have frequently taught courses on actuarial science, including classes on life insurance and mathematical risk management.

2. My professional work focuses on actuarial science and risk management, with an emphasis on quantitative methods. I have published more than 15 articles in scholarly journals and have co-authored two chapters in the *Handbook of Insurance*. My research has won awards from the Casualty Actuarial Society and the International Actuarial Association, including their life section prize. Together with co-authors, I have secured external research grants of more than $400,000, including two large grants from the Society of Actuaries. I am currently an editor of the *ASTIN Bulletin — the Journal of the International Actuarial Association*, and I am an associate editor of the *Journal of Risk and Insurance*. Both are reputable academic journals in my field.

3. During my graduate studies, I worked part-time for an actuarial consulting firm whose clients included investment funds focused on life settlement investments. My responsibilities included reviewing and analyzing insurance policies that were offered to the funds and implementing a database to support the management of the funds' policies, among other assignments. I have co-authored and published several papers on life settlements, including articles considering the economics of life

settlements,[1] their pricing in the presence of informational frictions,[2] and the evaluation of life expectancy providers / medical underwriters.[3] I have presented my work at conferences targeting the life settlement industry, particularly in the Annual Fasano Life Settlement Conference series. I have also consulted for major life expectancy providers.

4. My *curriculum vitae*, attached as **Appendix A**, includes a list of my publications.

II. Assignment

5. I have been asked by counsel for the Securities Exchange Commission ("SEC") to opine on issues related to the offer and sale of fractionalized interests in "used" life insurance policies in the secondary market, which are commonly referred to as life settlements. The investments were offered and sold by defendants Pacific West Capital Group, Inc. ("Pacific West", or "PWCG") and Andrew B Calhoun IV ("Mr. Calhoun") and issued by PWCG Trust ("the PWCG Trust"). Mills, Potoczak & Company ("Mills Potoczak") is the trustee of the PWCG Trust.

6. In particular, I have been asked to provide background on the principles of life insurance and life settlements and to assess: 1) whether it is an industry standard to use life expectancy estimates as part of evaluating life settlements; 2) whether PWCG's

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[1] Zhu, Nan and Daniel Bauer. *On the Economics of Life Settlements*. 2011 Proceedings of the Risk Theory Society (2011).

[2] Zhu, Nan and Daniel Bauer. *Coherent Pricing of Life Settlements Under Asymmetric Information*. Journal of Risk and Insurance, Vol. 80 (2013), pp. 827-851.

[3] Bauer, Daniel and Jochen Russ. *A New Methodology for Measuring Actual to Expected Performance*. Fasano Associates Newsletter (2009).

primary reserve periods[4] are reasonable in light of available life expectancy estimates from reputable medical underwriters and information on the health status of the insureds; 3) how quickly PWCG's policies are maturing compared to the length of PWCG's primary reserve periods and compared to PWCG's representations to investors about when the policies would mature; 4) the accuracy of PWCG's calculations of the premiums required to keep policies in force during the primary reserve periods; 5) the amount that the premiums to keep the policy in force will increase after the end of the primary reserve period relative to the premiums reported by PWCG; 6) the validity of PWCG's statements about the sufficiency of its reserve structure; 7) the validity of PWCG's statements that premium calls would be unlikely; 8) the validity of PWCG's statements about the returns that investors can expect; and 9) the extent to which the returns of investors depend on the performance of PWCG, the PWCG Trust, and Mills Potoczak.

7. I am being compensated for my time in this matter at a rate of $500 per hour. My compensation is not contingent upon my findings or the outcome of this matter. Employees of Analysis Group, Inc. working under my direction have assisted me in preparing this report.

[4] PWCG represents that the primary premium reserve is a lump sum amount funded by the investment proceeds that is sufficient to cover the policy's premium payments for a period of time (the "primary reserve period"). Wells Response on Behalf of Andrew B Calhoun IV and Pacific West Capital Group, Inc., September 7, 2014 ("PWCG Wells Response, September 7, 2014"), p. 3. The "primary reserve period" is equivalent to what the SEC calls the "Contract Period." Securities and Exchange Commission, Plaintiff v. Pacific West Capital Group, Inc. *et al*., Defendants, Complaint April 7, 2015 ("Complaint"), p. 6.

III. Documents and Information Considered

8. In preparing this report, I, or staff working under my direction, have reviewed the complaint; investigative testimony and numerous depositions with exhibits; material for all 133 policies in which PWCG has sold fractional interests to investors including, but not limited to, policy illustrations, contracts, statements, medical underwriting reports (when available), PWCG disclosures, PWCG premium calculations, and other documents produced in the investigation and through discovery. I have compiled relevant information for the PWCG policies into a database that I have used in my analyses.

9. My analyses and opinions are based on information provided through discovery as well as my knowledge, expertise, and experience gained from my professional work in the life settlement industry and my academic teaching and research. Information relied upon by me or by those working at my direction is listed in **Appendix B** or in the text of this report.

IV. Summary of Opinions

10. As of the date I submit this report, I have reached the following opinions. Brokers make actuarially-based life expectancy (LE) estimates for the insured(s) available in life settlement transactions as a standard practice, and this is important

information that PWCG obtained or should have obtained.[5] As PWCG has acknowledged, it did not rely on actuarially-based estimates of policy maturities (or life expectancies).[6] Without relying on actuarially-based life expectancy estimates, PWCG did not have a reasonable basis to determine the expected time to maturity of a policy, the price to pay for a policy, sufficient reserves to keep a policy in force, or the expected return on a policy.

11. For policies that PWCG purchased where LE estimates were in their records, PWCG set primary reserve periods that were shorter than the expected times to maturity given the LE estimates of the insureds. Based on information regarding the health status of the insured(s) and life expectancy estimates from reputable life expectancy providers that were available to PWCG at the time when it purchased the policies and offered them for sale to investors, for those policies, PWCG did not have a reasonable basis for representing that it set primary reserves that would be sufficient to keep the policies in force until maturity.

12. PWCG represented to investors that: (i) PWCG selects policies that it expects to mature in four to seven years; (ii) that the primary reserve period exceeds the expected time to maturity for a policy; and (iii) that premium calls are unlikely. In contrast, I find that PWCG's policies are maturing on average at a much slower rate than

[5] While PWCG did not produce actuarially-based life expectancy estimates for every policy they offered and sold, I would expect that in many of the transactions actuarially-based life expectancy estimates were either available to PWCG in the packets provided by the brokers or that they would have been provided by the brokers if asked.

[6] PWCG's policies include both single life policies and joint life survivorship policies. A single life policy matures when the insured dies (or survives until a terminal age). A joint life survivorship ("second to die") policy matures when both insureds have died (or at least one survives until a terminal age).

necessary to be consistent with the time set for the primary reserve period and PWCG's representations to investors about when its policies would mature. I reach this conclusion by comparing the actual number of matured policies with the expected number of matured policies that would be observed if the expected time to maturity equaled PWCG's primary reserve periods. I find that PWCG's policies mature at only 28.9 percent of the expected rate of maturity. This confirms that PWCG's primary reserve periods are too short. Had PWCG used this same analytic tool commonly used in the life settlement industry to evaluate the lengths of its primary reserve periods, PWCG would have learned by October 31, 2010 at the latest that its policies have expected time to maturity greater than their primary reserve periods. Furthermore, since at least late 2009 PWCG's own experience should have made it clear that there is no basis for PWCG's purported belief that its policies will mature in four to seven years. As detailed below, these observations are a key reason why: (i) PWCG's policy reserves are insufficient so that premium calls are likely to become necessary; and (ii) there is no basis for PWCG's representations about the return that investors can expect.

13. PWCG used its own method to calculate the amount needed for the primary reserve, that is, the amount needed to keep a policy in force during the primary reserve period. In my opinion, PWCG's method tends to underestimate the amount needed for the primary reserve because it fails to account for the increasing cost of insurance resulting from the depletion of the policy's account value as it is being used to subsidize the premiums. I note that PWCG's methodology also fails to account for interest earned on the decreasing account value during the primary reserve period, but this aspect typically does not make up for the increase in the cost of insurance.

14. In the disclosure to investors for each policy, PWCG reports the annual premium it determined was sufficient to keep the policy in force through the primary reserve period. Because of PWCG's method for calculating the primary reserve premium and specifically because of drawing down the account value, the premium needed to keep policies in force increases sharply after the primary reserve period ends, relative to the premium disclosed to investors at the time of sale.

15. The secondary and tertiary reserves are insufficient and offer little protection to investors when policies do not mature during the primary reserve period. As I point out above, PWCG's policies will not mature consistently within the primary reserve period. Therefore, PWCG's total premium reserves are not adequate and premium calls will be required for many of PWCG's policies—and indeed PWCG started to make premium calls. This is due in large part to the fact that the one percent of the proceeds contributed to the secondary reserve plus the expected contributions to the tertiary reserve amount to only a small fraction of the premium amount required to keep a policy in force after the end of the primary reserve period.

16. At the time of sale to investors, PWCG had no valid basis for its claims about the expected performance of its policies or that premium calls would be highly unlikely to occur. Because the actual average time to policy maturity will significantly exceed the primary reserve periods and the (consequential) highly likely necessity of premium calls, investors cannot expect to receive the total returns that PWCG advertised.

17. PWCG takes out as its "margin" approximately 45 percent of the funds raised from investors for a particular policy. While recent studies of the average returns

on life settlement investments comparable to those purchased by PWCG have found average returns of around 5 percent to 8 percent, investors in PWCG's policies could not reasonably expect to realize annual returns as high as the market average—because of PWCG's high margin. I calculated expected returns for two of PWCG's policies and found that one of the policies has a negative expected rate of return and both policies have much lower expected returns than PWCG's statements suggest.

18. The returns of investors in the policies offered by PWCG and issued by the PWCG Trust depend on the expertise of PWCG and Mr. Calhoun in arriving at accurate estimates for the expected maturity of the policies selected and offered, as well an ongoing management of the investments by PWCG, the PWCG Trust, and Mills Potoczak to keep the policies in force. If a policy is not kept in force, investors will lose their entire investment.

V. Background on Life Insurance

19. Life insurance is a type of insurance where premiums are paid by policyholders during the life of an individual or individuals in exchange for a payment known as a death benefit paid when the individual(s) die. The term insured(s) is used to describe the individual(s) covered by the policy and the term beneficiary is used to refer to the person(s) to whom the death benefit is paid. Life insurance policies typically fit into one of several classifications depending on the structure of benefit and premium payments. I discuss these classifications in the context of single life policies, which insure only one individual's life. Other types of insurance include joint life survivorship

(or "second to die") policies, which cover two lives and pay the death benefit upon the death of the second insured to die.[7]

A. Term Life Insurance

20. Term life insurance protects the insured for a set number of years defined in the insurance contract (for example, ten years). The face amount of the policy (the amount of death benefit) is only paid if the insured dies within the stipulated time period.[8] At the end of this time period, the policy expires and no payment is made to the beneficiary.[9]

21. The amount of premium paid accounts for the cost of insurance (which is based on the risk of mortality and the time value of money—*i.e.*, the interest rate), plus an additional amount to cover operating expenses.[10] A common type of term life insurance is known as level term insurance, in which the premium amount is the same for each year.

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[7] Black, Kenneth, and Harold D. Skipper. *Life & Health Insurance, 13th edition*. Prentice Hall, 2000 ("Black and Skipper, 2000"), pp. 108-109.

[8] Black and Skipper, 2000, p. 77.

[9] The purchaser pays only for insurance; the policy does not have a savings or investment element. Vaughan, Emmett J., and Therese Vaughan. *Fundamentals of Risk and Insurance, 10th edition*. John Wiley & Sons, 2007 ("Vaughan and Vaughan, 2007"), pp. 232-233.

[10] The insurance company receives premium payments up front, but their obligations are not due until sometime in the future. Insurance companies invest these premium payments and earn returns (*e.g.*, interest) on them, which reduces the amount that they need to collect to pay out their obligations. Vaughan and Vaughan, 2007, pp. 249-252.

22. **Exhibits 1A-C** depict an example 10-year level term policy.[11] **Exhibit 1A** illustrates that the cost of insurance increases over the contract period because, as the insured ages, the probability of dying and, therefore, the probability of the insurance company needing to make a payout, increases.[12] **Exhibit 1B** shows that the policyholder pays a premium that is higher than the cost of insurance in early years. As a consequence, a reserve (*i.e.*, the money set aside by the insurance company to satisfy future obligations) is being built up. In later policy years, the cost of insurance is greater than the premium, with the difference being financed by the reserve. The growth and subsequent decline in the reserve is shown in **Exhibit 1C**, which shows the evolution of the premium, the cost of insurance, and the policy reserve.[13]

B. Whole Life Insurance

23. As opposed to term life insurance, which is intended to cover an insured for only a set period of time, whole life insurance is intended to cover an insured for her entire life.[14] Whole life insurance also adds a savings or investment component to the

[11] I assume a 10-year term, a death benefit of $3 million, a female insured aged 80 at the policy's inception whose mortality follows the VBT 2001 Preferred, Non-Smoker, ALB, Select (using 76 as the underwriting age) table, an interest rate of 4.5 percent, and I ignore expenses. While it is uncommon to purchase a term life insurance for an 80-year old, I choose the parameters to be similar to a policy sold by PWCG (see **Exhibit 3** in **Section V.C** below). The shape and the general features are independent of the parameters.

[12] The cost of insurance for year 0 in **Exhibits 1A-C** is for the time period between year 0 and year 1.

[13] The reserve is calculated as the expected present value of future benefits minus the expected present value of future premium payments.

[14] Black and Skipper, 2000, p. 90.

policy. Premiums paid into the policy in excess of the cost of insurance and operating expenses constitute the policy reserve.[15]

24. Like level term policies, in level whole life insurance policyholders pay the same premium amount per period. A whole life policy pays the death benefit whenever the insured dies, or at the policy maturity date if the insured is still alive.[16] Another way to think of this feature is that the policyholder is saving money over time and at the age of maturity has saved the entire value of the death benefit, which is then returned to the policyholder.

25. **Exhibit 2A** illustrates the evolutions of premium and cost of insurance for a level whole life policy under the same parameters as **Exhibit 1** in **Section V.A**, and with a 100 year terminal age. **Exhibit 2B** additionally illustrates the reserve for this whole life policy. Compared to the term life insurance policy depicted in **Exhibit 1**, the policyholder pays a greater premium for the whole life policy.

26. The reserve is the policyholder's money and available to fund the death benefit on the policy if needed.[17] Therefore, the amount of insurance that a policyholder's premiums need to fund is not the entire face value, but only the face value less the reserve—the *additional* death benefit. As the reserve increases, the amount of insurance used to determine the cost of insurance charge decreases.

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[15] Vaughan and Vaughan, 2007, p. 255.

[16] The policy maturity date is set to the date when the insured reaches a predetermined age such as 100 or 110. For a whole life policy, the premiums are set so that when the insured reaches the maturity age the reserve is equal to the death benefit.

[17] The insurance company accumulates interest on the policy reserves. The greater the interest rate earned, the faster the reserve will grow and the lower the policyholder's premiums will need to be to fund the policy.

Exhibit 2C provides a graphical illustration for two different points in time during the life of the insured. Given the $3 million face amount and a reserve amount of $1.5 million at approximately year 12, the premium paid by the policyholder in year 11 needs to fund insurance to pay $1.5 million of the death benefit in that year. In contrast, at year 19 when the reserve is roughly $2.5 million, the premium paid by the policyholder in year 18 only needs to fund insurance to pay $500,000 of *additional* death benefit in that year because the reserve will fund the remaining $2.5 million.[18]

C. Universal Life Insurance

27. Universal life insurance is similar to whole life insurance in that it is intended to cover an insured for her entire life and it includes a savings component. A key difference is that the policyholder is not required to pay a fixed premium amount for the entire life of the policy. Universal life insurance allows the policyholder to vary the amount of premium that is paid as long as sufficient money is available to pay the cost of insurance and policy expenses. In each period (*e.g.*, each month), the policyholder pays a premium amount that is in essence deposited in the reserve. Due to the discretionary aspects, the reserve is referred to as the account value or policy account since it resembles a savings account.[19] The cost of insurance and policy expenses are subtracted from the account value and as long as there is sufficient money available to cover these charges the policy stays in force. In each period, the account value earns

[18] Vaughan and Vaughan, 2007, pp. 255-257.

[19] Note that here the underlying account value is only "notional" in the sense that the corresponding assets are not segregated but pooled in the insurance company's general account. The account value is sometimes referred to as a cash value.

interest to arrive at the end-of-period account value.[20] If the account value alone is sufficient to cover the current policy expense and cost of insurance charges, the policyholder does not need to pay any premium to keep the policy in force.[21]

28. Insurers generally quote at least two interest rates in universal life insurance contracts: a guaranteed minimum insurance rate known as the "guaranteed rate" and a higher, expected rate known as the "illustrated rate."[22]

29. If a policyholder chooses to terminate the policy, the account value less a surrender charge will be paid to the policyholder. Therefore, the amount that a policyholder would receive from surrendering the policy, referred to as the (cash) surrender value, is less than or equal to the account value.[23] In the most common type of universal life insurance, the death benefit remains constant.[24]

30. Universal life policies are the type of insurance most commonly bought and sold in the secondary market because they permit variable premium contributions:

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[20] Each period begins with the account value from the end of the previous period. The exact timing of when interest is credited relative to withdrawals for the cost of insurance and policy expenses depends on the administration of individual policies.

[21] Black and Skipper, 2000, pp. 115-117.

[22] Vaughan and Vaughan, 2007, p. 311. Similarly, cost of insurance and expense rates are typically chosen lower for policy illustrations than the guaranteed rates provided in the policy. Insurers are free to lower the interest rates or increase cost of insurance rates that are used in policy illustrations as long as they stay in the limits of the guaranteed rates and as long as they follow relevant insurance regulations. Winn, Paul J. *Universal Life Insurance*. Dearborn Financial Publishing (2000) ("Winn, 2000"), pp. 10, 17.

[23] Surrender charges are especially significant in early policy years since they serve to recoup underwriting expenses.

[24] As a consequence, the cost of insurance is lower when the account value is higher, since only the difference between the face amount and the account value—the *additional* death benefit not funded by the account value—needs to be covered by insurance. This type of insurance is sometimes called option 1 or option A universal life insurance. For less common option 2 or option B universal life insurance, the death benefit increases (or decreases) in lockstep with the account value, so that the cost of insurance is independent of the current account value.

life settlement purchasers may increase returns by optimizing their payment of premiums.[25]

31. **Exhibit 3** shows the evolution of the premium, the account value, and the cost of insurance according to the policy illustration for one of the policies sold by PWCG; the policy illustration assumes that the policyholder makes level premium payments.[26] The policy illustration's level premium in **Exhibit 3** exceeds the cost of insurance in early years.[27] The policy depicted in **Exhibit 3** pays the account value at the policy maturity date, corresponding to age 100.[28] Unlike whole life insurance, universal life insurance policies typically pay out the current account value rather than the death benefit at the policy maturity date.[29]

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[25] Optimizing premium payments generally refers to using the account value to pay the cost of insurance and policy expenses, and then making the minimum payments needed to keep the policy in force. *A.M. Best Methodology: Life Settlement Securitization*, A.M. Best Company, Inc., available at http://www3.ambest.com/ambv/ratingmethodology/OpenPDF.aspx?rc=197705 ("A.M. Best"), p. 13. This allows the investor to reduce the required investment to keep the policy in force in the early years and it maximizes the amount of death benefit that will be paid that is not funded by the account value.

[26] See B.A. Policy Illustration, prepared 2/15/2011 (PWCG002272-9). Note that the insured's age, the death benefit, and the interest rate for this policy correspond to the parameter choices in **Exhibits 1 and 2**, so that the figures are comparable.

[27] Therefore, the account value—which corresponds to the reserve in whole life insurance—is increasing.

[28] See B.A. policy (PWCG002387-442 at 405, 407, 423). Thus, in the late policy years the account value decreases since the premiums are not set so that the account value equals the death benefit at the policy maturity date. This is similar to the evolution of the term policy shown in **Exhibit 1**.

[29] PWCG's policies pay the account value rather than the death benefit on the policy maturity date according to William Potoczak, the trustee of PWCG Trust. Deposition of William M. Potoczak, December 16, 2015 ("Potoczak Deposition, 2015"), pp. 102, 219-220 (see also pp. 155-156). Some universal life policies contain a rider so that the death benefit is paid when the insured lives to the policy maturity date.

VI. Background on Life Settlements

A. What is a Life Settlement?

32. A life settlement is a transaction in which a policyholder sells her financial interest in her life insurance policy to a third party. People sell or surrender insurance policies for multiple reasons, including that they cannot pay the premiums, or because they no longer need the insurance protection.[30]

33. Typical life settlements involve senior insureds and policies with relatively high face values. A Harvard Business School case study estimates that the life settlement industry had $35 billion in face value of in-force life settlements in 2012, which corresponds only to a tiny fraction of the life insurance market, although estimates vary.[31] Many investment banks, insurance companies, hedge funds, and pension funds have invested in life settlements.[32] The life settlement national trade association known as the Life Insurance Settlement Association or LISA has 90 member companies.[33] As of 2013, 41 states allowed only life settlement providers to buy life insurance policies.[34] Many investors in life settlements utilize proprietary modeling tools

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[30] The price that investors are willing to pay to purchase a life insurance policy may exceed the surrender value of the policy for reasons that include surrender charges or because the health of the insured has declined since issue leading to a higher expected mortality rate than what was expected at issue. Since the cost of insurance charges are based on expectations and the mortality experience for all insureds of the same sex, age, and premium class whose policies have been in effect for the same length of time (Winn, 2000, p. 17), an increase in mortality relative to the pool means that the policy becomes more likely to mature and thus more valuable.

[31] Cohen, Lauren. *Seeking Alpha in the Afterlife: CMG Life Services and the Life Settlement Industry*. (2013) ("Cohen, 2013"), p. 3.

[32] Cohen, 2013, pp. 4-5.

[33] "About the Life Insurance Settlement Association," LISA, 2015, http://www.lisa.org/about, accessed January 19, 2016.

[34] Cohen, 2013, p. 6, footnote z.

and life expectancies estimated by major medical underwriting firms to price life settlement investments.[35] Industry participants use sophisticated techniques to predict life expectancies, such as analyzing Medicare records to determine the death risk of medical conditions and studying the relationship between mortality and socioeconomic and personality traits of the insured.[36]

B. Structure of a Life Settlement Transaction

34. There are a number of parties to a life settlement transaction. Typically, the original policyholder attempts to sell her policy through life settlement brokers, who seek to receive the highest possible offer by submitting the policy to multiple potential buyers (life settlement providers). Brokers seek reputable provider firms that have access to stable funding and meet regulatory requirements.[37]

35. When putting policies out to bid, brokers compile a packet of materials about the policy in order to help life settlement providers determine whether they would like to bid on a policy and, if so, how much they should bid. Medical underwriting reports are an important aspect of a broker packet. Medical underwriters provide actuarially-based life expectancy (LE) estimates based on the medical records of the insured. Typically at least two actuarially-based LE reports are required[38] and they are

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[35] Bhuyan, Vishaal B. *Life Markets: Trading Mortality and Longevity Risk with Life Settlements and Linked Securities*. Vol. 492. John Wiley & Sons, 2009 ("Bhuyan, 2009"), p. 21.

[36] Vlahos, James. "Are You Worth More Dead Than Alive?" *The New York Times Magazine*, August 10, 2012, available at http://www.nytimes.com/2012/08/12/magazine/are-you-worth-more-dead-than-alive.html.

[37] Bhuyan, 2009, p. 20.

[38] Aspinwall, Jim, Geoff Chaplin, and Mark Venn. *Life Settlements and Longevity Structures: Pricing and Risk Management*. John Wiley & Sons (2009) ("Aspinwall et al., 2009"), p. 19.

submitted to the life settlement providers.[39] These actuarially-based LEs are used by investors to model the cash flows of a policy.[40]

36. Life settlement providers purchase life insurance policies through life insurance brokers or directly from the insured. Providers are responsible for valuing life insurance policies, which requires knowledge of life settlement asset pricing.[41] The providers in turn sell to life settlement investors or keep policies in their own portfolios.

37. Once an investor has purchased a life insurance policy, the investor pays the premiums to keep the policy in force. If the investor does not pay to keep the policy in force, then it will lapse and the investor will lose her entire investment. For a single life policy, when the insured dies, the investor obtains a death certificate to verify that the insured is deceased and then is paid the death benefit.

C. Life Expectancy Estimates

38. An individual's time of death is uncertain but statistically assessable using accepted actuarial methods. Life insurance and life settlement market participants rely on this statistical predictability to make money. A mortality table is a record of mortality based on past observations for a group of individuals—for example, a mortality table might show the probability of death at each age, by sex.[42] Industry participants use

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[39] Aspinwall et al., 2009, p. 20.

[40] Bhuyan, 2009, p. 21.

[41] Bhuyan, 2009, pp. 18-19.

[42] Black and Skipper, 2000, pp. 696-697. Most mortality tables used in the life insurance industry are based on mortality statistics for the lives of individuals that held (or hold) life insurance due to the accuracy of records (Black and Skipper, 2000, p. 696).

complex methods to construct mortality tables—for example, to account for the fact that the rate of death typically decreases for individuals of a particular age and sex over time.[43] The mortality tables used in the life insurance and life settlement industries are adjusted over time—for example, in 2008 actuaries extended life expectancy tables.[44] Medical underwriters use mortality tables as a baseline to estimate an individual's life expectancy.

39. An actuarially valid life expectancy estimate (or "LE estimate") is an actuarially-based estimate of an individual's average future lifetime.[45] Life expectancy estimates are used by investors in a life settlement transaction. To generate an LE estimate, medical underwriters obtain the medical records of the insured, which may include attending physician statements, hospital records, and prescription records and can total between 100 and 250 pages.[46] Using this information, medical underwriters estimate the expected mortality of the insured relative to an individual with standard mortality using actuarial data and other industry standard tools.[47] The life expectancy report will contain a life expectancy estimate and may contain a specific mortality curve

[43] Aspinwall et al., 2009, pp. 38-39.

[44] Cohen, 2013, p. 3.

[45] I use "life expectancy" or "LE" to refer to an individual's average future lifetime.

[46] Aspinwall et al., 2009, p. 19.

[47] A.M. Best states that "[t]he life settlement industry has surmised, however, that most medical underwriters currently use a derivative of the 2008 Valuation Basic Table (2008 VBT) as standard—a conclusion that is probably correct in most cases" (A.M. Best, p. 6).

for the insured.[48] Medical underwriting reports generally state the reasons for the underwriter's findings.

40. The medical underwriter's findings are generally presented in the form of a multiplier. A multiplier of more than one means that the person is more likely to die than an individual of their age and sex with standard mortality. For example, a value of two would indicate that the insured is twice as likely to die in each year.[49] Alternatively, a value of less than one indicates the person is healthier than an individual with standard mortality.

41. When an LE provider issues LE estimates for a (large) number of individuals, those estimates can be compared statistically to the lifespans of those individuals to determine whether the LE estimates were on average too low or too high.[50] One of the methods used to do this is the actual to expected ratio, which I use below to evaluate whether PWCG's primary reserve periods are reasonable. Reputable medical underwriters advertise the accuracy of their LE estimates based on their actual to expected ratios.[51]

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[48] Aspinwall et al., 2009, p. 19.

[49] Medical underwriters may consider the fact that some illnesses have a greater impact on short-term mortality than longer-term mortality (Aspinwall et al., 2009, p. 19).

[50] Bhuyan, 2009, p. 28.

[51] See paragraph 90. An actual to expected ratio of close to 100 percent indicates that the LE estimates are accurate relative to the observed experience.

D. Economics of Life Settlements

42. The price of a life settlement depends on several factors, which I discuss in the context of single life universal life insurance policies.

43. The most important aspect for pricing the life settlement is the insured's life expectancy: The longer the life expectancy of the insured, the lower the price that would be paid for the policy. There are two relevant aspects. First, for a longer life expectancy, the death benefit will on average be paid further in the future, decreasing its present value because of the time value of money. Second, for a longer life expectancy, the expected period of time for which premiums must be paid—and thus the aggregate premium amount—will be greater.[52] Generally, investors bidding for a policy will rely on actuarially-based LE estimates to derive the policy's expected cash flows and to determine how much to bid. Because of the importance of LEs for the expected returns of life settlements, most life settlement providers obtain LE estimates from more than one medical underwriter.[53]

44. Single life policies mature when the insured dies (or survives until a terminal date). In comparison, second to die (joint life survivorship) policies mature only after both insureds have died. All else equal, lower prices are paid for second to die policies because they have longer expected times to maturity. The greater the account

[52] Life expectancy estimates are also important in determining the expected amount of money that will be required to keep a policy in force. For example, although a policy might have a lower initial price if the insured has a longer life expectancy, the expected cost to acquire the policy and keep it in force over its lifetime might be higher because of the longer expected time period for which premiums need to be paid.

[53] Aspinwall et al., 2009, p. 19; Bhuyan, 2009, pp. 34-35.

value, the higher the price that is paid, since the account value can be drawn down to subsidize the payment of future premiums.

45. As a consequence of the uncertainty of an individual insured's time of death, investors in life settlements usually diversify by investing in pools of policies rather than in single policies. For instance, in rating life settlement investments, A.M. Best opines that "at least 300 lives with similar features are necessary to produce more stable cash flows."[54]

VII. Background on PWCG

46. Pacific West is a privately-held California corporation formed in 2004. PWCG sells fractional interests in universal life insurance policies to investors.[55]

47. As of December 31, 2015, PWCG had acquired 133 policies: 53 single life policies and 80 joint life survivorship policies.[56] Of the 133 policies, 28.6 percent have settlement dates in 2004-2007, 35.3 percent have settlement dates in 2008-2011, and 36.1 percent have settlement dates in 2012-2015.[57] See **Exhibit 4**.

