SJIF Impact Factor (2025): 8.688| ISI I.F. Value: 1.241| Journal DOI: 10.36713/epra2016 ISSN: 2455-7838(Online)
EPRA International Journal of Research and Development (IJRD)
Volume: 10 | Issue: 3 | March 2025 - Peer Reviewed Journal

PORTFOLIO OPTIMIZATION OF LIC INDIA: A STATISTICAL APPROACH TO INVESTMENT STRATEGIES

Dr. Krunal P. Rajput[1], Dr. Tathagat P. Patel[2], Dr. Jaydeep D. Patel[3],
[1]Adhyapak Sahayak, - Statistics,Sheth C.D. Barfiwala College of Commerce, Surat
[2]Adhyapak Sahayak - Commerce and Accountancy,Sheth C.D. Barfiwala college of Commerce, Surat
[3]Adhyapak Sahayak - Commerce and Accountancy,Sheth C.D. Barfiwala college of Commerce, Surat

Article DOI: https://doi.org/10.36713/epra20766
DOI No: 10.36713/epra20766

ABSTRACT
The Life Insurance Corporation of India (LIC) plays a vital role in the Indian financial market as a significant institutional investor. Leveraging a substantial pool of policyholder funds, LIC strategically invests across public, private, joint, and cooperative sectors to promote financial stability and long-term growth. Its investment strategy balances risk management, return potential, and national interests, focusing on a mix of stocks, bonds, and loans. Investments in public sector enterprises (PSUs) offer stability, while exposure to the private sector drives growth. Additionally, investments in joint ventures and the cooperative sector support economic inclusivity. By managing its portfolio efficiently, LIC not only secures the financial well-being of its policyholders but also significantly contributes to India's economic growth and capital market stability. This study examines LIC's investment patterns across different sectors and instruments, highlighting its strategic importance in shaping market trends and supporting infrastructure development.
KEY WORDS: *Lic, Investment, Portfolio*

INTRODUCTION

The **Life Insurance Corporation of India (LIC)** plays a crucial role in the Indian financial market, acting as a significant institutional investor. With a vast pool of policyholder funds, LIC strategically invests in diverse sectors—including **public, private, joint, and cooperative**—to ensure financial stability and long-term growth. The corporation carefully balances its investments across multiple financial instruments such as **stocks, bonds, and loans**, aligning with both regulatory requirements and economic development goals. LIC's investment strategy is shaped by **risk assessment, return potential, and national interest considerations**. Investments in **public sector enterprises (PSUs)** ensure stability and government-backed security, while exposure to the **private sector** enables higher growth opportunities. **Joint ventures** and **cooperative sector investments** support economic inclusivity and social welfare, in line with LIC's broader mission.

The choice of investment instruments also reflects LIC's objective to balance **safety and profitability**. Equity investments in blue-chip companies contribute to wealth creation, while **fixed-income instruments** like government bonds and corporate loans provide steady returns. By carefully managing its portfolio, LIC ensures not only the financial well-being of its policyholders but also contributes to India's economic growth and capital market stability. This strategic allocation across **sectors and instruments** makes LIC a pivotal force in the Indian financial ecosystem, influencing market trends, corporate financing, and infrastructure development.

This study focuses on the investment patterns of **LIC India** across four key sectors: **Public, Private, Joint, and Cooperative**. Additionally, it examines LIC's investment in various financial instruments, particularly **stocks and loans**, to understand its strategic allocation and impact on the economy.

LITERATURE REVIEWS

Vijayalakshmi, P., & Ramasamy, S. (2018). The current study focused on the investing strategy followed by the Life Insurance Corporation. The study based on secondary data. The study period runs from 1990-1991 to 2016-17. The data is analyzed using statistical tools such as trend analysis, annual average growth rate (AAGR), and compound annual growth rate (CAGR). The findings of the study are that Life insurance firms invest in assets to mitigate their risks. Efficient investment decisions assist insurance companies protect their capital and reduce risk by spreading their interests in various securities. The Life Insurance Corporation of India properly manages investments in accordance with the IRDA's guidelines.

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Shieh, H. S., Hu, J. L., & Ang, Y. Z. (2020). The study uses metafrontier and four-stage data envelopment analysis (DEA) to assess the overall and individual efficiency of life insurance companies in mainland China and Taiwan, followed by the slack-based measure (SBM)-DEA model to adjust for differences in the operating environment across production units. The empirical findings indicate that environmental considerations greatly impacted the efficiency of all life insurance firms and efore 2008, Taiwan's life insurance companies were more efficient than those in mainland China.

Ray, S., Thakur, V., & Bandyopadhyay, K. (2020). In this study there is an attempt to examine the Indian insurance industry and trace its evolution and growth. The researcher also outlines the sector's significant difficulties. According to the research, some of the issues facing the sector include low penetration and density rates, insufficient investment in insurance products, the dominant position of public sector insurers, and their worsening financial condition. Because India's economic growth is dependent on its ability to absorb shocks, overcoming these difficulties is critical to creating a strong insurance sector.

