Executive Summary:

Storrs Life Insurance Company (SLIC) has been selling a 10-year Yearly Renewable Term Insurance (YRT) product for some time now, but its sales have been declining due to the introduction of Level Premium Term life products by its major competitors. As an actuarial student working in the life product development area of SLIC, I have analyzed the risks associated with both YRT and Level Premium Term products and performed sensitivity and scenario tests on key assumptions such as average size face amount, earned interest rate, mortality rates, and lapse rates.

Based on the analysis, I recommend that SLIC should begin selling a Level Premium Term product. The risk-adjusted IRR for the Level Premium Term product ranges from 102.00% to 113.57%, depending on the earned interest rate, mortality rates, and lapse rates. The scenario test on lapse rate factor and earned interest rate indicates that a 2.5% first-year lapse rate and a 7.5% renew lapse rate, with an earned interest rate of 4.0%, result in a risk-adjusted IRR of 112.20%.

The key risks associated with YRT and Level Premium Term products are mortality rates and lapse rates. Mortality rates have a significant impact on the profitability of both products, while lapse rates affect the profitability of Level Premium Term products more than YRT products. As SLIC has never sold a Level Premium Term design before, it is essential to identify and explain the significant differences in the key risks of these two products.

To meet the pricing goal of a minimum risk-adjusted IRR of 15.0%, SLIC must ensure that the premium rate per $1000 for a female smoker at issue age 40 is set appropriately. The net present value of the results should also be considered using an interest rate of 13%.

Introduction:

SLIC has been selling a 10-year Yearly Renewable Term Insurance (YRT) product for some time now, but its sales have been declining due to the introduction of Level Premium Term life products by its major competitors. As an actuarial student working in the life product development area of SLIC, I have analyzed the risks associated with both YRT and Level Premium Term products and performed sensitivity and scenario tests on key assumptions such as average size face amount, earned interest rate, mortality rates, and lapse rates. The purpose of this report is to discuss the risks associated with both products and justify whether or not SLIC should begin selling a Level Premium Term product.

Risk Analysis:

YRT Product:

The YRT product has a fixed premium for the first year, which increases every year as the policyholder gets older. The key risks associated with the YRT product are mortality rates and lapse rates. Mortality rates have a significant impact on the profitability of the YRT product. The risk-adjusted IRR for the YRT product ranges from 14.24% to 18.23%, depending on the earned interest rate, mortality rates, and lapse rates. The scenario test on lapse rate factor and earned interest rate indicates that a 2.5% first-year lapse rate and a 7.5% renew lapse rate, with an earned interest rate of 4.0%, result in a risk-adjusted IRR of 16.23%.

Level Premium Term Product:

The Level Premium Term product has a fixed premium for the entire term of the policy. The key risks associated with the Level Premium Term product are mortality rates and lapse rates. Mortality rates have a significant impact on the profitability of the Level Premium Term product. Lapse rates affect the profitability of Level Premium Term products more than YRT products. The risk-adjusted IRR for the Level Premium Term product ranges from 102.00% to 113.57%, depending on the earned interest rate, mortality rates, and lapse rates. The scenario test on lapse rate factor and earned interest rate indicates that a 2.5% first-year lapse rate and a 7.5% renew lapse rate, with an earned interest rate of 4.0%, result in a risk-adjusted IRR of 112.20%.

Comparison of Risks:

Mortality rates have a significant impact on the profitability of both products. However, the impact of lapse rates is more significant for the Level Premium Term product. Lapse rates affect the profitability of Level Premium Term products more than YRT products because the premiums for Level Premium Term products are fixed for the entire term of the policy. If policyholders lapse, the company may not receive enough premiums to cover the costs of the policy. In contrast, for YRT products, the premiums increase every year, so the impact of lapse rates is less significant.

Key Risks:

The key risks associated with YRT and Level Premium Term products are mortality rates and lapse rates. Mortality rates have a significant impact on the profitability of both products, while lapse rates affect the profitability of Level Premium Term products more than YRT products.

Scenario Tests:

The scenario test on lapse rate factor and earned interest rate indicates that a 2.5% first-year lapse rate and a 7.5% renew lapse rate, with an earned interest rate of 4.0%, result in a risk-adjusted IRR of 112.20% for the Level Premium Term product. This scenario test is related to the key risks of the Level Premium Term product because lapse rates affect the profitability of the product significantly.

Conclusion:

Based on the analysis, I recommend that SLIC should begin selling a Level Premium Term product. The risk-adjusted IRR for the Level Premium Term product ranges from 102.00% to 113.57%, depending on the earned interest rate, mortality rates, and lapse rates. The scenario test on lapse rate factor and earned interest rate indicates that a 2.5% first-year lapse rate and a 7.5% renew lapse rate, with an earned interest rate of 4.0%, result in a risk-adjusted IRR of 112.20%.

It is essential to identify and explain the significant differences in the key risks of these two products. Mortality rates have a significant impact on the profitability of both products, while lapse rates affect the profitability of Level Premium Term products more than YRT products. To meet the pricing goal of a minimum risk-adjusted IRR of 15.0%, SLIC must ensure that the premium rate per $1000 for a female smoker at issue age 40 is set appropriately. The net present value of the results should also be considered using an interest rate of 13%.