48. PWCG has a number of different reserves associated with its policies. PWCG represents that the primary premium reserve is a lump-sum amount funded by

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[54] A.M. Best, p. 12.

[55] Complaint, p. 6.

[56] PWCG_SEC 0035275.xlsx ("PWCG Policy Listing" or "Policy Listing").

[57] I used the "Date of Change" variable in PWCG's Policy Listing to identify the settlement date. Mr. Calhoun testified that the "Date of Change" variable indicates when the policy came under the ownership of PWCG Trust. Deposition of Andrew B Calhoun, IV, December 9, 2015 ("Calhoun Deposition, 2015"), pp. 252. The earliest "Date of Change" for one of PWCG's policies is December 1, 2004 (PWCG Policy Listing, policy number 610007074).

the investment proceeds that is sufficient to cover the policy's premium payments for a period of 6 years to 9 years (the primary reserve period).[58] PWCG represents that the secondary premium reserve is funded based on "1% of all gross investment proceeds" and represents that the tertiary premium reserve is based on unused portions of primary reserves for policies that matured prior to the number of years funded in their primary premium reserves, as well as interest from all reserves.[59] **Exhibit 5** shows the cumulative number of PWCG's policies that have their primary reserve periods scheduled to end by the end of each year.[60] **Exhibit 6** shows the cumulative face value for policies that have their primary reserve periods scheduled to end by the end of each year. For example, **Exhibits 5 and 6** indicate that by the end of 2012 only 6 of PWCG's policies comprising only $5.9 million in face value were scheduled to reach the end of PWCG's primary reserve periods, while by this time PWCG had passed the settlement dates for 94 policies comprising $165.4 million in face value.

49. Mr. Potoczak, the President of Mills Potoczak, which is the trustee of the PWCG Trust, stated that PWCG Trust is an Ohio business trust: Pacific West Capital Corp. arranges for a purchase of a policy and that policy is then titled in the trust.[61] PWCG Trust is responsible for paying the premiums on the policy. The services agreement between PWCG and the trustee of the PWCG Trust states that "PWCG

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[58] PWCG Wells Response, September 7, 2014, p. 3.

[59] PWCG Wells Response, September 7, 2014, p. 3.

[60] I identified the length of PWCG's primary reserve periods using the "Years Paid" column in the PWCG Policy Listing. Mr. Calhoun testified that the "Years Paid" column represents the number of years of the primary reserve period (Calhoun Deposition, 2015, p. 251).

[61] Potoczak Deposition, 2015, pp. 15-16.

[Pacific West Capital Group] is responsible under the Life Settlement Purchase Agreement for, among other things, acquisition and monitoring of life settlement policies."[62]

VIII. SEC Allegations

50. I understand that the SEC alleges, among other things, that Pacific West and Mr. Calhoun perpetrated a scheme to defraud investors, misrepresented the risks that investors would have to make future, out-of-pocket payments to keep the policies in force, and misled investors about their likely annual returns. The SEC alleges that Pacific West has used money received from the sale of new life settlements "to pay premiums on life settlement investments sold years earlier which had not matured and had exhausted the 'premium reserves' created by Pacific West" to "keep the policies in force" and to "create the false appearance that the life settlements that they sold had minimal risk."[63]

51. The SEC alleges that PWCG told investors that PWCG had never touched the secondary or tertiary premium reserves and had never made a premium call to investors.[64] According to the SEC, Pacific West "did not disclose the actual amount of any pro rata premiums that would be owed if the reserves ran out and there was a

[62] Potoczak Deposition, 2015, pp. 20-21 and Exhibit 4 (SEC-MP-E-0000687-97 at 87).

[63] Complaint, p. 2.

[64] Complaint, p. 6.

premium call."[65] The SEC alleges that PWCG represented to investors that PWCG offers policies that "typically" will mature in four to seven years, although PWCG has no reasonable basis for these representations based on actuarial estimates of an insured's life expectancy.[66]

52. The SEC also alleges that:

> Calhoun and Pacific West knew, or were reckless or negligent in not knowing, that premiums would spike at the end of the Contract Period. If an investor were required to pay pro rata shares of a substantially higher premium, then that would negatively impact the investor's returns. Pacific West and Calhoun generally did not disclose the premium spike, the amount of the spike, or the reasons for the spike. Pacific West and Calhoun also misled investors by omitting material information about the likelihood that investors will have to meet a premium cash call.[67]

IX. Analyses

A. PWCG Did Not Comply with the Industry Standard Because It Did Not Use Actuarially-based LE Estimates

1. LE Estimates Are Used Throughout the Life Settlement Industry

53. It is standard in the life settlement industry for buyers and sellers to use actuarially-based life expectancy estimates ("LE estimates"). For a single life policy the expected time to maturity is the insured's average life expectancy ("life expectancy," or "LE").[68] LE estimates are used by several different parties in the process of a life settlement being sold and subsequently administered through maturity. As noted above,

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[65] Complaint, p. 6.

[66] Complaint, p. 9.

[67] Complaint, p. 19.

[68] For a joint life survivorship policy, the expected time to maturity is the average amount of time until both insureds have died, which depends on the life expectancies of both individuals. I use "life expectancy" in this section for ease of exposition, but the same principles apply to life settlements for joint life survivorship policies.

actuarially-based LE estimates are obtained by brokers and provided to potential bidders in a life settlement. The purpose is to provide bidders with the information they need to evaluate a policy and to determine whether they would like to submit a bid and if so, how much to bid.[69]

54. Actuarially-based LE estimates are also used for cash flow projections, and for providing statistical estimates for the period of time premiums will need to be paid and for when the death benefit is likely to be received. In particular, actuarially-based LE estimates are a key element in calculating the expected return on a life settlement investment. Finally, investors may commission new LE estimates after they invest in a policy to help them determine whether they should continue paying premiums to keep a policy in force.

55. The expected return on a life settlement investment depends on the LE for the insured covered by the policy. The longer the insured lives—or is expected to live—the lower the annual return—or the expected annual return—will be on the life settlement for two reasons. First, the investor will need to pay premiums for a longer period of time to keep the policy in force, and the higher premium payments decrease the total return and therefore also reduce the annual return. Second, the death benefit is obtained later, which reduces the annual return (even if the total return were held fixed).[70] One cannot make return projections for a life settlement without an actuarially-

[69] Bhuyan, 2009, pp. 34-35.

[70] Bhuyan, 2009, p. 96.

based estimate for the LE of the underlying insured. Indeed, return projections for life settlements are very sensitive to changes in the mortality (LEs) of the insureds.[71]

56. This is commonly known in the industry and universally accepted. For example, a Harvard Business School case study on the life settlement industry notes that AIG reported large impairment charges related to its life settlement portfolio in 2011 largely due to increased life expectancy estimates.[72] A.M. Best notes that the "price providers pay for the life settlements depends generally on the life expectancies estimated by medical underwriters after evaluating the medical records of the insured, as well as policy-specific contract characteristics. … the lower the life expectancy … the higher the price paid."[73] In short, LEs play a central role in the life settlement industry and are nearly universally used by industry participants.

2. PWCG Acknowledged That It Does Not Follow the Standard in the Life Settlement Industry

57. PWCG's own statements acknowledge that "most (if not all)" other companies in the life settlement industry rely on actuarially-based LE calculations, but PWCG does not, and that PWCG differs from the industry standard in this regard.[74] Mr. Calhoun stated in deposition testimony, "I don't know how many more times I can say it. We don't rely on life expectancy reports."[75] Mr. Calhoun reviewed policies and

[71] Aspinwall et al., 2009, pp. 39-40.

[72] Cohen, 2013, p. 5.

[73] A.M. Best, p. 1.

[74] PWCG Wells Response, September 7, 2014, p. 3; Calhoun Deposition, 2015, pp. 87, 177-178.

[75] Calhoun Deposition, 2015, pp. 363-364.

selected the policies that PWCG purchased and offered to investors.[76] However, Mr. Calhoun is not an actuary, he does not have actuarial training or training in medical underwriting, and he did not rely on mortality tables when evaluating specific policies.[77]

58. This difference to standard practice in the life settlement industry is highlighted in an email exchange between Eric Cannon of PWCG and George Blankenbaker, who appears to have been a potential investor. Mr. Blankenbaker contacted PWCG inquiring about investing in life settlements and was provided with information on potential investments.[78] Upon review of the investments and not finding an LE estimate, Mr. Blankenbaker inquired of PWCG why it did not supply an LE estimate. Mr. Blankenbaker stated:

> Typically this would be part of your due diligence in selecting policies and is THE KEY element to statistically estimating a return on investment. I note that some companies use two or three nationally recognized medical underwriting companies . . . Without this estimate, it is impossible to compare the offers of your company to others. Does Pacific West not provide an estimate? If not, why not? [79]

59. In a subsequent email, Mr. Blankenbaker noted that using LE estimates "provides a basis to compare policies and compute a statistically expected ROI."[80]

60. Even Mr. Potoczak testified that it is standard in the industry for life settlement companies to rely on life expectancy reports to estimate the maturity of

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[76] Calhoun Deposition, 2015, pp. 58-60.

[77] Calhoun Deposition, 2015, pp. 90-91.

[78] Email string between George Blankenbaker and Eric Cannon (PWCG300395-401).

[79] Email from George Blankenbaker to Eric Cannon, November 4, 2012 (PWCG300395-401 at 396).

[80] Email from George Blankenbaker to Eric Cannon, November 6, 2012 (PWCG270018).

policies.[81] Mr. Potoczak also explained in his deposition that investors use life expectancy estimates in deciding whether to continue making premium payments to keep a policy in force.[82]

61. As I detail below, because PWCG did not use actuarially-based LE estimates, it did not have a reasonable basis for: (i) statements concerning expectations that policies will mature in four to seven years and representations that PWCG set sufficient primary reserve periods to keep policies in force until their maturity; (ii) statements indicating that PWCG's overall reserve structure is sufficient to protect investors from the possibility of premium calls; and (iii) making any projections about expected returns on the policies.

3. PWCG had No Basis for the Length of Its Primary Reserve Periods or Its Statements About When Its Policies are Expected to Mature

62. PWCG's statements to investors suggest that its policies will mature in four to seven years, and before the end of their respective primary reserve periods. For example, PWCG told investors that PWCG buys policies that it purportedly thinks will mature in "4 to 7 years"[83] while the average primary reserve period for the 133 policies PWCG sold to investors is 7.5 years.[84] PWCG, however, had no valid basis for setting the length of its primary reserve periods or for stating that it believed its policies would

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[81] Potoczak Deposition, 2015, pp. 45-46.

[82] Potoczak Deposition, 2015, pp. 121-124.

[83] PWCG Wells Response, September 7, 2014, p. 11; Calhoun Deposition, 2015, pp. 91-92; Deposition of Samuel Bainbridge, December 14, 2015 ("Bainbridge Deposition"), p. 35.

[84] PWCG Policy Listing, "Years Paid" column.

mature in four to seven years because it did not rely on actuarially-based estimates of life expectancy. If PWCG had relied on actuarial estimates and analyses either in its possession or available to it, PWCG would have known that the primary reserve periods it set were too short.

63. Many of PWCG's life settlement purchase agreements from 2005-2007 state that PWCG has placed sufficient funds in a premium escrow account to pay premiums for a minimum of "life expectancy plus two years."[85] For a single life policy, this implies that the primary reserve period is two years longer than the expected time to policy maturity (which equals the LE of the insured). However, PWCG had no basis for these statements because it did not rely on actuarially-based estimates of life expectancy. I observe, however, that PWCG's language in the 2005-2007 agreements is consistent with the fact that the life expectancies of the insureds are important in evaluating the sufficiency of PWCG's primary reserve periods and the financial performance of its policies.[86]

[85] For example, see Section 2(b) of the following Life Settlement Purchase agreements: PWCG034736-48 at 39 (dated January 6, 2005); Potoczak Deposition Exhibit 195 (dated July 29, 2005); PWCG033916-25 at 19 (dated November 28, 2005); PWCG247764-72 at 66 (dated April 12, 2006); PWCG038084-92 at 86 (dated August 25, 2006); PWCG035185-201 at 189 (dated November 6, 2006); PWCG035276-84 at 78 (dated February 15, 2007); PWCG122542-50 at 44 (dated July 17, 2007).

[86] Mr. Calhoun claims that PWCG's statements that the primary reserve is sufficient to pay premiums for minimum of life expectancy plus two years refer to "general mortality plus two years," and he appears to define "general mortality" in terms of average life expectancies in the U.S. Calhoun Deposition, 2015, pp. 98-102.

B. Information Available to PWCG Indicates and Has Indicated That PWCG's Policies Will on Average Mature After the End of Its Primary Reserve Periods

1. For Some Policies, PWCG Had Life Expectancy Estimates from Reputable Medical Underwriters That Indicate That the Expected Time to Maturity Exceeds Its Primary Reserve Period

64. When selling a policy, brokers typically obtain one or more actuarially-based LE estimates from medical underwriters such as Fasano Associates, AVS, or 21st Services for each insured covered by the policy. I would expect that for many (if not all) of the transactions, life expectancy estimates from reputable providers were either available to PWCG in the packets provided by the broker, or that the broker would have provided them if asked. LE estimates are commonly used in the life settlement industry and the information they provide is important to people investing in life settlements in order to estimate the expected return on a policy (see **Section IX.A**).

65. My expectation that LE estimates were available to PWCG is reinforced by the fact that PWCG produced many actuarially-based LE estimates in its document production for policies that it did not offer or purchase. Not only was I able to find many LE estimates in PWCG's production for policies that it appears not to have acquired,[87] but I was also able to find actuarially-based LE estimates for policies that PWCG acquired and subsequently sold to investors. I compared the actuarially-based LE estimates from reports prepared by reputable medical underwriters within PWCG's possession to primary reserve periods PWCG set for these same policies. For all of the

[87] See for example, from 21st Services: PWCG058295-98; PWCG059624-27; PWCG057105-07; PWCG058121-23; PWCG057660-62; PWCG053483-85. From AVS: PWCG056376-77; PWCG057673; PWCG055183-84; PWCG055436-37.

single life policies PWCG's primary reserve periods are years shorter than the available actuarially-based LE estimates. For three of the four joint life survivorship policies, PWCG's primary reserve periods are years shorter than the available actuarially-based LE estimates for at least one of the insureds.[88] See **Exhibits 7A and 7B** for summaries of my findings.

a. Analysis of Single Life Policies for Which PWCG Produced Medical Underwriting Reports

66. I was able to locate medical underwriting reports from reputable medical underwriters for four insureds with single life policies that PWCG sold to investors.[89] Because there is only one insured in a single life policy, the expected time to maturity equals the LE of the insured. Therefore, it is easy to compare the expected time to maturity to the length of PWCG's primary reserve period using the LE estimates in the medical underwriting reports. For all four insureds with single life policies for whom I found LE estimates, the LE estimate for the insured was greater than PWCG's primary reserve period.

67. PWCG set an eight-year primary reserve period for Ms. A.C.'s single life policy.[90] However, the medical underwriter 21st Services estimated Ms. A.C.'s median

[88] As I discuss below, the expected time to maturity for a joint life survivorship policy is greater than the longer life expectancy for the two insureds.

[89] One of these insureds, Mr. M.F., had two policies—PWCG set nine-year primary reserve periods for each.

[90] Life Settlement Disclosure Form for Ms. A.C. (PWCG_SEC 0001692-94 at 93)

life expectancy to be 11 years and stated that she is "without life-threatening or catastrophic conditions or illnesses."[91]

68. PWCG set an eight-year primary reserve period for Ms. M.J.'s single life policy.[92] However, Ms. M.J.'s median life expectancy was estimated to be 12.6 years by the medical underwriter 21st Services.[93] The underwriting report states that Ms. M.J. "appears to have no major health issues but is monitored and/or receives treatment for minor health issues consistent with age and gender."[94]

69. PWCG set a nine-year primary reserve period for Ms. E.D.'s single life policy.[95] However, the medical underwriter 21st Services estimated Ms. E.D.'s LE to be 12.2 years and stated that she is "without life-threatening or catastrophic conditions or illnesses."[96]

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[91] SEC-DB-EPROD-000443209-13 at 10. The term "median LE" refers to the time period that an individual has a 50 percent probability of surviving (median future lifetime). I use (average) LE estimates (expected future lifetimes) when available, and I use the estimate of "median LE" otherwise. There are four insureds in PWCG policies for which I have estimates of both the average LE and the "median LE," as part of the same medical underwriting report. The two estimates differ by at most two months. Of these four medical underwriting reports, the average LE is higher than the median LE for two, the average LE is the same as the median LE for one, and the average LE is lower than the median LE estimate for one. See PWCG057172 (LE estimate of 109 months and "median LE" estimate of 107 months for F.P.); SEC-DB-EPROD-000466052-55 at 54 (LE estimate of 146 months and "median LE" estimate of 145 months for E.D.); PWCG005627-30 at 27 (LE estimate of 60 months and "median LE" estimate of 60 months for J.C.); and PWCG005632-34 at 32 (LE estimate of 143 months and "median LE" estimate of 144 months for P.C.).

[92] Life Settlement Disclosure Form for Ms. M.J. (PWCG_SEC 0004089-91 at 90).

[93] SEC-DB-EPROD-000442337-41 at 38. See discussion of "median LE" estimates in footnote 91.

[94] SEC-DB-EPROD-000442337-41 at 39. Ms. M.J. was approximately 80 years old at the time of this estimate.

[95] Life Settlement Disclosure Form for Ms. E.D. (PWCG_SEC 0001933-35 at 34).

[96] SEC-DB-EPROD-000466052-55 at 53.

70. PWCG set nine-year primary reserve periods for two single life policies with Mr. M.F. as the insured.[97] Mr. M.F.'s LE was estimated to be 11.0 years and 11.2 years by the medical underwriters Fasano Associates and AVS, respectively.[98] Both LE estimates are longer than PWCG's primary reserve period of nine years.

71. **Table 1** below summarizes the primary reserve period set by PWCG and the LE estimate for each of these insureds.[99] The table shows that the smallest amount by which the LE estimate exceeds PWCG's primary reserve period is 24 months or two years, and the largest amount the LE estimate exceeds the primary reserve period is 55 months or over 4.5 years. The average amount by which the LE estimate exceeds the primary reserve period is approximately 38 months or 3.2 years. The available LE estimates are greater than PWCG's primary reserve periods by between approximately 22 percent and 57 percent, and on average by approximately 38 percent.

Table 1

Insured	PWCG Primary Reserve Period	LE Estimate from Reputable Provider	Amount LE Estimate Exceeds Primary Reserve Period	Percentage LE Estimate Exceeds Primary Reserve Period
Ms. A.C.	96 months	132 months	36 months	37.5%
Ms. M.J.	96 months	151 months	55 months	57.3%
Ms. E.D.	108 months	146 months	38 months	35.2%
Mr. M.F.	108 months	132 months	24 months	22.2%
		Average:	**38.25 months**	**38.0%**

Source: **Exhibit 7A**.

[97] SEC-DB-EPROD-000382327-8. Mr. M.F.'s policies were both issued on May 28, 2003, and PWCG's "Date of Change" for the policies are May 15, 2014 and May 16, 2014 (PWCG Policy Listing).

[98] PWCG057412-15 at 12-14.

[99] There were two LE estimates for Mr. M.F., 132 months and 134 months. I use the lesser estimate of 132 months in **Table 1**.

b. Analysis of Joint Life Survivorship Policies for Which PWCG Produced Medical Underwriting Reports

72. I was able to locate medical underwriting reports from reputable medical underwriters for four joint life survivorship policies PWCG sold to investors. Determining the expected time to maturity for joint life survivorship policies is more difficult than for single life policies for at least two reasons. First, medical underwriting reports for both insureds are required. Second, the expected (average) time to maturity for a joint life survivorship policy is not simply the greater of the two LEs but rather some period of time beyond the longer life expectancy (so that the expected time to maturity definitely exceeds the maximum of the two LEs). This is because there is a chance that the insured with the shorter life expectancy will outlive the insured with the longer life expectancy. The calculation of the expected time to maturity—and, thus, of the period that the expected time to maturity exceeds the greater of the underlying LEs—is an actuarial calculation that varies based on the characteristics of both insured.

73. Sufficient information to positively determine that PWCG's primary reserve period was shorter than the expected time to maturity is available for three of the four joint life survivorship policies for which medical underwriting reports were produced. For these policies, the longer LE estimate of the two insureds was at least two and a half years greater than PWCG's primary reserve period. When accounting for the fact that the expected time to maturity of joint life survivorship policies is greater than the longer LE estimate of the two insureds, the amount that the expected time to maturity exceeds PWCG's primary reserve period will even be greater.

74. The first of these policies is written on Mr. F.P. and Ms. S.P.'s lives (the "P. Policy"). PWCG set an eight-year primary reserve period for the P. Policy,[100] but both Mr. F.P. and Ms. S.P. had individual LEs at settlement that were longer than PWCG's primary reserve period.[101] Mr. F.P.'s LE at settlement was estimated to be 9.1 years and 9.9 years by medical underwriters 21st Services and AVS, respectively.[102] Ms. S.P. received an LE estimate of 12.67 years from AVS.[103] Therefore, the longer of Mr. F.P. and Ms. S.P.'s life expectancy estimates is 56 months (approximately 4.7 years) greater than PWCG's primary reserve period.

75. Because the P. Policy is a joint life survivorship policy, however, it only matures after both insureds have died. Using standard actuarial techniques, I estimate that the expected time to maturity for the P. Policy was 14.5 years,[104] which is 6.5 years longer than PWCG's primary reserve period. The expected time to maturity is thus approximately 80 percent greater than PWCG's primary reserve period.

76. In addition to the expected time to maturity, using the same method I also calculate the probability at settlement that the P. Policy will mature after PWCG's eight-

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[100] SEC-DB-EPROD-000048628 (Premium Calculation for policy of Mr. F.P. and Ms. S.P.).

[101] The P. Policy was issued in December 1990 and had a "Standard Non-Smoker" rating at issue (P. Policy Summary, SEC-DB-EPROD-000066485-89 at 85, 87). Mr. F.P. and Ms. S.P. were each approximately 80 years old at the time of settlement in 2013 (Abacus Settlement Application, SEC-DB-EPROD-000257803-17 at 05, 07).

[102] 21st Services estimated that Mr. F.P. had a life expectancy of 109 months (PWCG057172). AVS estimated that Mr. F.P. had a life expectancy of 119 months (PWCG057170).

[103] PWCG057184. I further note that Ms. S.P.'s primary impairment is listed as "elder."

[104] In this calculation, I assume that Mr. F.P. and Ms. S.P.'s future lifetimes are independent. I computed Mr. F.P.'s mortality curve from the mortality table associated with his LE estimate of 9.1 years (the lower of his two LE estimates). I estimated Ms. S.P.'s mortality curve by applying a constant multiplier to a standard mortality table to yield a life expectancy of 12.7 years. See **Exhibit 7B** note 3 for details.

year primary reserve period. There is an 83 percent probability that the P. Policy will mature after PWCG's eight-year primary reserve period.

77. The second of these policies is written on Mr. J.C. and Ms. P.C.'s lives (the "C. Policy").[105] PWCG set an eight-year primary reserve period for the C. Policy,[106] but Ms. P.C. had an individual LE at settlement that was longer than PWCG's primary reserve period. Ms. P.C.'s LE at settlement was estimated to be 11.9 years and 14.2 years by the medical underwriters 21st Services and AVS, respectively.[107] Mr. J.C.'s LE at settlement was estimated to be 60 months by both 21st Services and AVS.[108] Even if I assume that the lower of Ms. P.C.'s LE estimates is accurate, the longer of Mr. J.C. and Ms. P.C.'s LE estimates is 143 months, which is 47 months (approximately 3.9 years) greater than PWCG's primary reserve period. Because the C. Policy is a joint life survivorship policy, however, it only matures after both insureds have died. Using standard actuarial techniques and assuming that the lower of Ms. P.C.'s LE estimates is accurate, I estimate that the expected time to maturity for the C. Policy was 12.1 years, which is 4.1 years longer than PWCG's primary reserve period.[109]

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[105] Mr. J.C. and Ms. P.C.'s policy was issued in May 2002. The settlement date was in November 2011 (PWCG Policy Listing, "Date of Change" column).

[106] C. Policy Premium Calculation (SEC-DB-EPROD-000047751).

[107] 21st Services estimated that Ms. P.C. had an LE of 143 months and stated that she is "Without life-threatening or catastrophic conditions or illnesses" (PWCG005632-34 at 32). AVS estimated that Ms. P.C. had an LE of 170 months and listed her primary impairment as "elder" (PWCG005631).

[108] PWCG005626 (AVS); PWCG005627-30 at 27 (21st Services).

[109] In this calculation, I assume that Mr. J.C. and Ms. P.C.'s future lifetimes are independent. See **Exhibit 7B** note 5 for details.

78. The third joint life survivorship policy is written on Mr. S.S. and Ms. M.S.'s lives (the "S. Policy").[110] PWCG set a nine-year primary reserve period for the S. Policy.[111] I was only able to locate a medical underwriting report for Mr. S.S. However, Mr. S.S's LE at settlement alone was longer than PWCG's primary reserve period. The medical underwriter AVS estimated Mr. S.S's life expectancy as 11.6 years.[112] Therefore, the amount that the expected time to maturity exceeded PWCG's primary reserve period is at least 2.6 years and the expected time to maturity exceeded the primary reserve period by at least 29 percent. When accounting for Ms. M.S.'s future lifetime, the amount that the expected time to maturity exceeds the primary reserve period is of course even larger. Ms. M.S. received a Standard No Tobacco rating at issue, which suggests that at the time of issue she had average health for her age/sex.[113] Calculations using standard mortality assumptions for Ms. M.S. indicate that her LE is 11.8 years and the expected time to maturity of the S. Policy is 15.5 years, which exceeds PWCG's primary reserve period for this policy by 6.5 years.[114]

79. The fourth joint life survivorship policy for which an LE report was produced is written on Mr. G.B. and Ms. M.B.'s lives (the "B. Policy"). PWCG set the

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[110] The S. Policy was issued in September 2007 (PWCG Policy Listing). Mr. S.S. had a Preferred No Tobacco rating at issue, and Ms. M.S. had a Standard No Tobacco rating at issue (S. Policy Illustration (PWCG002670-81 at 71). At the time of settlement in June 2011, Mr. S.S. and Ms. M.S. were 79.9 and 78.1 years old, respectively (PWCG Policy Listing).

[111] S. Policy Premium Calculation (SEC-DB-EPROD-000047928).

[112] PWCG002821-22. I further note that Mr. S.S.'s primary impairment is listed as "elder."

[113] S. Policy Illustration (PWCG002670-81 at 71).

[114] In calculating the time to maturity, I assume that Mr. S.S. and Ms. M.S.'s future lifetimes are independent. See **Exhibit 7B** note 6 for details.

primary reserve period on the B. Policy to 96 months, or 8 years.[115] I was only able to locate a medical underwriting report for Mr. G.B., which provides an 87 month "median LE" estimate based on a "multiplier" of 1.44.[116] While this is lower than PWCG's 96 month primary reserve period, the expected time to maturity for the B. Policy will be larger—and potentially considerably larger—than Mr. G.B.'s LE, depending on Ms. M.B's LE, for which I could not find an estimate.

80. The "multiplier" of 1.44 used for Mr. G.B.'s LE estimate around the time of settlement indicates that his health was worse than is typical for his age/sex. The B. Policy received a Standard Non-Tobacco rating at issue in February 2003.[117] This suggests that Ms. M.B. had at least average health for her age/sex at the time of issue, as the B. Policy would not have received a Standard rating if both Mr. G.B. and Ms. M.B. had worse than average health for their age/sex. The B. Policy had a settlement date in December 2006, less than four years after the date of issue.[118] Calculations using standard mortality assumptions for Ms. M.B. indicate that the expected time to maturity also exceeds PWCG's primary reserve period for this policy.[119]

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[115] Life Settlement Disclosure Form for B. Policy (PWCG037676-78 at 77).

[116] 21st Services stated that Mr. G.B. is "without life-threatening or catastrophic conditions or illnesses" but noted that Mr. G.B. has a history of stage II prostate cancer that was diagnosed/treated/re-treated in 2006 SEC-DB-EPROD-000446567-71 at 68-69 (21st Services).

[117] PWCG Policy Listing (issue date in February 2003); B. Policy Illustration (PWCG038399-407 at 399).

[118] "Date of Change" variable from PWCG Policy Listing for policy number JG5278472.

[119] Ms. M.B. was 79.5 years old as of the settlement date. If she had average mortality for her age and sex, her average life expectancy would be 10.5 years and the expected time to maturity for the B. Policy would be 11.8 years. In calculating the time to maturity for the B. Policy, I assume that Mr. G.B. and Ms. M.B.'s future lifetimes are independent. See **Exhibit 7B** note 7 for details.

81. **Table 2** below summarizes the primary reserve period set by PWCG, the LE estimates for the insureds, and the amount the expected time to maturity exceeds PWCG's primary reserve period for these policies.[120]

Table 2

Insureds	PWCG Primary Reserve Period	LE Estimates from Reputable Providers	Amount LE Estimate For Insured with Greater LE Exceeds Primary Reserve Period	Amount Expected Time to Maturity Exceeds Primary Reserve Period
Mr. F.P. Ms. S.P.	96 months	109 months 152 months	56 months	77 months
Mr. J.C. Ms. P.C.	96 months	60 months 143 months	47 months	50 months
Mr. S.S. Ms. M.S.	108 months	139 months Not Available	31 months	78 months
Mr. G.B. Ms. M.B.	96 months	87 months Not Available	N/A	49 months

Source: **Exhibit 7B**.

