The Preference of Insureds to choose between Endowment and Annuities, Evidence from The Egyptian Insurance Industry

Dr. Ahmed Sayed Abdelzaher Sayed
Lecturer of Mathematics and Insurance
Faculty of Commerce- Beni Suef University

Abstract.

Importance Understanding the factors that support customers preferences for endowment insurance or annuities is critical for optimizing retirement planning and boosting coverage rates within the insurance sector in Egypt, limited participation in annuities and the irregular growth of endowment that requires considerable investigation

Objectives: This study aims at exploring the determinants that influence the choice and coverage value of endowment and annuity policies in the Egyptian insurance market between 2010 and 2024. Specifically, it examines how variables such as gender, age, regional location, payment frequency, and policy duration affect consumer decisions, and the insured amount associated with each product type.

Findings The analysis reveals that women are more likely to purchase endowment policies, potentially due to provide protection for their children after death, while men dominate the annuity market, reflecting a focus on long-term income security. Geographic disparities are evident, with certain districts consistently associated with higher insured amounts, suggesting localized differences in financial access and literacy. Payment frequency significantly influences coverage value - with semi-annual payment structures linked to higher benefit levels. Additionally, age and policy duration have opposite effects across policy types, positively influencing endowment coverage but negatively affecting annuity coverage- highlighting product- specific risk assessments and consumer goals.

Keywords*:Annuity demand, Endowment policy, Insurance behavior, Coverage determinants, Egyptian insurance market, Retirement planning.,*

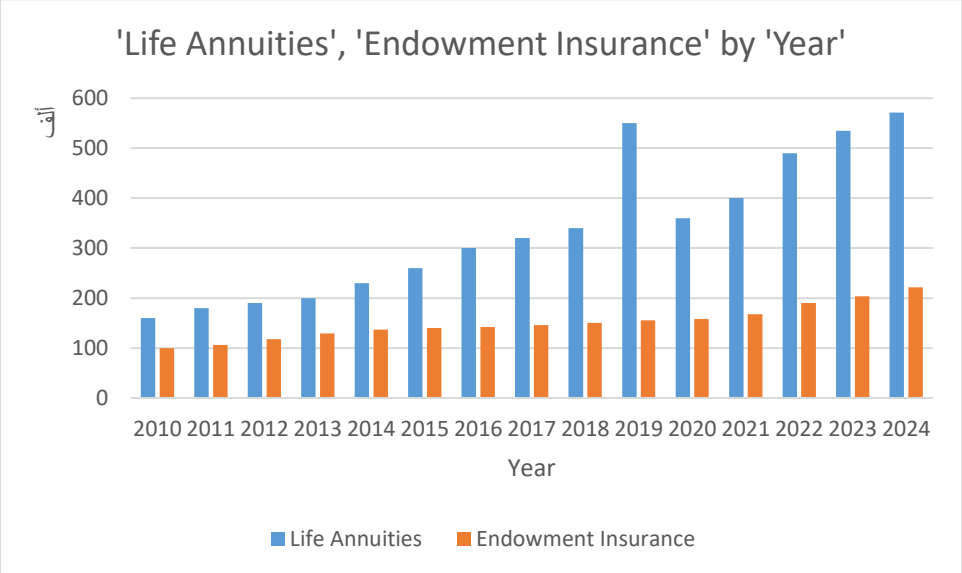
Introduction

During retirement, individuals face critical decisions regarding the allocation of financial resources to secure both their consumption needs and bequest motives. A variety of financial instruments are available to meet these objectives, including term insurance, life insurance, endowment policies, annuities, and low-risk government bonds. These instruments serve different purposes: while annuities provide a stream of income throughout retirement, endowment insurance can offer a lump sum payout after a certain period or upon death, aligning more directly with bequest intentions. Accordingly, households must determine how best to allocate their liquid wealth among consumption, annuity premiums, life insurance premiums (particularly endowments), and other investment vehicles (Yaari, 1965; Davidoff, Brown, & Diamond, 2005).

