

# A Review of Life Insurance's Secondary Market

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## Abstract

The secondary market for life insurance policies emerged to provide financial relief for terminally ill patients through viatical settlements. Over time, it expanded to include life settlements for seniors and individuals with chronic conditions. This growth was driven by demographic shifts and increased life expectancies.

This paper discusses the historical evolution of the secondary market, the types of transactions involved, and the market dynamics. It explores the benefits and challenges faced by policyholders, insurance companies, and investors. For policyholders, the market offers enhanced liquidity and fair compensation. However, it also requires insurers to adjust premium structures and manage adverse selection. Investors benefit from high returns and risk diversification, but they are also exposed to longevity risk, liquidity risk, return volatility, and regulatory changes. The study highlights the complexities of asymmetric information and emphasizes the need for sophisticated actuarial models and robust regulatory frameworks to ensure market stability and sustainability.

**Keywords:** The Secondary Market for Life Insurance Policies, Life Settlement, Viatical Settlement, Asymmetric Information, Adverse Selection

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# 1 Introduction

The secondary market for life insurance policies emerged in the late 1980s during the AIDS crisis. It was initially designed to provide a financial tool for terminally ill patients. This market allowed them to access life insurance benefits early by selling their policies for immediate financial relief. These transactions, known as viatical settlements, provided crucial financial support to individuals facing high medical costs and reduced life expectancies. This development changed how life insurance policies were understood and used during challenging life stages (Doherty and Singer [8]).

## Historical Development and Evolution

As medical and technological developments have improved survival rates for terminal illnesses, the market gradually evolved to include life settlements. This expansion mirrors the demographic changes, including aging populations and the increasing prevalence of chronic conditions, which have increased the demand for alternative financial solutions. As a result, the market expanded to include not only policyholders with terminal illnesses but also seniors seeking to optimize their financial portfolios for purposes such as retirement funding or healthcare expenses. The evolution from a specialized service to a broad financial planning solution underscores the market's adaptability to the evolving healthcare environment and shifting demographic patterns.

## Transaction Types and Market Dynamics

The secondary market for life insurance includes two main transaction types: viatical settlements and life settlements. Viatical settlements once played a crucial role in providing financial support to individuals with terminal illnesses, especially during the AIDS crisis in the 1980s and 1990s. This option is specifically designed for policyholder facing a limited life expectancy, offering them a higher payout than the cash surrender value of their policy. This immediate injection of cash can be essential for covering end-of-life expenses and ensuring the quality of life during a policyholder's final stages. However, viatical settlements now represent only a small portion of the secondary market for life insurance policies. Today, the market has largely shifted its focus to life settlements, which involve older policyholders who are not necessarily terminally ill (Lazarus [18]).

Life settlements make up the majority of the secondary market for life insurance. Unlike illnesses that are susceptible to major medical advances, the increasing age of the policyholder offers investors a more stable and predictable basis for purchasing decisions. The life settlement market experienced rapid growth in its early stages. A survey estimated that the market would expand from \$13 billion in 2004 to \$161 billion in the following years due to an aging population, increasing life expectancy, and broader market exposure. This emerging asset class has attracted significant attention from various market participants and regulators. Key players include dominant investment banks, reinsurance companies, and regulatory bodies such as the Securi-

ties and Exchange Commission (SEC), the National Association of Insurance Commissioners (NAIC), and the National Conference of Insurance Legislators (NCOIL), along with state regulators, rating agencies, and life expectancy underwriters. The large number of participants reflects the complexity of the market and the importance of regulatory oversight to maintain stability and transparency (Brockett et al.[5]).

Like other financial markets, the life settlement market faced a downturn in 2008 due to a lack of available investment capital [18]. Although the market has contracted due to the pandemic-related financial crisis, it remains an attractive asset class. Investors are drawn by the potential for high returns and the increased liquidity that securitization (the trade of life settlements) provides [22]. Life settlements present compelling investment opportunities, combining high returns with enhanced market stability and risk diversification, making them viable and attractive for a wide range of investors. The market is projected to grow to \$160 billion in face value by 2030 (Kamath and Sledge, 2005, as cited in Lazarus [18]). Securitization converts illiquid life insurance policies into tradeable securities, providing the liquidity and risk diversification that investors seek. This process facilitates better risk management, unlocks embedded profits, and optimizes capital utilization. Stone and Zissu [23] argue that the benefits of securitization include increasing market efficiency and transparency, further enhancing the appeal of life settlements as investments.

Life settlements have become a crucial part of the secondary market, allowing policyholders to cash out policies that are no longer needed or financially viable. This trend is driven by changes in family structures, evolving financial needs, and the desire for more flexibility in managing personal assets. The viatical and life settlements industry is now primarily focused on the senior market. Seniors find life settlements appealing because they offer funds that can be used for various purposes, such as supplementing retirement income or covering unexpected medical expenses. By converting life insurance policies (illiquid assets) into liquid assets, life settlements provide immediate access to cash. Typically, life settlement candidates are over 65 years old, experiencing some health deterioration, but not terminally ill. This makes the cash surrender value an unrealistic measure of their policies' worth. These individuals usually have policies with a death benefit of \$250,000 or more and no longer need or can afford the policy (Weber and Hause, 2008, as cited in Brockett et al.[5]).

The market's growth is also fueled by technological advancements and improved medical treatments, leading to an increase in the number of centenarians. For example, the number of people over 100 years old rose from about 15,000 in 1980 to about 72,000 in 2000, and it is projected to reach 601,000 by 2050 (Sisk, 2011, as cited in Brockett et al. [5]). Additionally, around 50% of individuals born in the United States in 2000 are expected to live to age 101 (Vaupel, 2011, as cited in Brockett et al. [5]). These demographic trends highlight the growing importance of life settlements as a financial strategy for seniors, providing them with greater financial flexibility and security in their later years.

Both viatical settlements and life settlements serve important roles in financial planning that can be used to meet the unique needs of policyholders at different stages of life. By offering practical and timely financial solutions, these options empower policyholders to manage their assets effectively, providing financial relief during

challenging times and enabling greater flexibility and security in navigating their financial resources.

### **Stakeholders and Market Mechanics**

The emergence of the secondary market for life insurance has created a dynamic ecosystem mainly involving policyholders, investors, and insurance companies. Intermediaries like brokers and life settlement companies are also included in the market. Each participant plays a crucial role, contributing to the market's complexity and dynamism.

In the secondary market for life insurance, policyholders are a key stakeholder group. They are individuals who initially purchase life insurance to secure financial stability for themselves or their beneficiaries. When their personal or financial circumstances change, they can sell their policies before maturity to gain immediate financial benefits. This option provides them with liquidity and flexibility, allowing them to manage their finances without waiting for the policy's payout upon death. The secondary market offers policyholders an alternative to traditional policy surrender, allowing them to maximize the potential financial return from their life insurance investments.

Investors in this market range from individual buyers to large institutional entities such as investment funds, banks, and private equity firms. They are attracted by the potential for high returns on investments that are relatively insulated from market fluctuations. By continuing to pay the premiums on acquired policies, investors eventually receive the death benefits when the insured person passes away. This strategy is appealing not only for its high returns but also because the payouts are generally uncorrelated with traditional financial assets or economic conditions, making it an effective way to diversify investment portfolios.

Insurance companies, which issue the original policies, are also pivotal stakeholders in the secondary market. While they initially receive premiums from policyholders, the transfer of policies to third parties can affect their actuarial models and financial forecasting. To manage risks associated with increased longevity and lower lapse rates, insurance companies may need to adjust pricing or reserve strategies to maintain profitability and solvency.

Brokers and life settlement companies serve as intermediaries, maintaining market transparency and efficiency by providing valuation services, facilitating negotiations, and ensuring compliance with regulatory standards. The mechanics of the secondary market involve meticulous evaluation and underwriting processes. Policies are assessed based on factors such as the policyholder's health status, life expectancy, and the expected future premiums needed to keep the policy active. Advanced actuarial models and medical evaluations help accurately estimate these factors.

Once a policy is considered suitable, it is listed for sale, often through brokers or settlement companies that specialize in matching sellers with buyers. Investors purchase these policies for a lump sum payment, which is typically higher than the cash surrender value offered by the insurance company but less than the policy's death benefit. The investor then pays the remaining premiums needed to maintain

the policy until the insured (the original policyholder) passes away and ultimately collects the death benefit.

This process provides liquidity to policyholders, enabling them to access substantial funds for medical expenses, retirement, or other financial needs. For investors, life settlements offer a unique, non-correlated asset that can diversify their portfolios. Returns on these policies are generally unaffected by market fluctuations, making them a stable investment option. The increasing involvement of institutional investors has enhanced market efficiency and transparency, attracting more participants and contributing to the overall growth and maturity of the life settlements market. These sophisticated investors bring professional management to the process, further stabilizing and legitimizing the market.

### **Recent Development**

The secondary market for life insurance has seen significant growth and development, particularly in the United States. The market expanded from \$200 million in face value in 1993 [13] to \$4.6 billion in 2020 [15]. This growth indicates a broader acceptance and integration of life settlements as viable financial strategies for policyholders seeking immediate financial benefits. This expansion is driven by better regulatory oversight, consumer awareness, and the involvement of sophisticated institutional investors, which have helped stabilize and mature the market.

It is worth noting that one of the key factors in the development of the secondary market for life insurance is the size of the primary market. The Largest life insurance market worldwide is the US market, which made up 24.2% of the global premium volume in 2006. In contrast, the United Kingdom reached 14.1% and Germany accounted for 4.3% of the worldwide premium income (totaling \$2,209 billion) [11]. If the policyholder decides not to keep their policy active, they have several options: letting the policy lapse, surrendering it for the cash surrender value, or selling it on the secondary market. Usually, life settlement firms can offer a higher purchase price than the surrender value due to differences in the actuarial valuations.

In the US, the market volume is reported in terms of the face value of purchased policies. According to the U.S. Life Insurance Settlement Association, the market size of the 11 surveyed firms increased by 38.3%, from \$2.80 billion to \$3.90 billion in terms of death benefits settled in 2007. Conning Research estimated the market size to be \$5.5 billion in 2005 and \$6.1 billion in 2006. The number of policies settled rose by 43.3% to 2,025 during that period [11].

In contrast, Canada maintains tight restrictions on the life settlements market. These activities are illegal in most provinces, except in Quebec, where they are regulated and permitted.