82. These examples for single life and joint life survivorship policies, for which PWCG had immediate access to LE estimates from reputable medical underwriters when setting the primary reserve periods, demonstrate that PWCG's primary reserve periods are considerably shorter than the expected time to maturity given available LE estimates.

2. For Some Policies, PWCG Should Have Known the Expected Time to Maturity Exceeded Its Primary Reserve Period Based on Available Policy-Specific Information

83. I expect that PWCG had or could have gained access to medical underwriting reports for all or nearly all of the policies it sold. However, even without

[120] There were two LE estimates of different lengths for Mr. F.P. (P. Policy) and for Ms. P.C. (C. Policy). I use the lesser LE estimates in **Table 2**.

those reports, PWCG should have known that the insureds' LEs exceeded its primary reserve period when those policies meet three conditions: (i) there was a short period of time between policy issue and the settlement date; (ii) the insured had not suffered a material decline in health between issue and settlement; and (iii) PWCG's primary reserve period is shorter than the insured's LE as of the settlement date using the rating for the insured at policy issue.

84. The rationale for this is straightforward. When people acquire new life insurance policies, they are required to submit to an underwriting process intended to evaluate the health status of the potential insured. Based upon a detailed review of the patient's health records and/or medical examinations, the insurance company assigns the potential insured a rating such as standard, preferred, or super-preferred that is used to set the premium level that the potential insured must pay.[121] People of the same age and sex rated standard pay more than people rated super-preferred because the latter group is assessed to be healthier and at lower risk of dying. This also means someone rated super-preferred has a longer LE than someone of the same age and sex rated standard. If there is a short period of time between issue and settlement, it means that the insured was evaluated in an underwriting process recently. Therefore, assuming that there were no material changes in health status between the time the policy was issued and when PWCG purchased the policy, the rating at issue is likely to provide a reasonable indication of the person's survival prospects at settlement.

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[121] Black and Skipper, 2000, pp. 668-675. People are also grouped as nicotine and non-nicotine based on whether they use nicotine products or not. People with a nicotine rating have a shorter life expectancy and are charged higher premiums relative to people with a non-nicotine rating.

85. In actuarial calculations, one accounts for the period since underwriting using so-called select-and-ultimate mortality tables. Using the ratings for the insured at issue and relevant information as of the settlement date (such as the insured's age), I can compute an LE estimate using suitable life tables and compare the result to PWCG's primary reserve period. For the policies that meet conditions (i)-(ii) above, PWCG knew or should have known that the insured recently qualified for insurance and that the rating at issue was based on reasonably current information, and therefore could have performed the same straightforward calculation of the insured's LE. Hence, PWCG does not have a reasonable basis for setting a primary reserve period shorter than the insured's calculated LE.

86. For example, Ms. B.A. received a preferred non-nicotine rating when her single life policy was issued in January 2007.[122] Ms. B.A. was 79.6 years old at the time of settlement of her policy in April 2010, only slightly over three years after the policy was issued. Ms. B.A. did not have a significant deterioration in medical status in the three years between issue and settlement.[123] PWCG set an eight-year primary reserve period for Ms. B.A.'s policy.[124] However, according to an appropriate mortality table, Ms. B.A.'s LE at settlement was 12.83 years and there was a 77 percent probability that she would live beyond the eight-year primary reserve period. The appropriate mortality

[122] Policy illustration for B.A., p. 7 (PWCG002272-79 at 77). Ms. B.A.'s preferred non-nicotine rating means that she was judged to be healthier than typical for non-smokers of her age and sex that purchased life insurance around the time of her purchase.

[123] Life Settlement Disclosure Form (SEC-DB-EPROD-000084083-95 at 95).

[124] Premium calculation for B.A. (PWCG033639).

table accounts for Ms. B.A.'s preferred rating and the "selection effect" due to the underwriting process outlined above.[125]

87. As another example, PWCG lists three policies written on Ms. F.A.'s life. Ms. F.A. received a preferred rating when her single life policy was issued in December 2010.[126] Ms. F.A. was approximately 80.5 years old around the time of the settlement of her policies around July 2013 through September 2013, approximately three years after issue.[127] Ms. F.A. did not have a significant deterioration in medical status in the three years between issue and settlement.[128] PWCG set a nine-year primary reserve period for Ms. F.A.'s policy.[129] However, according to an appropriate mortality table, Ms. F.A.'s LE at settlement was 12.3 years and there was a 70 percent probability that she would live beyond the nine-year primary reserve period.[130]

88. These examples show that there are policies for which PWCG set primary reserve periods that were substantially shorter than the expected time to maturity, given available information about the insured and the policy. This means that even if actuarially-based LE estimates from reputable medical underwriters were not available

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[125] In particular, I used the VBT 2001 Preferred, Non-Smoker, ALB, Select (female) mortality table from the Society of Actuaries, available at http://mort.soa.org. Even using the VBT 2008 Primary, Non-Smoker, ALB, Ultimate table, which does not account for Ms. B.A.'s preferred status or the selection effect of having recently purchased life insurance, her life expectancy is 10.54 years, which is greater than the primary reserve period of eight years.

[126] Ms. F.A. Policy Illustration (PWCG038974-81 at 75).

[127] See PWCG Policy Listing.

[128] Since issue, Ms. F.A. had a fall reported in 2012; she reported right knee pain and abnormal gait subsequent to fall. She also reported left foot and left shoulder pain in 2013. Life Settlement Disclosure Form (SEC-DB-EPROD-000284650-53 at 53).

[129] Ms. F.A. Policy Premium Calculation (SEC-DB-EPROD-000048300).

[130] I used the VBT 2001 Preferred, Non-Smoker, ALB, Select (female) mortality table, which accounts for Ms. F.A.'s preferred rating and the "selection effect" due to the underwriting process (see footnote 125).

to PWCG for some of its policies, PWCG still should have known that its primary reserve periods for these policies were too short. PWCG had 51 policies with less than five years between the issue date and settlement date.[131] This suggests that there were many more policies for which PWCG could have assessed the expected time to policy maturity given available information.

3. PWCG Failed to Use Basic Analytic Tools Used in the Life Settlement Industry to Evaluate the Length of Its Primary Reserve Periods and, if it Had Done So, PWCG Would Have Learned Its Primary Reserve Periods Were Too Short

89. A commonly used tool in the life settlement industry to evaluate the accuracy of LE estimates is known as the actual to expected ratio or A to E ratio ("A/E Ratio").[132] The A/E Ratio is simply the number of actual policy maturities divided by the number of expected policy maturities. If policies are maturing at a rate consistent with the expected rate, then the A/E Ratio will be at or near one (100 percent). If the policies are maturing faster than expected (more actual maturities than expected maturities), the A/E Ratio will be greater than one; whereas if the policies are maturing more slowly (fewer actual maturities than expected maturities), the A/E Ratio will be less than one.

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[131] PWCG Policy Listing ("Issue Date" and "Date of Change" columns).

[132] The A/E Ratio is a standard tool in the life settlement industry and in the analysis of life expectancy estimates. Actuarial Standards Board, "Actuarial Standard of Practice No. 48: Life Settlements Mortality," December 2013 ("Actuarial Standards Board, 2013"), p. 1; Qureshi, A. Hasan and Michael V. Fasano "Measuring Actual to Expected Accuracy for Life Settlement Underwriting", *Reinsurance News*, Issue 68 (July 2010). The track record of medical underwriters is assessed by A/E Ratios (A.M. Best, p. 24). As some of PWCG's policies are joint life survivorship policies that do not mature until both of the insured have died, I analyze policy maturity, which is the appropriate object of interest, rather than individual deaths, although of course for single life policies the two concepts are equivalent.

90. A/E Ratios are commonly used in the life settlement industry as a statistical measure of the performance of medical underwriters. For example, some medical underwriters advertise their A/E Ratios to demonstrate that their LE estimates are accurate. 21st Services is an example of such a company. In April 2010, 21st Services announced that their A/E Ratio was 98.1 percent. At the time, 21st Services' CEO Jack Kettler stated that "The actual-to-expected ratio reflects the accuracy of a life expectancy providers' predictions."[133] Similarly, the medical underwriter Fasano Associates on its website reports a "96% to 102% Actual to Expected Accuracy based on FIVE successive, independent Actuarial Studies."[134] Medical underwriters advertise their A/E Ratios because the accuracy of their actuarially-based LE estimates is critical to investors in the life settlement industry, as I discuss in **Section IX.A.1**.

91. If PWCG had employed the commonly used and straightforward A/E Ratio analysis, it would have learned that its policies were maturing at rates far below what was expected if the expected time to maturity equaled its reserve periods.

92. I conducted an A/E analysis using PWCG's primary reserve period as the expected time to maturity. The analysis is as of December 31, 2015, which is consistent with the most recent date for which I have information from PWCG regarding the

[133] 21st Services press release, April 28, 2010: "Actuarial Report Shows 21st Services' Actual-to-Expected Ratio Is the Most Accurate Yet Reported in the Industry at 98.1%," available at http://insurancenewsnet.com/oarticle/2010/04/28/Actuarial-Report-Shows-21st-Services%E2%80%99-Actual-to-Expected-Ratio-Is-the-Most-Accur-a-184176.html, accessed on February 9, 2016.

[134] See http://www.fasanoassociates.com, accessed on February 15, 2016.

mortality experience of its policies.[135] I find that PWCG's policies have an A/E Ratio of only 0.289, which means they are maturing at 28.9 percent of the rate that would be expected if the expected time to maturity equaled PWCG's primary reserve periods. The difference from the predicted A/E Ratio of 100 percent if the expected time to maturity equaled the primary reserve periods is too large to be explained by chance. The A/E Ratio of 28.9 percent indicates that PWCG's policies have expected times to maturity longer than their primary reserve periods or, in other words, that PWCG's primary reserve periods are too short. See **Exhibits 8A and 8B** for a summary of my findings.

93. To calculate the A/E Ratio, I calculate how many policies matured as a percentage of how many policies are expected to mature if the expected time to maturity equals PWCG's primary reserve period.[136]

94. To determine the rate at which a policy will be expected to mature assuming that the expected time to maturity equals PWCG's primary reserve period, I "back-solve" a mortality table for each policy.[137] Using this back-solved table, I

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[135] PWCG's Policy Listing appears to correspond to a date after December 29, 2015 as that is the date of the latest policy maturity in the listing. I assume that this listing is as of December 31, 2015. If I instead assumed that the listing is as of a later date, *e.g.*, January 31, 2015, the A/E Ratios that I calculate would decrease (because the number of expected matured policies, the denominator, would increase).

[136] A single life policy matures when the insured dies. As some of PWCG's policies are joint life survivorship policies that do not mature until both of the insureds have died, I analyze policy maturity, which is the appropriate object of interest, rather than individual deaths.

[137] "Back-solving" a life expectancy estimate into a mortality table is common in A/E analyses. Actuarial Standards Board, 2013, p. 9. I use the 2008 VBT Primary Table, Non-Smoker, ALB, Ultimate (Male or Female) available at http://mort.soa.org as a baseline or *standard* mortality table. As A.M. Best states, "[t]he life settlement industry has surmised, however, that most medical underwriters currently use a derivative of the 2008 Valuation Basic Table (2008 VBT) as standard – a conclusion that is probably correct in most cases" (A.M. Best, p. 6). For a single life policy, I calculate the multiplier to the mortality table rates such that the life expectancy equals PWCG's primary reserve period. For joint life survivorship policies, I find the rate of policy maturation

determine the probability that each policy will have matured by December 31, 2015.[138] Based on this analysis, I find that PWCG has only 28.9 percent as many policies mature as would be expected if the expected time to maturity of its policies equaled the corresponding PWCG primary reserve periods.[139] In particular, 11 policies have matured compared to 38.1 policies that would be expected to mature (out of 106 total policies) if PWCG's primary reserve periods corresponded to the expected time to maturity for its policies.[140]

95. To account for the possibility that the A/E Ratio may differ from 100 percent by chance even if the expected time to maturity equals PWCG's primary reserve period, I calculate a confidence interval for the A/E Ratio on December 31, 2015 assuming the expected time to maturity equals PWCG's primary reserve periods.[141]

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assuming that the insured future lifetimes are independent, and then calculate the multiplier to that rate of maturation such that the expected time to maturity equals PWCG's primary reserve period.

[138] I used the "Date of Change" variable in PWCG's Policy Listing to identify the settlement date. When the time from this date until December 31, 2015 is not a whole number of years, I assume that the chance of policy maturity is proportional to the fraction of the year—*e.g.*, if the policy has a 20 percent chance to mature over the entire year, I assume that over half the year the policy has a 10 percent chance to mature (this assumption is prevalent in actuarial mathematics and is referred to as the uniform distribution of deaths (UDD) assumption).

[139] To avoid having an A/E analysis disproportionately weight insureds that are covered by many policies, actuaries use methods that place similar weight on different insureds. Actuarial Standards Board, 2013, pp. 9-10. When PWCG has multiple single life policies with the same insured, or has multiple joint life survivorship policies with the same insureds, my A/E analysis uses only the policy with the lowest chance of policy maturity (for example, policies with the same insured and different settlement dates may have different chances of maturity). This results in the lowest number of expected matured policies (the denominator) and therefore results in the highest A/E Ratio, which is favorable to PWCG. Using all of the policies for each insured would not change my results, although I view doing so as less appropriate. In particular, the A/E Ratio would be 25.4 percent (13 matured policies compared to 51.1 expected matured policies, out of 133 total policies). See **Exhibit 8A**.

[140] PWCG's average primary reserve period for these 106 policies is 7.5 years (PWCG Policy Listing, "Years Paid" column).

[141] If PWCG's policies had an expected time to maturity equal to the primary reserve period set by PWCG, then the A/E Ratio would on average be 100 percent, but it could differ from 100 percent due to chance. That is, some insureds may die faster or slower than predicted due to the uncertain occurrence of death even if the prediction

Confidence intervals are commonly used in statistics to determine the degree of certainty of statistical estimates. For purposes of this analysis, I calculated both a 95 percent and a 99 percent confidence interval for the A/E Ratio. The observed A/E Ratio falls far outside both of these confidence intervals. This means that there is a very high degree of statistical certainty that PWCG's policies have an expected time to maturity greater than PWCG's primary reserve periods or, in other words, that the difference cannot be explained by "bad luck." If PWCG's policies had an expected time to maturity equal to PWCG's set primary reserve periods, then the A/E Ratio that I calculate would fall in the range 71.4 percent to 128.6 percent with a degree of certainty of 99 percent.[142] In comparison, PWCG's A/E Ratio is only 28.9 percent. This indicates that PWCG's policies are maturing at a much slower rate than would be observed if their expected time to maturity equaled the primary reserve periods, and this difference is too large to be explained by chance.

96. In addition to an overall A/E Ratio, I also calculate A/E Ratios separately for the single life and joint life survivorship policies. The A/E Ratios for single life and joint life survivorship policies separately are each substantially less than 100 percent: the A/E Ratio for single life policies is 37.5 percent and the A/E Ratio for joint life survivorship policies is 22.6 percent. See **Exhibits 8A and 8B**. One reason why the

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is accurate. However, this statistical error can be quantified and will become smaller and smaller for an increasingly large portfolio of insureds.

[142] This calculation assumes that each policy has an expected time to maturity equal to PWCG's primary reserve period. Therefore, the A/E Ratio would on average equal 100 percent and would differ from that due to chance. I use an analogous "back-solving" method to that described in paragraph 94. These confidence intervals are wider for subsets of the policies (*e.g.*, for single life policies alone) because there are fewer data points. As described in footnote 141, the statistical certainty is increasing in the number of observations.

A/E Ratio is lower for joint life survivorship policies than for single life policies is that PWCG's average primary reserve period is approximately the same for both types of policies, even though joint life survivorship policies only mature when both insureds have died, so that generally the time to maturity will be longer for joint life survivorship policies.[143]

97. As a further analysis, I calculated the A/E Ratio as of the end of each month from December 2009 through December 2015.[144] I also calculate confidence intervals analogous to those discussed above. I find that on and after October 31, 2010, the A/E Ratio is less than 39 percent and the confidence interval indicates that PWCG's policies have expected time to maturity greater than PWCG's primary reserve periods with a 95 percent degree of statistical certainty. From October 31, 2011 and on, the A/E Ratio is less than 35 percent and the confidence intervals indicate that PWCG's policies have an expected time to maturity greater than PWCG's primary reserve periods with a 99 percent degree of statistical certainty.[145] See **Exhibit 8C**. Therefore, by October 31, 2010—and possibly even earlier given the high degree of statistical

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[143] For the 39 single life policies, PWCG's average primary reserve period is 7.4 years, while for the 67 joint life survivorship policies the average primary reserve period is 7.6 years (PWCG Policy Listing, "Years Paid" column). Mr. Calhoun stated that PWCG chose joint life survivorship policies because fewer other investors buy them, so PWCG could typically buy them for less, and because the cost of insurance is also typically lower. Testimony of Andrew B Calhoun, IV, October 23, 2013 ("Calhoun Testimony, 2013"), p. 45. All else equal, lower prices are paid for joint life survivorship policies because they have longer expected times to maturity.

[144] Because PWCG's Policy Listing contains the date of maturity for each matured policy, I can construct the number of matured policies for dates earlier than December 31, 2015. It is straightforward to calculate the number of expected matured policies for dates earlier than December 31, 2015. For a given policy, the earlier the date the lower the chance of maturity, since there has been a smaller time period in which the insured(s) could have died. In addition, the sample size (number of observations) shrinks for earlier dates because as of those earlier dates, PWCG had sold interests in fewer policies. Because of the smaller sample sizes and the lower numbers of expected matured policies at the earlier dates, the confidence intervals become wider.

[145] It would be straightforward to update my A/E analyses to reflect updated information about policy maturity.

certainty —PWCG's own experience should have made it clear that the expected times to maturity of PWCG's policies exceed the corresponding primary reserve periods set by PWCG, and therefore PWCG's primary reserve periods were too short.

98. PWCG's policies are maturing substantially more slowly than the rate that would be expected if their expected time to maturity equaled the primary reserve period set by PWCG. As I discuss in **Section IX.A**, PWCG tells investors that it buys policies it believes will mature *sooner* on average than the end of the primary reserve periods. My A/E analyses demonstrate that PWCG did not have any reasonable basis for these statements, and in fact, an analysis of their performance using an A/E Ratio, an industry standard tool, would have made it clear to PWCG that there was no reasonable basis for these statements.

4. PWCG's Policies Are Maturing Much More Slowly Than the "Four To Seven Years" That It Purports to Believe Its Policies Will Mature In.

99. As I discuss in **Section IX.A**, PWCG's statements imply that its policies are expected to mature *before* the end of their corresponding primary reserve periods. Specifically, PWCG stated that it believes the policies will mature in four to seven years, while PWCG's primary reserve periods average approximately 7.5 years. Additionally, many of PWCG's life settlement purchase agreements from 2005-2007 state that the primary reserve is sufficient to pay premiums for "life expectancy plus two years."[146]

100. When I calculate the A/E Ratio under the assumption that the expected time to maturity for each policy equals PWCG's primary reserve period minus two

[146] Footnote 85 has examples of these purchase agreements.

years, the A/E Ratio is only 20.1 percent. See **Exhibit 8A**. This means that policies are maturing at a fifth of the rate expected under assertions from PWCG regarding the rate of policy maturity.

101. I also calculated the A/E Ratio as of the end of each month from December 2009 through December 2015 under the assumption that the expected time to maturity for each policy equals PWCG's primary reserve period minus two years, as well as corresponding 95 percent and 99 percent confidence intervals. **Exhibit 8D** shows that if PWCG had analyzed their performance using an A/E Ratio, it would have been clear for some time that the expected time to policy maturity exceeded the primary reserve period minus two years benchmark. Indeed already in December 2009, the earliest date in my calculation, the corresponding A/E Ratio was less than 35 percent and it differs from this benchmark with a statistical degree of certainty of 95 percent. On and after March 31, 2010, the A/E Ratio was less than 31 percent and it differs from the benchmark with a statistical degree of certainty of 99 percent. Thus, since no later than December 2009 or possibly even earlier given the high degree of statistical certainty, PWCG's own experience showed that the expected times to maturity of PWCG's policies are greater than primary reserve periods minus two years and, correspondingly, that there is no reasonable basis for PWCG's purported belief that their policies mature in four to seven years.

102. All in all, the observations in this section demonstrate that PWCG not only had no reasonable basis for its statements that its policy would mature in four to seven years, or that the primary reserve period exceeds the expected time to maturity for a policy, but that PWCG's policies are maturing on average at a much slower rate than

necessary to be consistent with the time set for the primary reserve period and PWCG's representations to investors about when its policies would mature. The primary reserve periods PWCG set were too short. As I detail below, this is a key reason why: (i) the secondary and tertiary reserves are insufficient and premium calls are likely to become necessary; and (ii) investors will receive lower returns than the returns advertised by PWCG.

C. PWCG's Premium Calculations Frequently Underestimate the Actual Premiums Required to Keep Policies in Force During the Reserve Period

103. Mr. Calhoun testified that PWCG intended to calculate the premium required to keep the policy in force over the primary reserve period while setting the account value at the end of the primary reserve period to zero.[147] PWCG determined the premium over the primary reserve period by: (i) aggregating the planned premiums over the primary reserve period per the policy illustration; (ii) adding the illustrated interest rate times the aggregate account value over the primary reserve period per the policy illustration; (iii) subtracting the policy account value at the end of the primary reserve period per the policy illustration; and (iv) dividing by the number of years in the primary reserve period.

104. The premiums resulting from this process frequently will underestimate the premiums required to keep the policy in force over the reserve period. There are two reasons why this process does not accurately estimate the (minimally) required premiums. The first reason frequently leads PWCG to substantially underestimate the

[147] Calhoun Testimony, 2013, pp. 86-87 (Mr. Calhoun refers to the account value as the "cash value").

premiums required to keep the policy in force over the primary reserve period, and the second reason leads to a slight overestimation of the required premiums.

105. First, PWCG's calculation does not account for the higher cost of insurance charges that will be incurred as a result of reducing the policy's account value. Since the cost of insurance covers the face amount less the account value—*i.e.*, the *additional* death benefit not funded by the account value—PWCG's premium schedule will increase the cost of insurance relative to the cost reflected in the policy illustration because it decreases account value (relative to the illustration). PWCG's calculation does not account for this increase. See **Appendix C** for a formal illustration.

106. Second, component (ii) of PWCG's calculation increases the required premium due to interest that would be earned if premiums were paid according to the policy illustration. This approach implicitly assumes that under the modified premium schedule, the policy will not earn any interest. However, even under the modified premium schedule, the account value will be positive in the early years of the primary reserve period and will accrue interest, which will slightly reduce the premium that PWCG needs to fund.

107. Since the first (underestimation) aspect typically dominates, in many cases PWCG did not allocate a sufficient amount to keep policies in force for the length of their primary reserve periods. This can be shown by a simple projection of the account value.[148] For instance, for Ms. B.A.'s policy the required premium to keep the policy in

[148] While the cost of insurance rate is not directly given in the policy illustration, it is possible to back out the cost of insurance using the relationship between the account value in one period and the next. See **Appendix C** for details.

force for the eighth and final year of the primary reserve period is more than $120,000, compared with $73,488 according to PWCG's calculation.[149]

108. In line with these arguments, for some policies the primary reserve ran out before the end of the primary reserve period and PWCG started paying premiums from its own funds. For example, PWCG paid over $200,000 in premiums each for two policies because the primary reserve was not sufficient to cover premiums until the end of the primary reserve period.[150]

109. Since PWCG's premium calculations are flawed and in many instances have led to an underestimation of the amount required to keep its policies in force over the primary reserve period, PWCG's primary reserve will often be insufficient to cover the premiums for the last year(s) of the primary reserve period.

110. Mr. Calhoun stated his belief that PWCG has a contractual obligation to keep its policies in force through the end of the primary reserve periods, so if the primary reserve were not sufficient to keep a policy in force through the end of the primary reserve period, PWCG would need to contribute premiums.[151] PWCG funded these premiums from its margin.[152] In fact, PWCG funded premiums for at least 19

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[149] Premium calculation for B.A. (PWCG033639).

[150] For policy numbers 20068524 and 536001378 PWCG paid $200,938 and $234,000 in premiums, respectively, because the premium ran out early. As of November 14, 2014, there were a total of 14 policies for which PWCG funded premiums of $25,000 or more because the primary reserve ran out early. See file produced by PWCG called "Exhibit 4.xlsx" that includes PWCG Investor list as of November 14, 2014 ("PWCG Investor List, November 14, 2014"), column "Premium Ran out Early".

[151] Calhoun Testimony, 2013, pp. 84, 88, 148, 155; Calhoun Deposition, 2015, p. 181.

[152] Calhoun Testimony, 2013, pp. 88-89.

policies where the premium "ran out early."[153] By paying the premiums to keep the policies in force out of its margin, PWCG avoided drawing down the secondary and tertiary reserves. If the secondary and tertiary reserves were depleted, PWCG paying the premiums to keep the policies in force out of its margin would avoid premium calls to investors. There is an additional risk to investors that PWCG will not or will not be able to make these payments in order to keep the policies in force through the end of the primary reserve period, in which case using other reserve layers or premium calls may become necessary. An investor's returns will be reduced if a premium call is made.[154]

D. The Premium Required to Keep Policies in Force Will Increase Sharply After the Primary Reserve Period Ends Relative to the Premium Reported by PWCG in Its Disclosure Forms

111. The premiums needed to keep policies in force will generally increase sharply after the primary reserve period ends relative to the premiums reported by PWCG in its disclosure forms. This increase is due to five factors. First, the cost of insurance increases as the insured ages due to increasing mortality probabilities so that, all else being equal, the required premium to keep a policy in force always increases from one year to the next. Second, PWCG determines a flat premium profile over the primary reserve period, which masks the increasing cost of insurance over time during the primary reserve period (that is, the flat premium over the primary reserve period is

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[153] PWCG Investor List, November 14, 2014, column "Premium Ran out Early."

[154] PWCG's calculation error also impacts the sufficiency of the secondary and tertiary reserves. The unused primary reserves frequently will be lower during the primary reserve period than PWCG's premium calculations suggest—for example, even if a policy matures before the end of PWCG's primary reserve period, there may be no unused primary reserve to add to the tertiary reserve.

higher than the annually required premium in early years and lower than the annually required premium in late years). Third, PWCG's use of the available account value balance to fund the premium payments over the primary reserve period reduces the amount of money that is needed to keep the policy in force during the primary reserve period and, thus, reduces the disclosed amount of the primary reserve premium. Fourth, the depletion of the account value at the end of the primary reserve period increases the amount of death benefit that needs to be funded by insurance. As discussed in **Section V**, the amount of insurance required in each period is equal to the face amount less the account value (the *additional* death benefit not funded by the account value). Therefore, decreasing the account value increases the cost of insurance and, thus, the premium required to keep the policy in force. Fifth, the premium PWCG reported to investors frequently understates the amount needed to keep the policies in force during the primary reserve period (see **Section IX.C** above). Since PWCG frequently understates the premium needed during the primary reserve period, there is a greater increase in the premium after the primary reserve period relative to PWCG's disclosed premium.

112. **Exhibits 9A and 9B** illustrate how PWCG sets it premium level over the primary reserve period and the factors leading to the sharp increase in premiums after the primary reserve period.[155] **Exhibit 9A** presents a simplified version in which the

[155] **Exhibits 9A and 9B** are illustrative and are not intended to reflect any specific policy. For ease of exposition, I assume that the account value does not earn interest and that there are no expenses besides the cost of insurance.

account value is not drawn down to pay premiums during the primary reserve period.[156] The green line shows the increasing cost of insurance over time. The vertical black line represents the end of the primary reserve period, which in the illustration is assumed to be eight years. The horizontal black line beginning at the *y*-axis and ending at the vertical black line indicating the end of the primary reserve period shows the average level of the cost of insurance during the primary reserve period. If PWCG had not used the account value to fund premium payments, this is the premium level that PWCG would report to investors and use to set the primary reserve. Note that the horizontal black line is above the cost of insurance line for years one to four and is below the cost of insurance line for years six to eight, meaning that the reported premium exceeds the cost of insurance in the early years and is less than the cost of insurance in later years. In contrast, the premium required to keep the policy in force in the first year after the end of primary reserve period (year nine) without drawing down the account value is simply the cost of insurance, which clearly is much higher as shown by the blue line.

113. **Exhibit 9B** introduces effects of using the account value to fund premiums. The dashed red line depicts the adjusted account value balance over time based on PWCG's premium schedule in which the account value is drawn down to fund premiums during the primary reserve period so that the account value is zero at the end

[156] For simplicity, I do not show the account value in **Exhibit 9A**.

of the primary reserve period. Therefore, in **Exhibit 9B**, the dashed red account value line is decreasing over time and reaches zero at the end of the primary reserve period.[157]

114. As a consequence of using the account value to fund the policies during the primary reserve period, the required amount of additional money that must be paid to the insurance company to keep the policy in force over the primary reserve period decreases and, therefore, so does the amount of money disclosed to investors as the required primary reserve. This is illustrated by the dashed black line, which is lower than the solid black line.