To illustrate trends in individual preferences between these financial instruments, the following data highlight the evolution of annuity and endowment insurance payouts in the Egyptian insurance market for 14 years.

Fig. (1)

Trends in Endowment Insurance vs. Life Annuity development (2010–2024)



Analysis of this data reveals a notable considerable upward increase in annuity payouts, with a marked acceleration from 2019 to 2023. This surge may reflect heightened demand during the COVID-19 pandemic, as individuals sought mechanisms for financial stability amidst economic and health uncertainties. Following 2023, growth appears to have stabilized, maintaining a substantial average insured amount of approximately EGP 550,000. In contrast, endowment policies exhibited relatively stable figures between 2010 and 2021. A moderate upward shift began in 2022, gaining momentum in 2023–2024, culminating in an average insured value of around EGP 250,000. Over the entire observation period, annuities consistently reflected higher insured sums than endowments, with the divergence widening over time. This trend may indicate a growing preference for annuitization over endowment-based instruments among policyholders.

This study seeks to understand the underlying motivations that drive individuals in the Egyptian insurance market to opt for either endowment insurance—often selected to secure a financial benefit for beneficiaries—or annuities, which ensure a guaranteed income stream during retirement. The investigation focuses on five key explanatory variables hypothesized to influence these choices. Notably, previous literature has tended to analyze the demand for life insurance and annuities separately (Brown, 2001; Inkmann & Michaelides, 2012). This study contributes to bridging that gap by evaluating both instruments within a single decision-making framework

Literature Review

This literature review examines the contrasting demand for Endowment insurance and annuities, focusing on the individual and market-level factors that influence these financial decisions. By synthesizing recent theoretical and empirical studies, it highlights key determinants such as risk preferences, financial literacy, and institutional constraints.

First, Integrated Demand for Life Insurance and Annuities: -

Historically, studies have often examined life insurance and annuities in isolation. Lewis (1989) emphasized the role of demographic factors in life insurance decisions, while Browne and Kim (1993) provided an international perspective on life insurance demand, noting substantial growth rates. Zietz (2003) defined the economic and demographic factors

influencing life insurance purchases, such as aging populations and innovative insurance products. Recent research underscores the Integration of Life Insurance and annuities. For instance, Arandjelović et al. (2023) discussed how age-varying bequest motives and product loads affect the demand of life insurance and annuities, indicating gaps in participation during middle age and the later stages of life

Emerging theoretical models increasingly highlight the joint optimization problems that individuals face when choosing between Endowment policies and annuities, especially in retirement planning. Lockwood (2012) introduced the concept of bequest motives and their influence on annuitization decisions, illustrating that a strong desire to leave wealth to the beneficiaries reduces the motivation to buy of annuities. Similarly, Koijen, Van Nieuwerburgh, and Yogo (2016) developed a life-cycle model incorporating both endowment and annuity markets, revealing that drawbacks such as limited product offerings and high loadings change the optimal allocation between these instruments. These insights suggest that endowment policies and annuities are not considered substitute financial products.

Behavioral factors also play a critical role in shaping the integrated demand for these financial instruments. Brown et al. (2008) stated that framing effects and financial literacy significantly influence annuity choices, often leading to suboptimal underutilization. Life insurance purchases are likewise impacted by psychological biases, including overconfidence, risk misperception, and present-biased preferences (Guiso & Jappelli, 2005). These findings imply that the observed market behavior—such as low annuity uptake and persistent demand for term life insurance—cannot be fully explained by standard economic models alone. A behavioral approach thus enriches our understanding of the joint demand by accounting for cognitive and emotional influences on consumer decision-making.