Pattnaik et al., (2021). This study proposes a paradigm to solve the decision-making dilemma. In this model, a fuzzy multi-criteria decision-making strategy is paired with a technique for order preference by similarity to ideal solution (TOPSIS) and used to rank the various insurance firms based on their online term plans. The testing results suggest that the Life Insurance Corporation of India (LIC) ranks first out of 12 businesses for purchasing an online term plan. A sensitivity analysis was conducted to validate the suggested model.

Murthy, C. V., & Kumar, G. R. (2023). This report addresses current industry developments and issues. The analysis focuses solely on the life insurance business, with little emphasis on other industries. The suggestions and recommendations will assist academics and industry professionals in rethinking their perspectives on the insurance sector.

SIGNIFICANCE OF THE STUDY

The study holds substantial significance in multiple dimensions, including financial stability, investment strategy, risk management, and policy implications. The following points highlight the key contributions of this research:

- The study provides insights into how Life Insurance Corporation of India (LIC) strategically allocates its portfolio across various financial instruments and sectors. By using statistical analysis, it identifies trends and patterns that help in optimizing investment decisions for long-term financial sustainability.
- Given the volatility in financial markets, LIC's portfolio must balance risk and returns. This study assesses sector-wise performance and financial instruments' stability to enhance risk mitigation strategies, ensuring better financial security for policyholders.
- As LIC operates in a highly regulated environment, understanding its investment strategies can help policymakers frame better regulations. The study can contribute to discussions on investment limits, sectoral exposure, and diversification rules imposed by IRDAI and the Indian government.
- The research evaluates how LIC's investments influence different sectors of the Indian economy, such as banking, infrastructure, energy, and technology. It helps in understanding LIC’s role in economic development and identifying potential growth opportunities.
- By statistically analyzing returns from equity, bonds, mutual funds, and other assets, the study helps in assessing the effectiveness of LIC’s investment choices. This can guide future investment allocations and improve overall portfolio returns.

RESEARCH OBJECTIVES

1. To analyze LIC’s sectoral allocation strategies and their impact on portfolio performance.
2. To examine the role of various financial instruments in LIC’s investment portfolio.
3. To evaluate LIC’s risk management strategies in portfolio diversification.

RESEARCH METHODOLOGY

The research methodology for this study follows a structured approach to analyze LIC India’s strategic portfolio management using statistical techniques. The methodology comprises research design, data collection, data analysis methods, and the scope of the study.

1. Research Design

This study follows a **quantitative research design**, incorporating statistical analysis to evaluate LIC India's portfolio allocation across various sectors and financial instruments. The research employs **descriptive** and **analytical** approaches to examine trends, risk factors, and investment performance.

2. Data Collection Methods

The study is based on secondary data sources, drawing extensively from the annual reports of LIC India to examine portfolio composition, asset allocation, and investment performance. Additionally, it utilizes financial statements and disclosures, including

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balance sheets, profit and loss statements, and sector-wise investment data, to gain a comprehensive understanding of LIC's financial health. IRDAI reports provide insights into regulatory filings and investment policies that influence LIC's portfolio strategies. The study also incorporates stock market data from NSE and BSE to assess the performance of LIC's equity investments.
To support the analysis, the study references research papers and financial journals that focus on portfolio management and investments in the insurance sector, providing a well-rounded perspective on LIC's investment practices.

Hypothesis

Hypothesis for Sectoral Allocation Strategies

H01: LIC's sectoral allocation strategies significantly influence its portfolio performance, with a higher allocation to the public sector leading to lower risk but moderate returns, while increased investments in the private sector enhance returns with higher risk.

Hypothesis for Financial Instruments

H02: Equity investments in the stock exchange contribute more significantly to the overall returns of LIC's portfolio compared to debt instruments like loans and government securities.

Hypothesis for Risk Management and Diversification

H03: Diversification across multiple sectors and instruments effectively reduces portfolio risk for LIC, ensuring financial stability even during market volatility.

3. Data Analysis Methods

The research utilizes **statistical tools and financial models** to assess LIC's portfolio performance, risk exposure, and sectoral allocations. The following methodologies will be applied:

(A) Descriptive Statistics

- Mean, median, standard deviation, and variance to analyze historical investment returns.
- Sector-wise allocation percentages to identify LIC's investment trends.

Table 1 ***Descriptive Statistics***

LIC Investment	N	Minimum	Maximum	Mean	Std. Deviation
PUBLIC	14	799009	3473042	1989078.36	889057.795
PRIVET	14	267518	807476	441112.71	164066.009
JOINT	14	40	108	89.64	16.359
COOPERATIVE	14	380	3667	1161.57	1061.060
Stock Exchange	14	1026492	4271037	2402344.43	1054697.663
Loans	14	9950	43784	29098.00	11911.509

(B) Sectoral & Financial Instrument Analysis

- Sector-wise investment distribution and growth trends.
- Performance comparison of equity, bonds, government securities, and alternative investments.