115. However, using the account value to fund the policies has another effect on the policy. The cost of insurance in the illustration used by PWCG to determine the amount to keep the policy in force is based on the level of account value shown in the illustration in each year. As discussed in **Section V**, the amount of insurance required in each period is equal to the face amount less the account value. If the account value decreases, then one will need to purchase more insurance. Since PWCG uses the account value to fund the policy and depletes it to zero, it increases the amount of insurance that will need to be purchased and must be paid for. This is illustrated in **Exhibit 9B** by the dashed green cost of insurance line that is above the solid green cost of insurance line. As the cost of insurance line increases, so does the premium required to keep the policy in force both during and after the primary reserve period.

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[157] The exact progression of the account value over time depends on how PWCG administered the policies. PWCG could use the account value to fund premiums as long as possible without putting in additional funds, which would quickly reduce the account value to zero. Alternatively, they could draw on the account value over time only to exhaust the account value at the end of the primary reserve period. For simplicity, in **Exhibit 9B** I assume that PWCG would intend to deplete the account value evenly over time.

116. PWCG's primary reserve calculation for the premium level needed to keep policies in force during the primary reserve period does not reflect this effect.[158] As discussed in **Section IX.C**, the amount disclosed to investors and used to set the primary reserve is therefore frequently too low to keep the policies in force though the primary reserve period. In addition, the amount of the increase in the premium required to keep the policy in force after the primary reserve period is even greater. This is illustrated by the horizontal dashed blue line in **Exhibit 9B**, which exceeds the horizontal solid blue line.

117. Hence, the premium required to keep the policy in force increases sharply after the end of the primary reserve period compared to the premiums reported by PWCG in its disclosure forms. Given that the primary reserve periods are shorter than the expected time to maturity of PWCG's policies as I show in **Section IX.B.3**, this sharp increase means that significant funds in addition to the primary reserves will be necessary to keep policies in force. I discuss below that the secondary and tertiary reserves are not sufficient to cover the gap.

E. The Secondary and Tertiary Reserves are Inadequate and PWCG Should Have Known They Will Be Inadequate

118. PWCG uses a reserve structure that it claims reduces the risk to investors. The reserves are composed of the primary, secondary, and tertiary reserves. The primary

[158] This error in PWCG's premium calculation, which I describe in **Section IX.C**, can be seen on **Exhibit 9B** as follows: PWCG's calculation in effect used the solid green line as the cost of insurance when in fact they should have used the higher, dashed green line. As a result, the account value will be drawn down faster than PWCG projects, and the primary reserve will not be sufficient to keep the policy in force through the end of the primary reserve period.

reserve is intended to fund premiums due on the policy through the primary reserve period. PWCG represents that the secondary reserve is based on "1% of all gross investment proceeds," and that the tertiary reserve is generated from unused portions of primary reserves for policies that matured prior to the end of their primary reserve period and interest paid on all reserve layers.[159] The primary reserve is policy-specific, but the secondary and tertiary reserves are intended to cover all policies where the insured lives longer than the primary reserve period.

119. PWCG repeatedly made statements to investors implying the secondary and tertiary reserves were large and sufficiently funded to protect investors from the possibility of premium calls. For example, in 2005 Mr. Calhoun stated that none of his investors ever had to pay a premium in response to a premium call.[160] Another example is that in May 2012, September 2012, and January 2014, PWCG represented that the secondary and tertiary premium reserves had "millions of dollars," that PWCG had not utilized funds from either of those reserves because "all our policies have matured before their primary reserves were exhausted," and that it is unlikely that PWCG's investors will need to make payments in response to premium calls.[161] In reality, however, the secondary and tertiary reserves were/are neither well-funded nor sufficient

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[159] PWCG Wells Response, September 7, 2014, p. 3.

[160] Deposition of Wesley Bemis, November 12, 2015 ("Bemis Deposition"), p. 18, on what he was told by Mr. Calhoun in 2005 (**emphasis** added): "He gave me the impression that there were enough reserves that I would not have to pay premiums. …**one of the things he said specifically is that none of his investors had ever had to pay a premium.** And he did satisfy me into believing that I would -- I would not have to pay a premium."

[161] Emails sent by Mike Dotta of PWCG: on May 18, 2012 (Exhibit 166—PWCG190652-55 at 52); on September 25, 2012 (Exhibit 187—PWCG198722-25 at 22); and on January 9, 2014 (Exhibit 167—PWCG226572-74 at 72-73).

to protect investors. PWCG knew or should have known the reserves are insufficient given the economics of life insurance and the size of the reserves. In addition, given that PWCG did not use LE estimates to set its primary reserve periods (see **Section IX.A**), it had no basis for the statement that the secondary and tertiary reserves will be sufficient to provide protection to investors.

1. The Secondary and Tertiary Reserves Will Not Be Sufficient to Cover Premiums After PWCG's Primary Reserve Periods

120. The secondary and tertiary reserves will not be sufficient to cover all of the premiums due to keep the policies in force after the PWCG primary reserve periods end, which PWCG was or should have been aware of when designing the reserves and selling the policies allegedly protected by the reserves. The insufficiency of the reserves is closely related to the fact that actual policy maturities for PWCG's policies are much lower than expected policy maturities given the primary reserve periods set by PWCG (see **Section IX.B**). This implies that many of PWCG's policies will not mature by the end of the respective primary reserve periods, and additional premium payments will be required after the primary reserve period ends.

121. One of the reasons the secondary and tertiary reserves will be insufficient is that the required premium to keep a policy in force will increase sharply after the end of the primary reserve period, which is discussed in detail in **Section IX.C**. The sharp increase in premiums after the end of the primary reserve period impacts the sufficiency of both the secondary and tertiary reserves.

122. The secondary reserve is determined as one percent of gross investment amount. The sharp increase in premium, together with the fact that policies on average

mature after their respective primary reserve periods, means that the resulting size of the secondary reserve is too small to provide a reasonable level of protection. Ms. B.A.'s policy provides a good example. The secondary reserve amount for this policy is $15,000. Based on my analysis, the premium required to keep the policy in force in the first year after the eight-year primary reserve period is approximately $144,000. Moreover, as noted in **Section IX.B**, I estimate the probability that Ms. B.A. lives beyond the reserve period to be 77 percent. Therefore, in the likely event that Ms. B.A.'s policy is still in force only one year beyond the reserve period (I estimate the probability to be 72 percent) it will consume more than nine times its own contribution to the secondary reserve. Given the increasing nature of the cost of insurance, the impact of each additional year is even greater.

123. In order to evaluate the sufficiency of the secondary reserve as a whole, I analyzed a summary of the secondary reserve as of June 23, 2015 produced by PWCG.[162] The total secondary reserve collected as of that date was $1.058 million across 131 policies for an average contribution of approximately $8,100 per policy. The same file also lists premium payments made from the secondary reserve. Payments were made for 16 policies totaling to approximately $650,000, with an average payment per policy of approximately $40,600. In other words, the average payments on these policies were approximately five times greater than the average amount collected for the secondary reserve.

[162] "Calculation of 1 percent premium reserve left as of 06232015.xls"

124. Given that policies on average will mature after their respective primary reserve periods (**Section IX.B**), it is likely that payments will need to be made on the majority of PWCG's policies. While 131 policies had contributed to the secondary reserve as of June 2015, only a small fraction of them had even reached the end of their scheduled primary reserve periods by June 2015, so that the number of policies drawing on the secondary reserve will increase. Moreover, it is important to note that the $40,600 per-policy is as of June 23, 2015 and does not account for any subsequent payments made on these policies. Also, the reported premium payments do not account for any payments PWCG made on these policies, if any. Therefore, the average draw per policy will likely exceed $40,600. In fact, I understand that the secondary reserve was depleted sometime after June 2015 (see **Section IX.E.3**), which my analysis predicts will happen.

125. The tertiary reserve is generated from unused portions of primary reserves for policies that matured prior to the end of their primary reserve period and interest paid on all reserve layers. The sharp increase in premiums after the primary reserve period means that for a given policy, the contribution to the tertiary reserve in case the policy matures before the end of the primary reserve period is usually less than the draw on the secondary and tertiary reserves in case the policy matures after the end of the primary reserve period. **Section IX.B** shows that policies will mature on average after the end of their primary reserve periods. Therefore, on average, each policy has a negative expected contribution to PWCG's tertiary reserve over the lifetime of the policy so that the tertiary reserve is not going to remain positive as more and more policies reach the end of their primary reserve periods.

126. For instance, for Ms. B.A.'s policy, using the life tables as described in **Section IX.B.2** and a discount rate of 4.5 percent (the illustrated interest rate on her policy), the discounted expected value of the premium payments that are required after the primary reserve period is more than $910,000, whereas the discounted expected value of contributions to the secondary and tertiary reserves is less than $73,000.[163] This means that, on average, the required contributions to keep Ms. B.A.'s policy in force exceed inflows from Ms. B.A.'s policy to the secondary and tertiary reserves by more than a factor of ten. Therefore, the overall contribution to PWCG's reserve accounts will be substantially negative.[164]

127. Similarly, for Mr. F.P. and Ms. S.P.'s policy, using the life tables as described in **Section IX.B.1**, and a discount rate of 5.5 percent (the illustrated interest rate on the policy), the discounted expected value of the premium payments that are required after the primary reserve period is more than $143,000, whereas the discounted expected value of contributions to the secondary and tertiary reserves is less than $14,000. This means that, on average, the required contributions to keep Mr. F.P. and Ms. S.P.'s policy in force exceed inflows from their policy to the secondary and tertiary reserves by more than a factor of ten.[165]

128. The secondary and tertiary reserves will be positive in the years before PWCG's policies have reached the end of their primary reserve periods, but this does

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[163] $15,000 of this sum is contributed to the secondary reserve based on the $1.5 million investment in the policy.

[164] This calculation uses the same general assumptions as my net present value calculations in **Section IX.F**.

[165] This calculation uses the same general assumptions as my net present value calculations in **Section IX.F**.

not indicate that the reserves are sufficient. The timing of when policies contribute and when they draw on the secondary and tertiary reserve layers is highly asymmetric. A given policy's contribution to the secondary reserve occurs at the time PWCG sells the policy to investors because the secondary reserve is funded by the proceeds. A policy's contributions to the tertiary reserve will be zero or positive until the end of its primary reserve period, with the size of the contribution depending on whether the insured survives to the end of the primary reserve period or dies before it.[166] Therefore, the secondary and tertiary reserve contributions for each policy will be positive and increasing over the primary reserve period. However, this does not mean that it will remain positive, since as discussed above it is possible and even likely that the required draw on these primary reserve layers after the primary reserve period for a given policy far exceeds the positive contributions in the early years after the point of sale.

129. Therefore, the second and tertiary reserves will appear to be well-funded for a period of time and will allow PWCG to cover shortfalls temporarily. However, they will not be adequate to make required premium payments when it is needed in future years.

130. PWCG's increasing rate of selling policies over time exacerbates this false appearance. The secondary and tertiary reserve contributions from new policies will potentially make up for premium payments required on older policies that are moving

[166] Even if the policy matures during the primary reserve period, there may be no remaining primary reserve to add to the tertiary reserve. For example, this may happen because of PWCG's error in calculating the premiums required during the primary reserve period that I discuss in **Section IX.C**, or it may happen if the insurer deviates from the interest and cost of insurance rates shown in the policy illustration.

beyond their primary reserve periods. Here, a sufficiently large number of "new" policies can make up for the described imbalance between in- and outflows to these reserve layers, although the eventual shortfall will be greater since the premium contributions for the "newer" policies required in the future will be largely unfunded. This type of risk sharing across generations is not consistent with the principles of insurance.[167]

2. PWCG Had No Valid Basis For Its Statements About the Sufficiency of the Secondary and Tertiary Reserves

131. PWCG has and had no valid basis for its statements that the secondary and tertiary reserves are sufficient to prevent investors from paying premiums. PWCG did not set its primary reserve periods by relying on actuarially valid estimates of life expectancy and time to policy maturity. Without the use of actuarially valid LE estimates, PWCG cannot have a reasonable expectation on whether or not its policies will mature before the end of the primary reserve period to fund the tertiary reserve and on whether or not its policies will draw on either the secondary or tertiary reserves. In fact, because actual maturities on PWCG's policies are much lower than expected maturities according to the primary reserve periods set by PWCG, the reserves do not have nearly enough funds to cover future obligations and investors will be required to make payments in response to premium calls.

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[167] Actuarial Standards Board, "Actuarial Standard of Practice No. 15: Dividends for Individual Participating Life Insurance, Annuities, and Disability Insurance," May 2011 ("Actuarial Standards Board, 2011"), pp. 2-3. In particular, the "contribution principle" states that divisible surplus should be allocated to policies in a way that reflects their contribution to the surplus.

3. The Secondary and Tertiary Reserves Were Depleted Within Nine Months After PWCG Needed To Draw On Them Demonstrating They Were Insufficient

132. It was not until 2011 that the first of PWCG's policies moved beyond its primary reserve period (see **Exhibit 6**). Therefore, the secondary and tertiary reserves necessarily had a positive balance until that time. By year-end 2012, only $5.9 million of PWCG's policies in terms of face value reached the end of their respective primary reserve periods set by PWCG, while by this time PWCG had sold interest in policies comprising $165.4 million in face value (see **Exhibit 6**). However, PWCG paid required premiums for two policies that had gone past their primary reserve periods by February 2012.[168] According to Mr. Calhoun, PWCG began drawing on the secondary reserve in December 2014.[169]

133. I understand both the secondary and tertiary reserves are now depleted, and no funds are available to cover future premiums after the end of the primary reserve period for the policies that are allegedly protected by the reserves. By the time the reserves were depleted and PWCG began to make premium calls in August 2015,[170] less than 24 percent of PWCG's policies had even reached the end of their scheduled primary reserve periods (see **Exhibit 6**).

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[168] This was for policy numbers 506057558 and 1A27114800. See PWCG Investor List, November 14, 2014, column "Insured Outlived Contract Period" and PWCG Policy Listing, columns "Date of Change" (used to identify the settlement date) and "Years Paid" (indicating the primary reserve period set by PWCG).

[169] Calhoun Testimony, 2013, pp. 54, 138, 150-151; Calhoun Deposition, 2015, pp. 275-277. Mr. Calhoun stated "PWCG accessed the secondary reserves to start paying premiums on policies that have gone past primary premium reserves in December of 2014. Because of this, PWCG no longer represents to investors that the secondary reserve has never been used." Declaration of Andrew B Calhoun IV, May 7, 2015, p. 6.

[170] Mr. Potoczak states that investors were billed for premium calls starting in August 2015. Potoczak Deposition, 2015, pp. 61, 67-68.

134. All in all, my analysis shows that the secondary and tertiary reserves are not sufficient, and premium calls will become necessary. My analysis suggesting that the reserves are not sufficient is in line with the fact that PWCG has started making premium calls in the recent past. As I detail in the next section, given the necessity of premium calls, investors will realize lower total returns than those advertised by PWCG. Furthermore, the necessity of premium calls and longer expected times to policy maturity than the primary reserve periods set by PWCG imply that expected annual returns will be lower than advertised by PWCG.

F. PWCG Had No Basis for Its Statements about the Returns on Its Policies

1. PWCG Had No Basis for Its Total Guaranteed Return

135. PWCG represented to investors that they will realize a "total fixed return" of 100 percent or higher.[171] For example, PWCG's marketing materials states that "the total return is always known by the investor in advance."[172] However, this statement is not correct because premium calls reduce the return and this statement assumes that the investors face no premium calls.[173] As I discuss in **Section IX.E**, PWCG's reserves are not sufficient to prevent many investors from having to make payments in response to premium calls and PWCG had no basis for claiming that they would be sufficient. In

[171] Calhoun Deposition, 2015, pp. 145, 188.

[172] PWCG Brochure (PWCG00001-11 at 08).

[173] PWCG's marketing materials illustrate hypothetical annual rates of return if a policy matures in one to ten years. However, even though PWCG's primary reserve periods are represented to be six to nine years, the calculation does not include premium calls in the tenth year. PWCG Brochure (PWCG00001-11 at 06, 08-09).

fact, PWCG has made premium calls starting in August 2015[174] and, if they had not used their own funds for covering required premiums, they would have needed to draw down the secondary and tertiary reserves as early as 2012.

136. In addition, PWCG's guaranteed "total return" assumes that insureds will never live to the policy maturity date. PWCG's policies will pay only the account value rather than the death benefit if the insured is alive at the policy maturity date, as the President of the trustee of the PWCG Trust, Mr. Potoczak, stated.[175] Therefore, if a policy reaches the policy maturity date, investors will not receive the death benefit but rather they will receive the account value of essentially zero.[176] These investors will lose their initial investment and any additional amount paid due to premium calls, and will therefore realize a total return of negative 100 percent. PWCG has no valid basis to claim that none of its insureds will ever live to the policy maturity date.

137. Mr. Calhoun testified that the "total fixed return" and the "total return" will be unchanged even if investors are required to make premium calls.[177] This is incorrect because returns are calculated using all cash flows, including both initial

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[174] Potoczak Deposition, 2015, pp. 61, 67-68.

[175] Potoczak Deposition, 2015, pp. 102, 219-220 (discussing policies that mature when the insured reaches age 100; see also pp. 155-156). See also Testimony of William M. Potoczak, September 24, 2013, pp. 147-149.

[176] Mr. Potoczak stated that the account value (which he refers to as the "cash value") of policies where there have been premium calls is zero (Potoczak Deposition, 2015, p. 103). This is expected as Mr. Calhoun stated that PWCG set premiums during the primary reserve period so that the account value (cash value) is zero at the end of the primary reserve period (Calhoun Testimony, 2013, pp. 86-87).

[177] Calhoun Testimony, 2013, pp. 114-117; Calhoun Deposition, 2015, p. 176 (see also pp. 168-175).

expenditures *and* subsequent expenditures.[178] Consider a hypothetical investor that invests $2 million initially, pays $3 million in additional premiums, and then receives $4 million upon policy maturity. This investment clearly has a negative return; it is incorrect to claim that the investor earned a positive "total (fixed) return" because the amount received is higher than the *initial* investment. It is incorrect to ignore all expenditures after the initial investment in calculating returns as Mr. Calhoun claims.

138. PWCG had additional evidence that the "total fixed return" it represented to investors is not accurate given the experience with early policies where PWCG started paying premiums because the insureds outlived the contract period.[179] Given the high likelihood—and the actual experience—that many investors needed and will need to make substantial premium calls, the total return realized by these investors will be less than the "total fixed return" represented by PWCG.

2. PWCG Had No Valid Basis for Its Statements That Investors Would Obtain a 12-14 Percent Return

139. Some of PWCG's marketing materials represented that its investors would obtain a 12 to 14 percent annual return.[180] Also, investors in PWCG's policies were told

[178] For example, calculating a discounted-cash flow ("internal") rate of return for an asset involves using all of the cash flows. See Brealey, Richard A., Stewart C. Myers, and Franklin Allen. "Principles of Corporate Finance, 8th Edition." McGraw-Hill Companies, Inc. (2006) ("Brealey, Myers, and Allen, 2006"), pp. 91-92.

[179] For example, PWCG paid required premiums for two policies that had gone past their primary reserve periods by February 2012. See footnote 168.

[180] See, for example, PWCG000027 (a radio advertisement script).

that the expected annual rate of return is 12 to 14 percent.[181] PWCG has represented to investors that they can earn a 12 to 14 percent return through radio ads, postcards for seminars, conversations with investors, and on its website.[182] Mr. Calhoun testified that PWCG has said "on many occasions" that 12 to 14 percent is typically accepted as an industry average annual rate of return.[183]

140. PWCG had and has no valid basis for its statements that its policies would earn a 12 to 14 percent expected annual rate of return. PWCG takes out an initial profit share of approximately 45 percent on average,[184] which is large relative to the fees charged by other life settlement providers. For example, Braun et al. find that open-end life settlement funds that do not have performance fees have management fees of 0.3 percent to 2.0 percent.[185]

141. In addition, PWCG's high profit share (margin) means that it will not be able to purchase policies with low expected times to maturity. As I explain in **Section VI.D**, for a policy with a given face value, the lower the expected time to maturity, the higher the price that would need to be paid for the policy. PWCG's high

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[181] Bemis Deposition, pp. 20, 53; Bainbridge Deposition, pp. 97-98 (stating that a representative of PWCG told him that 12 to 14 percent was the industry average annual rate of return, but PWCG had an annual rate of return greater than that).

[182] Calhoun Deposition, 2015, pp. 113-117. Mr. Calhoun states that PWCG refers to a 12 to 14 percent "total fixed return" in these materials. However, investors in PWCG's policies were told that the expected annual rate of return would be 12 to 14 percent. See footnote 181.

[183] Calhoun Deposition, 2015, pp. 118-119.

[184] PWCG Investor List, November 14, 2014. I calculate the margin as 1 – (the sum of "Primary Premium Reserve," "1% Reserve," and "Policy, Commission, Escrow" across all policies, divided by the sum of "Investment Amount" across all policies).

[185] Braun, Alexander, Nadine Gatzert, and Hato Schmeiser. *Performance and Risks of Open-End Life Settlement Funds*. Journal of Risk and Insurance Vol. 79, pp. 193-230 (2012) ("Braun et al., 2012"), p. 204.

margin combined with its "guaranteed total return" of at least 100 percent means that it cannot acquire policies that sell at a high price relative to their face value and still make its margin.[186] Therefore, if PWCG wanted to maintain margins above 40 percent, it would likely not be possible to acquire policies with low expected times to maturity.

142. A few recent academic studies analyze returns for life settlement investments and find that average returns are lower than those advertised by PWCG or not calculated on a comparable basis. Braun et al. find an average return of 4.85 percent per year for open-end life settlement funds between 2003 and 2010.[187] Giaccotto et al. construct an index of purchased policies and find an average return of approximately 8 percent per year over the period 1993-2009.[188] Using data from a single large life settlement company, Januário and Naik find an annual return of 12.5 percent between 2001 and 2011.[189] However, Januário and Naik point out that the policies in the company's portfolio were "purchased as life settlements from their original owners in the secondary market," so that these returns are relative to purchase price and necessary premium payments (but do not include fees for brokers or other intermediaries such as PWCG).[190] Even if PWCG's policies were not maturing more slowly than PWCG's

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[186] For example, if PWCG acquired a policy with face value of $2 million and sold $1 million of fractional interests in the policy at a "guaranteed total return" of 100 percent, PWCG would not be able to pay more than $550,000 combined for the acquisition price, primary reserve, and contribution to the secondary reserve and still achieve a 45 percent margin.

[187] Braun et al., 2012, pp. 206-207.

[188] Giaccotto, Carmelo, Joseph Golec, and Bryan P. Schmutz. *Measuring the Performance of the Secondary Market for Life Insurance Policies*. Journal of Risk and Insurance, forthcoming (2015).

[189] Januário, Afonso V., and Narayan Y. Naik. *Testing for adverse selection in life settlements: The secondary market for life insurance policies*. Unpublished manuscript (2014) ("Januário and Naik, 2014"), p. 18.

[190] Januário and Naik, 2014, p. 7.

primary reserve periods (see **Section IX.B**), considering that PWCG takes out a margin of approximately 45 percent on average, investors could not reasonably expect to realize 12 to 14 percent annual returns.

3. The Expected Returns on PWCG's Policies Are Lower than PWCG's Statements Suggest and Are Sometimes Negative

143. I calculate expected returns for one PWCG policy discussed in **Section IX.B.1** for which I found life expectancy estimates from reputable medical underwriters.[191] I also calculate expected returns for one policy discussed in **Section IX.B.2** for which PWCG had available policy-specific information in order to assess the insured's LE. I find that one policy has a negative internal rate of return meaning that on average the investors in this policy will not recoup their initial investment.[192] I also find that both of the considered policies have much lower expected returns than PWCG's statements suggest.

144. The expected returns of PWCG's policies in aggregate cannot be improved by use of the tertiary reserve, since these reserves come out of the funds associated with other policies. However, the secondary and tertiary reserve structure will

[191] It is unclear how PWCG allocated the premiums during the primary reserve period: I assume that PWCG intended to pay the annual premium amount from its premium calculation in each year of the primary reserve period. I further assume that PWCG pays any additional premiums required to keep the policy in force through the end of the primary reserve period out of its own profits (Mr. Calhoun stated that PWCG has an obligation to do so, see footnote 151).

[192] The internal rate of return is the rate of discounting that equates the present values of the cash inflows and the present values of the cash outflows. Brealey, Myers and Allen, 2006, pp. 91-92; Bodie, Zvi, Alex Kane, and Alan J. Marcus. *Investments*, 7th Edition. McGraw-Hill Companies, Inc. (2008), p. 852. For example, if a policy has cash inflows that equal the cash outflows, the internal rate of return is zero. A policy where on average the investor never recoups her investments has an internal rate of return less than zero.

impact the variance of returns across policies. In calculating the return for a policy, I ignore any transfers across policies caused by the secondary and tertiary reserves.[193]

145. For Ms. B.A.'s policy, the internal rate of return is negative 2.7 percent—this calculation uses the life tables as described in **Section IX.B.2**, an interest rate of 4.5 percent (the policy's illustrated rate), and expense and cost of insurance rates per the policy illustration.[194] The net present value of the investment, using the illustrated interest rate of 4.5 percent, is approximately negative $650,000. A key cause of this negative internal rate of return and negative net present value is the considerable margin charged by PWCG. In particular, the primary reserve, the contribution to the secondary reserve, and the acquisition price add up to $773,504, so that PWCG's margin amounts to more than 48.4 percent of the initial investment of $1.5 million. Setting PWCG's margin to zero, the resulting (hypothetical) internal rate of return would be greater than 5.0 percent and the net present value at a 4.5 percent discount rate would be positive.

146. **Exhibit 10** demonstrates how the net present value on Ms. B.A.'s policy worsens as the policy has a longer time to maturity. To focus on this effect, **Exhibit 10** shows the net present value if the policy matures when Ms. B.A. is at different ages.

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[193] I operationalize this by assuming: 1) each policy has a "policy reserve" that initially equals the primary reserve plus the policy's contribution to the secondary reserve; 2) the policy reserve earns interest at a rate equal to the policy's illustrated rate; 3) when the policy matures, the policy reserve is returned to the investor; and 4) the investor pays any premiums required after the policy reserve is depleted.

[194] While the cost of insurance rate is not directly given in the policy illustration, it is possible to back out the cost of insurance using the relationship between the account value in one period and the next. See **Appendix C** for details. For simplicity I assume annual (rather than monthly) cash flows, both when backing out the cost of insurance and when forecasting the account value. Because I use annual cash flows consistently, the effect of this simplification will be minor.

Exhibit 10 also shows the chance that the policy will mature after each number of years using an actuarial table described in **Section IX.B.2**.

147. Obviously, if Ms. B.A. dies right away in the first year after the investment, the realized net present value will be large as the death benefit will be paid and the reserves are largely unused (red line). However, this is very unlikely to happen (green line). The likelihood of dying at each age increases until the modal age of 93 years (green line), whereas the net present value decreases the longer Ms. B.A. survives (red line). At and after the age of 92, the net present value at a 4.5 percent discount rate will be negative. If Ms. B.A. survives to the maturity date of the policy (at age 100), the policy pays the account value, not the death benefit.[195] As the account value at this date is zero, there would be only negative cash flows and the net present value would be approximately negative $3.5 million. According to the mortality table used, there is a 12.25 percent probability that Ms. B.A. survives to at least age 100.

148. The P. Policy, going over similar calculations, yields an internal rate of return of 3.3 percent at PWCG's margin of 53.1 percent—compared to almost 8.0 percent when setting PWCG's margin to zero. The net present value of the investment, using the illustrated rate of 5.5 percent, is approximately negative $125,000. In these calculations, I use the same method to estimate the time to maturity for the P. Policy that I discuss in **Section IX.B.1**.

[195] See B.A. policy (PWCG002387-442 at 405, 407, 423).

G. The Returns of Investors in PWCG's Policies Depend on the Performance of PWCG, the PWCG Trust, and Mill Potoczak

149. The returns investors can expect to realize depend on the performance of PWCG, the PWCG Trust, and Mill Potoczak for a number of reasons.

150. PWCG researches potential life settlements and ultimately selects the policies it will offer to investors. As I discuss in **Section IX.A**, Mr. Calhoun selects policies that he purportedly believes will mature in four to seven years *without* relying on actuarially-based LE estimates from medical underwriters.[196] As I discuss in **Section IX.F**, the returns to investors on PWCG's policies depend on the expected time to maturity. Therefore, the returns investors can expect depend on whether PWCG's policies will mature in the four to seven years that PWCG represents are expected times to maturity. As discussed in detail in **Section IX.B**, actual policy maturities are lower than expected policy maturities if the expected time to maturity equaled the primary reserve periods set by PWCG, which indicates that PWCG's policies are maturing on average after the end of the primary reserve periods. PWCG's primary reserve periods average approximately 7.5 years, so PWCG's policies are therefore maturing much more slowly than the purported four to seven years.

151. PWCG also negotiates the purchase price for the policies it will offer to investors, sets the primary reserve period for each policy, and calculates the premiums required to keep each policy in force through the end of the primary reserve period.

[196] As I discuss in paragraph 57, Mr. Calhoun is not an actuary, he does not have actuarial training or training in medical underwriting, and he did not rely on mortality tables when evaluating specific policies.

PWCG also decides at which "total return" to sell each policy (*e.g.*, 100%, 125%). Each of these actions directly affects the return that investors will receive.