Institutional structures and policy environments further mediate the interaction between annuity and endowment insurance markets. For example, the presence of public pensions or mandatory annuitization policies can crowd out private annuity demand (Mitchell, Poterba, Warshawsky, & Brown, 1999). Meanwhile, regulatory frameworks, tax incentives, and the availability of employer-sponsored life insurance can shape consumer choices in both domains (Niehaus, 2018). Cross-national

comparisons reveal considerable variation in integrated product demand, suggesting that institutional context- such as financial literacy programs, market competitiveness, and consumer protection regulations play a significant role.

Second, Behavioral Factors and the Annuity Puzzle: -

The differences between the theoretical benefits of annuities and their low market uptake has been considered a considerable point of behavioral economics. Dushi and Webb (2004) opposed the notion that low annuity demand reflects a lack of interest, suggesting instead that framing and availability play considerable roles. Hu and Scott (2007) focused on the behavioral advantages of longevity annuities over immediate annuities. Benartzi et al. (2011) and Lockwood (2011) further examined psychological factors, including risk aversion and bequest motives, influencing annuitization decisions. Li and Wei (2024) introduced the concept of money illusion where individuals focus on nominal rather than real values as a contributing factor to the annuity puzzle, finding that it increases life insurance demand among young adults while reducing annuity demand among retirees. Recent experimental studies illustrated how behavioral biases such as loss aversion and complexity aversion further complicate annuitization decisions. Brown et al. (2017) found that even when annuities are presented as beneficial, many individuals avoid them due to a strong preference for liquidity and a psychological aversion to withdrawing an amount of money. Moreover, people often perceive annuities as complex and inflexible, which discourages engagement despite their value in mitigating longevity risk (Agnew, Anderson, Gerlach, & Szykman, 2008). These behavioral tendencies are compounded by limited financial literacy and misunderstanding of product features, particularly among older adults making high-stakes retirement decisions.

Institutional framing and the design of retirement plans also influence annuity take-up. Research by Beshears et al. (2014) showed that when annuities are considered as the default payout option in retirement plans, participation rates increase significantly. This finding suggests that behavioral actions can be redirected toward more optimal outcomes through the policy. Additionally, the social context of annuitization—such as trust in insurance providers and peer behavior—plays a subtle but meaningful role in shaping individual preferences (Shu, Zeithammer, & Payne, 2016). These insights point to the need for integrated approaches

combining financial education, institutional reform, and behavioral interventions to address the persistent gap between theoretical models and real-world annuity demand.

Third, Demographic and Economic Determinants: -

Demographic factors such as age, income, and education level have consistently influenced life insurance demand. Truett and Truett (2012) compared the U.S. and Mexico, finding that higher income and education levels correlate with increased life insurance purchases. Kjosevski (2012) identified the inflation rate, GDP per capita, education level, rule of law, and health expenditure as significant determinants in Central and Southern Europe. Zerriaa and Noubbigh (2017) extended this analysis to the MENA region, emphasizing the role of financial development. In the context of retirement planning, Hübener et al. (2014) modeled optimal portfolio choices for retired couples, considering annuities, endowment insurance, bonds, and stocks. Their findings suggest that life insurance serves as a protective measure for the surviving spouse, particularly when annuitized income is unevenly distributed.

Recent studies have further examined the role of life expectancy, employment status, and household composition in shaping demand for both endowment insurance and annuities. For instance, Li et al. (2021) found that households with dependents and uncertain life expectancy are more likely to invest in life insurance products as a hedge against income loss. Meanwhile, annuity demand is more sensitive to health status and retirement timing, with healthier individuals delaying annuitization in favor of maintaining liquidity and control over assets (Poterba, Venti, & Wise, 2011). This nuanced relationship implies that demographic characteristics influence not just whether individuals participate in insurance markets, but also when and how they allocate resources across financial instruments throughout the life cycle.