Sector wise Analysis of LIC Investment Strategies

The following Table is about Percentage values of investment of LIC India sectors wise & instrument wise during 2000-2024

Table 2

YEAR	PUBLIC	PRIVET	JOINT	CO-OPERATIVE	TOTAL
2000	83.00173	13.66215	0.408418	1.509586	100
2001	83.58096	13.47889	0.473359	1.282802	100
2002	86.31397	11.33237	0.379052	1.017657	100
2003	86.53251	11.58787	0.269925	0.820415	100
2004	82.67117	15.79452	0.292018	0.632705	100
2005	81.48536	17.32964	0.321364	0.356284	100
2006	77.42891	21.49246	0.39143	0.277169	100
2007	82.82911	16.0946	0.01432	0.678771	100
2008	78.93113	20.14375	0.011603	0.598662	100
2009	74.78746	24.46604	0.009413	0.47444	100
2010	73.71571	25.65968	0.007715	0.398476	100
2011	74.51447	24.94836	0.007647	0.341979	100

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2012	74.60884	24.92144	0.007049	0.295813	100
2013	75.40884	24.37495	0.006366	0.060843	100
2014	78.92564	20.88521	0.006212	0.04983	100
2015	80.07657	19.76008	0.005495	0.040047	100
2016	81.89163	17.93871	0.004979	0.060115	100
2017	82.21449	17.64385	0.0043	0.045101	100
2018	83.7092	16.16956	0.004418	0.034278	100
2019	85.00388	14.87909	0.003829	0.037393	100
2020	84.63748	15.26729	0.003278	0.023689	100
2021	84.45008	15.4643	0.003202	0.020795	100
2022	82.42165	17.50327	0.002333	0.01591	100
2023	81.7462	18.18936	0.001022	0.011728	100
2024	81.08879	18.853	0.002078	0.008872	100

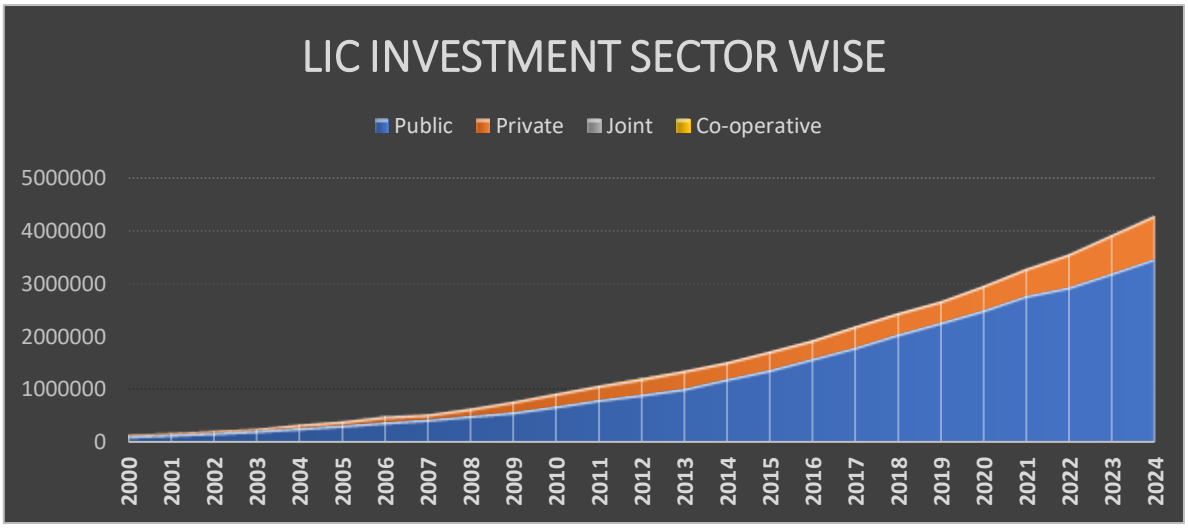


Figure 1

From 2000 to 2004, the sector experienced an early growth phase, with a total increase from ₹1,41,032 crore to ₹3,28,747 crore, marking an approximate 2.3x growth. During this period, the public sector dominated with steady progress, rising from ₹1,17,059 crore to ₹2,71,779 crore. Meanwhile, the private sector began to gain momentum, expanding from ₹19,268 crore to ₹51,924 crore. In contrast, the co-operative sector faced challenges, showing a slight decline from ₹2,129 crore to ₹2,080 crore, while the joint sector remained relatively stable with minimal impact on overall growth.

The years 2005 to 2009 saw a phase of rapid expansion, with the total increasing from ₹3,95,190 crore to ₹7,64,901 crore, nearly 1.9x growth. The public sector continued to lead, reaching ₹5,72,050 crore by 2009, but the most notable change was the private sector's significant rise to ₹1,87,141 crore, reflecting a surge in private investments. The co-operative and joint sectors maintained minor roles with stable but low figures during this period.

From 2010 to 2014, the sector entered a phase of consolidation and growth, with a total increase from ₹9,20,257 crore to ₹15,13,147 crore, marking around 1.6x growth. The public sector exceeded ₹11 lakh crore, reinforcing its leadership, while the private sector sustained its growth trajectory, reaching ₹3,16,024 crore by 2014. A key insight from this period was the increasing shift towards private investments.