As the market continues to evolve, it faces ethical and regulatory scrutiny, particularly about the nature of betting on life spans. This has led to discussions about the social implications of such investments and moral considerations of profiting from someone's death. These concerns highlight the need for robust regulatory frameworks. Such regulations are essential to ensure the market operates transparently and ethically, protecting the interests of all stakeholders involved while maintaining

the integrity of the life insurance industry.

## 2 An Example of Life Insurance Lifecycle

To better understand the entire process of managing and leveraging a life insurance policy, let us explore a detailed example that assumes the awareness of the secondary life insurance. It is also assumed that the policyholder seeks to maximize benefits, which means that the natural lapsation of the policy is not considered. This means that the policyholder may choose between surrendering the policy or selling it on the secondary market. The discussion will also cover the financial implications of each option and its impact on all parties involved, from the policyholder to the insurance company and potential investors.

### 2.1 Initial Purchase and Commitment

For example, at the beginning of age 45, an individual decides to take a proactive step towards securing the financial future of their family (beneficiaries). Understanding the uncertainties of life, they choose to purchase a whole life insurance policy as a protective buffer against the financial impact of unexpected life events on their family. By entering into this agreement, the policyholder ensures that their beneficiaries will receive a predetermined sum upon their death that can potentially help cover living expenses, outstanding debts, or educational costs, thus reducing potential financial burdens during challenging times. It is a strategic move that provides a safety net, ensuring that the policyholder's death does not result in a financial crisis for their beneficiaries.

The terms of this life insurance policy are carefully calculated and selected to balance affordability with coverage. The policyholder agrees to pay an annual premium at the beginning of each year, calculated based on factors such as the policyholder's age, health status, and lifestyle at the time of purchase. This ensures it remains within a manageable expense range while offering substantial protection. In exchange for these premium payments, the insurance company commits to paying a death benefit. This benefit is designed to provide significant financial relief and security to the policyholder's beneficiaries upon their death. For this example, the annual premium is set at \$1,000, and the death benefit is set at \$200,000.

### 2.2 Financial Re-evaluation

Suppose fifteen years after purchasing the policy, at the beginning of age 60, the policyholder's life presents unexpected twists. The policyholder finds themselves in financial difficulties and considers re-evaluating their assets and liabilities to financially make the most of their life insurance policy.

Over the years, the policyholder continues to pay \$1,000 in annual premiums. However, financial circumstances change unexpectedly. The policyholder's savings may not be as adequate as expected due to unforeseen medical expenses, changes in



employment status, or other life events. The need for immediate liquidity becomes critical, forcing the policyholder to consider a life insurance policy as a potential source of immediate funds. At this point, the policyholder is faced with the reality that their life insurance, originally intended as a form of protection, is now a valuable asset that might need to be used to stabilize their current financial situation. It's a decision that carries weight and complexity, requiring careful consideration of the implications for their future security and that of their beneficiaries.

In response to this financial crossroad, the policyholder considers two primary choices of action to liquidize the policy:

- **Surrendering the Policy:** This option would involve terminating the policy in exchange for the cash surrender value from the insurance company. This is a straightforward approach that offers immediate financial relief, although it has the potential cost of losing the future security provided by the death benefit.
- **Selling the Policy on the Secondary Market:** Alternatively, the policyholder may consider selling the life insurance policy to a third-party investor at a price above the surrender value. This option may provide a better financial return and ensure more immediate liquidity while transferring the policy's death benefit to another party.

Each choice presents different financial implications and strategic considerations. Surrendering the policy offers quick liquidity but at the cost of losing long-term security for the policyholder's beneficiaries. Selling the policy, however, might provide more substantial financial relief and preserve the policy's long-term benefits, although for someone else. Thus, the decision depends not only on the policyholder's immediate financial needs but also on their long-term considerations for their beneficiaries' well-being.

### 2.3 Option 1: Surrendering the Policy

When a policyholder chooses to surrender their life insurance policy, they are effectively terminating the policy before its maturity or their death. This action results in the insurance company paying out the cash surrender value, which is a specified amount calculated based on the policy's accumulated cash value minus any surrender charges or penalties predetermined in the policy terms.

#### Calculating the Cash Surrender Value

The cash surrender value often includes the total premiums paid into the policy, adjusted for policy expenses and the cost of insurance coverage provided up until the surrender. The cash surrender value is typically calculated based on several factors:

1. **Total Premiums Paid:** The cumulative amount of money the policyholder has paid in premiums over the life of the policy. The policyholder has paid

annual premiums of \$1,000 from age 45 to 60 (inclusive, since the premium is paid at the beginning of each year), which is a total of 16 years.

$$\text{Total Premiums Paid} = \text{Annual Premium} \times \text{years} = \$1,000 \times 16 = \$16,000$$

2. **Future Value of Premiums:** The premiums paid are usually invested by the insurance company, and the cash value accrues interest over time. The risk-free rate is commonly used when calculating the future value of premiums paid or any other cash flows that are assumed to be secure and not subject to default risk. We use the risk-free rate to calculate the future value of premiums paid or other secure cash flows. The risk-free rate is appropriate because it represents a secure investment return, accurately reflecting the accumulated value of the premiums over time.

For this example, the policy is assumed to include an investment component that grows at an average risk-free rate of 3% annually compounded. The actual calculation of compounded interest would depend on the specifics of how frequently the interest is compounded (annually, semi-annually, etc.), but for simplicity, a rough value is estimated using the future value of an annuity formula (This is a simplified example. Actual calculations may use more complex compounding methods and more precise net premium calculations):

$$FV = \text{Premium} \times \left( \frac{(1+r)^n - 1}{r} \right) = \$1,000 \times \left( \frac{(1+0.03)^{16} - 1}{0.03} \right)$$

$FV \approx \$20,156.88$  (This is an illustrative number; exact calculation might differ)

3. **Cost of Insurance and Administrative Fees:** The cost of insurance is the amount charged by an insurance company to provide life insurance benefits to the policyholder. It primarily covers the risk that the insurance company assumes in insuring the life of the policyholder. This cost reflects the insurer's risk exposure, which is determined based on several factors, including the insured's age, health, life expectancy, and the amount of the death benefit. The cost of insurance includes the cost of providing life insurance coverage and is systematically deducted from the accumulated funds to compensate the insurer for this risk.

In the example, the policyholder has continuously paid the annual premium of \$1,000 from the age of 45. During this time, they have also continuously enjoyed the coverage, which is equivalent to the insurance company having provided services according to the contract.

Administrative fees are the costs associated with managing the policy. These costs are also systematically deducted from the accumulated funds. The cost of insurance and administrative fees could vary widely based on the policy's terms, the policyholder's age, health at the start of the policy, and other risk factors.

In the example, the amount of total cost of insurance and administrative fees is assumed to be totally \$5,000 over these years.

4. **Surrender Charges:** Surrender charges, also referred to as surrender fees or penalties. These are fees imposed by the insurance company when a policyholder terminates their life insurance policy before the end of a pre-determined specified period. These charges serve multiple purposes: they help to discourage policyholders from ending their policies prematurely, cover the insurance company's administrative costs, and compensate for the loss of future premium payments. The structure and amount of surrender charges can vary widely among different insurance companies and types of policies. Typically, these charges are calculated as a percentage of the policy's cash value or the total premiums paid [17]. In this example, for simplicity, we assume a surrender charge of 5% of the accrued cash value.

$$\text{Surrender Charges} = 0.05 \times \$20,156.88 \approx \$1,007.84$$

### Final Calculation of the Cash Surrender Value

In this example, if the total premiums paid over 16 years amount to \$16,000 and the policy has accumulated interest (and it amounts to \$20,156.88), offset by various costs and fees, the insurance company might calculate a surrender value of

$$\text{Surrender Value} = \$20,156.88 - \$5,000 - \$1,007.84 = \$14,149.04$$

For simplicity, in this example, the cash surrender value is set as \$14,000. Choosing this option can provide immediate financial relief, which can be crucial in a financially difficult time. However, it comes at the cost of losing the future security provided by the death benefit, which was intended to support the policyholder's beneficiaries after their passing.

### Impact on the Policyholder

When a policyholder decides to surrender their life insurance policy, they receive the cash surrender value, which in the example amounts to \$14,000. This immediate lump sum payment can be a significant benefit, releasing short-term financial stress. The immediate liquidity provides crucial financial relief, especially useful for addressing urgent needs such as medical expenses, debt repayment, or other pressing financial obligations.

However, surrendering the policy also means the policyholder gives up the future death benefit of \$200,000. This loss can impact the policyholder's beneficiaries, as they will no longer receive the financial support originally intended upon the policyholder's death. Without this death benefit, long-term financial planning can be disrupted, potentially leaving beneficiaries without the security that was planned for them.

Another impact of surrendering the policy is that the policyholder no longer has to make the annual premium payments, which were \$1,000 in this example. This can provide significant financial relief, particularly if continuing these payments was becoming a burden due to changing financial circumstances. However, it is also

important to note that the cash surrender value received is the final amount, and there will be no further growth or interest accumulation on this sum, as would have been possible if the policy had remained active.

### **Impact on the Insurance Company**

When a policyholder decides to surrender their life insurance policy, they receive the cash surrender value. This amount is usually calculated based on the premiums paid, the cash value accumulated, and minus any applicable surrender charges. For the insurance company, the surrender of a policy can often be financially advantageous. When a policy is surrendered, the insurer's obligation to pay the death benefit ceases immediately. This termination of liability can be financially beneficial if the surrender value is significantly less than the death benefit. Moreover, the insurance company no longer has to take the risk of paying out the policy, which may happen earlier than actuarially expected, especially if the policyholder's health is declining.

The end of premium payments after a policy is surrendered might seem like a disadvantage due to the loss of cash flow. However, this might be offset by the company's release of the reserves held against the policy. Insurance companies are required to maintain reserves to ensure they can meet future policyholder claims. When a policy is surrendered, these reserves can be reallocated or used for other purposes, thereby increasing the insurer's financial flexibility and potentially improving profitability.

### **Impact on the Investor**

From the investor's perspective, the surrender of a life insurance policy represents a significant opportunity cost, as it eliminates a potential investment opportunity. Investors in the secondary life insurance seek policies that balance risk and return. When a policy is surrendered, it is removed from the market, thus eliminating the possibility for investors to acquire it. This effect is particularly large if the insured's health status and life expectancy make the policy attractive as an investment, as such policies can yield substantial returns.

The removal of a potentially high-yield asset means investors miss out on the chance to enhance their portfolios with a profitable investment. Additionally, the absence of this investment opportunity can cause investors to allocate funds to less desirable options, potentially lowering overall returns. Therefore, the surrender of a policy not only represents the loss of a single investment but also affects the broader strategy of investors seeking profitable opportunities in the secondary market.