152. Mr. Calhoun stated that PWCG has a contractual obligation to keep its policies in force through the end of the primary reserve periods. Therefore, if the primary reserve is not sufficient to keep a policy in force through the end of the primary reserve period, PWCG will need to contribute premiums.[197] PWCG's error in calculating the premiums required for the primary reserve period that I describe in **Section IX.C** means that it is likely that the primary reserve for many of PWCG's policies will not be sufficient to keep the policy in force through the end of the primary reserve period. PWCG has been making up the shortfall in the primary reserves when those reserves were insufficient by making payments from the profit that PWCG realized on the sale of those and other life settlements.[198] Therefore, PWCG's continued performance of its duty to keep the policies in force through the primary reserve period is integral to investors and investors' returns will be reduced if PWCG fails to make additional payments.

153. The PWCG Trust and Mills Potoczak also perform important functions, such as monitoring insureds, arranging premium calls, obtaining death certificates, and ultimately paying out death benefits.[199] Some of the fees for Mills Potoczak, the trustee

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[197] Calhoun Testimony, 2013, pp. 84, 88, 148, 155; Calhoun Deposition, 2015, p. 181.

[198] Calhoun Testimony, 2013, pp. 88-89.

[199] Amended and Restated Trust Agreement between PWCG and Mills Potoczak, April 29, 2011, pp. 1-2, 4 (SEC-MP-E-0000675-686 at 75-76).

of PWCG Trust, are paid by PWCG.[200] If PWCG ceased to exist and had not set aside sufficient funds to pay the fees, Mills Potoczak would need to be paid to continue performing its services.[201] Mr. Potoczak testified that his intention would be to bill investors directly if PWCG ceased to exist.[202] Since PWCG currently pays these fees, investor returns would be negatively impacted if PWCG ceased to pay Mills Potoczak's fees and investors had to pay the fees.

154. PWCG is also responsible for initiating and managing the premium call process that will be implemented by Mills Potoczak.[203] As discussed in **Section IX.E**, the secondary and tertiary reserves on average are insufficient. Therefore, it is likely that premium calls will become necessary on many of PWCG's policies and, indeed, premium calls to investors have already been issued for several policies. If a premium call is made and current investors decide not to invest new money in the policy, according to Mr. Potoczak PWCG will be responsible for recruiting new investors to assume the fractional interest of the investors not meeting the premium call, or Mills Potoczak would need to reduce the face value of the policy, if that option were available.[204]

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[200] Testimony of William Potoczak, May 7, 2014 ("Potoczak Testimony, 2014"), pp. 201-203.

[201] Potoczak Deposition, 2015, pp. 40-41.

[202] Potoczak Testimony, 2014, pp. 204-206.

[203] Amended and Restated Trust Agreement between PWCG and Mills Potoczak, April 29, 2011, p. 4 (SEC-MP-E-0000675-686 at 78).

[204] Potoczak Deposition, 2015, pp. 95-97. Mr. Potoczak did not know if reducing the face value was an option that is available in every PWCG policy (Potoczak Deposition, 2015, p. 96).

155. Moreover, to the extent that premiums are not paid because the primary, secondary, and tertiary reserves are exhausted and sufficient funds are not raised from investors through a premium call, a policy may lapse in which case investors will lose their entire investment (including their initial investment and any subsequent amounts paid to satisfy premium calls).

Signed on February 19, 2016

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MS Statistics, Department of Mathematics and Statistics, San Diego State University, 9/2002–9/2003

Diploma in Econo-Mathematics, Faculty of Mathematics and Economics, Ulm University, 10/1999–6/2005, Summa cum Laude

Publications

Journal Articles, Refereed Scholarly

Mönig, T., **Bauer, D.** (2015). Revisiting the Risk-Neutral Approach to Optimal Policyholder Behavior: A Study of Withdrawal Guarantees in Variable Annuities. Forthcoming in the *Review of Finance*.

Bauer, D., Kramer, F. (2015). The Risk of a Mortality Catastrophe. Forthcoming in the *Journal of Business & Economics Statistics*.

Bauer, D., Zanjani, G. (2015). The Marginal Cost of Risk, Risk Measures, and Capital Allocation. Forthcoming in *Management Science*.

Zhu, N., **Bauer, D.** (2014). A Cautionary Note on Natural Hedging of Longevity. *North American Actuarial Journal* 18: 104-115.

Zhu, N., **Bauer, D.** (2013). Coherent Pricing of Life Settlements Under Asymmetric Information. *Journal of Risk and Insurance* 80: 827-851.

Bauer, D., Benth, F.E., Kiesel, R. (2012). Modeling the Forward Surface of Mortality. *SIAM Journal on Financial Mathematics* 3: 639-666.

Bauer, D., Reuss, A., Singer, D. (2012). On the Calculation of the Solvency Capital Requirement based on Nested Simulations. *ASTIN Bulletin* 42: 453-499.

Zhu, N., **Bauer, D.** (2011). Applications of Forward Mortality Factor Models in Life Insurance Practice. *Geneva Papers on Risk and Insurance – Issues and Practice* 36: 567-594.

Bauer, D., Bergmann, D., Kiesel, R. (2010). On the risk-neutral valuation of life insurance contracts with numerical methods in view. *ASTIN Bulletin* 40: 65-95.

Bauer, D., Börger, M., Ruß, J. (2010). On the Pricing of Longevity-Linked Securities. *Insurance: Mathematics and Economics* 46: 139-149.

Bauer, D., Kling, A., Ruß, J. (2008). A Universal Pricing Framework for Guaranteed Minimum Benefits in Variable Annuities. *ASTIN Bulletin* 38: 621-651.

Bauer, D., Weber, F. (2008). Assessing Investment and Longevity Risks within Immediate Annuities. *Asia-Pacific Journal of Risk and Insurance* 3: 90-112.

Bauer, D., Börger, M., Ruß, J., Zwiesler, H.-J. (2008). The Volatility of Mortality. *Asia-Pacific Journal of Risk and Insurance* 3: 172-199.

Zaglauer, K., **Bauer, D.** (2008). Risk-Neutral Valuation of Participating Life Insurance Contracts in a Stochastic Interest Rate Environment. *Insurance: Mathematics and Economics* 43: 29-40.

Bauer, D., Kling, A., Ruß, J. (2007). Ein allgemeines Modell zur Analyse und Bewertung von Guaranteed Minimum Benefits in Fondspolicen. *DGVFM Blätter* 28: 259-290.

Bauer, D., Kiesel, R., Kling, A., Ruß, J. (2006). Risk-neutral valuation of participating life insurance contracts. *Insurance: Mathematics and Economics* 39: 171-183.

Handbook Chapters, Refereed Scholarly

Bauer, D., Zanjani, G. (2013). Capital Allocation and its Discontents. *Handbook of Insurance*, 2nd Edition (G. Dionne Ed.), 863-880.

Bauer, D., Phillips, R.D., Zanjani, G. (2013). Financial Pricing of Insurance. *Handbook of Insurance*, 2nd Edition (G. Dionne Ed.), 627-645.

Monographs

Bauer, D. (2008). Stochastic Mortality Modeling and Securitization of Mortality Risk. ifa-Verlag, Ulm (Germany).

Patents

Ortgiese, J., Kastner, Z., Douglas, P.M., Forbes, A.J., **Bauer, D.** (2012). On-demand flight accident insurance. US Patent 8,224,676.

Journal Articles, Submitted

Bauer, D., Gao, J., Mönig, T., Ulm, E.R., Zhu, N. (2015). Policyholder Exercise Behavior in Life Insurance: The State of Affairs. Revise and Resubmit at the *North American Actuarial Journal*.

Bauer, D., Ruß, J., Zhu, N. (2015). Adverse Selection in Secondary Insurance Markets: Evidence from the Life Settlement Market. Submitted.

Schilling, K., **Bauer, D.**, Christiansen, M.C., Kling, A. (2015). Decomposing Life Insurance Liabilities into Risk Factors. Submitted.

Working Papers

Lakdawalla, D., Reif, J., **Bauer, D.** (2016). Mortality Risk, Insurance, and the Value of Life.

Bauer, D., Zanjani, G. (2015). The Marginal Cost of Risk in a Multi-Period Risk Model.

Bauer, D., Ha, H. (2015). A Least-Squares Monte Carlo Approach to the Calculation of Capital Requirements.

Bauer, D., Biffis, E., Sotomayor, L.R. (2015). Optimal Collateralization with Bilateral Default Risk.

Zhu, N., **Bauer, D.** (2013). Modeling and Forecasting Mortality Projections.

Mönig, T., **Bauer, D.** (2013). On Negative Option Values in Personal Savings Products.

Bauer, D., Phillips, R., Speight, A. (2012). Risk and Valuation of Premium Payment Options in Participating Life Insurance Contracts.

Zhu, N., **Bauer, D.** (2010). On the Economics of Life Settlements.

Grants & Externally Funded Research Projects

Society of Actuaries. SOA Center for Actuarial Excellence Research Grant "New Trends in Longevity" (with L. Peng). Principal investigator. Since 7/2015

Society of Actuaries. Sponsored Research "Longevity Pooling—Identifying and Measuring the Impact" (with L. Peng). Since 7/2015

Casualty Actuarial Society. Research Consulting Project "Follow-up to Allocation of the costs of holding capital" (with G. Zanjani). Co-Principal investigator. Since 9/2014

Katie School of Insurance Research Grant (Illinois State University) "Testing and Valuing Informational Advantage of Life Expectancy Providers" (with N. Zhu). 5/2014-12/2014

Willis Economic Capital Forum. Research Grant "Dynamic Capital Allocation" (with X. Ping and G. Zanjani). 7/2013

Casualty Actuarial Society. Research Consulting Project "Allocation of the costs of holding capital" (with G. Zanjani). Co-Principal investigator. 8/2012-12/2013

Society of Actuaries. SOA Center for Actuarial Excellence Research Grant "Structural Models of Policyholder Behavior" (with E. Ulm and others). Principal investigator. 4/2011-5/2014.

Awards & Fellowships

The 2015 Charles A. Hachemeister Prize (awarded by the Casualty Actuarial Society) for the paper "Allocation of Costs of Holding Capital" (with G. Zanjani), 8/2015

The Bob Alting von Geusau Memorial Prize for the best paper published in the ASTIN Bulletin on an AFIR/ERM related topic in the years 2012-2013 for "On the Calculation of the Solvency Capital Requirement Based on Nested Simulations" (with A. Reuss and D. Singer), 8/2015

Award for the "best paper in non-life insurance" presented at the International Congress of Actuaries 2014 for "The Marginal Cost of Risk in a Multi-Period Risk Model" (with G. Zanjani), 04/2014

Willis Research Network Fellowship, 07/2010-06/2012

International Association of Actuaries (IAA) Life Section Prize 2009 for "A Universal Pricing Framework for Guaranteed Minimum Benefits in Variable Annuities" (with A. Kling and J. Russ), 09/2009

SCOR Actuarial Prize Germany (1st Prize) for the dissertation "Stochastic Mortality Modeling and Securitization of Mortality Risk", 11/2008

Dissertation Award from the Ulm University Society for the best Mathematics dissertation in 2007/2008, 07/2008

Junior GAUSS-Award of the German Actuarial Society (DAV) and the German Society for Actuarial and Financial Mathematics (DGVFM) for "Ein allgemeines Modell zur Analyse und Bewertung von Guaranteed Minimum Benefits in Fondspolicen" (with A. Kling and J. Russ), 05/2006

German Research Society (DFG) Scholarship for doctoral studies, 04/2005–08/2007

Fulbright Scholarship for studying abroad (travel grant), 09/2002–09/2003

Service Activities in Academic and Professional Organizations

Co-Editor of the *ASTIN Bulletin – The Journal of the International Actuarial Association*. Since 12/2012

Associate Editor of the *Journal of Risk and Insurance*. Since 8/2014

Editorial board member of *Risks*. Since 11/2013

Referee for the *Annals of Actuarial Science*, *Applied Mathematical Finance*, *Asia-Pacific Journal of Risk and Insurance*, *ASTIN Bulletin*, *B.E. Journal of Theoretical Economics*, *Belgian Actuarial Bulletin*, *Economics Letters*, *European Actuarial Journal*, *European Journal of Finance*, *European Journal of Operational Research*, *Finance and Stochastics*, *Geneva Risk and Insurance Review*, *Geneva Papers on Risk and Insurance – Issues and Practice*, *Insurance: Mathematics and Economics*, *Insurance Risk*, *International Journal of Theoretical and Applied Finance*, *International Transactions in Operational Research*, *Journal of Banking and Finance*, *Journal of Economic Dynamics and Control*, *Journal of Financial Intermediation*, *Journal of Insurance Issues*, *Journal of Risk and Insurance*, *Journal of Risk Finance*, *Mathematics and Computers in Simulation*, *Mathematical Finance*, *North-American Actuarial Journal*, *Operations Research*, *Risk Management and Insurance Review*, *Risks*, *SIAM Journal on Financial Mathematics*, *Springer* series "Probability Theory and Stochastic Modelling", and *Theory and Decision*

Reviewer for the National Science Foundation (NSF), the Natural Sciences and Engineering Research Council of Canada (NSERC), and the Georgian National Science Foundation

Chair of the Organizing committee for the 2016 International Congress on Insurance: Mathematics and Economics. Member of the Scientific Committee for the 2015 AFIR/ERM Colloquium and the 2012 Eighth International Longevity Risk and Capital Markets Solutions Conference (Longevity 8). Referee for the 2011 and the 2015 Meeting of the American Risk and Insurance Association (ARIA); the 2009, the 2012, the 2013, and the 2014 Meeting of the European Finance Association (EFA); and the 2007 and the 2008 Annual Meeting of the Asia-Pacific Risk and Insurance Association (APRIA)

Co-chair of the International Association of Actuaries (IAA) Life Section Prize 2014 Committee. Member of the 2015 ARIA Brockett-Shapiro Actuarial Journal Award Committee. Referee for the 2009 and the 2012 GAUSS-Award of the German Actuarial Society (DAV) and the German Society for Actuarial and Financial Mathematics (DGVFM).

Work Experience (relevant, post high school)

Assistant Consultant with the Institute for Finance and Actuarial Science (ifa), Ulm, Germany (actuarial and financial consulting), 9/2003–8/2007

Intern with BodeGrabnerBeye AG & Co. KG (now BodeHewitt AG & Co. KG), Munich, Germany (actuarial consulting), 3/2002–4/2002

Presentations

Invited Presentations at Conferences or Professional Meetings

2016: 9th Conference in Actuarial Science & Finance on Samos (plenary presentation, scheduled).

2015: 2015 Casualty Actuarial Society Meeting, Philadelphia, PA, "The Marginal Cost of Risk in a Multi-Period Risk Model" (Hachemeister Prize presentation, with G. Zanjani). V Simposio de Actuaria, Bogotá, Colombia (plenary presentation), "An Application of Analytics in the Secondary Life Insurance Market" (and panel on big data in insurance). BIRS/BANFF Workshop Recent Advances in Actuarial Mathematics, Oaxaca, Mexico, "On the (Mis-)Use of Models in Actuarial Research". 2015 AFIR Colloquium, Sydney, Australia, "On the Calculation of the Solvency Capital Requirement based on Nested Simulations" (Bob Alting von Geusau Memorial Prize presentation). 2015 CEAR–Huebner Summer Risk Institute, Atlanta, GA, "Mortality and Longevity Risk: Methods, Models and Management". Society of Actuaries Life & Annuity Symposium, New York, NY, "Structural Models of Policyholder Behavior".

2014: Fasano Life Settlement & Longevity Conference, Washington, DC (with Jochen Ruß), "Quantifying the Effect of Anti-Selection on Life Settlement Pricing". 2014 German Probability and Statistics Days (satellite conference), Ulm, Germany, "The Marginal Cost of Risk, Risk Measures, and Capital Allocation".

2013: IV Simposio de Actuaria, Medellín, Colombia (plenary presentation), "The Marginal Cost of Risk, Risk Measures, and Capital Allocation". 3rd joint Statistical Meeting DAGStat 2013, Freiburg, Germany (plenary presentation), "Coherent Modeling of the Risk in Mortality Projections".

2012: Fasano Life Settlement & Longevity Conference, Washington, DC (with Jochen Ruß), "A New Methodology for Measuring Actual to Expected Performance". INFORMS Annual Meeting 2012, Phoenix, AZ, "Optimal collateralization with bilateral default risk: The symmetric case". Leibniz University Workshop on Insurance and Financial Mathematics, Hannover, Germany, "Modeling the Forward Surface of Mortality: Basic Setup and Extensions".

2011: Workshop on Longevity and Pension Funds, Paris, France, "Applications of Forward Mortality Factor Models in Life Insurance Practice".

2010: SIAM Conference on Financial Mathematics and Engineering, San Francisco, "Modeling the Forward Surface of Mortality".

2009: AFIR/LIFE Colloquium 2009, Munich, Germany (plenary presentation), "A Universal Pricing Framework for Guaranteed Minimum Benefits in Variable Annuities". CMA workshop on insurance mathematics and longevity risk, Centre of Mathematics for Applications, University of Oslo, "Solvency II and nested simulations – a least squares Monte Carlo approach".

2008: ISBIS-2008 International Symposium on Business and Industrial Statistics, Prague, Czech Republic (session organizer), "Modeling the Forward Surface of Mortality". Workshop on Prospective Mortality Tables, Longevity and Mortality Linked Securities, AXA, Paris, France, "Risk and Valuation of Mortality Contingent Catastrophe Bonds".

2007 Workshop Scientific Computing in Finance and Insurance, Research Association Scientific Computing Baden Württemberg. "Computationally Intensive Problems from Life Insurance" (translated title). 2/2007

Contributed Presentations at Conferences

2015: 2015 CenFIS-CEAR workshop "The Role of Liquidity in the Financial System", Atlanta, GA, "Optimal Collateralization with Bilateral Default Risk". 2015 Risk Theory Society Seminar, Ithaca, NY, "The Marginal Cost of Risk in a Multi-Period Risk Model". 2015 ASSA Meetings, Boston, MA, "Adverse Selection in Secondary Insurance Markets: Evidence from the Life Settlement Market".

2014: 2014 SIAM Conference on Financial Mathematics and Engineering (mini-symposium organizer, scheduled), Chicago, IL, "Revisiting the Risk-Neutral Approach to Optimal Policyholder Behavior: a Study of Withdrawal Guarantees in Variable Annuities". Econometrical Society European Meeting (ESEM) 2014, Toulouse, France, "Adverse Selection in Secondary Insurance Markets: Evidence from the Life Settlement Market". International Congress of Actuaries 2014, Washington, DC, "The Marginal Cost of Risk in a Multi-Period Risk Model". NBER Insurance Working Group meeting, Cambridge, MA, "Adverse Selection in Secondary Insurance Markets: Evidence from the Life Settlement Market".

2013: Workshop *Indices of Riskiness and New Risk Measures* at ETH Zurich, Zurich, Switzerland (with George Zanjani), "The Marginal Cost of Risk, Risk Measures, and Capital Allocation". 3rd joint Statistical Meeting DAGStat 2013, Freiburg, Germany (poster presentation), "Adverse Selection in Secondary Insurance Markets: Evidence from the Life Settlement Market". 2013 ASSA Meetings, San Diego, CA, "Optimal Policyholder Behavior in Personal Savings Products".

2012: Financial Management Association (FMA) 2012 Annual Meeting, Atlanta, GA, "Coherent Modeling of the Risk in Mortality Projections". Eighth International Longevity Risk and Capital Markets Solutions Conference (Longevity 8), Waterloo, Canada, "Forward Mortality Models: Newborn Cohort Effects, Mortality Spikes, and Beyond". Econometrical Society European Meeting (ESEM) 2012, Málaga, Spain, "Coherent Modeling of the Risk in Mortality Projections". American Risk and Insurance Association (ARIA) 2012 Annual Meeting, Minneapolis, MN, "The Marginal Cost of Risk, Risk Measures, and Capital Allocation". 47th Actuarial Research Conference, Winnipeg, Manitoba, "The Marginal Cost of Risk, Risk Measures, and Capital Allocation" and "Revisiting the Risk-Neutral Approach to Optimal Policyholder Behavior: A Study of Withdrawal Guarantees in Variable Annuities" (two presentations).

2011: International Conference on Mathematical Finance and Economics, Istanbul, Turkey, "The Marginal Cost of Risk, Risk Measures, and Capital Allocation". 2011 Risk Theory Seminar, Little Rock, AR (with Nan Zhu), "On the Economics of Life Settlements".

2010: Sixth International Longevity Risk and Capital Markets Solutions Conference (Longevity 6), Sydney, Australia, "Gaussian Forward Mortality Models: Specification, Calibration, and Application".

2009: Fifth International Longevity Risk and Capital Markets Solutions Conference (Longevity 5), New York, NY, "Risk and Valuation of Mortality Contingent Catastrophe Bonds" and "Modeling the Forward Surface of Mortality" (two presentations).

2008:11th Symposium on Finance, Banking, and Insurance, Technical University Karlsruhe, Germany, "A Universal Pricing Framework for Guaranteed Minimum Benefits in Variable Annuities".

2006: American Risk and Insurance Association (ARIA) 2006 Annual Meeting, Washington, DC, "Pricing Longevity Bonds using Implied Survival Probabilities". Asia-Pacific Risk and Insurance Association (APRIA) 2006 Annual Meeting, Meiji University, Tokyo, Japan, "Risk-Neutral Valuation of Participating Life Insurance Contracts" and "Pricing Longevity Bonds using Implied Survival Probabilities" (two presentations). International Symposium on Insurance and Finance, Norwegian School of Economics and Finance (NHH), Bergen, Norway,"Risk-Neutral Valuation of Participating Life Insurance Contracts".

2005: 15th International AFIR Colloquium, ETH Zurich, Zurich, Switzerland, "Risk-Neutral valuation of With-Profits Life Insurance Contracts".

Seminar Presentations

2016: University of California, Santa Barbara (scheduled). Université de Montréal (scheduled).

2015: HEC Montréal, "Variable Annuities with Guaranteed Minimum Benefits: An Overview on Market, Valuation, and Risk Management". "University of Illinois at Urbana-Champaign, "The Marginal Cost of Risk in a Multi-Period Risk Model". Towson University, "Adverse Selection in Secondary Insurance Markets: Evidence from the Life Settlement Market".

2014: University of Connecticut, "Adverse Selection in Secondary Insurance Markets: Evidence from the Life Settlement Market". University of St. Thomas, "Adverse Selection in Secondary Insurance Markets: Evidence from the Life Settlement Market". St. John's University, "Adverse Selection in Secondary Insurance Markets: Evidence from the Life Settlement Market".

2013: Ulm University, "Optimal Collateralization with Bilateral Default Risk". University of Copenhagen, "The Marginal Cost of Risk, Risk Measures, and Capital Allocation". Georgia State University, "Adverse Selection in Secondary Insurance Markets: Evidence from the Life Settlement Market".

2012: Ulm University, "Coherent Modeling of the Risk in Mortality Projections: Theory and Applications". Barrie&Hibbert, "On the Calculation of the Solvency Capital Requirement based on Internal Models".

2011: Université Catholique de Louvain, "Coherent Modeling of the Risk in Mortality Projections: Theory and Applications". Queen's University, "Risk and Valuation of Mortality Contingent Catastrophe Bonds". Imperial College, "The Marginal Cost of Risk, Risk Measures, and Capital Allocation". Ulm University, "The Marginal Cost of Risk, Risk Measures, and Capital Allocation". École Polytechnique, "Mortality Risk Modeling".

2010: University of Duisburg-Essen, "On the Calculation of the Solvency Capital Requirement based on Internal Models". Ulm University, "On the Economics of Life Settlements". Georgia State University, "Modeling the Forward Surface of Mortality".

2009: Georgia Institute of Technology, "Modeling the Forward Surface of Mortality".

2008: Humboldt University Berlin, "Some Ideas on Solvency II".

2007: Georgia State University, "Mortality Derivatives with a Focus on Longevity Risk".

2006: Illinois State University, "Pricing Longevity Bonds using Implied Survival Probabilities". San Diego State University, "Risk-Neutral Valuation of Participating Life Insurance Contracts".

Supervision of Doctoral Dissertations

Chair (including first & current positions)

Hongjun Ha, RMI Ph.D. (expected 2016)

Thorsten Mönig, "Optimal Policyholder Behavior in Personal Savings Products and its Impact on Valuation", RMI Ph.D. (2012), Assistant Professor at the University of St. Thomas, Saint Paul, Mn (Assistant Professor at Temple University (Fox) starting Fall 2016)

Nan Zhu, "Essays on Lifetime Uncertainty: Models, Applications, and Economic Implications", RMI Ph.D. (2012), Assistant Professor at Illinois State University, Bloomington, Il

Committee Member

Xiaohu Ping, "Essays on Optimal Insurance Contracts and Dynamic Capital Allocation," RMI Ph.D. (2015)

Jinjing Wang, "Essays on Insurance Economics," RMI Ph.D. (2015)

Andreas Niemeyer, "Risk management and regulatory aspects of life insurance companies with a special focus on disability insurance," External Committee Member, Ulm University (2014)

Jinyu Yu, "Essays on Financial Risk Modeling and Forecasting," RMI Ph.D. (2014)

Ning Wang, "Essays on Dynamic Models of the Insurance Markets," RMI Ph.D. (2013)

Mark Cathcart, "Monte Carlo Simulation Approaches to the Valuation and Risk-Management of Unit-Linked Insurance Products with Guarantees," External Committee Member, Heriot-Watt University Edinburgh (2012)

Jin Gao, "A Dynamic Analysis of Variable Annuities and Guaranteed Minimum Benefits," RMI Ph.D. (2010)

Xiangjing Wei, "House Prices and Mortgage Defaults: Econometric Models and Risk Management Applications," RMI Ph.D. (2010)

Short Courses and Executive Education

Workshop "Financial Risk Modeling, Capital Requirements, and Economic Capital Models," Bermuda Monetary Authority, Bermuda, 3/2014

Short course "Risk and Valuation of Variable Annuities with Guaranteed Minimum Benefits," Mathematical Finance Summer School, African Institute for Mathematical Sciences, Cape Town, South Africa, 2/2014

Incisive workshop on "Modelling and Managing Longevity and Mortality Risk," New York, NY, 9/2008

Miscellaneous

Member of the German Society for Actuarial and Financial Mathematics (DGVFM) and the Risk Theory Society

Passed all preliminary exams of the German Society of Actuaries (DAV) (for the final exam three years of practical actuarial experience are necessary)

Last updated: February 19, 2016

Appendix B: Documents Relied On

	Bates Start	Bates End
Legal Filings		
• Securities and Exchange Commission, Plaintiff v. Pacific West Capital Group, Inc. *et al* ., Defendants, Complaint, April 7, 2015		
Declarations		
• Declaration of Andrew B Calhoun IV, May 7, 2015		
• Wells Response on Behalf of Andrew B Calhoun IV and Pacific West Capital Group, Inc., September 7, 2014		
Depositions, Exhibits, and Testimonies		
• Deposition of William M. Potoczak, December 16, 2015		
• Deposition of Andrew B Calhoun, IV, December 9, 2015		
• Deposition of Samuel Bainbridge, December 14, 2015		
• Deposition of Wesley Bemis, November 12, 2015		
• Exhibit 4	SEC-MP-E-0000687	SEC-MP-E-0000697
• Exhibit 166	PWCG190652	PWCG190655
• Exhibit 167	PWCG226572	PWCG226574
• Exhibit 187	PWCG198722	PWCG198725
• Exhibit 195 of the Deposition of William M. Potoczak, December 16, 2015		
• Testimony of Andrew B Calhoun, IV, October 23, 2013		
• Testimony of William M. Potoczak, September 24, 2013		
• Testimony of William Potoczak, May 7, 2014		
Bates Stamped Documents		
• Amended and Restated Trust Agreement between PWCG and Mills Potoczak, April 29, 2011	SEC-MP-E-0000675	SEC-MP-E-0000686
• B. Policy Illustration (Mr. G.B. and Ms. M.B.)	PWCG038399	PWCG038407
• C. Policy Premium Calculation (Mr. J.C. and Ms. P.C.)	SEC-DB-EPROD-000047751	SEC-DB-EPROD-000047751
• Email from George Blankenbaker to Eric Cannon, November 6, 2012	PWCG270018	PWCG270018
• Email string between George Blankenbaker and Eric Cannon	PWCG300395	PWCG300401
• Life Expectancy estimate for Mr. F.P. from 21st Services	PWCG057172	PWCG057172
• Life Expectancy estimate for Mr. F.P. from AVS	PWCG057170	PWCG057170
• Life Expectancy estimate for Mr. G.B. from 21st Services	SEC-DB-EPROD-000446567	SEC-DB-EPROD-000446571
• Life Expectancy estimate for Mr. J.C. from 21st Services	PWCG005627	PWCG005630
• Life Expectancy estimate for Mr. J.C. from AVS	PWCG005626	PWCG005626
• Life Expectancy estimate for Mr. S.S. from AVS	PWCG002821	PWCG002822
• Life Expectancy estimate for Ms. A.C. from 21st Services	SEC-DB-EPROD-000443209	SEC-DB-EPROD-000443213
• Life Expectancy estimate for Ms. E.D. from 21st Services	SEC-DB-EPROD-000466052	SEC-DB-EPROD-000466055
• Life Expectancy estimate for Ms. M.J. from 21st Services	SEC-DB-EPROD-000442337	SEC-DB-EPROD-000442341
• Life Expectancy estimate for Ms. P.C. from 21st Services	PWCG005632	PWCG005634
• Life Expectancy estimate for Ms. P.C. from AVS	PWCG005631	PWCG005631
• Life Expectancy estimate for Ms. S.P. from AVS	PWCG057184	PWCG057184
• Life Expectancy estimate from 21st Services	PWCG053483	PWCG053485
• Life Expectancy estimate from 21st Services	PWCG057105	PWCG057107
• Life Expectancy estimate from 21st Services	PWCG057660	PWCG057662
• Life Expectancy estimate from 21st Services	PWCG058121	PWCG058123
• Life Expectancy estimate from 21st Services	PWCG058295	PWCG058298
• Life Expectancy estimate from 21st Services	PWCG059624	PWCG059627
• Life Expectancy estimate from AVS	PWCG055183	PWCG055184
• Life Expectancy estimate from AVS	PWCG055436	PWCG055437
• Life Expectancy estimate from AVS	PWCG056376	PWCG056377
• Life Expectancy estimate from AVS	PWCG057673	PWCG057673
• Life Expectancy estimates for Mr. M.F. from Fasano Associates and AVS	PWCG057412	PWCG057415
• Life Settlement Disclosure Form for B. Policy	PWCG037676	PWCG037678
• Life Settlement Disclosure Form for Ms. A.C.	PWCG_SEC 0001692	PWCG_SEC 0001694
• Life Settlement Disclosure Form for Ms. B.A.	SEC-DB-EPROD-000084083	SEC-DB-EPROD-000084095
• Life Settlement Disclosure Form for Ms. E.D.	PWCG_SEC 0001933	PWCG_SEC 0001935
• Life Settlement Disclosure Form for Ms. F.A.	SEC-DB-EPROD-000284650	SEC-DB-EPROD-000284653
• Life Settlement Disclosure Form for Ms. M.J.	PWCG_SEC 0004089	PWCG_SEC 0004091
• Life Settlement Purchase agreement (dated April 12, 2006)	PWCG247764	PWCG247772
• Life Settlement Purchase agreement (dated August 25, 2006)	PWCG038084	PWCG038092
• Life Settlement Purchase agreement (dated February 15, 2007)	PWCG035276	PWCG035284
• Life Settlement Purchase agreement (dated January 6, 2005)	PWCG034736	PWCG034748