The period 2015 to 2019 was marked by a surge in the private sector, with the total rising from ₹17,10,504 crore to ₹26,63,583 crore, about 1.6x growth. The private sector saw a notable expansion, reaching ₹3,96,317 crore in 2019. While the public sector continued to grow, its rate of growth was relatively lower compared to the private sector. The co-operative sector further declined to ₹996 crore, highlighting its limited competitiveness.

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Finally, the **years 2020 to 2024** witnessed accelerated growth dominated by the public sector, with the total increasing from ₹29,59,183 crore to ₹42,83,011 crore, approximately 1.4x growth. The public sector demonstrated unmatched growth, reaching ₹34,73,042 crore in 2024. The private sector also showed a significant rise to ₹8,07,476 crore, indicating strong investor confidence. Meanwhile, the co-operative sector continued to struggle, declining to ₹380 crore, and the joint sector remained stable with minimal impact.

The data highlights the dominance of the public sector, which consistently led the financial figures throughout the years, reflecting strong government investments and a significant role in driving the overall growth. Meanwhile, private investments displayed a remarkable upward trend, with an increasing share year-on-year, particularly gaining momentum post-2015. This surge indicates rising investor confidence and a favorable environment for private enterprises. In contrast, the co-operative sector experienced a steady decline, pointing towards structural challenges and diminishing relevance in the evolving financial landscape. Additionally, the joint sector remained stable yet minimal in its impact, suggesting limited influence on the overall financial growth. Together, these trends paint a clear picture of shifting financial dynamics with a growing emphasis on public and private investments.

Instrument wise Analysis of LIC Investment Strategies

Table 3

YEAR	STOCK EXCHANGE	LOANS	TOTAL
2000	**114032**	**28926**	**144958**
2001	140106	32155	174262
2002	178943	34913	215858
2003	222449	27540	251992
2004	297566	31800	331370
2005	355635	37530	395170
2006	450097	37135	489238
2007	480427	41308	523742
2008	590467	45281	637756
2009	715710	47181	764900
2010	872388	45855	920253
2011	1026492	43784	1072287
2012	1162388	41430	1205830
2013	1307333	41664	1351010
2014	1468886	42247	1513147
2015	1668047	40442	1710504
2016	1891161	34788	1927965
2017	2152592	31586	2186195
2018	2415496	27178	2444692
2019	2636655	24909	2663583
2020	2936030	21134	2959184
2021	3258567	19043	3279631
2022	3539141	16395	3557558
2023	3898997	12822	3913842
2024	4271037	9950	4283011

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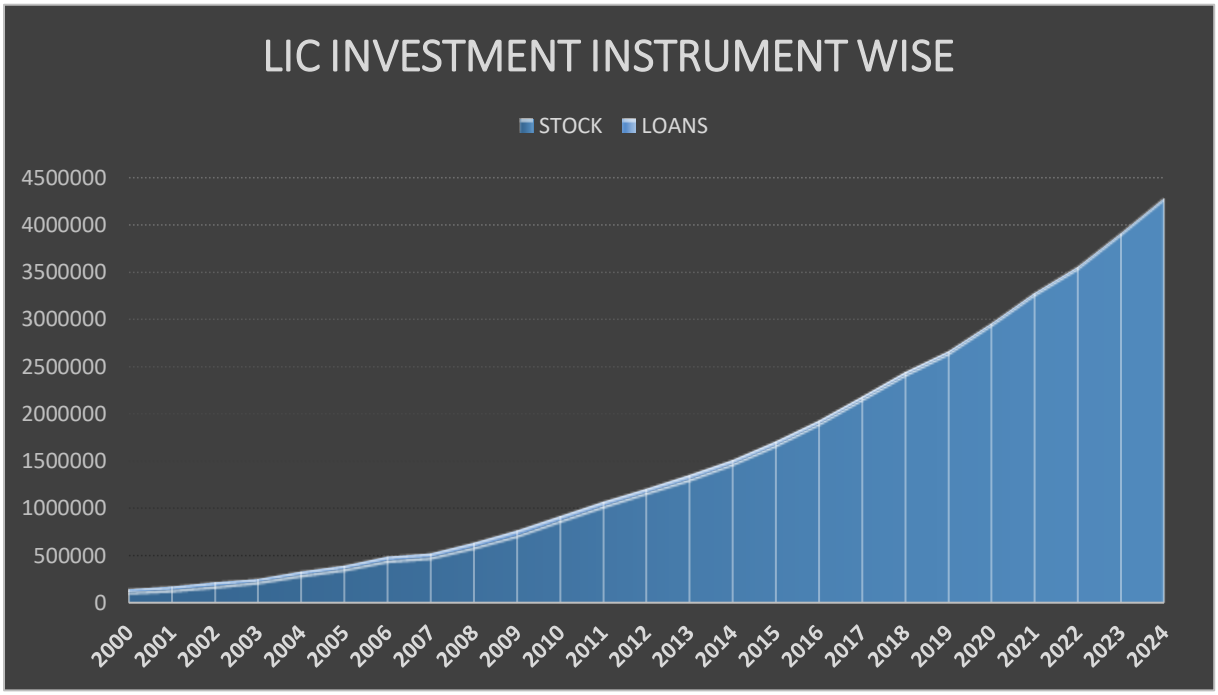


Figure 2

From 2000 to 2004, the financial landscape experienced an early growth phase marked by a significant rise in stock exchange investments, which increased from ₹1,14,032 crore to ₹2,97,566 crore, reflecting a 161% growth. In contrast, loans saw a modest increase of 9.9%, rising from ₹28,926 crore to ₹31,800 crore. The overall financial total grew from ₹1,44,958 crore to ₹3,31,370 crore, achieving a 128% increase. This period highlighted a rapid growth in stock investments alongside a cautious approach to debt, as suggested by the moderate rise in loans.