Economic stability and institutional quality also significantly affect consumer behavior in insurance and annuity markets. Evidence from developing economies indicates that macroeconomic volatility—such as inflation or currency devaluation—reduces trust in long-term financial contracts like annuities (Mahul & Skees, 2007). In contrast, countries with strong legal institutions and financial infrastructure tend to experience higher insurance penetration and greater annuitization rates (Beck & Webb,

2003). These findings underscore the importance of contextualizing demographic and economic determinants within broader institutional environments. Policy interventions aimed at strengthening financial markets and enhancing transparency may thus contribute to more effective risk management and retirement security across diverse populations.

Fourth, Market Innovations and Policy Implications: -

The insurance market has seen innovations aimed at addressing the annuity puzzle and enhancing product appeal. Beshears et al. (2014) found that offering partial annuitization options and flexible product designs, such as bonus annuities and limited penalty-free early withdrawals, can increase annuity demand. Gatzert and Koltzki (2016) examined enhanced annuities in the UK, noting potential for market growth despite current limitations. From a policy perspective, the introduction of longevity bonds by governments has been proposed to mitigate insurers' longevity risk, thereby encouraging annuity offerings (Dushi & Webb, 2004). Additionally, improving financial literacy is crucial, as highlighted by Li and Wei (2024), to help individuals make informed decisions in inflationary environments. Recent studies have continued to explore the complexities of insurance demand. Chen, Gao, and Zhu (2024) analyzed the optimal mix of deferred annuities and life insurance, suggesting that equilibrium occurs when annuity loading is low, and life insurance loading is high. Pashchenko and Porapakkam (2022) investigated the impact of life value on annuity demand, concluding that individuals preferring early resolution of uncertainty are less inclined to purchase annuities.

Why we conduct this research

Over the past few decades, the Egyptian insurance sector has experienced irregular trends in the issuance of annuity payments compared to endowment insurance policies, unlike the more consistent development observed in advanced markets. Furthermore, participation in term life insurance and annuity products remains significantly limited in Egypt, highlighting gaps in consumer engagement and financial planning behavior.

This research is driven by the following objectives:

A. To understand the persistent disparity in the value of annuity payouts compared to endowment benefits over the 2010–2024

period, and to investigate the macroeconomic or institutional causes behind this trend.

B. To explore the underlying determinants that shape individuals' choices between purchasing endowment life insurance and opting for annuitization within the Egyptian context.

Data Collection and Hypotheses Formulation

This study utilizes a dataset derived from the Egyptian insurance sector, spanning the years 2010 to 2024. The dataset is distinctive in that it offers comprehensive insights into the evolution of annuity products in comparison to endowment policies. Drawing upon existing scholarly work and the scope of data accessible within the Egyptian insurance market, the following hypotheses are formulated to assess the trends in annuity versus endowment policy payments:

1. The insured's gender, residential governorate, payment frequency, age at the time of policy issuance, and the duration of the insurance contract significantly influence the demand for annuity products, as reflected by the insured sum in annuity policies.

2. The insured's gender, residential governorate, payment frequency, age at the time of policy issuance, and the duration of the insurance contract significantly influence the demand for endowment products, as reflected by the insured sum in endowment policies.

Data Insights and Variables Framework

The analysis draws upon a dataset comprising 64786 randomly selected observations that accurately reflect the structure of the Egyptian life insurance industry. The dataset spans the years 2010 to 2024, offering a broad and detailed perspective on market behavior. This robust dataset captures the key patterns and determinants influencing consumer demand for annuity and endowment insurance products over a 14- year timeframe. The following section describes the variables utilized in this study.

This study investigates both dependent and independent variables to explore the determinants of life insurance demand in Egypt. The dependent variable is *the coverage value or the face amount*, representing the overall financial coverage provided by each policy and measured on a continuous

scale. Among the independent variables, the insured individual's age at the start of the policy and the length or the duration of the insurance contract are both treated as continuous variables. The insured's gender is included as a categorical variable, distinguishing between male and female policyholders. Additionally, the place of residence is captured through seven distinct provincial categories to account for geographic variation. Insurance payment cycle, another categorical variable, reflects the frequency with which premiums are paid, it is categorized into schedules such as monthly, quarterly, semi-annual, and annual payments. These variables collectively offer a comprehensive framework for analyzing the factors that shape consumer preferences for annuity and endowment policies.