## **2.4 Option 2: Selling the Policy on the Secondary Market**

Alternatively, the policyholder may explore the option of selling their policy on the secondary market. This involves transferring the ownership and benefits of the policy to a third-party investor in exchange for a lump sum payment that typically exceeds the cash surrender value.

### Value of the Policy

According to Doherty and Singer [8], there exists significant undervaluation faced by policyholders with impaired health when they attempt to surrender their policies. As shown in Figure 1, the policy value for a policyholder with poor health is higher than both the economic value based on normal health and the surrender value. This discrepancy arises because the present value of the death benefit increases as the policyholder's life expectancy shortens, which is not reflected in the surrender value set by the insurance company. However, in the secondary market, life settlement firms can offer valuations closer to the true economic worth of the policies.

**Figure 1. Economic Values and Surrender Value**

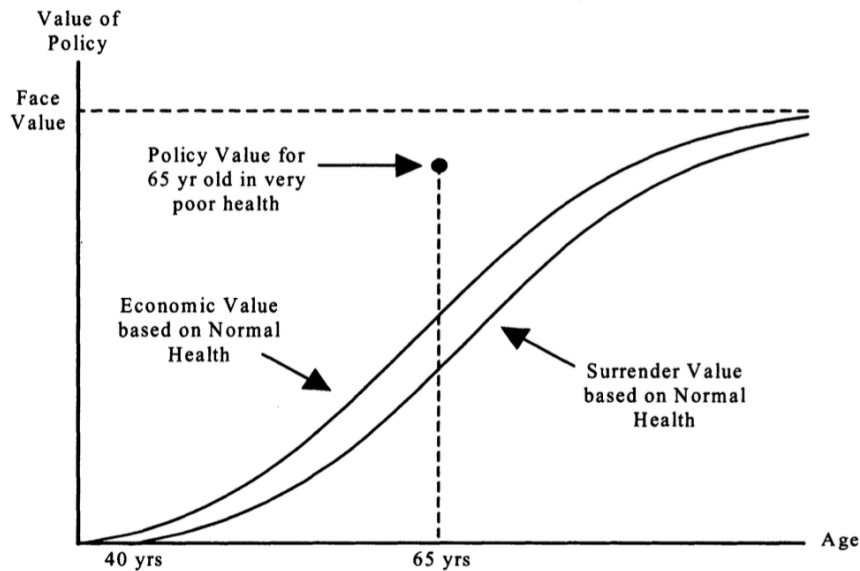


Figure 1: Economic Values and Surrender Value. Note. Adapted from "The Benefits of a Secondary Life Insurance Policies," by Doherty, N. A., and Singer, H. J., 2003, *Real Property, Probate and Trust Journal*, 38(3), p 462. <http://www.jstor.org/stable/20785738>

Investors in the secondary market evaluate the policy based on several factors, including the amount of death benefit, the health and life expectancy of the insured, and the remaining premium payments. These investors are often willing to pay more than the surrender value because they are betting on the timing of the benefit payout, expecting that the cost will be offset by the final death benefit. Thus, the value of a policy in the secondary market can be calculated considering the present value of the death benefit and the present value of remaining premium payments. The sample calculations would be as follows (this is a simplified example; actual calculations may use more complex actuarial methods):

### Introduction to Key Functions

- **Mortality Table** A mortality table shows the rate of deaths occurring in a particular population during a selected time interval. In this example, the probabilities of survival ( ${}_t p_x$ ) and death ( $q_{x+t}$ ) are derived from the actuarial life tables published by the Society of Actuaries. These tables provide statistical estimates of mortality rates based on extensive historical data. In this example, the mortality table "2001 CSO Select and Ultimate - Male Smoker, ALB" [21] is used.
- **Discount Rate** When evaluating the present value of uncertain future cash flows, such as the potential future benefits from an investment or a policy payout, the discount rate is used. This rate reflects the investor's required return, which includes compensation for taking on risk. Since we are evaluating the present value of the death benefit or any other uncertain future payouts, the discount rate would be appropriate because it accounts for the time value of money and the specific risks associated with the investment, including the credit risk of the insurance company and the mortality risk of the insured. In this example, the discount rate of 5% is used.
- **Probability of Survival** ( ${}_t p_x$ ):  ${}_t p_x$  represents the probability that an individual who is currently  $x$  years old will live for another  $t$  years. This probability is derived from actuarial life tables and is crucial for estimating the current value of future premium payments.
- **Probability of Death** ( $q_{x+t}$ ):  $q_{x+t}$  represents the probability that an individual who is currently  $x$  years old will die within the next year when they reach age  $x + t$ . This probability is also derived from actuarial life tables and is essential for estimating the current value of the expected death benefit.
- **Present Value of Death Benefit:** Calculates the current value of the future death benefit paid by the life insurance policy. It accounts for the time value of money, the probabilities of death at each age, and the appropriate discount factor. By discounting the expected death benefit to the present, it reflects the actual economic value of the benefit, considering the likelihood of different mortality outcomes over time. In this example, we multiply the death benefit (\$200,000) by the probability of death at each future age ( $q_{x+t}$ ) and the probability of surviving to that age ( ${}_t p_x$ ). We then discount these values back to their present value using the discount rate (5%).
- **Present Value of Premium Payments:** Calculates the current value of all future premiums that the policyholder is supposed to pay to maintain the policy. This function also considers the time value of money and the probabilities of survival at each age. By discounting these future premium payments to the present, it provides an accurate measure of the financial commitment required to keep the policy in force. In this example, we multiply the annual premium

(\$1,000) by the probability of surviving to each future age ( ${}_t p_x$ ). We then discount these values back to their present value using the discount rate (5%).

### Calculation

1. **Present Value of Death Benefit** Recall that the death benefit is set at \$200,000

$$\text{Present Value of Death Benefit} = \sum_{t=0}^{\infty} \frac{\$200,000 \cdot q_{x+t} \cdot {}_t p_x}{(1 + 0.05)^{(t+1)}} = \$91,309.29$$

2. **Present Value of Premium Payments**

$$\text{Present Value of Premium Payments} = \sum_{t=1}^{\infty} \frac{\$1,000 \cdot {}_t p_x}{(1 + 0.05)^t} = \$34,237.57$$

3. **Value of the Policy**

#### Net Value of the Policy

$$\begin{aligned} &= \text{Present Value of Death Benefit} - \text{Present Value of Premium Payments} \\ &= \$91,309.29 - \$34,237.57 \\ &= \$57,071.72 \end{aligned}$$

For simplicity, in this example, the investor offers \$57,000 for the policy. This offer considers the policyholder, now aged 60, has a life expectancy that allows for a profitable payout period, with a death benefit of \$200,000 and expected ongoing premiums.

### The Process of the transaction

Selling a policy on the secondary market is more complicated than surrendering it back to the insurance company. The policyholder must find a suitable buyer, negotiate the sale, and handle the transfer of ownership. The financial return is usually higher and provides greater liquidity compared to surrender. Moreover, this option relieves the policyholder from future premium obligations and transfers them to the investor. However, it also means transferring the policy's potential future benefits away from the policyholder's beneficiaries to a third party.

Once a life insurance policy is sold on the secondary market, the investor becomes the new policy owner. This transition involves several key steps (Brockett et al. [5]):

1. **Initiating the Contact** To sell the life insurance policy, the policyholder would contact settlement firms. Settlement firms, also known as life settlement providers, facilitate the transaction. They provide consultations to the policyholder to explain the process, benefits, and potential downsides of selling their life insurance policies.

2. **Medical Information and Life Expectancy Assessment** The settlement firm gathers medical information about the policyholder's current health and works with life expectancy underwriters to assess mortality risk.
3. **Assessment and Agreement** The settlement firm assesses the value of the policy and negotiates with the policyholder to offer a lump sum payment that is higher than the policy's cash surrender value but less than its death benefit. The goal is to create a mutually beneficial agreement for both the policyholder (seller) and the third-party investor (buyer). Once a policyholder agrees to sell their policy, the settlement company seeks out investors interested in purchasing it. They conduct due diligence to ensure the policy is a viable investment, verify policy details, and ensure investors understand the required ongoing premium payments.
4. **Transfer of Ownership** The original policyholder and the investor must complete the transfer process. This includes a change of ownership and, typically, a change of beneficiary.
5. **Continuation of Premium Payments** The investor assumes responsibility for ongoing premium payments to keep the policy active.
6. **Claiming the Death Benefit** Upon the death of the original policyholder, the investor claims the death benefit from the insurance company. To do this, the investor submits a claim form along with a certified copy of the death certificate. The insurance company then processes the claim and pays the death benefit to the investor if everything is in order.

### Impact on the Policyholder

From the example, the policyholder faces financial difficulties at age 60. If they decide to sell their life insurance policy on the secondary market, the transaction sets off a series of financial outcomes that affect all parties involved. The policy was initially purchased at the beginning of age 45 with a death benefit of \$200,000 and annual premiums of \$1,000. With the continuous annual premium payment, the policy has matured somewhat financially. Faced with pressing financial needs, the policyholder finds the secondary market an appealing option that offers more liquidity than surrendering the policy to the insurance company.

Upon deciding to sell, the policyholder manages to get a sale price of \$57,000 from a third-party investor, which is higher than the cash surrender value of \$14,000. This immediate financial gain provides the policyholder with a lump sum that can significantly ease their current financial stress. Moreover, by selling their policy, the policyholder is relieved from the burden of continuing to make premium payments, which amount to \$1,000 annually. This reduction in the financial obligations can be essential, especially if these payments were becoming unsustainable due to the changed financial circumstances. However, this decision also means that the policyholder terminates the policy and gives up the death benefit, which would have otherwise gone



to their beneficiaries upon their death. This loss could have significant long-term impacts for the financial planning of their family.

### Impact on the Insurance Company

When a policy is sold on the secondary market, the insurance company continues to receive premium payments of \$1,000 annually from the new policy owner (the investor). This helps maintain the company's revenue stream and supports its overall financial health. Despite the beneficial inflow of premiums, the company's liability under the policy remains unchanged. The insurance company is still required to pay the \$200,000 death benefit upon the death of the original policyholder, thus maintaining a financial risk that must be managed over time. This continued liability is an important consideration because it requires the insurance company to manage the ongoing financial risk associated with the death of the insured. It requires maintaining adequate reserves, affects cash flow, and influences long-term financial strategies and actuarial planning. Additionally, regulatory requirements to ensure sufficient capital for future payouts must be met, all of which collectively increase the company's risk exposure and affect its long-term financial planning.