The years 2005 to 2009 marked an expansion phase, with stock exchange investments doubling from ₹3,55,635 crore to ₹7,15,710 crore, indicating a 101% increase. Meanwhile, loans grew from ₹37,530 crore to ₹47,181 crore, representing a 25.7% increase. The total financial assets expanded from ₹3,95,170 crore to ₹7,64,900 crore, reflecting a 93% growth. This phase underscored a strong confidence in equity investments along with a notable expansion in both stocks and loans.

From 2010 to 2014, the financial sector witnessed consistent growth, driven primarily by the stock exchange, which increased by 68%, rising from ₹8,72,388 crore to ₹14,68,886 crore. In contrast, loans declined by 7.9%, dropping from ₹45,855 crore to ₹42,247 crore. The total financial assets grew by 64%, from ₹9,20,253 crore to ₹15,13,147 crore. This period highlighted a clear preference shift towards equity financing, with declining loan figures suggesting a move away from debt.

During 2015 to 2019, there was a surge in investments, with stock exchange assets rising by 58% from ₹16,68,047 crore to ₹26,36,655 crore. In contrast, loans saw a sharp decline of 38%, falling from ₹40,442 crore to ₹24,909 crore. The total financial assets increased by 56%, from ₹17,10,504 crore to ₹26,63,583 crore. This phase emphasized accelerated growth in stock investments and a risk-averse approach towards debt, as indicated by the substantial drop in loans.

The period 2020 to 2024 was characterized by the dominance of equity investments, with stock exchange assets rising from ₹29,36,030 crore to ₹42,71,037 crore, showing a 45% growth. Loans became almost negligible, plummeting by 52.9% from ₹21,134 crore to ₹9,950 crore. The total financial assets grew by 44.7%, from ₹29,59,184 crore to ₹42,83,011 crore. This phase underscored a strong shift towards equity-based financing, with loans playing an increasingly minor role in the financial landscape.

From 2000 to 2024, the stock exchange witnessed a remarkable nearly 40-fold growth, indicating a significant surge in equity investments. In contrast, loans have been consistently declining, especially after 2010, reflecting a reduced reliance on debt-based financing. The total investments followed a strong upward trajectory, primarily driven by the impressive growth in stock investments. This trend highlights a clear transition from debt-based to equity-based financing, showcasing a sustained preference for equity investments over the years.

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Comparative Analysis of LIC Investment Sector vs Instrument

The following date is about investment of LIC India sectors wise & instrument wise during 2000-2024

Table 4

TABLE 1 : INVESTMENTS BY LIC

(₹ Crore)

Year (end-March)	Sector-wise				Instrument-wise of which		Total (2 to 5)
	Public	Private	Joint	Co-operative	Stock Exchange	Loans	
1	2	3	4	5	6	7	8
2000	117059	19268	576	2129	114032	28926	139032
2001	141256	22780	800	2168	140106	32155	167004
2002	180574	23708	793	2129	178943	34913	207203
2003	219597	29407	685	2082	222449	27540	251770
2004	271779	51924	960	2080	297566	31800	326741
2005	322022	68485	1270	1408	355635	37530	393185
2006	378807	105148	1915	1356	450097	37135	487227
2007	433810	84294	75	3555	480427	41308	521735
2008	503388	128468	74	3818	590467	45281	635748
2009	572050	187141	72	3629	715710	47181	762892
2010	678374	236135	71	3667	872388	45855	918247
2011	799009	267518	82	3667	1026492	43784	1070276
2012	899655	300510	85	3567	1162388	41430	1203818
2013	1018781	329308	86	822	1307333	41664	1348996
2014	1194261	316024	94	754	1468886	42247	1511133
2015	1369713	337997	94	685	1668047	40442	1708489
2016	1578842	345852	96	1159	1891161	34788	1925949
2017	1797369	385729	94	986	2152592	31586	2184178
2018	2046432	395296	108	838	2415496	27178	2442674
2019	2264149	396317	102	996	2636655	24909	2661564
2020	2504578	451787	97	701	2936030	21134	2957163
2021	2769651	507172	105	682	3258567	19043	3277610
2022	2932198	622689	83	566	3539141	16395	3555536
2023	3199417	711903	40	459	3898997	12822	3911818
2024	3473042	807476	89	380	4271037	9950	4280987

Notes : 1. Data for 2024 are provisional.

2. Public sector includes G-secs and State Government securities.

3. Instrument-wise loans exclude policy loans, loans to HPF, money market investments and foreign investments.

Source : Life Insurance Corporation of India.