General Findings

The demand for annuity and endowment insurance policies is markedly shaped by several factors, including the insured's gender, geographical location, frequency of premium payments, age at policy initiation, and the duration of the insurance contract.

Table (1)

Summary Statistics for Policy Duration, Age and Coverage Amount in Endowment Insurance policies and Annuities Plan.

	Life Annuities Policies			**Endowment Insurance Policies**		
	The age of the insured	The Policy Duration	The Coverage Amount	The age of the insured	The Policy Duration	The Coverage Amount
Mean	41.38	31.68	248728.07	48.35	18.26	98352.6
Median	41	25	216000	48	17	103000
Mode	40	28	360000	48	15	100000
Std. Deviation	12.682	8.94	92409.679	14.449	8.724	268671
Variance	80.417	48.409	5594352847	117.403	42.464	2.83E+38
Skewness	0.688	0.689	2.301	0.645	0.498	262.083
Std. Error of Skewness	0.028	0.023	0.029	0.007	0.008	0.008

Kurtosis	-0.397	1.867	2.552	-0.432	-0.2	47650.60
Std. Error of Kurtosis	0.064	0.065	0.068	0.009	0.009	0.009
Minimum	38	30	2569	41	11	62000
Maximum	99	91	850827	139	57	438031026
Percentiles 25	52	49	147000	61	27	86000
Percentiles 50	63	64	224000	70	34	101000
Percentiles 75	74	63	362000	80	41	150000

The analysis of the central tendency indicators—specifically the mean, median, and mode—reveals that individuals typically choose to initiate life annuity contracts around the age of 40. This early engagement with annuities reflects their role in long-term financial planning, especially as a mechanism to ensure lifetime income during retirement. In contrast, the purchase of endowment insurance policies tends to occur at a slightly older average age, approximately 48. This delay is often attributed to the product's dual nature of providing both insurance protection and a savings component, which aligns with later-life financial goals such as funding dependents' education, estate transfer, or achieving specific lump-sum objectives (Lemos & Tavares, 2023; OECD, 2021).

Regarding contract duration, annuity policies are generally associated with significantly longer insurance periods, underscoring their design for enduring financial security and post-retirement stability. Endowment policies, however, exhibit relatively shorter coverage spans. This is consistent with their typical use for intermediate financial objectives and planned cash flows, rather than lifelong income replacement. Shorter durations also suggest greater flexibility and appeal to individuals seeking guaranteed returns over fixed periods (IMF, 2022; Rothschild, 2015).

The distributional characteristics of the insured amounts further differentiate between the two products. In particular, endowment insurance exhibits extreme values for skewness and kurtosis, indicating a highly asymmetrical and peaked distribution. This pattern points to the presence of outliers—particularly high-value policies—which substantially affect the statistical profile. These anomalies likely reflect purchases made by affluent individuals who use endowment policies not merely for protection

but as tax-advantaged investment tools or components of wealth transfer strategies (Zhang, 2022; World Bank, 2023). In contrast, annuity distributions tend to be more normalized, reflecting broader demographic participation and more consistent policy values across age and income groups.

Table (2)

Summary of Gender classification, District, and the Frequency of payments for endowment insurance and annuities policies.