There are also some administrative costs involved in transferring policy ownership in the secondary market. Although the costs are generally minimal, this process requires the insurance company to update records and process the change of ownership. These are routine business operations for most insurance companies and do not significantly impact the bottom line.

### Impact on the Investor

The investor takes on the role of the policy owner, with a unique set of financial risks and opportunities. If the insured passes away soon after the policy is purchased, the investor stands to see a high return on their investment. This scenario would involve paying the initial \$57,000 purchase price for the policy, plus continuing the annual premium payments, but potentially receiving the \$200,000 death benefit within a few years if the insured passes. This investment decision is heavily influenced by the health and life expectancy of the insured, which affects the timing and magnitude of returns.

#### 1. High Return on Early Payout

- **Scenario:** If the insured passes away soon after the policy is purchased.
- **Explanation:** The investor pays the initial \$57,000 purchase price for the policy and continues to pay the annual premium of \$1,000. If the insured passes away within a few years, for example, in 2 years, the investor receives the \$200,000 death benefit.
  - **Investment Costs:** \$57,000 (purchase price) + \$2,000 (2 years of premiums) = \$59,000.
  - **Return:** \$200,000 (death benefit).

- **Net Profit:**  $\$200,000 - \$59,000 = \$141,000$ .
- **Return on Investment (ROI):**  $\frac{\$141,000}{\$59,000} \approx 239\%$ .

#### 2. Moderate Return on Average Life Expectancy

- **Scenario:** If the insured lives to their expected lifespan, estimated at 16 years.
- **Explanation:** The investor pays the initial \$57,000 purchase price for the policy and continues to pay the annual premium of \$1,000 for 16 years. The insured passes away at the expected lifespan.
  - **Investment Costs:** \$57,000 (purchase price) + \$16,000 (16 years of premiums) = \$73,000.
  - **Return:** \$200,000 (death benefit).
  - **Net Profit:**  $\$200,000 - \$73,000 = \$127,000$ .
  - **Return on Investment (ROI):**  $\frac{\$127,000}{\$73,000} \approx 174\%$ .

#### 3. Low or Negative Return on Extended Lifespan

- **Scenario:** If the insured lives significantly longer than expected, resulting in high premium payments.
- **Explanation:** The investor pays the initial \$57,000 purchase price for the policy and continues to pay the annual premium of \$1,000. If the insured lives 40 more years, the investor's costs increase significantly. In some cases, the costs could even surpass the death benefit.
  - **Investment Costs:** \$57,000 (purchase price) + \$40,000 (40 years of premiums) = \$97,000.
  - **Return:** \$200,000 (death benefit).
  - **Net Profit:**  $\$200,000 - \$97,000 = \$103,000$ .
  - **Return on Investment (ROI):**  $\frac{\$103,000}{\$97,000} \approx 106\%$ .

As can be seen from the example, the third-party investor's return is closely tied to the insured's lifespan. Thus, they must carefully assess the insured's health and life expectancy and balance the potential for high returns against the risk of extended premium payments. Actuarial analysis and mortality assessments are essential to making informed investment decisions in the secondary market for life insurance.

## 3 Impact on Stakeholders

In exploring the secondary market for life insurance, it is crucial to assess its multi-faceted impact on stakeholders. This market primarily affects policyholders, investors, and insurance companies. For policyholders, particularly those with deteriorating health or financial need, the secondary market offers a vital financial lifeline, allowing them to sell their policies at a value typically higher than the surrender value

provided by insurers. This not only increases immediate liquidity into their personal finances but also relieves them from the burden of continuing premium payments. Insurers, on the other hand, would face both challenges and opportunities. Selling the premature policy on the secondary market can serve as an alternative to natural lapse and surrender. This can result in adjusting actuarial assumptions and capital reserves to manage the risks associated with extended policy duration. However, this also presents opportunities to redesign products that better align with consumer behaviors, improving customer retention and competitive advantage in the marketplace. For investors, life settlements offer a unique, non-traditional investment opportunity characterized by potentially high returns. However, these returns come with substantial risks, including longevity risk, liquidity risk, and regulatory changes, requiring sophisticated risk assessment models to ensure profitability.

#### **3.1 The Impact on the Policyholders**

The secondary market for life insurance has emerged as an attractive financial innovation, offering policyholders an alternative to traditional cash surrender options provided by primary insurance companies. This market allows policyholders to sell their life insurance policies at prices that more accurately reflect their true market value, particularly in response to changes in health or financial conditions. The enhanced liquidity and fair compensation offered by the secondary market can provide critical financial relief, especially for those facing unexpected health declines or rising medical costs. However, this dynamic also introduces complexities, such as increased premiums and front-loading of costs, which can significantly impact policyholders' welfare. By examining the contributions of key studies, this section explores the multifaceted impacts of the secondary market on policyholders, highlighting both the benefits and challenges associated with this financial innovation.

##### **Enhanced Liquidity and Impartial Compensation**

The secondary market for life insurance serves as an alternative to the traditional cash surrender options offered by primary insurance companies. This market provides higher compensation that aligns more closely with the true market value of the policy, which is particularly beneficial when policyholders face unexpected changes in health or financial conditions. The ability to sell these policies at a fair market price offers a crucial financial safety net for policyholders facing unexpected health declines or rising medical costs. For example, a policyholder whose health has unexpectedly declined can use the secondary market to sell their policy at a rate that accounts for their reduced life expectancy, which is likely much higher than the traditional surrender value (Fang and Kung [10]). Traditionally, insurance companies offer cash surrender values based on actuarial assumptions of normal health conditions, which often fail to reflect the true value of a policy when the policyholder's health has deteriorated.

The liquidity provided by the secondary market is particularly valuable for individuals with impaired health who need access to cash quickly. Doherty and Singer [8] reinforce that secondary markets can lead to improved welfare for policyholders

by offering them a better financial alternative to traditional surrender options. They point out that policyholders who are aware of the secondary market can make more informed decisions and benefit from higher liquidation values, thus improving their financial well-being. Hilpert et al. [16] note that the secondary market can offer policyholders compensation that more accurately reflects the true market value of their policies, which is especially useful when deteriorating health could otherwise reduce their quality of life and financial stability. Moreover, Daily et al. [6] highlight that secondary markets offer health-contingent liquidation values. This refers to the payout policyholders receive when they sell their life insurance policies on the secondary market, which is contingent on the policyholder's health status.

The secondary market adjusts the value of life insurance policies and potentially increases the payout to policyholders who choose to sell their policies. The payouts are typically higher than the standard surrender values offered by insurance companies. This is because the secondary market considers the policyholder's reduced life expectancy, providing a more accurate reflection of the policy's market value. This fairer compensation is crucial, especially for those who need funds to cover urgent financial needs.

#### **More Competitive Market Environment**

The secondary market enhances transparency and consumer awareness. Policyholders become more informed about the value of their policies and the options available to them, leading to better decision-making. Hilpert et al. [16] note that informed policyholders are more likely to benefit from secondary market transactions. With the ability to compare offers and choose the best available option, these policyholders are better positioned to make decisions in their best financial interests. This increased awareness and transparency will ultimately lead to a more informed and competitive market environment.

The emergence of the secondary market has stimulated a more competitive market environment, prompting insurance companies to re-evaluate the surrender values they offer. This competition diminishes the monopsony power of insurance companies, ensuring better financial outcomes for policyholders (Doherty and Singer [8]). Historically, without an active secondary market, insurance companies had little incentive to offer fair surrender values for policies of impaired lives. They could exercise monopsony power, controlling the market to their advantage. However, the emergence of an active secondary market has changed this dynamic. Life settlement firms are now willing to pay more than the traditional surrender values, reflecting a more accurate actuarial valuation of the policies. As a result, policyholders can receive better financial outcomes and access necessary funds when they need them most. This eliminates the need to wait for the policy to mature or to face adverse financial compromises.

The competition in the secondary market ensures that policyholders are not disadvantaged when they decide to exit their policies early. Historically, insurance companies have benefited from policy lapses or surrenders, especially from policyholders with impaired health. The introduction of the secondary market changes this dynamic. It decreases surrender rates, particularly among impaired individuals, which

reduces surrender profits. This competitive pressure from the secondary market can lead insurance companies to adjust their pricing models and strategies. They might offer more attractive terms to retain policyholders and prevent them from selling their policies on the secondary market. Gatzert et al. [12] state that increased competition may lead to better value and service for policyholders as insurance companies enhance their policy offerings to retain customers. To compete with the secondary market, insurance companies have adopted new strategies such as offering accelerated death benefits (ADB). These benefits allow policyholders diagnosed with a terminal illness to receive a portion of their death benefit early. Insurers might also broaden the scope of ADB riders to include coverage for chronic illnesses (Doherty and Singer [8]).

#### **Premium Increases and Front-Loading of Premiums**

Insurance companies may respond to the secondary market by adjusting premiums to mitigate the risks associated with higher surrender rates. Daily et al. [6] explain that insurance companies raise premiums to compensate for the potential loss of profitable policies to the secondary market. This increase can negatively impact policyholders' welfare. For instance, policyholders may face higher upfront costs (front-loading) when purchasing or renewing policies. This can strain their financial resources, especially if they are already on tight budgets. The financial burden is particularly significant in the early stages of the policy when policyholders' income is likely to be lower and more volatile.

Front-loaded premiums require consumers to pay higher premiums early in the policy term. This practice impacts both the welfare of individual policyholders and the overall insurance market. This practice is designed to stabilize the cost of premiums over the entire duration of the policy. By paying more upfront, policyholders are protected from potential premium increases in the future due to changes in their health or risk status. This strategy helps prevent them from being priced out of coverage as they age or if their health deteriorates. However, this approach can reduce the overall benefit to policyholders. Front-loaded premiums require higher initial payments, which can limit the liquidity and financial flexibility of policyholders. The resources committed early on could have been used for other investments, representing a significant opportunity cost. Furthermore, adjustments made by insurance companies in response to the secondary market can lead to higher overall insurance costs. This can diminish the financial advantages policyholders might gain from the secondary market, resulting in higher out-of-pocket expenses. Policyholders with lower incomes or limited cash flow early in life may find it especially challenging to cope with these increased costs (Daily et al. [6]; Gottlieb and Smetters [14]).