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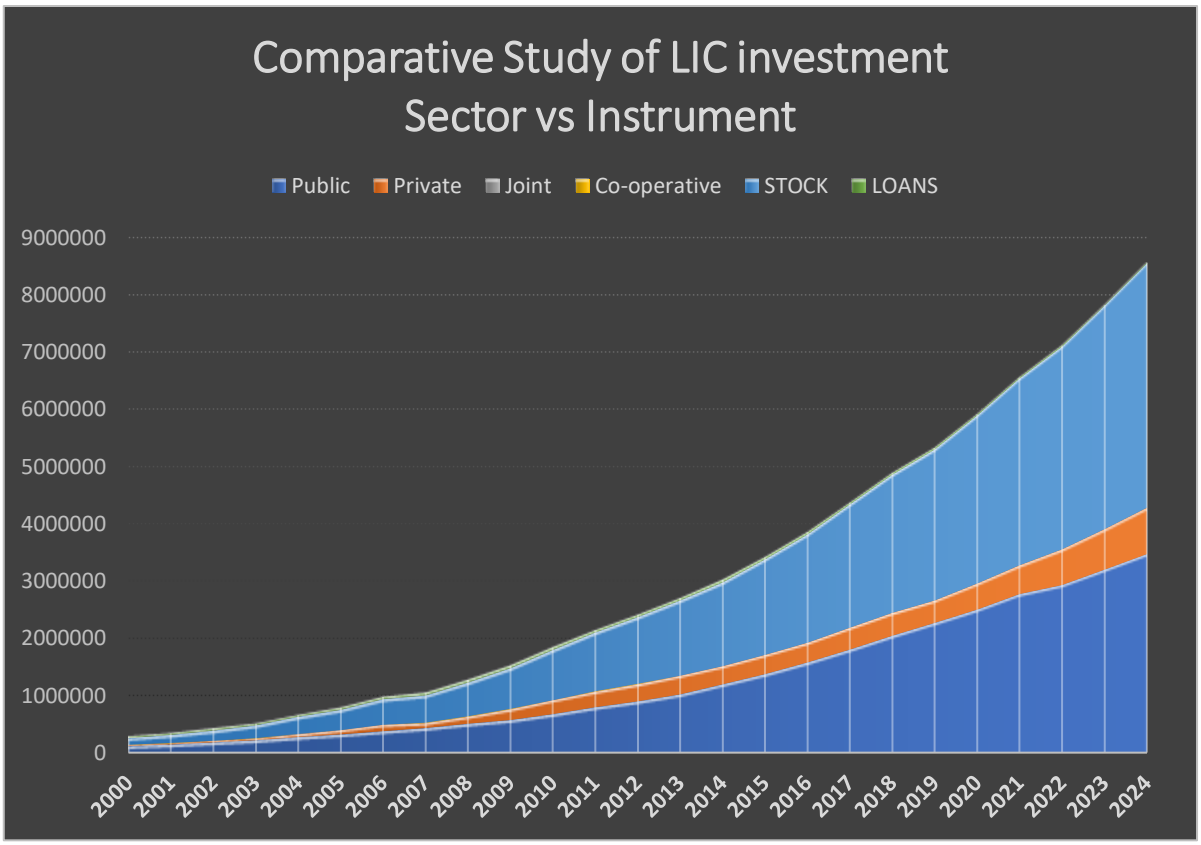


Figure 2

From 2000 to 2024, investments by the Life Insurance Corporation of India (LIC) exhibited substantial growth across both sector-wise and instrument-wise categories. The public sector consistently dominated LIC's investments, rising sharply from ₹1,17,059 crore in 2000 to a provisional ₹34,73,042 crore in 2024. This growth was primarily driven by investments in government securities, indicating a preference for low-risk assets. In comparison, the private sector saw a significant expansion from ₹19,268 crore to ₹8,07,476 crore over the same period, highlighting a growing confidence in private enterprises. The joint sector and co-operative sector played minor roles throughout, with investments peaking modestly at ₹1,270 crore in 2005 for the joint sector and gradually declining for the co-operative sector to a mere ₹380 crore by 2024, reflecting ongoing struggles and limited competitiveness.

On the instrument-wise front, stock exchange investments surged remarkably from ₹1,14,032 crore in 2000 to ₹42,71,037 crore in 2024, underscoring a decisive shift towards equity-based investments. This growth reflects LIC's strategy to capitalize on high returns from equities despite their higher risk profile. Conversely, loans exhibited a contrasting trend, growing initially from ₹28,926 crore in 2000 to a peak of ₹47,181 crore in 2009, before declining significantly to ₹9,950 crore by 2024. This sharp reduction in loans indicates a strategic move away from debt-based instruments towards more profitable equity investments.

The total investments soared from ₹1,39,032 crore in 2000 to ₹42,80,987 crore by 2024, emphasizing a robust growth trajectory driven by a balanced portfolio approach—focusing predominantly on public sector securities and equity investments while progressively reducing exposure to loans. This strategy reflects LIC's emphasis on maximizing returns while managing risks effectively, ensuring long-term financial stability and growth

(C) Correlation & Regression Analysis

- Correlation analysis to measure the relationship between LIC's investment choices and market performance.
- Regression models to predict future trends in portfolio performance based on past data.