	Life Annuities		**Endowment Insurance**	
	Freq.	%	Freq.	%
X1	3286	18.5	140294	30.7
X2	14477	81.5	316690	69.3
Total	17764	100	456984	100
District				
District A	1048	5.2	34661	7.1
District B	1199	5.96	18075	3.7
District C	1846	9.18	75983	15.4
District D	1568	7.8	119542	24.2
District E	2468	12.3	47529	9.6
District F	6527	32.5	58903	11.95
District G	5436	27.1	137830	28
Total	20092	100	492523	100
The Frequency of Payment				
Quarter	8382	37	26349	6.4
Year	1038	4.6	12535	3
Month	12493	55.2	356980	86.3
Half Year	728	3.2	17836	4.3

Total	22641	100	413700	100

The Gender Classification in Endowment policies and Life Annuities

The table reveals that (X1) females account for 18.5% of life annuity policies and 30.7% of endowment insurance policies, while males (X2) hold 81.5% of life annuity policies and 69.3% of endowment policies. This demonstrates a significant gender difference in the uptake of these products. Gender differences in life insurance and annuity demand are well-established in the literature. Females, who tend to have longer life expectancies, may be more convinced to purchase life annuities to secure a steady income during retirement (Finkelstein & Poterba, 2004). Moreover, women are often more concerned with long-term financial security for their families, which could explain the higher percentage of endowment policies held by females (Schmeiser, 2013).

Further, gender roles and differences in income also influence insurance purchasing behavior. Women, particularly those in households with children or dependents, may prioritize the protection of future benefits and financial stability, which drives their higher preference for endowment policies that provide both savings and insurance coverage (Finkelstein & Poterba, 2004).

District Distribution in Endowment Policies and Life Annuities

The highest proportion of life annuities is concentrated in District F (32.5%) and District G (27.1%), while endowment insurance sees significant demand in District G (28%), District D (24.2%), and District C (15.4%). Regional differences in policy uptake are often influenced by economic development, employment sectors, and access to financial institutions. For instance, districts with strong urbanization, industrial activity, or white-collar employment (such as District F and District G) often see higher demand for annuities due to a greater focus on retirement planning and income continuity. Conversely, districts with higher endowment uptake (like Districts E and G) might have more middle-income populations preferring savings-oriented insurance products that serve both investment and protection purposes. Findings are consistent with (Kaiser et al., 2016) (Outreville, 2013).

Payment Frequency Preferences in Endowment Policies and Life Annuities

The most common payment frequency for both products is monthly, which accounts for 55.2% of annuities and an even higher 86.3% for endowment policies. Quarterly payments are also notably high for annuities (37%), but much lower for endowments (6.4%). Annual and semi-annual options remain the least preferred across both product types. The dominance of monthly payments can be linked to the alignment with salary cycles and easier budget management, especially for middle-income consumers. Monthly installments reduce the upfront burden and make insurance more accessible, particularly in environments with low to moderate income. The preference for quarterly payments in annuities also suggests a subset of policyholders seeking a balance between convenience and lower administrative overhead. Payment frequency choice is affected by income regularity, risk aversion, and perceived affordability (Liebenberg et al., 2012.

Table (3)

Reg. Analysis of the coverage amount for Endowment policies in the Egyptian Insurance Market

Variable	B (Coefficient)	Standard Error	95% Confidence Interval (Lower)	95% Confidence Interval (Upper)	Wald Chi-Square	Sig. (p-value)
(Intercept)	97,718.16	3,761.198	90,346.34	105,089.96	1,349.982	0.000
X1	6,281.404	943.8886	4,431.416	8,131.392	88.574	0.000
X2	0	-	-	-	-	-
District A	242.172	1,956.9442	-3,593.36	4,078.712	0.030	0.902
District B	15,010.98	2,649.99	9,817.096	20,204.86	64.174	0.000
District	17,701.524	1,374.861	15,006.84	20,396.2	331.538	0.000