Hilpert et al. [16] and Gatzert et al. [12] further elaborate on the secondary market's impact on premium increases. They note that the enhanced liquidity, financial flexibility, and market-value compensation of policies lead insurance companies to raise premiums to offset the increased risk of higher lapse rates and the associated potential loss in premiums. This shift occurs when more policyholders choose to liquidate policies to meet immediate financial needs rather than maintain them over the

long term. The interplay between policyholder behavior and insurer responses highlights a critical balance: the potential financial gains from higher surrender payouts in the secondary market may be offset by the increased premiums. This equilibrium is delicate and varies with market conditions, policyholder decision-making, and insurance companies' risk assessment strategies. For instance, if many policyholders decide to sell their policies due to favorable conditions in the secondary market, insurance companies may react by significantly increasing premiums for new policies or adjusting the terms of existing ones to prevent financial shortfall. Consequently, while policyholders can benefit from immediate financial relief and potential gains through higher payouts in the secondary market, they must also consider the possibility of corresponding increases in premiums, which could ultimately diminish overall welfare.

These adjustments by insurance companies, while aimed at protecting their financial health, can make life insurance less affordable and accessible for some policyholders. Those with limited financial means or those who purchased policies expecting lower long-term costs may find themselves facing unexpected financial strain due to these premium adjustments.

In conclusion, the secondary market for life insurance offers opportunities for enhanced liquidity and more impartial compensation, which is particularly beneficial for policyholders with deteriorated health conditions. However, the challenges of increased premiums and complex dynamics between the insurance companies and the policyholder require careful consideration. The collective insights from the discussed studies emphasize the need for policyholders to approach this market with a comprehensive understanding of both its benefits and potential risks. The informed approach will enable policyholders to optimize their financial outcomes, balancing immediate benefits against long-term costs effectively.

## **3.2 The Impact on the Insurance Companies**

While it offers clear benefits to policyholders, especially those in poor health, it also poses substantial challenges for insurance companies. This market impacts insurers by affecting profitability, changing surrender behaviors, and causing adverse selection. As a result, insurance companies must adapt by modifying policy structures, re-evaluating premium payment methods, and developing new strategies to maintain profitability and manage risk. This section explores the impact of the secondary market on insurance companies, focusing on changes in policy structures, profitability, risk management, premium payments, and overall market dynamics.

### **Premium Payments Structure and Profitability**

The structure of premium payments significantly influences the profitability of insurance companies, particularly in the context of a secondary market for life insurance policies. The emergence of secondary markets, where policyholders can sell their policies to third parties, disrupts traditional premium payment models. Insurance companies have historically benefited from lapses and surrenders, allowing them to

retain premiums without paying out the death benefit. However, with the option for policyholders to sell their policies instead of surrendering them, the profitability of insurers is adversely affected.

Daily et al. [6] They analyze this disruption by emphasizing that insurers need to adjust their premium structures to mitigate the financial impact of reduced surrender profits. When policyholders sell their policies on the secondary market, insurers lose out on the surrender profits they would have otherwise retained. These profits are significant because they constitute a substantial portion of insurers' income, derived from premiums collected without corresponding payouts due to policy termination. As a result, insurers must restructure premiums to compensate for this lost revenue. This adjustment is crucial to ensuring their financial stability and profitability despite the reduction in surrender profits.

Equity-linked life insurance is a popular insurance option that emerged in the latter half of the 20th century. Since its inception, it has evolved significantly to incorporate both financial and insurance risk elements (Melnikov and Romanyuk [20]). Hilpert et al. [16] show that equity-linked life insurance policies with surrender guarantees lead to increased premiums in the secondary market. This happens because insurers need to compensate for higher surrender rates. Investors acquiring these policies tend to optimize surrender behavior, which ultimately impacts the overall profitability of the insurers' products. Equity-linked life insurance policies with surrender guarantees are particularly impacted by the secondary market. These policies combine a death benefit with an investment component tied to the performance of specified equity indices or mutual funds and include embedded options that allow for surrender at a guaranteed minimum value. In the secondary market, financially astute investors purchase these policies and exercise the surrender option optimally at optimal times. They carefully time the surrender to coincide with periods when the guaranteed payout exceeds the market value of the underlying assets. This behavior leads to higher surrender rates than insurers originally anticipated, as the guaranteed surrender values usually exceed the premiums paid. The specific nature of these equity-linked policies, with values tied to market performance, adds complexity since market fluctuations influence surrender behavior. During market downturns, the guaranteed surrender value becomes more attractive, leading to increased surrenders and higher costs for insurers. As a result, insurers must raise premiums to cover these higher expected payouts. They also need to adjust their actuarial models and risk management strategies to account for the optimized surrender behaviors driven by the secondary market, ensuring they can maintain profitability.

The impact of these altered surrender behaviors is further quantified by Gatzert et al. [12], who show a significant reduction in profitability due to decreased surrender rates. Their study highlights that policies with single premium payments are less affected compared to those with annual premiums, which are more vulnerable to adverse selection. Single premium policies collect all premiums upfront, protecting insurers from future adverse selection risks where policyholders with higher mortality risks might continue their policies. Conversely, annual premium policies face ongoing adverse selection risks as healthier policyholders might opt out, leaving a pool with disproportionately higher mortality risk. This adverse selection promotes a higher

incidence of claims, reducing profitability for insurers. More details about adverse selection will be discussed in the following section.

Moreover, changes in policy structure are also evident in the shift towards more front-loaded premium structures. Daily et al. [6] note that the emergence of life settlements reduces the beneficial lapsation that insurers traditionally relied upon. This change necessitates premium structures that account for the increased risk posed by the secondary market. Although front-loaded premiums can help offset potential losses, they may be less appealing to consumers and more challenging for insurers to manage.

In summary, the secondary market for life insurance policies requires adjustments in premium structures and policy designs. Insurers need to adapt by increasing premiums and considering front-loaded premium structures. These changes are crucial for mitigating the financial impact of the secondary market. By making these adjustments, insurers can maintain profitability in the middle of the evolving market dynamics.

#### **Impact of Adverse Selection on Insurance Companies**

Adverse selection is a major issue intensified by the secondary market. It occurs when individuals who know they are at a higher risk of making insurance claims are more likely to purchase or retain insurance, while those at lower risk are less likely to do so.

Daily et al. [6] note that the emergence of life settlements reduces the beneficial lapsation that insurers traditionally relied upon. This occurs because policyholders, especially healthier ones, might voluntarily allow their life insurance policies to lapse. This usually happens because they no longer need the coverage, cannot afford the premiums, or find that the benefits do not justify the cost. When policies lapse naturally, insurers do not have to pay out the death benefits. Natural lapsation is beneficial for insurers because it reduces the number of policies that might result in future claims, thus lowering their payout burden.

However, the secondary market disrupts this process. Policyholders who sell their policies on the secondary market typically sell to investors who manage these policies optimally. These investors have a strong financial incentive to maintain the policies because their return on investment depends on eventually receiving the death benefit. Therefore, they continue paying the premiums and hold onto the policies until the policyholder's health declines significantly or they pass away. While insurers continue to receive premiums, they also face a higher likelihood of paying out the death benefits. This leads to increased payout obligations over time, which is financially harmful to insurers.

According to Gatzert et al. [12], the secondary market causes an adverse shift in the insured risk portfolio, with high-risk individuals remaining insured while low-risk individuals are more likely to surrender or sell their policies. Bauer et al. [1] further highlight that the secondary market allows individuals to leverage private information about their mortality risks. This leads to a significant adverse shift in the insured risk portfolio, increasing the insurer's costs and payout obligations due to the higher



frequency and amount of claims.

This shift results in a higher incidence of claims than anticipated, increasing insurers' costs. Insurers set premiums based on a balance of low-risk and high-risk policyholders within a large pool. Low-risk policyholders are those who are less likely to claim insurance benefits soon due to better health and longer life expectancy. High-risk policyholders, on the other hand, have poorer health and a shorter life expectancy, making them more likely to claim benefits sooner. When healthier, low-risk policyholders leave the pool, the remaining pool consists of higher-risk individuals who are more likely to claim the death benefit sooner.

Higher risk in the pool is unfavorable for insurers because it undermines the statistical assumptions used in underwriting and pricing policies. These assumptions rely on a balanced mix of low- and high-risk individuals. When the risk pool skews towards higher-risk individuals, insurers face more frequent and higher payouts than initially projected. Even though the insured individuals do not change, this concentration of higher-risk policyholders leads to more frequent claims within a shorter time frame than initially projected.

Insurers rely on a mix of low- and high-risk individuals to balance the overall risk and keep premiums affordable. When this balance is disrupted, insurers must either raise premiums for new and existing policyholders or accept reduced profitability. Both options have adverse consequences: higher premiums may drive away low-risk policyholders, further exacerbating adverse selection, while reduced profitability threatens the insurer's financial stability.

In summary, the secondary market for life insurance policies exacerbates adverse selection. High-risk individuals retain their policies while low-risk individuals sell theirs, disrupting the natural lapsation process. This increases the frequency and amount of claims, elevating the overall risk and financial burden on insurers. Insurers face increased costs and must adapt by implementing more robust risk management strategies and adjusting premium structures to maintain profitability and financial stability. The challenge lies in balancing the need to compensate for higher risks with the necessity of keeping premiums attractive to consumers.

#### **Actuarial Calculation and Risk Management Strategies**

The presence of the secondary market significantly impacts actuarial calculations and risk management strategies for insurers. Traditional actuarial models, which rely on predictable surrender rates and mortality assumptions, are no longer adequate due to the new variables introduced by the secondary market.

Daily et al. [6] highlight that insurers need to incorporate factors such as the likelihood of policy sales based on health status into their models to accurately predict future liabilities and cash flows. This adjustment is crucial for insurers to adapt to the increased unpredictability in policyholder behavior. Moreover, the performance and risks associated with open-end life settlement funds introduce specific risks such as liquidity, longevity, and valuation risks that are not fully captured by traditional actuarial models. Braun et al. [4] explain that the uncertainty in the timing of death benefit payouts introduces significant longevity risk. If the insured lives longer than

expected, the insurer must continue to manage these liabilities over a more extended period, which can increase costs and reduce profitability.

Longevity risk arises because insurers must maintain reserves for future payouts longer than anticipated. These reserves are financial provisions set aside to ensure insurers can meet future policyholder obligations, such as death benefit payouts. They are calculated based on expected mortality rates and the anticipated timing of claims. However, when policyholders live longer than expected, insurers must hold these reserves for a more extended period, tying up capital that could otherwise be used for investments or other operational needs. This requirement to maintain higher reserves increases the cost of capital for insurers and reduces their financial flexibility, as funds are locked in to cover future payouts rather than being available for other uses. This extended duration of liabilities can strain the insurer's financial resources and affect overall profitability.