Appendix B: Documents Relied On

	Bates Start	Bates End
• Life Settlement Purchase agreement (dated July 17, 2007)	PWCG122542	PWCG122550
• Life Settlement Purchase agreement (dated November 28, 2005)	PWCG033916	PWCG033925
• Life Settlement Purchase agreement (dated November 6, 2006)	PWCG035185	PWCG035201
• Ms. B.A. Policy Illustration, prepared 2/15/2011	PWCG002272	PWCG002279
• Ms. B.A. Policy Summary	PWCG002387	PWCG002442
• Ms. F.A. Policy Illustration	PWCG038974	PWCG038981
• Ms. F.A. Policy Premium Calculation	SEC-DB-EPROD-000048300	SEC-DB-EPROD-000048300
• P. Policy - Abacus Settlement Application (Mr. F.P. and Ms. S.P.)	SEC-DB-EPROD-000257803	SEC-DB-EPROD-000257817
• P. Policy Summary (Mr. F.P. and Ms. S.P.)	SEC-DB-EPROD-000066485	SEC-DB-EPROD-000066489
• Premium calculation for Ms. B.A.	PWCG033639	PWCG033639
• Premium Calculation for P. Policy (Mr. F.P. and Ms. S.P.)	SEC-DB-EPROD-000048628	SEC-DB-EPROD-000048628
• Premium calculations for policies of Mr. M.F.	SEC-DB-EPROD-000382327	SEC-DB-EPROD-000382328
• PWCG Brochure	PWCG00001	PWCG00011
• PWCG_SEC 0035275.xlsx (PWCG Policy Listing)	PWCG_SEC 0035275	PWCG_SEC 0035275
• Radio Advertisement Script	PWCG000027	PWCG000027
• S. Policy Illustration (Mr. S.S. and Ms. M.S.)	PWCG002670	PWCG002681
• S. Policy Premium Calculation (Mr. S.S. and Ms. M.S.)	SEC-DB-EPROD-000047928	SEC-DB-EPROD-000047928

Other Documents Produced by PWCG

- Exhibit 4.xlsx (PWCG Investor List, November 14, 2014)
- PWCG Policy Listing at 2014 1114.xlsx (PWCG Policy Listing as of November 14, 2014)
- Calculation of 1 percent premium reserve left as of 06232015.xls

Articles and Books

- A.M. Best. *A.M. Best Methodology: Life Settlement Securitization*, available at http://www3.ambest.com/ambv/ratingmethodology/OpenPDF.aspx?rc=197705
- Actuarial Standards Board, "Actuarial Standard of Practice No. 15: Dividends for Individual Participating Life Insurance, Annuities, and Disability Insurance," May 2011
- Actuarial Standards Board, "Actuarial Standard of Practice No. 48: Life Settlements Mortality," December 2013
- Aspinwall, Jim, Geoff Chaplin, and Mark Venn. *Life settlements and longevity structures: pricing and risk management*. John Wiley & Sons (2009)
- Bauer, Daniel and Jochen Russ. *A New Methodology for Measuring Actual to Expected Performance*. Fasano Associates Newsletter (2009)
- Bhuyan, Vishaal B. *Life Markets: Trading Mortality and Longevity Risk with Life Settlements and Linked Securities*. Vol. 492. John Wiley & Sons, 2009
- Black, Kenneth, and Harold D. Skipper. *Life & Health insurance, 13th edition*. Prentice Hall, 2000
- Bodie, Zvi, Alex Kane, and Alan J. Marcus. *Investments*, 7th Edition. McGraw-Hill Companies, Inc. (2008)
- Braun, Alexander, Nadine Gatzert, and Hato Schmeiser. *Performance and Risks of Open-End Life Settlement Funds*. Journal of Risk and Insurance Vol. 79, p. 193-230 (2012)
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Appendix B: Documents Relied On

	Bates Start	Bates End

- Zhu, Nan and Daniel Bauer. *Coherent Pricing of Life Settlements Under Asymmetric Information* . Journal of Risk and Insurance, Vol. 80 (2013), pp. 827-851

- Zhu, Nan and Daniel Bauer. *On the Economics of Life Settlements* . 2011 Proceedings of the Risk Theory Society (2011)

Actuarial Tables from the Society of Actuaries (available at http://mort.soa.org)

- 2008 VBT Primary Table - Female, Non-Smoker, Age Last Birthday, Ultimate
- 2008 VBT Primary Table - Male, Non-Smoker, Age Last Birthday, Ultimate
- 2001 VBT Preferred Select and Ultimate - Female Nonsmoker, ALB

Websites

- http://www.fasanoassociates.com, accessed on February 15, 2016
- "About the Life Insurance Settlement Association," LISA, 2015, http://www.lisa.org/about, accessed on January 19, 2016

Other

- 21st Services press release, April 28, 2010: "Actuarial Report Shows 21st Services' Actual-to-Expected Ratio Is the Most Accurate Yet Reported in the Industry at 98.1%," available at http://insurancenewsnet.com/oarticle/2010/04/28/Actuarial-Report-Shows-21st-Services%E2%80%99-Actual-to-Expected-Ratio-Is-the-Most-Accur-a-184176.html

APPENDIX C: TECHNICAL APPENDIX TO THE EXPERT REPORT OF DANIEL BAUER

Universal Life as a Savings Account with Insurance Features

A universal life (UL) policy evolves much like a "savings account with insurance features."[1] More precisely, following the notation from Dickson et al. (2013), the relationship between the account values at two subsequent dates t and $t+1$ is given by:

$$(\mathrm{AV}_t + P_{t+1} - \mathrm{EC}_{t+1} - \mathrm{CoI}_{t+1}) \times (1 + i_{t+1}) = \mathrm{AV}_{t+1}. \tag{1}$$

That is, the AV at time t plus the premium paid at the beginning of year $t+1$, P_{t+1}, minus expense charges, EC_{t+1}, and the cost of insurance, CoI_{t+1}, compounded at the credited interest rate i_{t+1}, will give the account value at time $t+1$. The length of the period $[t, t+1)$ depends on the frequency at which premiums are paid and expenses are charged (typically monthly or yearly). Here, clearly the cost of insurance reflects the "insurance features" in that it pays for the additional death benefit beyond the account value, ADB_{t+1}, at time $t+1$. For simplicity, if not stated otherwise and without much less of generality, I will consider annual payments.

The form of the expense charge depends on the contract specification. It frequently includes a fixed maintenance expense, a fraction of the premium paid every year ("premium tax"), plus additional components in early policy years that account for underwriting expenses. The cost of insurance is calculated as the probability that a death benefit will be paid at the end of year $t+1$, q_t, times a discount factor times the additional death benefit at time $t+1$, ADB_{t+1}:[2]

$$\mathrm{CoI}_{t+1} = q_t \times \frac{1}{1+i_{t+1}} \times \mathrm{ADB}_{t+1}.$$

The form of the additional death benefit, in turn, also depends on the characteristics of the policy. In the common case of a type 1 / type A UL insurance, the total death benefit at time $t+1$, DB_{t+1}, is fixed at the face amount FA. Hence, the additional death benefit is the total death benefit minus the account value:

$$\mathrm{ADB}_{t+1} = \mathrm{FA} - \mathrm{AV}_{t+1}. \tag{2}$$

For type 2 / type B UL insurance, the ADB is fixed so that the total death benefit is greater for higher account values.

PWCG Premium Calculation Biased Low for Type A Policies

As a consequence of Equation (2), for type A UL policies, the cost of insurance is decreasing in the account value – or, in other words, the cost of insurance is smaller for higher face values. This implies that PWCG's premium calculation will frequently not yield sufficient premiums for the considered reserve period of n years. To illustrate, applying the basic equation (1) n times, I can write:

$$\mathrm{AV}_n = \mathrm{AV}_0 + \sum_{k=1}^{n} P_k + \sum_{k=1}^{n} \mathrm{AV}_k \frac{i_k}{1+i_k} - \sum_{k=1}^{n} \mathrm{EC}_k - \sum_{k=1}^{n} \mathrm{CoI}_k,$$

[1] Note that here the underlying *account value* (AV) is "notional" in the sense that the corresponding assets are not segregated but pooled in the insurance company's general account.

[2] For simplicity, I assume that the interest rate coincides with the credited interest rate.

so that by adjusting the premium schedule:

$$\widetilde{\mathrm{AV}}_n = \mathrm{AV}_0 + \sum_{k=1}^{n} \underbrace{\left(\frac{\sum_{k=1}^{n} P_k + \sum_{k=1}^{n} (\mathrm{AV}_k - \widetilde{\mathrm{AV}}_k) \frac{i_k}{1+i_k} - \mathrm{AV}_n}{n} \right)}_{*} + \sum_{k=1}^{n} \widetilde{\mathrm{AV}}_k \frac{i_k}{1+i_k} - \sum_{k=1}^{n} \widetilde{\mathrm{EC}}_k - \sum_{k=1}^{n} \widetilde{\mathrm{CoI}}_k.$$

The term $(*)$ resembles the premium calculation perfumed by PWCG, with the exception of a slight difference in the interest rate ($i_k / (1+i_k)$ rather than i_k) and that PWCG sums over the account value, implicitly assuming the new account value $\widetilde{\mathrm{AV}}_k$ is zero. Abstracting from these differences, the account value under the new premiums schedule $\widetilde{\mathrm{AV}}_n$ will be zero **only if** it is assumed that $\mathrm{EC}_k = \widetilde{\mathrm{EC}}_k$ and $\mathrm{CoI}_k = \widetilde{\mathrm{CoI}}_k$, i.e. that the expenses and the cost of insurance are not affected by decreasing the premium outlay and, as a consequence, the account value. While this assumption may be tenable, at least approximately, for the expenses, as argued above the cost of insurance is decreasing in the account value for type A UL policies so that $\widetilde{\mathrm{CoI}}_k > \mathrm{CoI}_k$. Therefore, frequently the premiums will not prove sufficient to secure a zero account value after the reserve period.

Reverse Engineer Cost of Insurance from Policy Illustrations

Equation (1) can also be used to derive the implicit probabilities q_t used in policy illustrations, which in turn can be used produce different forecasts under different premium schedules. I obtain:

$$q_t = \frac{(\mathrm{AV}_t + P_{t+1} - \mathrm{EC}_{t+1}) \times (1 + i_{t+1}) - \mathrm{AV}_{t+1}}{\mathrm{ADB}_{t+1}}.$$

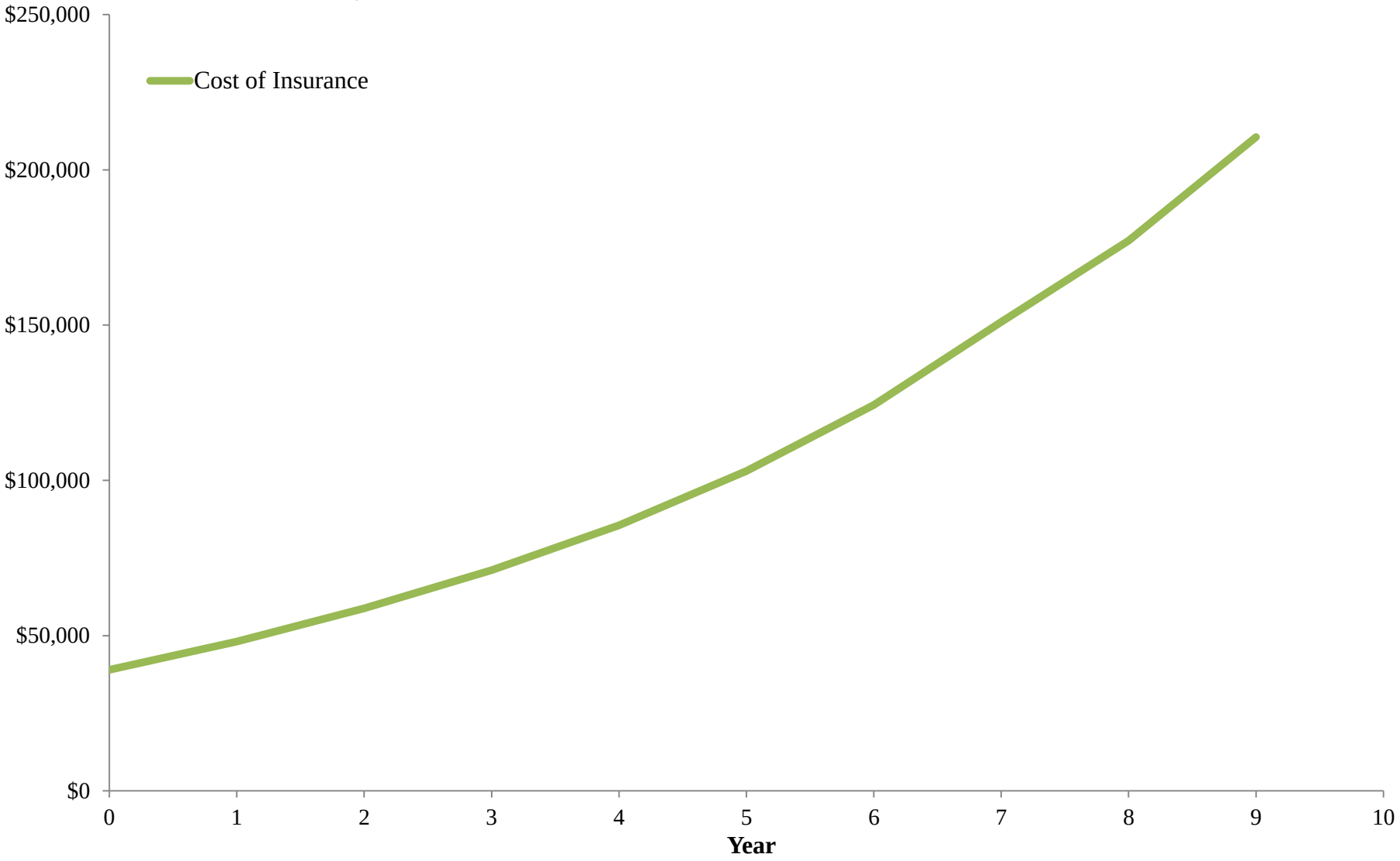
References

Dickson, David C.M., Mary R. Hardy, and Howard R. Waters (2013). "Actuarial Mathematics for Life Contingent Risks." 2nd Edition, Cambridge International Series on Actuarial Science, Cambridge University Press.

Winn, Paul J. (2000). "Universal Life Insurance." Deaborn Financial Publishing.

Exhibit 1A - 10 Year Term Policy

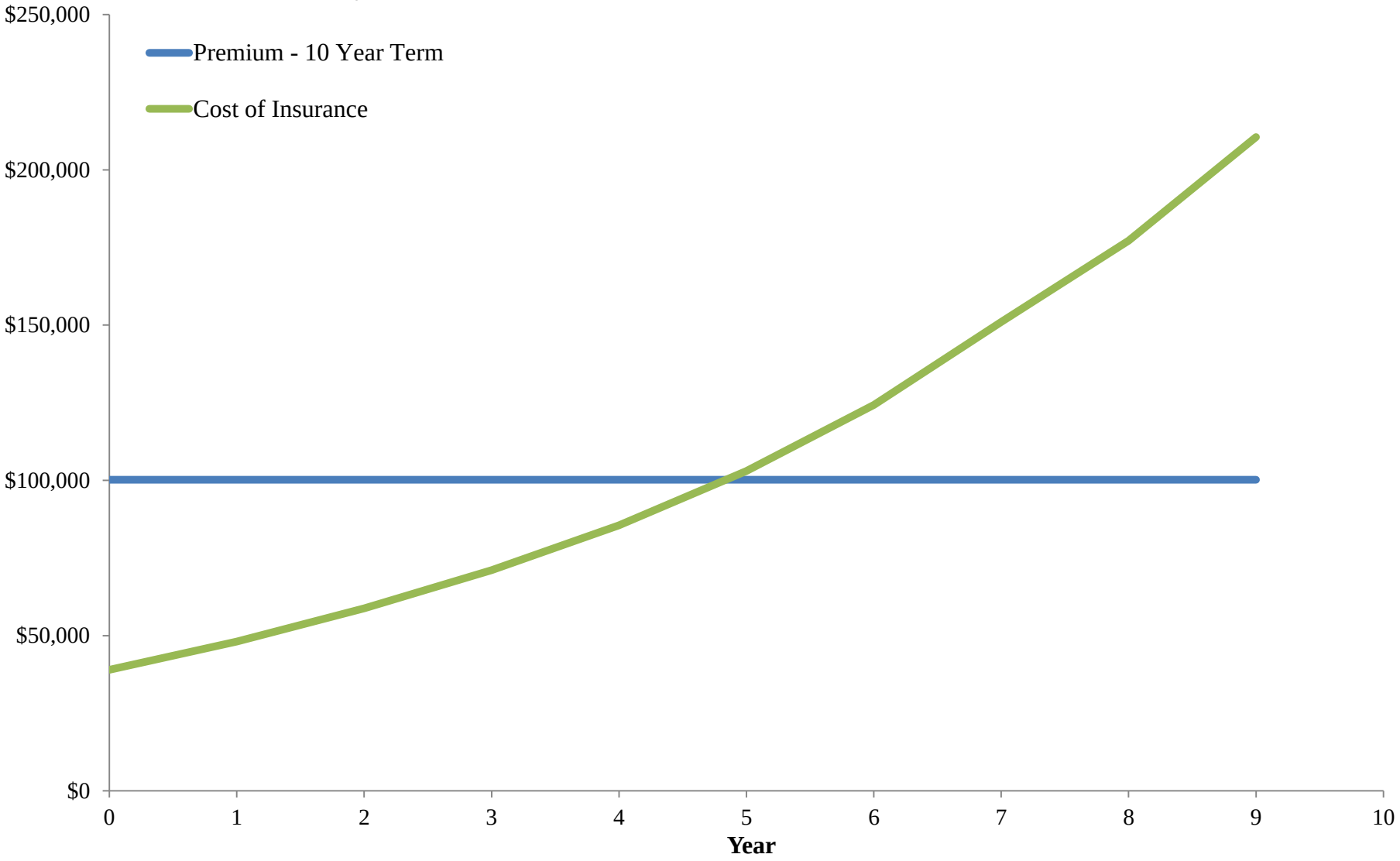
80 year-old female, $3 million death benefit, 4.5% interest rate



Source:
VBT 2001 Preferred, Non-Smoker, ALB, Select (female) Mortality Table.

Exhibit 1B - 10 Year Term Policy

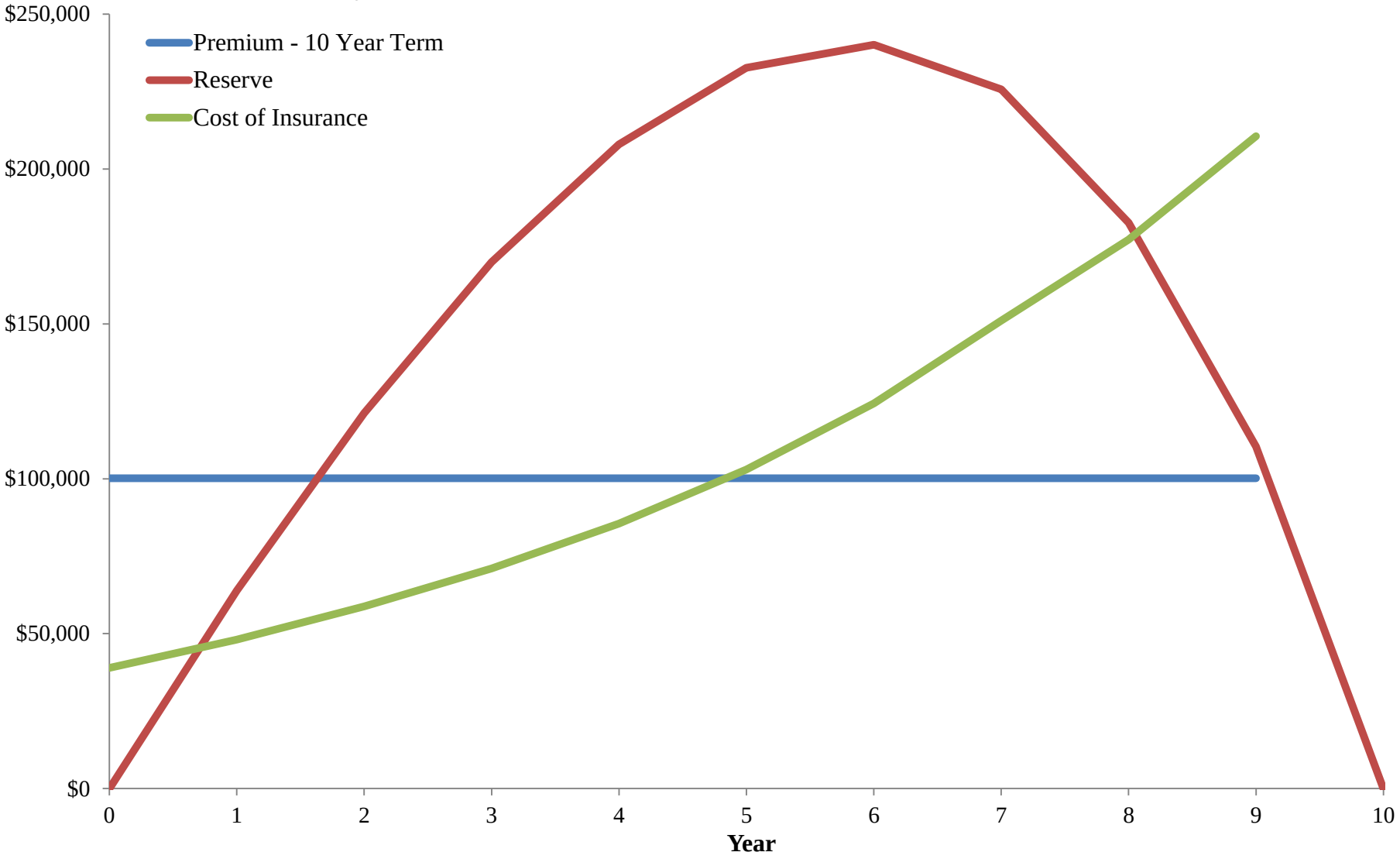
80 year-old female, $3 million death benefit, 4.5% interest rate



Source:
VBT 2001 Preferred, Non-Smoker, ALB, Select (female) Mortality Table.

Exhibit 1C - 10 Year Term Policy

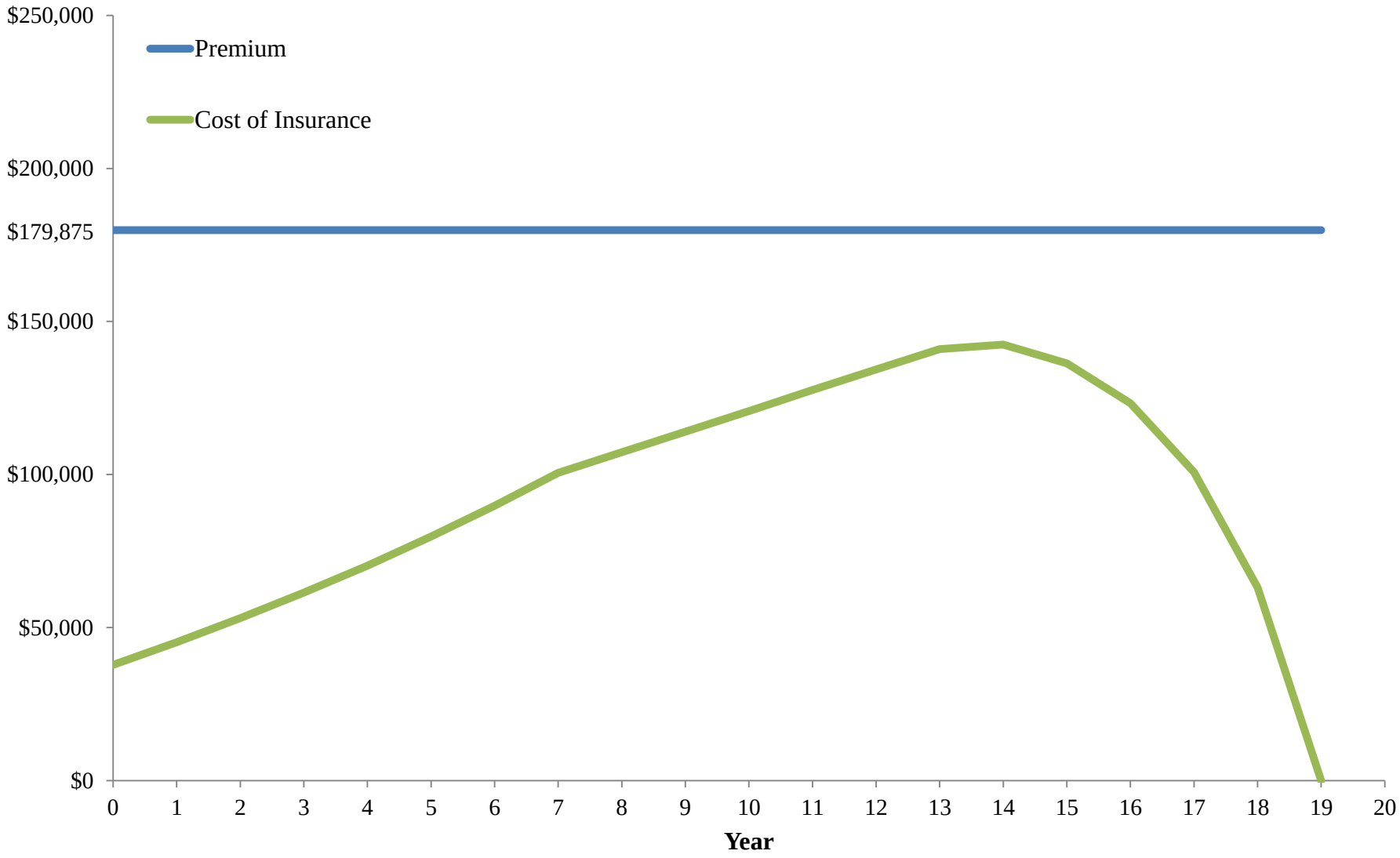
80 year-old female, $3 million death benefit, 4.5% interest rate



Source:
VBT 2001 Preferred, Non-Smoker, ALB, Select (female) Mortality Table.