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Table 5

Correlations							
		PUBLIC	**PRIVET**	**JOINT**	**CO-OPERATIVE**	**STOCK**	**LOANS**
PUBLIC	Pearson Correlation	1	.931**	-.206	-.641*	.998**	-.993**
	Sig. (2-tailed)		.000	.479	.013	.000	.000
	N	14	14	14	14	14	14
PRIVET	Pearson Correlation	.931**	1	-.420	-.541*	.950**	-.920**
	Sig. (2-tailed)	.000		.135	.046	.000	.000
JOINT	Pearson Correlation	-.206	-.420	1	-.058	-.242	.214
	Sig. (2-tailed)	.479	.135		.844	.405	.462
CO-OPERATIVE	Pearson Correlation	-.641*	-.541*	-.058	1	-.630*	.577*
	Sig. (2-tailed)	.013	.046	.844		.016	.031
STOCK	Pearson Correlation	.998**	.950**	-.242	-.630*	1	-.991**
	Sig. (2-tailed)	.000	.000	.405	.016		.000
LOANS	Pearson Correlation	-.993**	-.920**	.214	.577*	-.991**	1
	Sig. (2-tailed)	.000	.000	.462	.031	.000	
	N	14	14	14	14	14	14
**. Correlation is significant at the 0.01 level (2-tailed).							
*. Correlation is significant at the 0.05 level (2-tailed).							

Key Observations from the Table

The correlation analysis reveals significant relationships between different investment sectors. In the **PUBLIC sector**, there is a very strong positive correlation with **stock investments (0.998)**, indicating that as public sector investments increase, stock investments also rise significantly. Conversely, there is a very strong negative correlation with **loan investments (-0.993)**, suggesting that higher public sector investments are associated with a significant decrease in loan investments. Additionally, there is a moderate negative correlation with the **co-operative sector (-0.641)**, implying a somewhat inverse relationship between these sectors.

In the **PRIVET (private) sector**, there is a strong positive correlation with **stock investments (0.950)**, indicating that private sector growth is linked to higher stock investments. On the other hand, there is a strong negative correlation with **loan investments (-0.920)**, suggesting that as private investments increase, reliance on loans decreases. A moderate negative correlation with the **co-operative sector (-0.541)** also suggests some inverse relationship between these sectors.

For the **JOINT sector**, no significant correlations were observed with stocks, loans, or other sectors, indicating that investments here do not strongly relate to other sectors. The **CO-OPERATIVE sector** shows a moderate positive correlation with **loan investments (0.577)**, suggesting that higher investments in co-operatives are somewhat linked to increased loan investments. However, there is also a moderate negative correlation with **stock investments (-0.630)**, indicating an inverse relationship between co-operative and stock investments.

Lastly, **stock investments** have a very strong negative correlation with **loan investments (-0.991)**, highlighting that as stock investments increase, loan investments decrease sharply and vice versa. Overall, the analysis suggests distinct patterns of relationships between sectors, with strong interdependencies among public, private, stock, and loan investments, while the joint sector remains relatively isolated.

Significance Levels

- **p-value (Sig. (2-tailed))**: Determines if the correlation is statistically significant.
  - **$p \leq 0.01$ (**)**: Highly significant.
  - **$p \leq 0.05$ (*)**: Moderately significant.
  - **$p > 0.05$**: Not significant.

SJIF Impact Factor (2025): 8.688| ISI I.F. Value: 1.241| Journal DOI: 10.36713/epra2016 ISSN: 2455-7838(Online)
EPRA International Journal of Research and Development (IJRD)
Volume: 10 | Issue: 3 | March 2025 - Peer Reviewed Journal

Table 6 Linear Regression Analysis

Model Summary				
INVESTMENTS	**R**	**R Square**	**Adjusted R Square**	**Std. Error of the Estimate**
PUBLIC	.996[a]	0.992	0.991	85276.233
PRIVET	.911[a]	0.830	0.815	70497.219
JOINT	.173[a]	0.030	-0.051	16.772
CO-OPERATIVE	.696[a]	0.484	0.441	793.360
STOCK	.991a	0.983	0.982	143178.7
LOAN	.984[a]	0.968	0.966	2202.129

The model summary shows how well the year predicts investments across different categories. The **PUBLIC** sector has an **R Square of 0.992**, indicating that 99.2% of its variance is explained by the year, with a strong correlation (**R = 0.996**). **STOCK** and **LOAN** investments also show very high explanatory power, with R Squares of **0.983** and **0.968** respectively, and strong correlations. The **PRIVET** sector has a moderately high R Square of **0.830**, suggesting a good fit. In contrast, the **CO-OPERATIVE** sector has a moderate fit with an R Square of **0.484**. The **JOINT** sector shows a very low R Square of **0.030** and a negative Adjusted R Square, indicating that the year is a poor predictor for it. The standard errors vary significantly, reflecting the differences in data variability across sectors. Overall, the year is a strong predictor for most sectors except the JOINT sector.