The complexity of equity-linked life insurance policies with surrender guarantees adds significant challenges to actuarial calculations. These policies link their value to the performance of underlying financial assets, introducing extra layers of risk and uncertainty. Hilpert et al. [16] emphasize that market fluctuations can greatly influence the surrender behavior of such policies. This necessitates continuous updates to actuarial models to reflect current market conditions and policyholder behavior. Consequently, insurers must be agile in their actuarial approaches to keep up with the dynamic nature of equity-linked policies.

To mitigate the adverse effects of the secondary market, insurers might consider developing products that are less sensitive to surrender behaviors or designing policies with features that discourage adverse selection. For example, implementing higher surrender charges can make it less appealing for policyholders to sell their policies, thereby reducing the likelihood of optimized surrenders by third-party investors. Another strategy is front-loading premiums to collect more revenue upfront, which can offset potential losses from policyholder exits later on. These strategies, suggested by Daily et al. [6] and Gatzert et al. [12], aim to maintain profitability and financial stability despite the disruptive influence of the secondary market.

Furthermore, advanced risk management strategies are essential to adapt to these changes. Gatzert et al. [12] advocate for using models that include stochastic frailty factors to account for mortality heterogeneity, which can significantly affect the valuation of surrender options. By integrating these factors, insurers can better understand the impact of the secondary market on their portfolios, allowing for more accurate actuarial predictions and effective risk management. This approach helps insurers develop dynamic models that adjust to market changes and incorporate the potential for life settlements into their risk assessments.

For example, the insurers may respond to the challenges of the secondary market for life insurance by introducing a buy-back program. If an insurer sees many policyholders selling their policies to third-party investors, they could offer to buy these policies back at a competitive rate. This helps the insurer keep control over its risk pool and manage its liabilities more effectively. Moreover, insurers might enhance their policies by offering more attractive options, such as reduced paid-up policies or loyalty programs that reward long-term policyholders. These strategies can make it

more appealing for policyholders to keep their policies instead of selling them, helping insurers deal with the issues brought about by the secondary market.

In conclusion, the secondary market for life insurance policies compels insurers to adjust their actuarial and risk management strategies. Incorporating new variables such as health status-based policy sales, adopting advanced models that account for market and mortality heterogeneity, and implementing robust risk management frameworks are crucial steps for insurers to maintain profitability and manage risks in this evolving market environment. By adopting more sophisticated risk management practices, insurers can effectively address the challenges posed by the secondary market and ensure long-term sustainability.

### **3.3 The Impact on the Third-Party Investors**

The secondary market for life insurance allows policyholders to sell their policies to third-party investors for a lump sum payment. This payment exceeds the policy's cash surrender value but is less than its face value. The market has grown significantly, offering new opportunities and challenges for investors. Investors, such as mutual funds and institutional investors, are increasingly drawn to life settlements as a way to diversify their portfolios and achieve higher returns. However, investing in life settlements comes with risks, including longevity risk, mortality risk, liquidity risk, and potential regulatory changes. This section analyzes the impact of the secondary life insurance market on third-party investors, focusing on its benefits, risk factors, market opportunities, and the issue of asymmetric information.

#### **Diversification and Return Characteristics**

The secondary life insurance market presents significant opportunities for third-party investors. They can purchase policies at a discount and potentially achieve substantial returns if managed properly. Investing in life settlements exposes investors to longevity and mortality risks, which can be economically viable if these risks are well-managed. According to Davó et al. [7], life settlements can be an attractive investment for those willing to navigate the market's complexities and inherent risks. This appeal stems from the potential for higher returns compared to traditional financial markets, as long as the life expectancy of the insured is accurately estimated.

Additionally, the secondary market allows investors to capitalize on the aging demographic trend. As the population ages, the demand for life settlements is expected to grow, offering more investment opportunities. Braun et al. [4] discuss how open-end life settlement funds have capitalized on these trends, providing steady returns to investors despite the inherent risks. This growing market indicates robust potential for future investments, especially as more policyholders become aware of and participate in the secondary market.

Life settlements offer significant diversification benefits to investors. Due to their low correlation with traditional asset classes like stocks and bonds, including life settlements in a portfolio can enhance overall performance and reduce risk. Typically, life settlements offer higher returns compared to other fixed-income investments, making

### 3. Impact on Stakeholders

#### Quarterly Return Statistics for Portfolios Ranked by Investor Risk Tolerance

	Conservative	Moderate	Aggressive
Panel A: Portfolios Without VLSI			
Total return over period	158.28%	176.92%	165.36%
Mean return	1.55%	1.69%	1.71%
Median return	1.24%	1.29%	1.74%
Standard deviation	3.24%	4.25%	5.90%
Maximum	9.06%	11.89%	14.15%
Minimum	-9.57%	-12.70%	-11.98%
Skewness	-0.42	-0.37	-0.08
# Negative returns	21	22	21
Panel B: Portfolios With VLSI			
Total return over period	161.23%	182.09%	160.59%
Mean return	1.59%	1.76%	1.79%
Median return	1.46%	1.65%	1.70%
Standard deviation	3.98%	4.96%	7.61%
Maximum	11.83%	14.74%	22.10%
Minimum	-10.76%	-13.93%	-19.17%
Skewness	-0.161	-0.156	0.145
# negative returns	22	22	24
Panel C: Portfolios Without VLSI (Financial Crisis Period 2008:Q1–2009:Q4)			
Total return over period	1.31%	-0.94%	-12.47%
Mean return	0.37%	0.24%	-1.22%
Median return	-0.87%	-1.23%	-4.75%
Standard deviation	6.47%	8.47%	9.39%
Maximum	9.06%	11.89%	13.61%
Minimum	-9.57%	-12.70%	-11.98%
Skewness	-0.036	-0.019	0.720
# negative returns	5	4	5
Panel D: Portfolios With VLSI (Financial Crisis Period 2008:Q1–2009:Q4)			
Total return over period	3.88%	3.41%	-7.09%
Mean return	0.48%	0.42%	-0.92%
Median return	1.97%	2.08%	-1.08%
Standard deviation	6.85%	8.84%	11.40%
Maximum	11.83%	14.74%	20.53%
Minimum	-10.75%	-13.93%	-14.12%
Skewness	-0.138	-0.170	0.515
# negative returns	3	3	4

*Note:* This table presents the risk and return statistics for three portfolios constructed for conservative, moderate, and aggressive investors. Panel A presents portfolio performance without VLSI, and Panel B presents portfolio performance after adding VLSI to an investor's choice set. Panels C and D present the portfolio characteristics during the financial crisis from 2008:Q1 to 2009:Q4 for portfolios without and with VLSI, respectively.

Figure 2: Quarterly Return Statistics for Portfolios Ranked by Investor Risk Tolerance. Note. Adapted from "Measuring the Performance of the Secondary Market for Life Insurance Policies," by Giaccotto et al., 2017, *The Journal of Risk and Insurance*, 84(1):127-151, p. 147. <http://www.jstor.org/stable/26482955>

them attractive to investors seeking higher yields. Giaccotto et al. [13] demonstrated that life settlement funds, which pool various life insurance policies, have an average return of about 8% per year, outpacing the average returns from corporate bonds at 7% and the S&P 500 index at 5.5%.

From an investment standpoint, settlement funds comprise insurance policies purchased from the secondary market and offer unique advantages by integrating well with traditional asset classes such as fixed-income and equity index funds. Davó et al. [7] found that life settlements can improve mutual fund performance by providing a fixed return with a lower level of risk compared to equity and fixed-income index funds. These funds often exhibit significant negative correlations with major asset classes, contributing to market risk mitigation, enhancing portfolio diversification, and potentially stabilizing and improving overall portfolio performance.

An adapted table of Figure 2 is used to better illustrate these points. The table provides quarterly return statistics for portfolios ranked by investor risk tolerance, with data collected from 1993 through 2009. The table is divided into four panels: Panels A and B compare portfolios without and with Viatical Life Settlement Investments (VLSI) over the entire sample period, while Panels C and D focus on the financial crisis period from 2008 to 2009.

The data shows that mean returns are consistently higher when VLSI are included in the portfolios, but this comes with increased volatility. For instance, the mean returns for conservative, moderate, and aggressive portfolios with VLSI are 1.59%, 1.76%, and 1.79%, respectively, compared to 1.55%, 1.69%, and 1.71% without VLSI. However, the standard deviation for the aggressive portfolio rises from 5.90% to 7.61% with VLSI. Skewness also improves, indicating a more favorable distribution of returns, especially for the aggressive portfolio, where skewness shifts from -0.08 to 0.145. During the financial crisis of 2008-2009, portfolios with VLSI achieved higher returns and fewer negative outcomes despite greater risk and variability. For example, the total return for the conservative portfolio with VLSI during the crisis was 3.88%, significantly higher than the 1.31% return without VLSI. These findings suggest that while VLSI increases portfolio volatility, it also enhances returns and offers resilience during market downturns, making it a valuable addition for investors willing to tolerate higher risk.

In summary, the secondary life insurance market presents a compelling opportunity for investors. It offers a way to engage with demographic trends, higher returns, and risk diversification.

#### **Risk Factors and Market Dynamics**

The secondary market for life insurance significantly impacts third-party investors through various risk factors and market dynamics. One primary concern is longevity risk, which arises from the possibility that insured individuals may live longer than expected. This risk forces investors to face extended payout periods, delaying the receipt of death benefits from the life insurance policies they have purchased. Such delay can reduce the present value of the expected payouts, thereby diminishing the overall profitability of these investments. Additionally, longer lifespans increase the

costs associated with maintaining the policies, such as ongoing premium payments, which can strain investors' financial resources over time. Braun et al. [4] highlight that while life settlement funds offer attractive returns, they inherently carry longevity risk. This risk is often not reflected in historical data, potentially leading to overestimated performance. To mitigate this risk, diversifying the portfolio across various life expectancies and health conditions is crucial. Doherty and Singer [8] emphasize the need for accurate life expectancy predictions to mitigate longevity risk. Accurate life expectancy estimates from reliable medical underwriters are essential in managing this risk effectively, as misestimations can lead to significant financial losses. Consequently, investors in the secondary market for life insurance are expected to conduct more thorough due diligence, focusing on the health and lifestyle factors of insured individuals. Hedging strategies, such as longevity swaps and mortality-linked securities, may also gain popularity for managing exposure. Regulatory frameworks are likely to evolve, ensuring transparency and protecting investors through enhanced disclosure requirements. As medical and technological advances continue to extend life expectancy, the secondary market for life insurance must adapt. Continuous improvements in healthcare and biotechnology will require investors to stay informed and adjust their strategies accordingly. Collaboration between insurers, investors, and regulators will be crucial to maintaining a robust and adaptable market amidst changing demographic trends.