C		2	6			
District D	10,662.964	1,190.0432	8,330.522	12,995.406	160.568	0.000
District E	-2,608.66	1,690.2988	-5,921.58	704.274	4.764	0.123
District F	3,401.462	1,693.6942	81.884	6,721.042	8.066	0.045
District G	0	-	-	-	-	-
Quarterly	-52,256.4	1,793.1832	-55,771.0	-48,741.8	1,698.474	0.000
Yearly	-12,308.72	2,440.976	-17,092.94	-7,524.5	50.854	0.000
Month	-8,269.88	2,761.592	-13,682.5	-2,857.26	17.936	0.006
Half Year	0	-	-	-	-	-
Age of The Insured	577.306	62.7356	454.346	700.266	169.360	0.000
Duration of the Insurance	3,057.322	104.6842	2,852.144	3,262.498	1,705.882	0.000
(Scale)	3.82E+10	86,776,74	3.8E+10	3.84E+10	-	-

The Gender Classification in Endowment Policies

The regression analysis explores the determinants of endowment policies coverage in the Egyptian insurance market from 2010 to 2024, revealing that various demographic, geographic, and policy-related factors significantly influence the Amount of coverage. The intercept, representing the baseline coverage when all other factors are held constant, is highly significant and suggests a substantial starting level of endowment policies

coverage. Gender plays a key role, with female policyholders (X_1) receiving significantly higher coverage amounts compared to their male counterparts (X_2), possibly due to changing social and economic responsibilities or targeted insurance products.

District Distribution of Endowment policies

Geographic location, represented by districts, also shows notable variation: while Districts B, C, and D exhibit strong, positive, and significant effects on coverage, suggesting higher economic activity or access to insurance services, Districts A and E show no significant difference from the reference group (District G), and District F has a modest but significant positive influence. Payment frequency emerges as a critical determinant; quarterly, monthly, and yearly payments are all negatively associated with coverage compared to the omitted category (half-yearly), indicating that less frequent payment structures may align better with higher benefit levels or lower administrative costs.

Age of the Insured and the Policy Duration for Endowment Policies

Additionally, both the age of the insured and the duration of the insurance policy are positively and significantly associated with coverage, reflecting the cumulative effect of age-related premiums and long-term policy commitment. Overall, the findings underscore the importance of individual characteristics, regional variations, and contract structure in shaping the value of endowment coverage, offering useful insights for insurers and policymakers aiming to enhance endowment policy design and features.

Table (4)

Reg. analysis of the coverage amount of Annuities policies in the Egyptian Insurance Market

Variable	B Coefficient	Standard Error	95% Confidence Interval (Lower)	95% Confidence Interval (Upper)	Wald Chi-Square	Sig. (p-value)
Intercept	717,991.2	17,116.936	684,442.6	751,539.8	3,518.974	0.000
X1	-10,700.22	2,931.258	-16,445.38	-4,955.06	26.650	0.000
X2	0	-	-	-	-	-
District A	45,703.4	5,309.402	35,297.16	56,109.64	148.196	0.000
District B	66,402.78	5,610.532	55,406.34	77,399.22	280.152	0.000
District C	58,025.44	4,442.392	49,318.52	66,732.36	341.220	0.000
District D	-7,538.2	3,347.266	-14,098.72	-977.676	10.144	0.048
District E	3,393.126	4,045.920	-4,536.74	11,322.984	1.406	0.804
District F	51,691.64	4,730.078	42,420.84	60,962.42	238.854	0.000
DistrictG	0	-	-	-	-	-
Quarter	-63,882.6	5,608.954	-74,875.8	-52,889.2	259.436	0.000
Year	-42,671.6	7,332.384	-57,042.8	-28,300.4	67.736	0.000
Month	-25,441.8	8,470.586	-42,044.0	-8,839.84	18.042	0.006
Half Year	0	-	-	-	-	-
Age of The Insured	-5,302.7	264.6754	-5,821.44	-4,783.94	802.780	0.000
Duration	-8,975.36	342.074	-9,645.80	-8,304.90	1,376.87	0.000

of the Insurance					0
(Scale)	1.216E+10	134,441,138	1.19E+10	1.244E+10	-

The Gender Classification in Life Annuities Policies

The analysis examines the influence of various demographic, regional, and policy-related variables on the coverage amount of annuity policies issued in Egypt between 2010 and 2024. The intercept term, which represents the expected coverage amount in the absence of other factors, is highly significant, indicating a strong baseline level of coverage. Gender appears to play a notable role in shaping annuities coverage levels. The variable representing females (X1) is associated with a statistically significant decrease in the insured amount compared to the reference category (males, X2), suggesting that female policyholders tend to receive lower coverage. This significant difference may reflect broader gender-based economic differences or preferences in annuity planning.