Exhibit 2A - Whole Life Policy

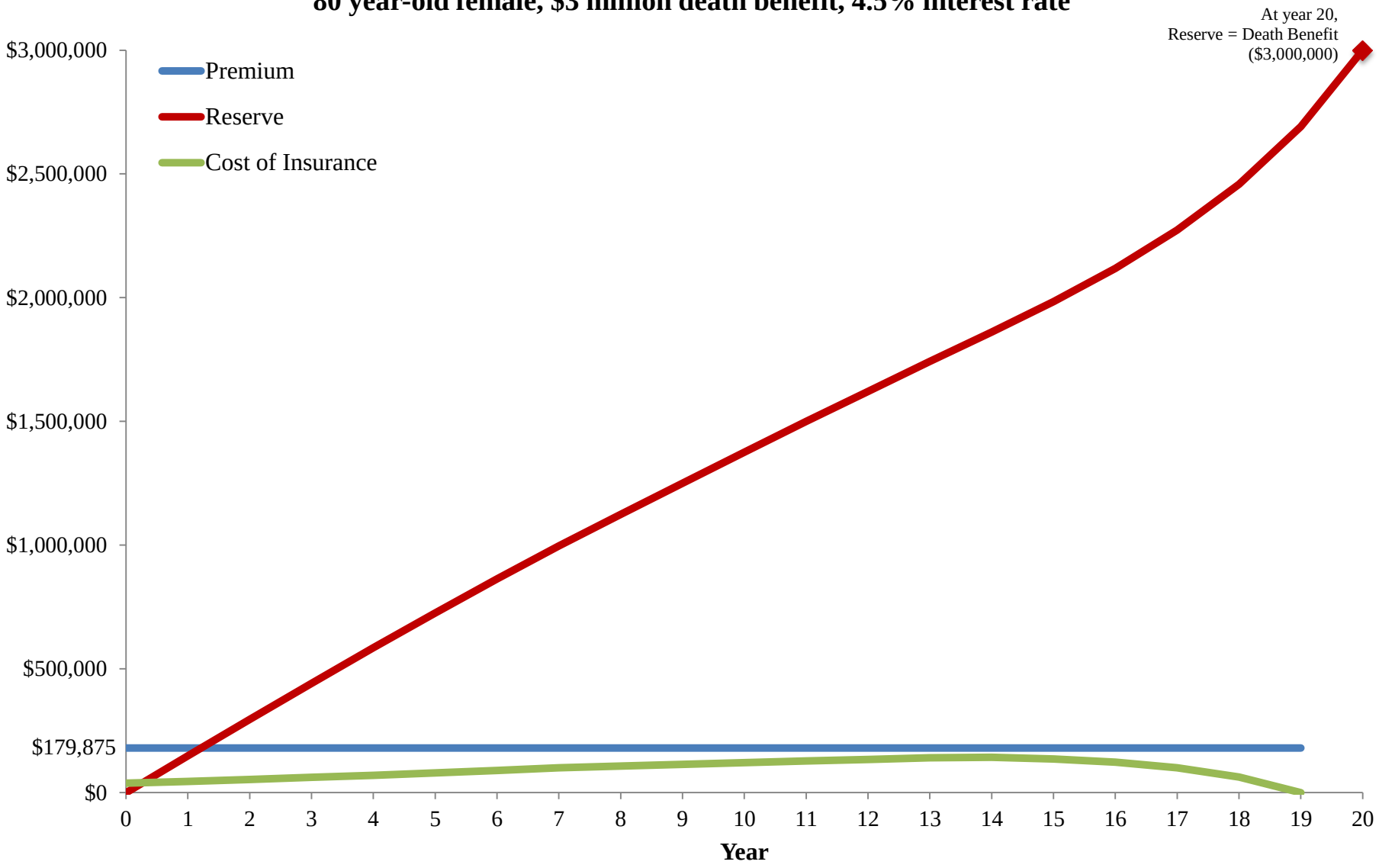
80 year-old female, $3 million death benefit, 4.5% interest rate



Source:
VBT 2001 Preferred, Non-Smoker, ALB, Select (female) Mortality Table.

Exhibit 2B - Whole Life Policy

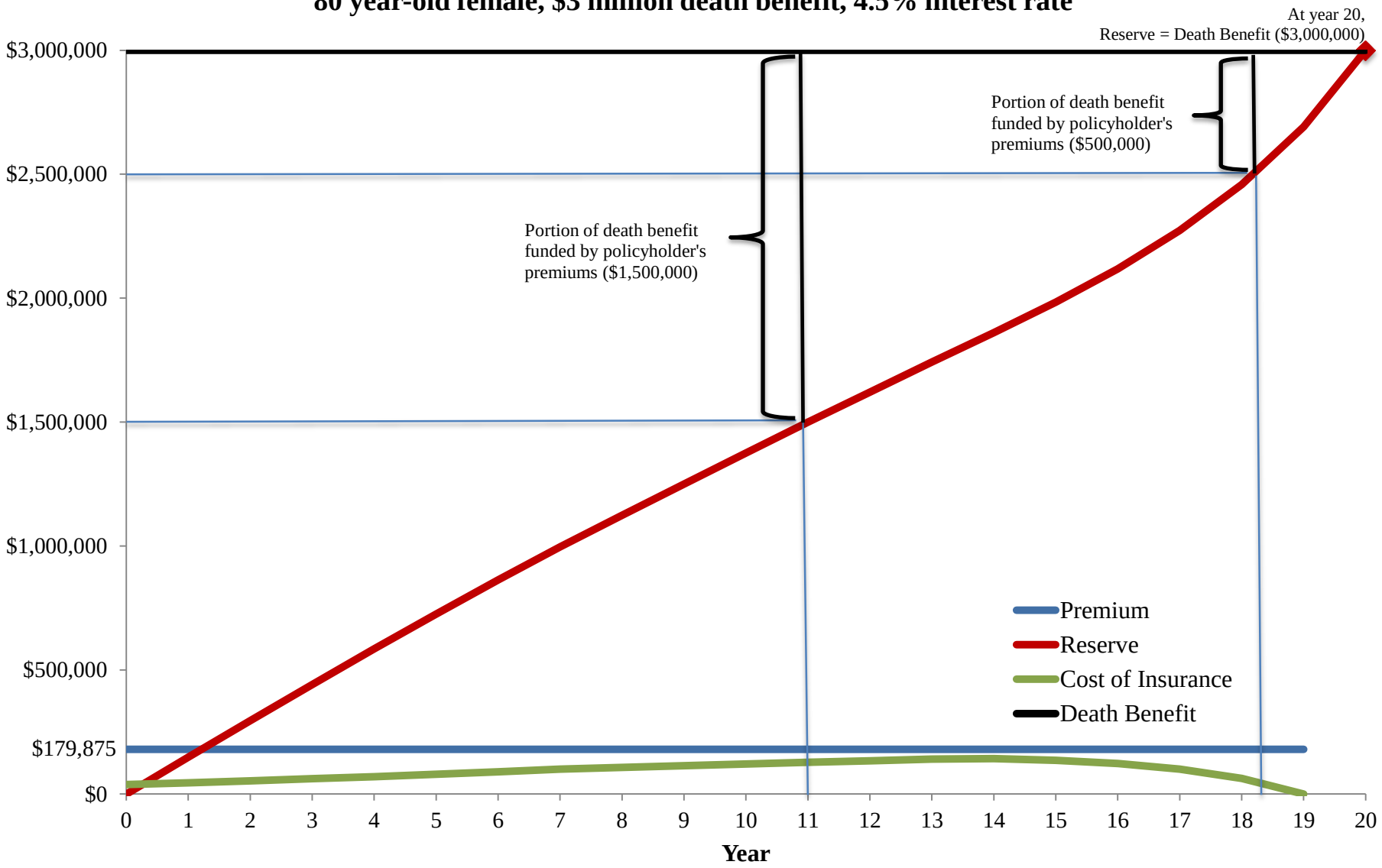
80 year-old female, $3 million death benefit, 4.5% interest rate



Source:
VBT 2001 Preferred, Non-Smoker, ALB, Select (female) Mortality Table.

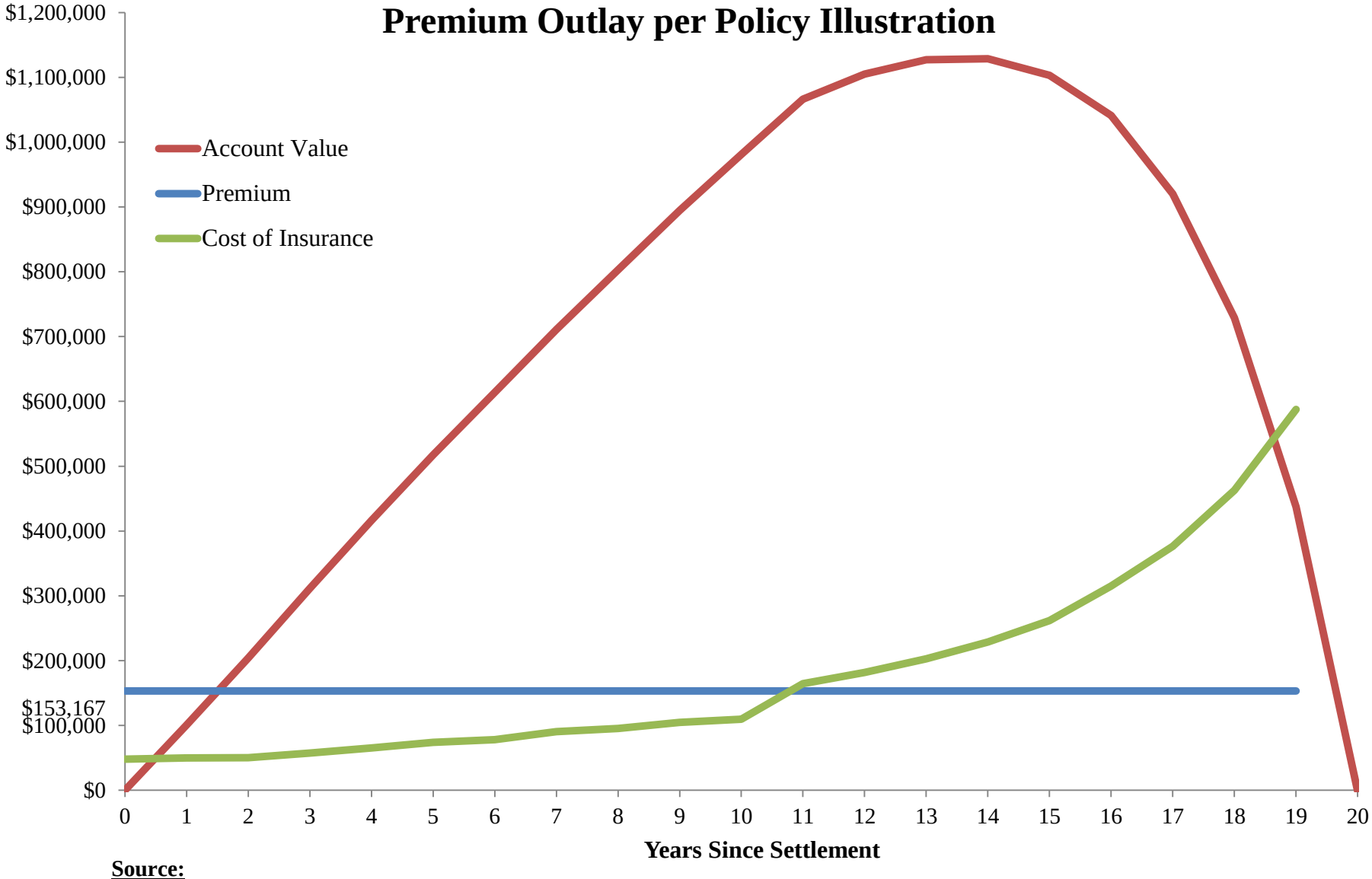
Exhibit 2C - Whole Life Policy

80 year-old female, $3 million death benefit, 4.5% interest rate



Source:
VBT 2001 Preferred, Non-Smoker, ALB, Select (female) Mortality Table.

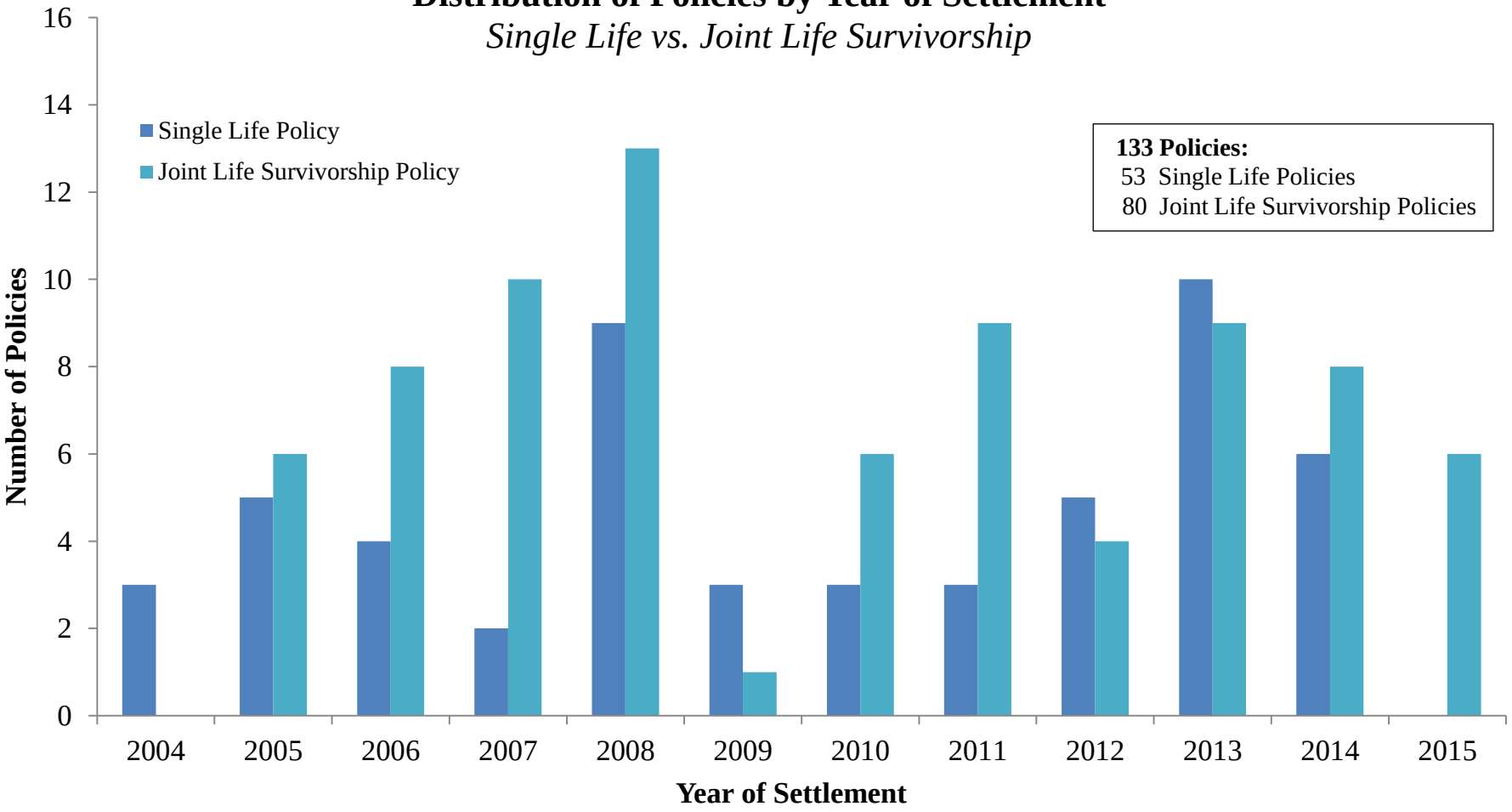
Exhibit 3 - Universal Life Policy
Premium Outlay per Policy Illustration



Source:

Ms. B.A. Policy Illustration (PWCG002272-9). Note that the parameters of this insurance policy are the same as those in Exhibits 1 and 2: 80 year-old female, $3 million death benefit, 4.5% interest rate.

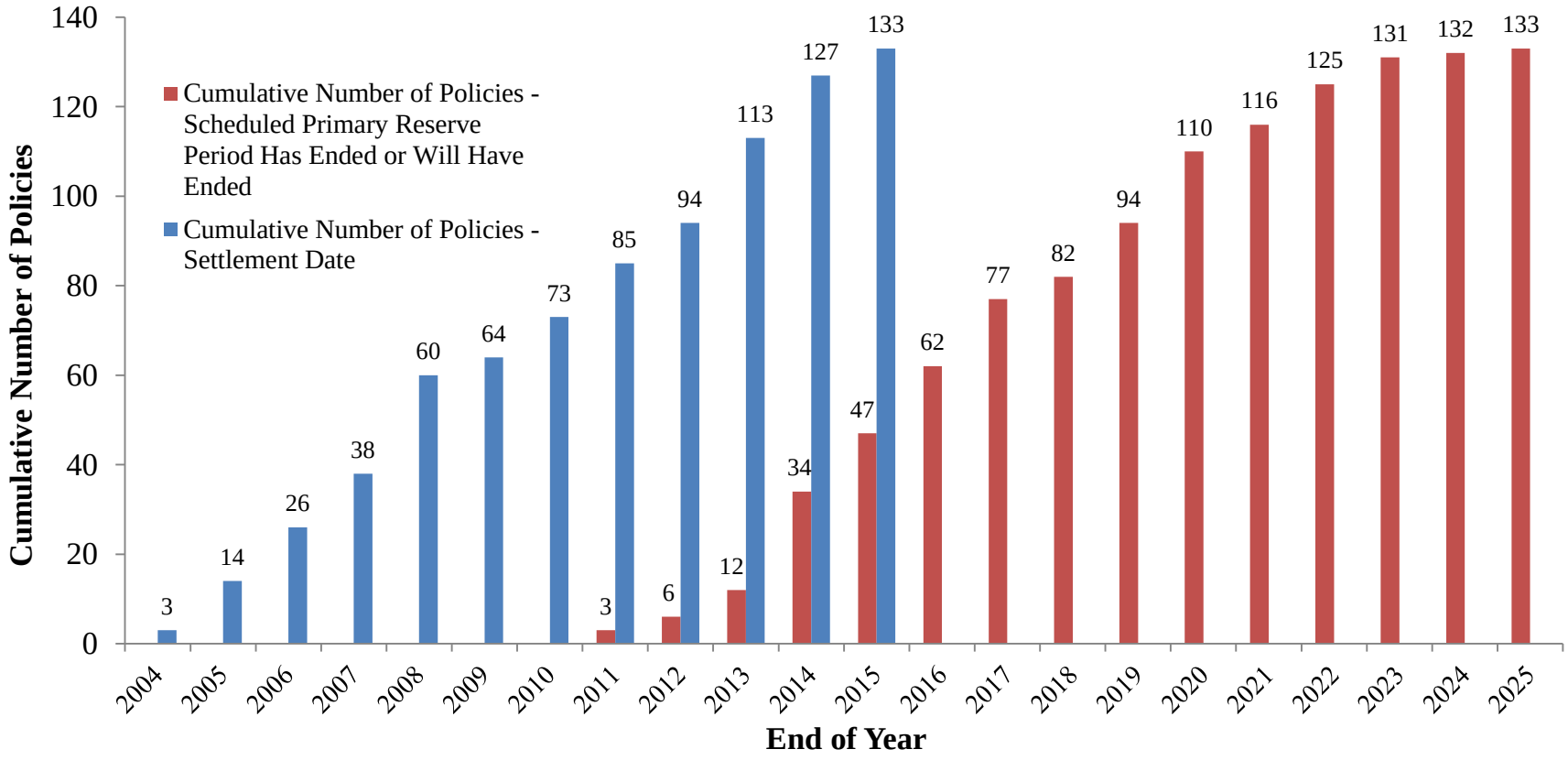
Exhibit 4
Distribution of Policies by Year of Settlement
Single Life vs. Joint Life Survivorship



Notes:
[1] A policy is identified as single life or joint life survivorship based on the number of people insured (i.e. one insured for a single life policy and two insured for a joint life survivorship policy), as indicated on the disclosure forms, policy forms, or illustration forms.
[2] Year of settlement date is identified using the "Date of Change" variable in PWCG's Policy Listing.

Sources:
PWCG Policy Listing (PWCG_SEC 0035275); Disclosure Forms; Policy Forms; Illustration Forms.

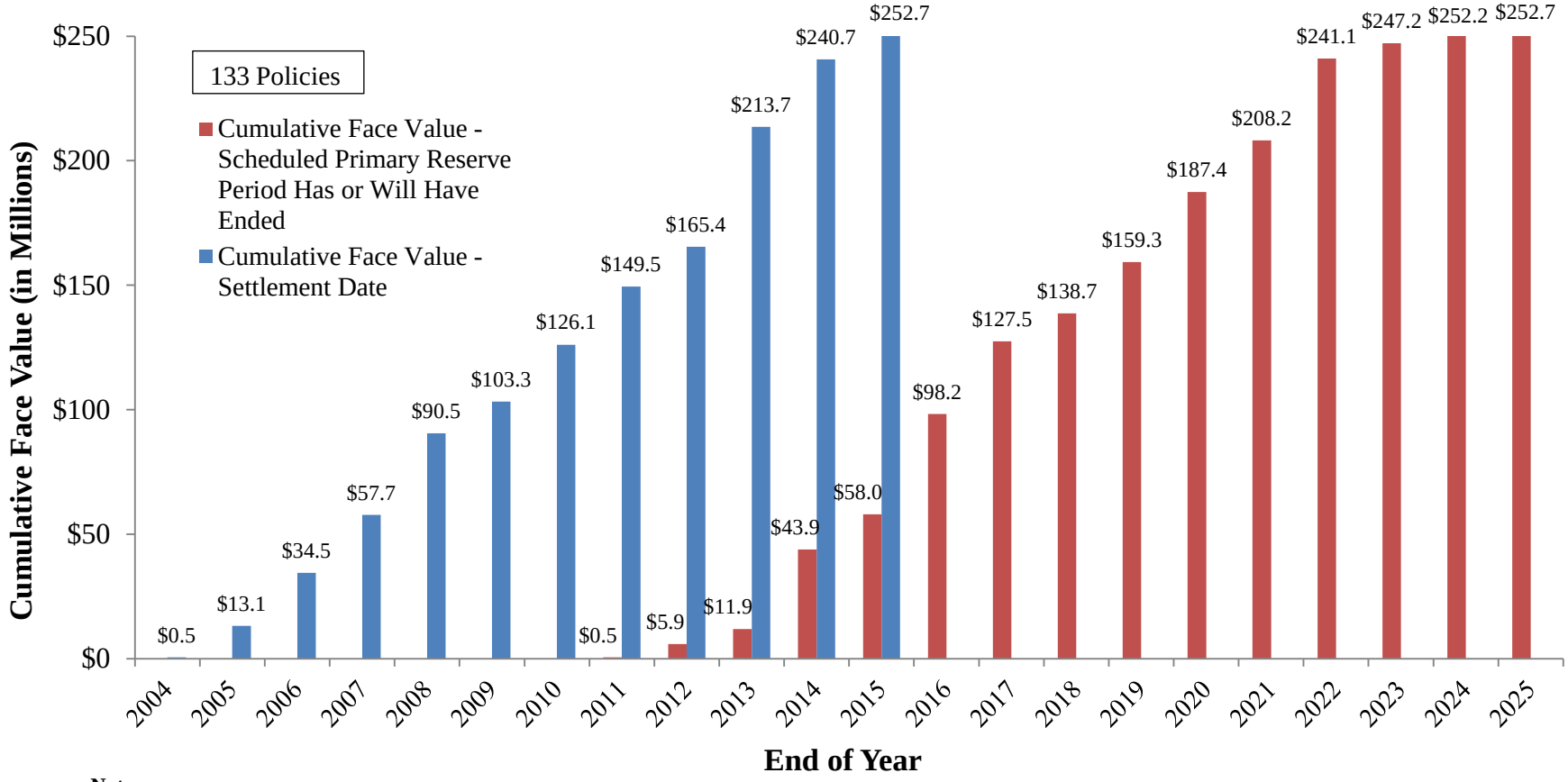
Exhibit 5
Cumulative Number of Policies
For Which PWCG Primary Reserve Period Is Scheduled To End



Notes:
[1] The scheduled end of PWCG's primary reserve period is calculated as of the settlement date (i.e., it equals settlement date + length of PWCG's primary reserve period). The length of PWCG's primary reserve period is identified using the "Years Paid" variable in the PWCG's Policy Listing.
[2] The cumulative number of policies is calculated by summing the number of policies through the end of each year. I analyze 1) policies for which PWCG's primary reserve periods are scheduled to end and 2) policies for which the settlement date is on that or a prior year.
[3] Settlement date is identified using the "Date of Change" variable in PWCG's Policy Listing.

Source:
PWCG's Policy Listing (PWCG_SEC 0035275).

Exhibit 6
Cumulative Face Value (in Millions of Dollars) of Policies For Which PWCG Primary Reserve Period is Scheduled to End



Notes:
[1] The scheduled end of PWCG's primary reserve period is calculated as of the settlement date (i.e. it equals settlement date + length of PWCG's primary reserve period). The length of PWCG's primary reserve period is identified using the "Years Paid" variable in the PWCG's Policy Listing.
[2] The cumulative face value is calculated by summing the "Face Value" variable in the November 14, 2014 Policy Listing through the end of each year. In particular, I analyze 1) the policies for which PWCG's primary reserve periods are scheduled to end and 2) the policies for which the settlement date is on that or a prior year.
[3] Settlement date is identified using the "Date of Change" variable in PWCG's Policy Listing.

Sources:
PWCG's Policy Listing (PWCG_SEC 0035275); Policy Listing as of November 14, 2014.

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Exhibit 7A
Comparison of Life Expectancy Estimates From Reputable Providers and PWCG Primary Reserve Periods
Single Life Policies

Policy Number	Issue Date	Settlement Date	Insured	PWCG Primary Reserve Period	Life Expectancy Estimate(s) from Reputable Providers[1]	Amount LE Estimate Exceeds Primary Reserve Period[2]
2VULA00379	2/1/2002	12/3/2007	Ms. A.C.	96 months	132 months median (21st)	36 months (37.5%)
U10023492L	10/14/2005	1/3/2008	Ms. M.J.	96 months	151 months median (21st)	55 months (57.3%)
8253190	2/26/2000	1/23/2009	Ms. E.D.	108 months	146 months average (21st)	38 months (35.2%)
7412586	5/28/2003	5/15/2014	Mr. M.F.	108 months	134 months (AVS) 132 months (Fasano)	24 months (22.2%)

Notes:

[1] The term "median LE" refers to the time period that an individual has a 50 percent probability of surviving (median future lifetime). I use (average) LE estimates (expected future lifetimes) when available, and I use the estimate of "median LE" otherwise. Some LE estimates did not specify whether the estimate is of average LE or "median LE."

[2] For single life policies, the life expectancy equals the expected time to maturity. For Mr. M.F., I used the lower of his two LE estimates.

Sources:

21st Services Life Expectancy Certificates (SEC-DB-EPROD-000443209-13, SEC-DB-EPROD-000442337-41, SEC-DB-EPROD-000466052-55); Email containing Fasano and AVS LE estimates (PWCG057412-15); PWCG Policy Listing; PWCG Policy listing as of November 14, 2014; Settlement Purchase Agreements; Disclosure Forms; Policy Forms.

Exhibit 7B
Comparison of Life Expectancy Estimates From Reputable Providers and PWCG Primary Reserve Periods
Joint Life Survivorship Policies

Policy Number	Issue Date	Settlement Date	Insured	PWCG Primary Reserve Period	Life Expectancy Estimate(s) from Reputable Providers[1]	Amount LE Estimate For Insured with Greater LE Exceeds Primary Reserve Period	Expected Time to Maturity[2]	Amount Expected Time to Maturity Exceeds Primary Reserve Period
92353264	12/6/1990	8/27/2013	Mr. F.P. --- Ms. S.P.	96 months	109 months average (21st) 119 months (AVS) --- 152 months (AVS)	56 months (58.3%)	173 months[3]	77 months (80.6%)
60089441	5/23/2002	11/4/2011	Mr. J.C. --- Ms. P.C.	96 months	60 months average (21st) 60 months (AVS) --- 143 months average (21st) 170 months (AVS)	47 months (49.0%)[4]	146 months[5]	50 months (51.9%)
911625004	9/12/2007	6/14/2011	Mr. S.S. --- Ms. M.S.	108 months	139 months (AVS) --- Not Available	31 months (28.7%)	186 months[6]	78 months (71.8%)
JG5278472	2/28/2003	12/6/2006	Mr. G.B. --- Ms. M.B.	96 months	87 months median (21st) --- Not Available	N/A	145 months[7]	49 months (50.9%)

Exhibit 7B
Comparison of Life Expectancy Estimates From Reputable Providers and PWCG Primary Reserve Periods
Joint Life Survivorship Policies

Notes:

[1] The term "median LE" refers to the time period that an individual has a 50 percent probability of surviving (median future lifetime). I use (average) LE estimates (expected future lifetimes) when available, and I use the estimate of "median LE" otherwise. Some LE estimates did not specify whether the estimate is of average LE or "median LE."

[2] For joint life survivorship policies, a calculation of expected time to maturity requires LE estimates for both insureds. In calculating expected time to maturity, I used standard actuarial techniques and I assumed that the insureds future lifetimes are independent.

[3] For policy 92353264 (written on Mr. F.P. and Ms. S.P.'s lives), information on LE estimates is available for both insureds. I estimated that the expected time to maturity for this policy is 14.5 years. I computed Mr. F.P.'s mortality curve from the mortality table associated with Mr. F.P.'s LE estimate of 9.1 years (the lower of his two LE estimates). I estimated Ms. S.P.'s mortality curve by applying a constant multiplier to the 2008 VBT NS ALB - December 2008, Ultimate mortality table to yield a life expectancy of 12.7 years.

[4] For Ms. P.C., I used the lower of her two LE estimates.

[5] For policy 60089441 (written on Mr. J.C. and Ms. P.C.'s lives), information on LE estimates is available for both insureds. I estimated that the expected time to maturity for this policy is 12.1 years. I estimated Mr. J.C.'s mortality curve by applying a constant multiplier to the 2008 VBT NS ALB - December 2008, Ultimate mortality table to yield a life expectancy of 5.0 years. I estimated Ms. P.C.'s mortality curve by applying a constant multiplier to the 2008 VBT NS ALB - December 2008, Ultimate mortality table to yield a life expectancy of 11.9 years (the lower of her two LE estimates).

[6] For policy 911625004 (written on Mr. S.S. and Ms. M.S.'s lives), information on LE estimates is available for Mr. S.S. only. I estimated that the expected time to maturity for this policy is 15.5 years. I estimated Mr. S.S.'s mortality curve by applying a constant multiplier to the 2008 VBT NS ALB - December 2008, Ultimate mortality table to yield a life expectancy of 11.6 years. No LE estimate was provided for Ms. M.S. I estimated her future lifespan using the 2008 VBT NS ALB - December 2008, Ultimate mortality table with no adjustments, which yields a life expectancy of 11.8 years. See Section IX.B.1.