Mortality risk is another critical factor for third-party investors. It involves the possibility that the insured individual might die sooner or later than expected. The timing of the insured's death directly affects the investor's cash flow. Early deaths result in quicker payouts, benefiting the investor, while delayed deaths mean longer premium payments and postponed benefits, diminishing the overall return. According to Davó et al. [7], diversified life settlement funds could provide a fixed return with lower risk compared to traditional financial instruments because mortality risk is uncorrelated with market volatility. Daily et al. [6] also note that the secondary market for life insurance has increased the actuarial value gap between surrender values and policy values. This creates opportunities for investors but also introduces significant risk if mortality expectations are inaccurate. Accurate underwriting is essential to mitigate mortality risk. The use of biomedical research-backed obligations (BRBOs) can help manage this risk by aligning the investor's interests with advancements in medical treatments and technologies that impact mortality rates. Braun et al. [4] emphasize the importance of high-quality life expectancy estimates, as inaccuracies can significantly impact expected returns.

Liquidity risk arises from the inherently illiquid nature of the market. Investors have great intentions to hold the policies until the insured's death, which is an unpredictable event. The irregular timing of cash inflows, mainly from new fund subscriptions or death benefit payments, does not consistently align with the need for cash outflows to cover premium payments and investor redemptions. When liquid assets are insufficient, funds may be forced to sell policies quickly, often at a significant loss due to the infrequent trading and complexity of these policies. This issue can worsen during market downturns when financial market liquidity typically decreases. Braun et al. [4] highlight that liquidity risk is a latent factor that has not signifi-

cantly materialized in historical data but poses a real threat to investors if market conditions change. To manage this risk, investors can structure their portfolios to include a mix of more liquid assets in addition to life settlements. Open-end life settlement funds, for example, provide monthly valuations and offer some level of liquidity through regular subscription and redemption options. However, these options come with restrictions and notice periods to manage cash flows effectively. Daily et al. [6] also emphasize the importance of maintaining a liquidity reserve to handle potential shortages. This ensures that the fund can meet its cash flow needs without being forced to sell life settlement policies at a loss.

Return volatility is another critical factor that third-party investors must consider. Investments in life settlements can yield attractive returns, often outperforming traditional bonds and stocks. However, these returns are subject to greater volatility, influenced by factors such as medical advancements and regulatory changes. Giaccotto et al. [13] highlight that while life settlements offer the benefit of low correlation with other asset classes, providing potential diversification, they come with higher stand-alone risks. They found that the secondary market for life insurance is noted for its higher volatility — twice as volatile as the S&P 500 and four times as volatile as bonds. This high volatility is largely due to the unpredictability of life expectancy and the complexities involved in accurately pricing life insurance policies. Investors must carefully weigh these factors, balancing the potential for high returns against the inherent volatility and uncertainty of the secondary market.

Regulatory risk also plays a critical role in the secondary market for life insurance. Regulations governing life settlements can vary widely across jurisdictions, introducing uncertainty and potential changes that can impact the viability and profitability of these investments. Increased regulation aimed at protecting policyholders can lead to higher transaction costs and reduced profitability for investors, as discussed by Doherty and Singer [8]. For instance, stricter regulations may mandate more comprehensive disclosures and safeguards, increasing operational costs and complicating the transaction process. Bhattacharya et al. [3] further illustrate that price floors set by regulations can affect certain populations, such as HIV patients, preventing mutually beneficial transactions and reducing market efficiency. These regulatory fluctuations require investors to stay informed and adaptable to maintain effective investment strategies.

Ethical considerations also emerge in the life settlement market, as discussed by Stone and Zissu [23]. The ethical implications of investing in life settlements include concerns about commodifying life and potentially exploiting vulnerable populations. These issues can influence market dynamics by affecting investor sentiment and regulatory responses, adding complexity to the investment landscape.

While the secondary life insurance market offers opportunities for third-party investors through diversification and high returns, these benefits come with significant risks. Investors must contend with longevity risk, mortality risk, liquidity risks, and potential regulatory changes. The evolving market dynamics, influenced by changes in return volatility and ethical considerations, further complicate the landscape. As a result, investors need to adopt sophisticated strategies to navigate these challenges effectively.

#### **Impact of Asymmetric Information and Adverse Selection**

The secondary life insurance market is significantly affected by asymmetric information. Policyholders often have better knowledge about their health status than investors, leading to adverse selection. Investors may end up purchasing policies from healthier individuals who live longer than expected, thereby reducing the anticipated returns.

Bauer et al. [2] provide empirical evidence of asymmetric information in the life settlements market by analyzing data from a large U.S. life expectancy provider. They discovered that policyholders who decide to sell their policies often have private knowledge about their short-term survival chances, and they use this information when making their decision. This issue of asymmetric information has significant economic consequences for investors, affecting pricing and returns. Bauer et al. [1] emphasize the importance of sophisticated pricing and underwriting practices to mitigate these risks. Ensuring that investors have access to accurate and comprehensive health information about policyholders can help in making more informed investment decisions.

Adverse selection is a specific consequence of asymmetric information. It occurs when healthier individuals, aware of their better-than-average life expectancy, choose to sell their policies. As a result, investors end up purchasing policies that are less likely to pay out sooner than expected, reducing the anticipated returns. In their analysis, Gatzert et al. [12] highlight the challenges posed by adverse selection and emphasize the need for robust actuarial practices to price policies correctly and manage the inherent risks. Effective use of health assessments and continuous monitoring can help investors mitigate the impact of adverse selection and improve their investment outcomes. They suggest that integrating more advanced predictive modeling and regularly updating the health status of the insured can significantly reduce the risks associated with asymmetric information.

Moreover, Bhattacharya et al. [3] discuss how regulatory frameworks can exacerbate or mitigate the effects of asymmetric information. They argue that while price floors and other regulatory measures are intended to protect vulnerable populations, they can also limit the availability of accurate information, thereby increasing the risk of adverse selection for investors. To counteract this, investors need to push for regulations that mandate better disclosure and transparency in health information.

Overall, while asymmetric information presents significant challenges in the secondary life insurance market, effective strategies involving sophisticated actuarial practices, better regulatory frameworks, and ethical considerations can help investors manage these risks and capitalize on market opportunities. By addressing the issue of asymmetric information, investors can better navigate the complexities of the secondary life insurance market and enhance their potential for achieving desirable returns.

In conclusion, the secondary market for life insurance offers a compelling opportunity for third-party investors seeking diversification and higher potential returns. However, the associated risks and complexities need to be carefully considered. Investors must employ advanced analytical tools and strategies to mitigate these risks



and take advantage of the opportunities presented by this unique investment class.

## 3.4 Conclusion

Exploring the secondary market for life insurance reveals a complex ecosystem with significant impacts on policyholders, insurance companies, and third-party investors. Each stakeholder group faces unique opportunities and challenges stemming from the dynamics of this market.

For policyholders, the secondary market offers a valuable financial option beyond traditional surrender values, especially for those facing deteriorating health or financial challenges. This market provides an alternative that can significantly enhance their immediate financial liquidity, offering fair compensation that is more in line with the true market value of their policies. However, the benefits of greater liquidity and potential financial relief come at the expense of potentially higher premiums, affecting the affordability and attractiveness of life insurance.

Insurance companies confront a double-edged scenario. The secondary market can lead to increased initial policy sales by making life insurance products more attractive and flexible. However, it also carries significant risks, such as the loss of expected premium revenues from premature policy liquidations and the need to adjust actuarial assumptions and capital reserves. Moreover, a more active secondary market compels insurance companies to innovate and possibly redesign products to better meet consumer needs and expectations while managing the increased risk profile of remaining policyholders.

Third-party investors are attracted by the potential for high returns from life settlements, which can enhance a diversified investment portfolio. However, the inherent risks associated with longevity, regulatory changes, and asymmetric information require robust risk assessment and management strategies. Navigating this market successfully requires sophisticated modeling and a deep understanding of both health and regulatory environments.

Collectively, the secondary market for life insurance represents a significant and evolving component of the financial services sector. It has triggered a shift in how policies are valued and traded, impacting the broader insurance and financial landscapes. This market offers substantial opportunities for enhanced liquidity and financial flexibility for policyholders while presenting new challenges and strategic requirements for insurance companies and investors.

Stakeholders must respond to these changes with strategic foresight and informed decision-making to maximize benefits while mitigating risks. As this market continues to evolve, continuous analysis and adjustments by all parties involved will be necessary to maintain a balance between opportunity and risk. The ongoing development of this market is likely to drive further innovations in product design, risk management, and investment strategies, reflecting its complex interaction with broader economic and regulatory trends.

## 4 Impact of Asymmetric Information

Asymmetric information, where one party has more or better information than the other, is a well-known issue in the insurance market. This information gap between buyers and sellers can significantly impact decision-making and market efficiency. Many scholars have studied this problem, highlighting its prevalence in various insurance sectors. It is particularly noticeable in the secondary market for life insurance, where existing policies are sold to third-party investors for more than the cash surrender value but less than the death benefit. Policyholders who no longer want or need their policies can sell them to investors, who then continue paying the premiums and eventually collect the death benefit.

Asymmetric information significantly impacts both the primary and secondary markets for life insurance. In the primary market, asymmetric information occurs when policyholders have more information about their health and lifestyle than the insurers. This information disparity can lead to adverse selection, where people with higher health risks are more likely to buy insurance, ultimately skewing the insurer's risk pool and affecting profitability.

In the secondary market, asymmetric information also plays a crucial role. Investors buying life insurance policies depend on accurate and complete information about the insured individuals. If policyholders or original insurers withhold or misrepresent details about the insured's health, lifestyle, or life expectancy, investors might end up mispricing the policies, which can lead to financial losses. Therefore, having precise data is crucial for investors to make informed decisions and accurately assess the long-term risk associated with the life insurance policies they purchase.

Although the study of the secondary market is still in its early stages, some papers offer insights into how asymmetric information affects market dynamics and pricing from both theoretical and empirical perspectives. In this market, asymmetric information occurs when original policyholders have more detailed or accurate knowledge about their health status and life expectancy than third-party investors or intermediaries. This discrepancy can lead to adverse selection, where those who expect to live longer than actuarial estimates are more likely to sell their policies. These policyholders benefit from liquidating their policies at a value that doesn't fully account for their private information. Meanwhile, third-party investors, relying on standard risk evaluations, may end up purchasing less profitable policies than expected. This situation also affects insurance companies by distorting the risk pool, retaining higher-risk individuals who are more likely to claim benefits (Bauer et al. [1]; Gatzert et al. [12]).