District Distribution in Life Annuities policies

Geographic differences are also evident. Districts A, B, C, and F are all significantly associated with higher coverage amounts relative to the reference group (District G), implying that policyholders in these areas receive greater financial protection, potentially due to differences in income levels, market access, or regional insurance penetration. In contrast, District D shows a significant negative effect, indicating lower coverage levels, while District E does not illustrate a statistically meaningful difference from the baseline. Payment frequency significantly affects annuity coverage. Compared to the omitted category (half-year payments), quarterly, monthly, and yearly payment plans are all linked to lower insured amounts, with quarterly payments showing the largest negative impact. This pattern suggests that less frequent payment structures may be more compatible with higher coverage levels, possibly due to reduced administrative costs or different risk assessment strategies.

Age of the Insured and the Policy Duration for Life Annuities Policies

Also, two additional individual characteristics—age of the insured and duration of the insurance—are both negatively and significantly correlated with the coverage amount. The negative coefficients imply that older individuals and those with longer policy durations tend to have lower coverage amounts. This could reflect insurer pricing strategies, policyholder risk profiles, or differences in the types of annuities selected by different age groups or for different policy terms.

Overall, the model highlights the importance of demographic factors, regional location, payment schedules, and policyholder characteristics in shaping annuity coverage levels in the Egyptian market throughout the period from 2010 to 2024. These results provide valuable guidance for insurance providers aiming to customize their products and for decision-makers working to reduce disparities in retirement income protection.

Conclusion and Recommendations

This study offers an in-depth exploration of the determinants influencing the insured amount in both endowment and annuity policies within Egypt's life insurance sector between 2010 and 2024. By evaluating a robust and nationally representative dataset, the research identifies significant roles for demographic, geographic, and contract-specific variables in shaping consumer insurance decisions. Female policyholders are more likely to opt for endowment policies with higher insured values, reflecting a possible preference for savings-linked coverage and financial protection for dependents (Schmeiser, 2013). Conversely, male policyholders, who dominate the annuity market, tend to prioritize products offering lifetime income security. The analysis also underscores the effect of regional variation, where districts characterized by urbanization and greater economic activity—such as Districts B, C, and F—show markedly higher coverage levels, aligning with literature on geographic disparities in financial product uptake (Outreville, 2013; Kaiser et al., 2016).

A particularly notable finding is the impact of payment frequency on coverage amount: semi-annual payments are associated with higher insured sums compared to monthly, quarterly, or annual plans. This suggests that more substantial but less frequent contributions are preferred or more viable among those seeking larger benefit structures. Additionally, age and contract duration exhibit inverse effects depending on policy type. In annuity plans, older age and longer durations are linked to reduced

coverage—possibly due to pricing strategies and mortality risk considerations—whereas in endowment policies, these factors show a positive association, reflecting long-term savings behavior.

These findings have clear practical implications. Insurers can leverage this knowledge to design targeted offerings that accommodate diverse consumer profiles and regional characteristics. Moreover, policymakers should consider interventions to reduce structural barriers—such as financial literacy gaps and access disparities—to enhance participation in life insurance markets, particularly annuities, which remain underutilized despite their potential to support retirement security (Benartzi et al., 2011; OECD, 2021). By integrating behavioral, economic, and institutional insights, this research bridges the analytical gap between endowment and annuity demand, offering a more unified understanding of insurance behavior in emerging markets.

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