[7] For policy JG5278472 (written on Mr. G.B. and Ms. M.B.'s lives), information on LE estimates is available for Mr. G.B. only. I estimated that the expected time to maturity for this policy is 12.1 years. I estimated Mr. G.B.'s mortality curve by applying a constant multiplier to the 2008 VBT NS ALB - December 2008, Ultimate mortality table to yield a life expectancy of 7.3 years. No LE estimate was provided for Ms. M.B. I estimated her future lifespan using the 2008 VBT NS ALB - December 2008, Ultimate mortality table with no adjustments, which yields a life expectancy of 10.5 years. See Section IX.B.1.

Sources:

21st Services Life Expectancy Certificates(PWCG057172, PWCG005632-34, PWCG005627-30, SEC-DB-EPROD-000446567-71); AVS Underwriting Life Expectancy Reports (PWCG057170, PWCG057184, PWCG005631, PWCG005626, PWCG002821-22); PWCG Policy Listing; PWCG Policy listing as of November 14, 2014; Settlement Purchase Agreements; Disclosure Forms; Policy Forms.

Exhibit 8A: Actual Matured Policies Compared to Expected Matured Policies
As of December 31, 2015

	Number of Policies	Matured Policies	Expected Matured Policies[1]	Matured Policies / Expected Matured Policies (A/E Ratio)	99% CI for A/E Ratio Based on Expected Time to Maturity[2]	99% CI for Matured Policies Based on Expected Time to Maturity[2]
			Assuming that Expected Time to Maturity equals Primary Reserve Period			
By Unique Insured [3]	106	11	38.1	**28.9%**	[71.4% , 128.6%]	[27.2 , 49.0]
Single Life	39	6	16.0	37.5%	[55.2% , 144.8%]	[8.8 , 23.1]
Joint Life Survivorship	67	5	22.1	22.6%	[62.8% , 137.2%]	[13.9 , 30.4]
Including Multiple Policies for the Same Insured [4]	133	13	51.1	25.4%		
Single Life	53	8	22.6	35.5%		
Joint Life Survivorship	80	5	28.6	17.5%		
			Assuming that Expected Time to Maturity equals Primary Reserve Period minus two years			
By Unique Insured [3]	106	11	54.8	**20.1%**	[81.1% , 118.9%]	[44.5 , 65.2]
Single Life	39	6	21.4	28.1%	[67.1% , 132.9%]	[14.4 , 28.4]
Joint Life Survivorship	67	5	33.5	14.9%	[77.3% , 122.7%]	[25.9 , 41.1]

Notes:

[1] I explain my calculations under the assumption that expected time to maturity equal the primary reserve period; the methodology is analogous assuming that expected time to maturity equals the primary reserve period minus two years. For single life policies, Expected Matured Policies is calculated by finding a multiplier to the 2008 VBT Primary Table, Non-Smoker, Ultimate (Male or Female) that results in an expected time to maturity equals to the primary reserve period. For joint life survivorship policies, Expected Matured Policies is calculated by finding the rate of policy maturation based on the assumption that each insured life independently follows the 2008 VBT Primary Table, Non-Smoker, Ultimate (Male or Female), and then finding a multiplier that results in an expected time to maturity equal to the primary reserve period. Using this multiplier, I determine the probability that each policy will have matured by December 31, 2015. I identified the settlement date using the "Date of Change" variable in PWCG's Policy Listing.

Exhibit 8A: Actual Matured Policies Compared to Expected Matured Policies
As of December 31, 2015

[2] Confidence intervals (CIs) are calculated based on the assumption that each policy has an expected time to maturity equals to the primary reserve period, and therefore on average Actual Matured Policies / Expected Matured Policies would equal 100 percent. I approximate the distribution of Actual Matured Policies using the normal (bell-curve) distribution (note that Expected Matured Policies is a constant). 95 percent confidence intervals are approximately 76.1 percent as wide as these 99 percent confidence intervals; phrased differently, these 99 percent confidence intervals are approximately 31.4 percent wider than 95 percent confidence intervals. The methodology is analogous assuming that expected time to maturity equals the primary reserve period minus two years.

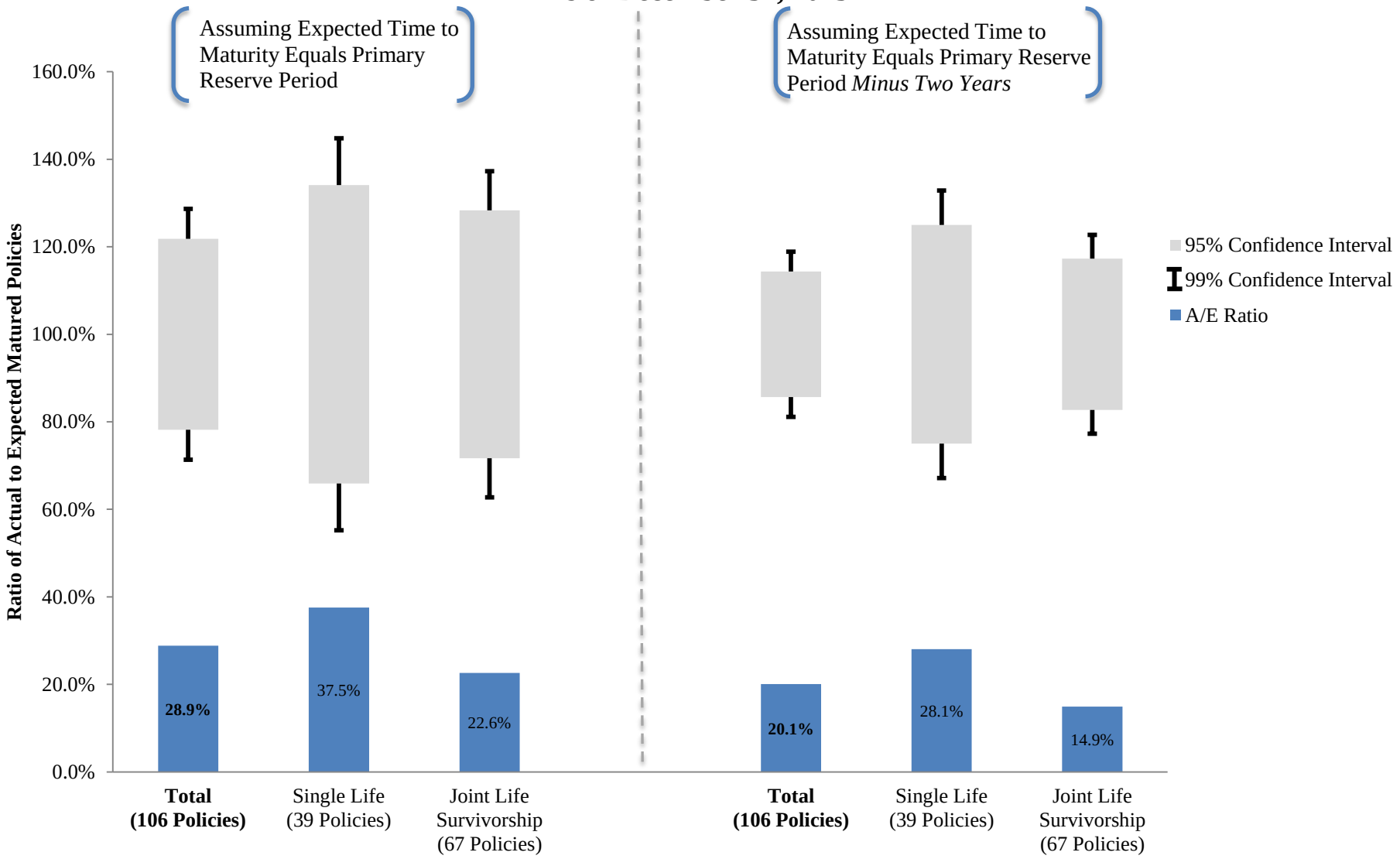
[3] For single life policies with the same insured and joint life survivorship policies with the same insureds, I include only the policy with the lowest probability of maturity.

[4] I view using all of the policies for each insured as less appropriate, as I explain in **Section IX.B.3**.

Sources:

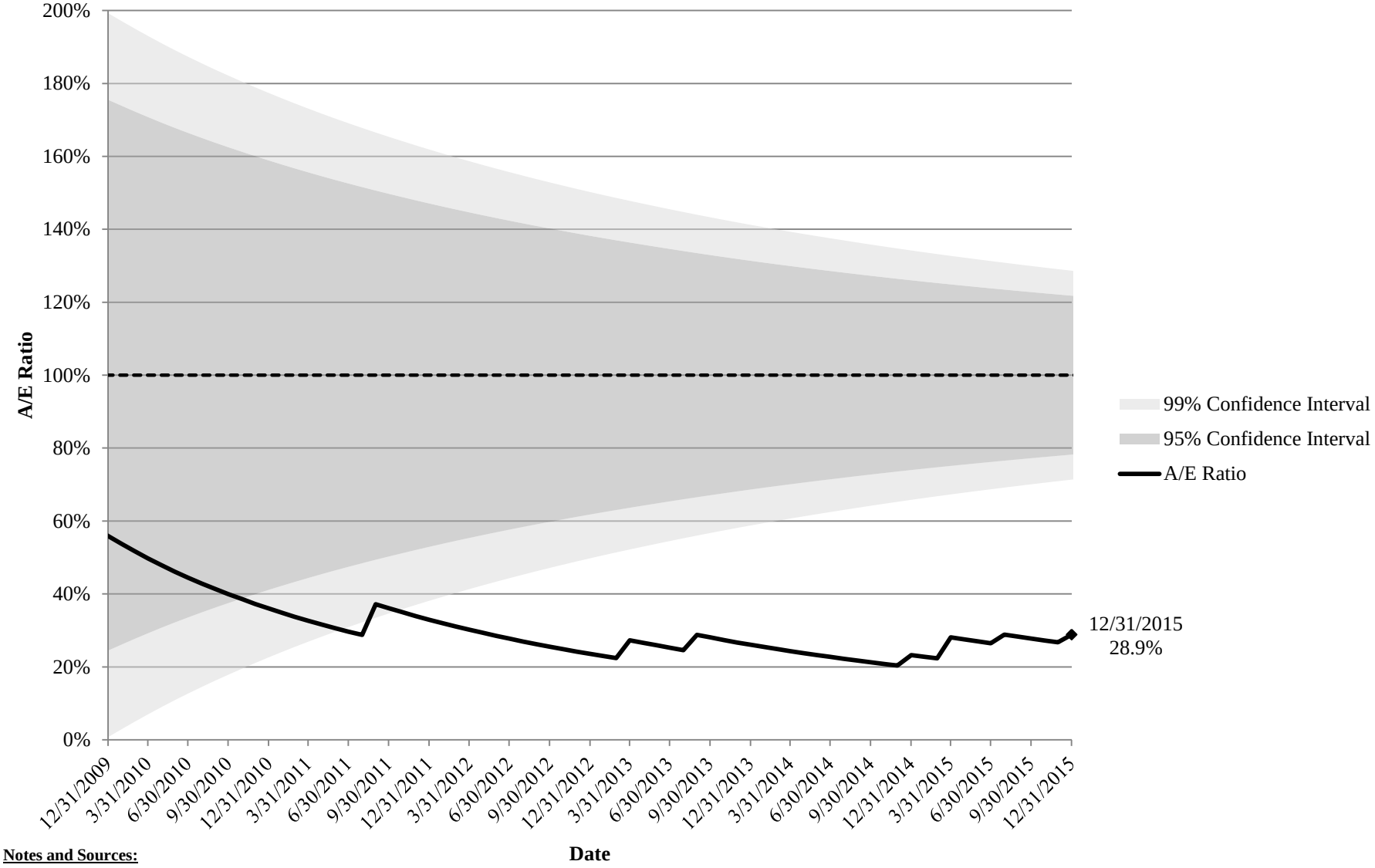
PWCG Policy Listing (PWCG_SEC 0035275.xlsx); Policy Listing Produced November 14, 2014; Illustration Forms; Policy Forms; Settlement Purchase Agreements; Disclosure Forms; Investor Listing as of November 14, 2014; 2008 VBT Primary Table - Male, Non-Smoker, Age Last Birthday, Ultimate; 2008 VBT Primary Table - Female, Non-Smoker, Age Last Birthday, Ultimate.

Exhibit 8B
Actual Matured Policies Compared to Expected Matured Policies
As of December 31, 2015



Notes and Sources:
See Exhibit 8A.

Exhibit 8C
Actual Matured Policies Compared to Expected Matured Policies Over Time Assuming that Expected Time to Maturity Equals Primary Reserve Period



Notes and Sources:
See Exhibit 8A.

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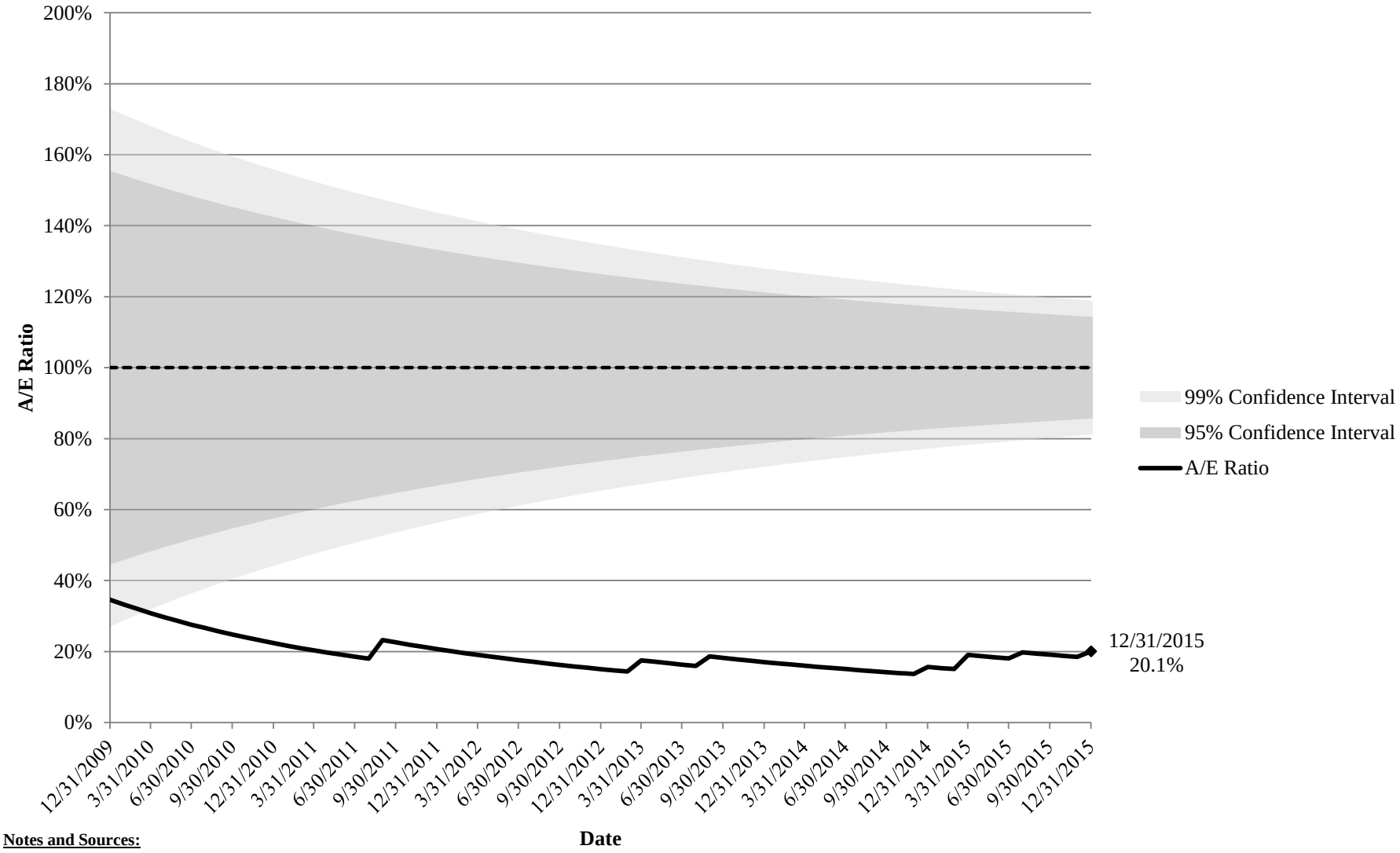
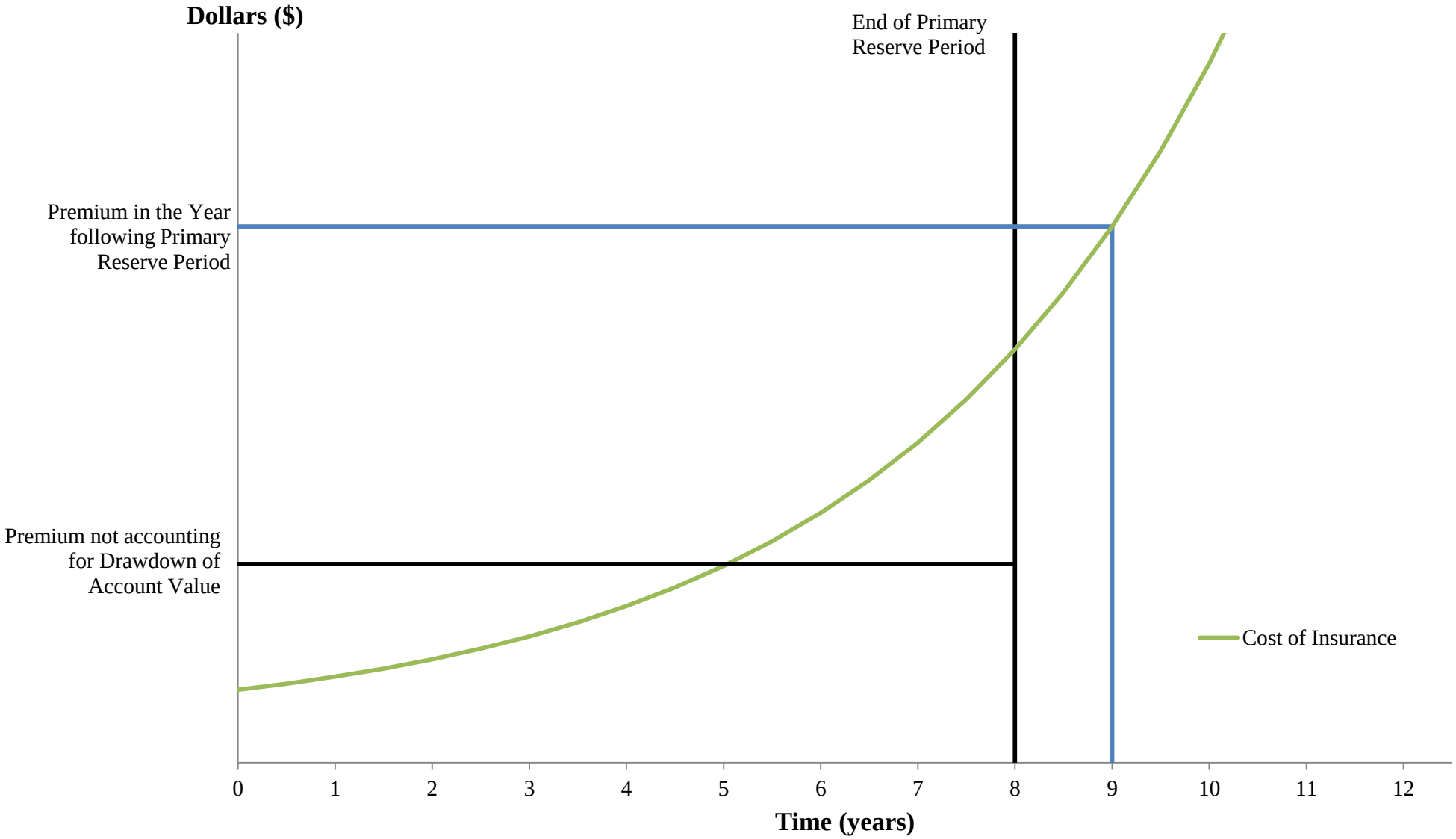
Exhibit 8D
Actual Matured Policies Compared to Expected Matured Policies Over Time
Assuming that Expected Time to Maturity Equals Primary Reserve Period *Minus Two Years*



Notes and Sources:
See Exhibit 8A.

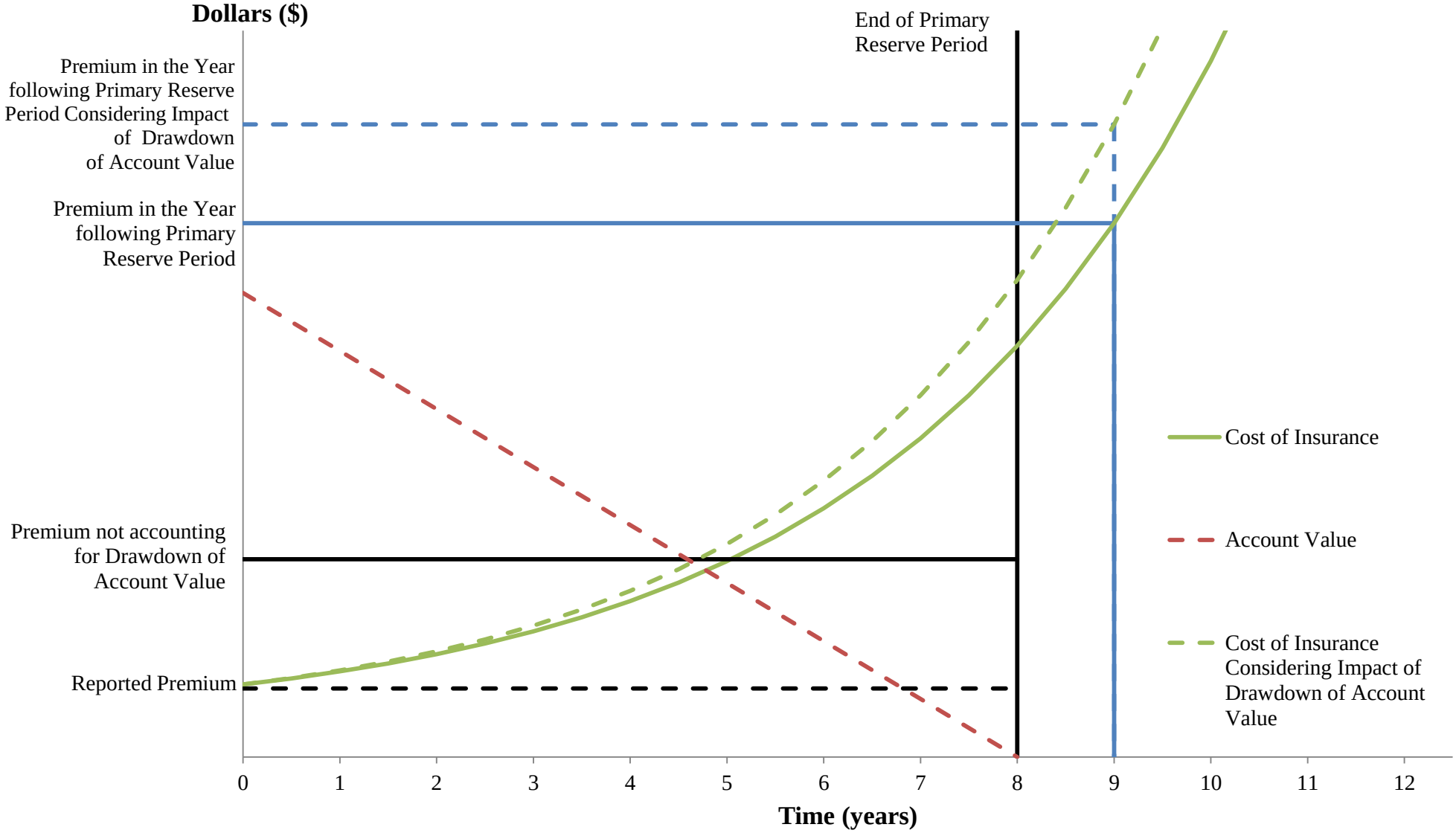
Exhibit 9A



Note:

[1] This is meant to be illustrative and is not intended to reflect any specific policy. For ease of exposition, I assume that the account value does not earn interest and that there are no expenses besides the cost of insurance.

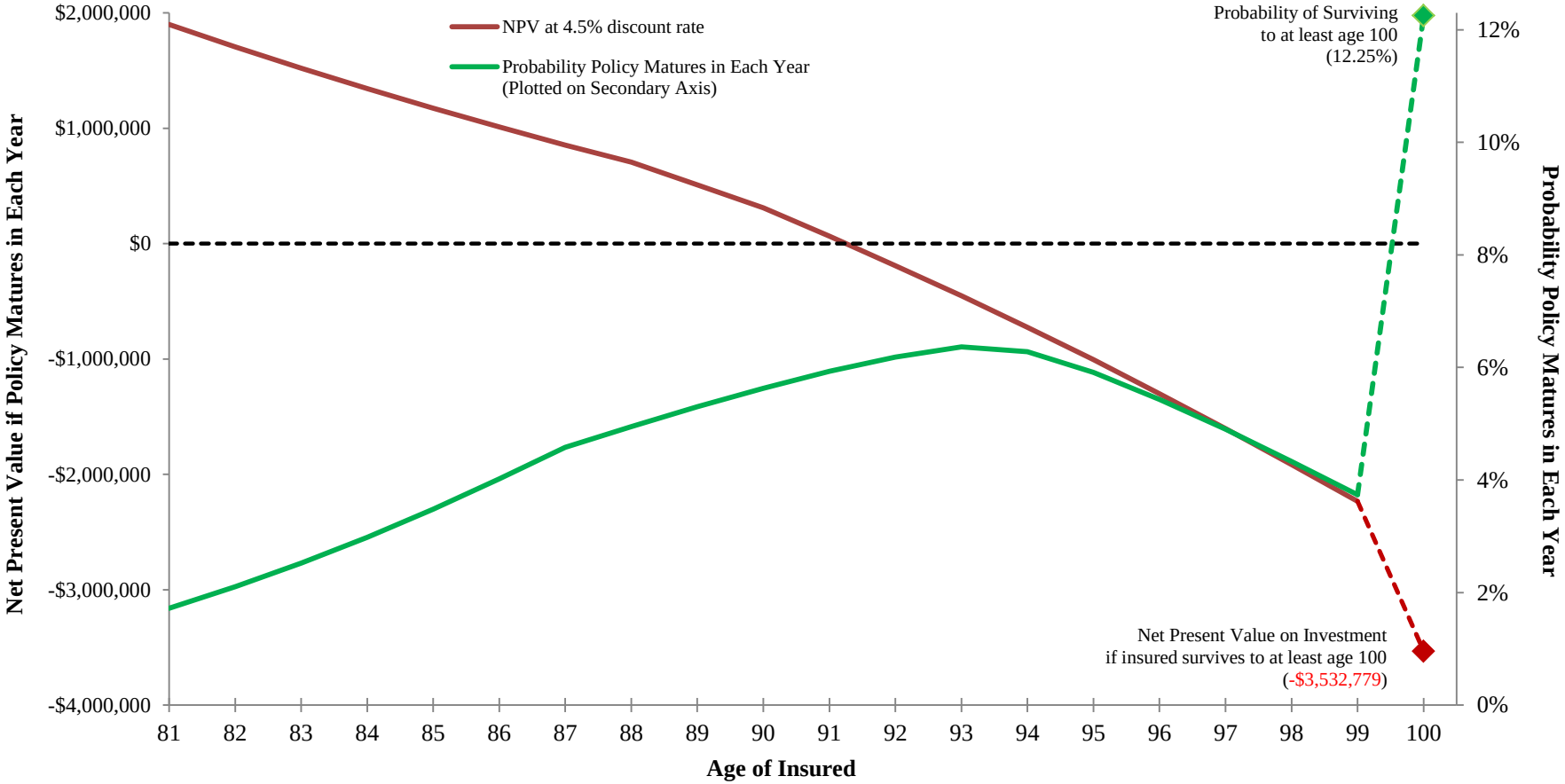
Exhibit 9B



Note:

[1] This is meant to be illustrative and is not intended to reflect any specific policy. For ease of exposition, I assume that the account value does not earn interest and that there are no expenses besides the cost of insurance.

Exhibit 10: Net Present Value
Assuming Policy Matures at Different Ages



Notes:

[1] The calculation is for Ms. B.A.'s single life policy (Policy Number: 102-U01850024). The Net Present Value is calculated using a discount factor of 4.5%, which is equal to the policy's illustrated rate.

[2] In calculating the net present value, I ignore transfers across policies caused by the secondary and tertiary reserves. **Section IX.F** discusses the method of calculation.

[3] If the insured survives to the maturity date of the policy (at age 100), the policy pays the cash surrender value, not the death benefit (PWCG002387-442 at 405, 423). As the account value at this date (and therefore cash surrender value) is zero, there would be only negative cash flows. There is a 12.25 percent chance that the insured survives at least to the age of 100 per the used mortality table.

Sources:

Ms. B.A. Policy Illustration (PWCG002272-9); Premium Calculation for Ms. B.A. (PWCG033639); Ms. B.A. Policy Summary (PWCG002387-442 at 408); VBT 2001 Preferred, NonSmoker, ALB, Select (female) Mortality Table; PWCG Policy Listing; Exhibit 4.