### 4.1 Theoretical and Empirical Evidence

The foundational study by Zhu and Bauer [24] introduced a pivotal theoretical model that illuminates the phenomenon of adverse selection driven by asymmetric information in the life insurance market. This model demonstrates that adverse selection occurs when original policyholders (sellers of life insurance policies) have more knowledge about their expected longevity than investors (buyers of life insurance policies). For example, a policyholder who knows they are likely to live significantly longer than

the actuarial estimates might choose to sell their policy. They act on private knowledge not reflected in the market price, anticipating they won't need the death benefit soon but can gain immediate financial value from the sale. Zhu and Bauer's model shows that traditional pricing methods fall short in these scenarios. These methods typically use broad actuarial data and fail to account for individual health nuances that policyholders might not disclose. As a result, the market often systematically underestimates the value of life insurance policies, leading to mismatches between the prices offered and their actual long-term values. The model further quantifies the potential economic losses incurred by investors due to this adverse selection, highlighting the inefficiencies caused by the failure of current market practices to integrate private health information into pricing decisions.

Empirical support for this theoretical model was robustly reinforced by studies from Bauer et al. [1] [2]. By analyzing a comprehensive dataset, they identified signs of asymmetric information in real-world transactions within the life settlements market. Their research confirmed that policyholders with private health information, particularly those aware of their better-than-average health prospects, tend to outlive their actuarially projected life spans, especially in the initial years following the sale of their policies. The study shows that these policyholders' life spans often exceeded initial estimates by several years, a discrepancy not accounted for in the pricing algorithms used by investors.

For investors and financial institutions involved in these transactions, the unpredictability introduced by undisclosed private health information necessitates more sophisticated risk management strategies. These strategies might include integrating more dynamic actuarial models that can adjust to new information and using predictive analytics to better assess the longevity risk associated with life settlement policies.

### 4.2 Broader Implications and Market Dynamics

The consequences of asymmetric information in the life settlements market go beyond investment losses. This information imbalance leads to market inefficiency, where policies are often underpriced relative to their true actuarial value. As a result, the market skews against investors, reducing expected returns. The discrepancy between expected and actual longevity also poses a broader economic challenge. It threatens the sustainability of the life settlements market by potentially deterring future investment due to increased perceived risk. This complicates pricing structures and risk assessment processes in the secondary market for life insurance.

Research by Bauer et al. [2] and Gatzert et al. [12] highlights the broader impacts of asymmetric information in life settlements. They found that policyholders who sell their insurance often live longer than predicted, reinforcing the adverse selection issue. This means individuals with better-than-expected health outcomes are more active in the market. The dynamic exacerbates existing challenges, impacting the actuarial models used by investors to price these policies. Longer-than-expected lifespans of insured individuals disrupt pricing strategies and lead to significant adjustments in expected returns. Investors face higher-than-expected payout obligations, deepening

market inefficiencies and underscoring the need for pricing models that accurately reflect the true actuarial value of life insurance policies in secondary markets.

Gatzert et al. [12] also examined the subtle impact of asymmetric information on life insurance companies within the secondary market. In a traditional environment, insurance companies benefit from policy surrenders. However, the presence of a secondary market introduces a complex dynamic. Healthier policyholders tend to sell their policies rather than surrender them, leaving insurance companies with a pool increasingly composed of higher-risk policyholders. This shift diminishes expected surrender profits and complicates risk management strategies. As noted by Daily et al. [6], the secondary market challenges traditional insurance mechanisms. High-risk policyholders may keep their coverage longer with the intention of selling it on the secondary market, skewing the risk calculations that insurance companies rely on. These dynamics emphasize the need for sophisticated actuarial and regulatory adjustments to manage the risks posed by asymmetric information.

Therefore, enhanced transparency, more accurate pricing models, and tighter regulatory oversight are necessary to ensure the stability and fairness of the secondary market for life insurance.

### 4.3 Mortality and Longevity Risk Management

Managing mortality and longevity risks is crucial in the secondary life insurance market, especially given the challenges posed by asymmetric information. Mortality risk refers to the uncertainty surrounding the timing of death, while longevity risk concerns the possibility that individuals live longer than expected. Both risks significantly impact the pricing and valuation of life insurance policies. Asymmetric information makes managing these risks even more difficult, requiring insurers and investors to develop sophisticated models that account for individual health variations and other personal information that may not be readily available.

Predictive analytics and dynamic actuarial models are essential in this context. These models can adjust predictions based on new information, reducing the adverse impacts of asymmetric information. Accurate predictions are crucial because they enable firms to manage their cash flows and financial risks more effectively. For example, life settlement firms rely heavily on advanced mortality forecasting models to generate accurate life expectancy estimates. These estimates help in pricing policies appropriately and determining the lump sum to be paid to the original policyholders.

MacMinn and Zhu [19] emphasize the importance of stochastic mortality models, which account for random variations in mortality rates over time. These models use historical data, medical information, and demographic trends to provide more realistic predictions of life expectancies. By obtaining comprehensive health data from policyholders, insurers and investors can better estimate life expectancies and adjust their pricing models accordingly. This approach helps create a more balanced and fair market, where risks are more accurately reflected in the pricing of life insurance policies.

Life settlement companies rely not only on advanced actuarial models but also on professional life expectancy companies. These specialists provide detailed assessments

of the insured's health and potential future medical advancements. Brockett et al. [5] highlight the role of these companies in refining life expectancy estimates using sophisticated actuarial and medical information. This service is crucial as it helps adjust predictions based on the latest medical research and trends, offering a more accurate and dynamic approach to risk management. These professional assessments are essential for making informed decisions about policy purchases and managing associated risks.

One primary strategy for managing mortality and longevity risks involves hedging through financial instruments. Traditional tools like longevity bonds and swaps are commonly used in pension funds and annuity markets. However, these instruments often do not perfectly align with the needs of the life settlement market due to the specific characteristics of the insured individuals in this sector. Recognizing the limitations of traditional hedging tools, MacMinn and Zhu [19] propose using BRBOs. These innovative securities tie returns to the success of biomedical research, specifically targeting medical developments that could extend life expectancies. The idea is that breakthroughs in medical science could significantly increase life expectancies, thereby raising longevity risk. By investing in BRBOs, life settlement firms can offset this risk. The returns from these obligations would ideally increase in scenarios where longevity risks surge, thus providing a natural hedge. This approach links the financial health of life settlement firms to progress in biomedical research, creating a symbiotic relationship that benefits both sectors.

Empirical evidence supports the effectiveness of integrating biomedical research insights into mortality predictions. MacMinn and Zhu [19] discuss how the failure of the viatical settlement market, which preceded the life settlement market, was due to advancements in AIDS treatments that significantly extended patients' lives. This unexpected increase in life expectancy led to substantial financial losses for investors. This historical case underscores the importance of incorporating dynamic and up-to-date medical information into life expectancy models to avoid similar pitfalls.

Another significant aspect of managing mortality and longevity risk is the regulatory environment. Fang and Kung [9] discuss how regulations impact market behavior, pricing, and the overall stability of the life settlement market. Regulations can either facilitate or hinder the effectiveness of risk management strategies. Therefore, it is crucial for life settlement firms to stay updated with regulatory changes and adapt their strategies accordingly.

The integration of advanced actuarial models, professional medical assessments, and innovative financial instruments forms a robust framework for managing mortality and longevity risks in the life settlement market. These components work together to provide a comprehensive approach to predicting life expectancies and managing the financial risks that arise from these predictions. By understanding and implementing these strategies, life settlement firms can better navigate the complexities of mortality and longevity risks, ensuring more stable and profitable operations. This comprehensive approach to risk management not only enhances the financial stability of life settlement firms but also promotes confidence and trust among investors and policyholders.

### 4.4 Conclusion

The secondary market for life insurance is highly susceptible to asymmetric information, which significantly impacts decision-making and market efficiency. Theoretical and empirical findings highlight the urgency of integrating more refined information-gathering and pricing mechanisms to accurately reflect individual risk profiles.

Advanced actuarial models, professional medical assessments, and innovative financial instruments such as BRBOs provide a framework for managing the mortality and longevity risks in life settlement transactions. These components work together to offer a comprehensive approach to predicting life expectancies and managing financial risks. The findings suggest that regulatory and actuarial practices must shift to mitigate the adverse impacts of asymmetric information. Enhanced transparency, more accurate pricing models, and tighter regulatory oversight are necessary to ensure the stability and fairness of the secondary market for life insurance.

As the market continues to evolve, it is essential to create an environment that prioritizes transparency and fairness. This approach is crucial not only to protect investors but also to ensure the long-term sustainability of the market. Maintaining trust and stability in the financial transactions of life insurance will depend on these improvements.

## 5 Conclusions

The secondary market for life insurance policies has evolved significantly since its inception in the late 1980s. Initially designed to provide financial relief to terminally ill patients through viatical settlements, the market has expanded to include life settlements for seniors and individuals with chronic conditions. This evolution reflects broader demographic and healthcare trends, such as an aging population and increased life expectancy due to medical advancements.

The secondary market offers substantial benefits to policyholders, including enhanced liquidity and the ability to receive fair compensation for their life insurance policies. This is particularly beneficial for those facing unexpected financial needs or changes in health status. However, these benefits come with complexities, such as potential premium increases and the need for policyholders to carefully navigate their options to maximize financial outcomes.

Insurance companies face significant challenges due to the secondary market, including the need to adjust premium structures and manage adverse selection. The market disrupts traditional actuarial models and requires insurers to develop new strategies to maintain profitability and financial stability. These adjustments are essential to mitigate the financial impact of reduced surrender profits and higher-than-expected claim rates.

For investors, the secondary market presents both opportunities and risks. Life settlements can offer high returns and portfolio diversification due to their low correlation with traditional asset classes. However, investors must navigate longevity risk, return volatility, and regulatory changes. Effective management of these risks requires sophisticated pricing, underwriting practices, and continuous monitoring of the health status of insured individuals.

The secondary market is also heavily influenced by asymmetric information, where policyholders often have better knowledge about their health status than investors. This leads to adverse selection, complicating the investment landscape and necessitating advanced actuarial models and predictive analytics to manage risks effectively.

While the secondary market for life insurance policies provides valuable financial solutions for policyholders and attractive investment opportunities, it also introduces significant challenges. Stakeholders must navigate a complex and dynamic landscape, balancing immediate financial benefits with long-term considerations. As the market continues to evolve, maintaining transparency, fairness, and robust regulatory frameworks will be crucial for ensuring its stability and sustainability.

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