Table 7 ANOVA

Investments	Sum Of Squares	Df	Mean Square	F	Sig.	Significant
Public	1.01882e+13	1	1.0188e+13	1401.017	.000b	Significant
Privet	2.90291e+11	1	2.9029e+11	58.41	.000b	Significant
Joint	103.570	1	103.570	0.368	.555[b]	Not Significant
Co-Operative	7082989.732	1	7082989.732	11.253	.006[b]	Not Significant
Stock	1.4215e+13	1	1.4215e+13	693.411	.000b	Significant
Loan	1786300221	1	1786300221	368.357	.000b	Significant

The ANOVA analysis shows that the **year** is a significant predictor for most investment categories except the **JOINT** sector. The **PUBLIC** sector has an extremely high F-value (**1401.017**) and a very low p-value (**.000**), indicating a strong and significant effect. Similarly, **STOCK** and **LOAN** investments also show high F-values (**693.411** and **368.357**, respectively) with p-values of **.000**, confirming their strong significance. The **PRIVET** sector has a moderate F-value (**58.41**) but is still highly significant (**p = .000**). The **CO-OPERATIVE** sector shows moderate significance with an F-value of **11.253** and a p-value of **.006**. In contrast, the **JOINT** sector has a low F-value (**0.368**) and a high p-value (**.555**), suggesting that the year does not significantly predict investments in this sector. Overall, the year is a strong predictor for all sectors except JOINT.

Table 8 STUDENT t - STATISTICS

Model	Unstandardized Coefficients (B)	Std. Error	Standardized Coefficients (Beta	T	Sig.	ACCEPTED/ REJECTED
PUBLIC	401920.1	48140.03		8.349	0	SIGNIFICANT
	211621.1	5653.759	0.996	37.43	0	
PRIVET	173203.6	39797		4.352	0.001	SIGNIFICANT
	35721.22	4673.92	0.911	7.643	0	
JOINT	94.703	9.468		10.002	0.000	INSIGNIFICANT
	-0.675	1.112	-0.173	-0.607	0.555	
CO-OPERATIVE	2484.934	447.866		5.548	0.000	INSIGNIFICANT
	-176.448	52.599	-0.696	-3.355	0.006	
STOCK	527589.6	80827.07		6.527	0	SIGNIFICANT
	249967.3	9492.658	0.991	26.333	0	
LOAN	50113.890	1243.143		40.312	0.000	SIGNIFICANT
	-2802.119	146.000	-0.984	-19.193	0.000	

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The regression coefficients indicate how well the **year** predicts investments across different sectors. The **PUBLIC** sector shows a high unstandardized coefficient (**401920.1**) with strong significance (**p = 0**), suggesting a substantial and reliable positive effect of the year. **STOCK** and **LOAN** investments also exhibit large positive unstandardized coefficients (**527589.6** and **50113.89**, respectively) with very significant p-values (**0**), highlighting a strong impact of the year. The **PRIVET** sector's coefficients (**173203.6**) and significance (**p = 0.001**) imply a moderate positive influence. For the **CO-OPERATIVE** sector, a significant negative standardized coefficient (**-0.696**) suggests an inverse relationship with the year (**p = 0.006**). However, the **JOINT** sector has an insignificant standardized coefficient (**p = 0.555**), indicating that the year does not meaningfully predict its investments. Overall, the year is a significant predictor for all sectors except JOINT, with varying degrees of positive and negative impacts.

MAJOR FINDINGS & CONCLUSION

- **Steady Growth in Investments:** Investments by LIC have shown a **consistent upward trend** from ₹1,39,032 crore in 2000 to ₹42,80,987 crore in 2024. This reflects substantial growth in LIC's investment portfolio over the years.
- **Dominance of Public Sector Investments:** The **public sector** has consistently received the largest share of investments, increasing from ₹1,17,059 crore in 2000 to ₹34,73,042 crore in 2024. This indicates LIC's preference for **safer investments** such as **government securities**.
- **Rising Private Sector Investments:** Investments in the **private sector** have surged significantly, from ₹19,268 crore in 2000 to ₹8,07,476 crore in 2024, showing a growing inclination towards private sector opportunities.
- **Decline in Joint and Co-operative Sectors:** The **joint sector** has seen minimal investments with a decreasing trend, from ₹576 crore in 2000 to ₹89 crore in 2024. Similarly, investments in the **co-operative sector** have decreased from ₹2,129 crore in 2000 to ₹380 crore in 2024, suggesting a shift away from these sectors.

❖ **Instrument-Wise Analysis**

- **Stock Exchange Investments:** There has been a notable increase in investments through the **stock exchange**, rising from ₹1,14,032 crore in 2000 to ₹42,71,037 crore in 2024, indicating a significant reliance on **equity markets**.
- **Loans:** Investments in **loans** have reduced gradually from ₹28,926 crore in 2000 to ₹9,950 crore in 2024, reflecting a **shift towards market-linked instruments**.
- **Accelerated Growth Post-2010:** The growth rate of investments appears to have **accelerated significantly** post-2010, especially in the **public and private sectors**, highlighting a possible strategic shift by LIC towards **aggressive portfolio expansion**.

CONCLUSION

The analysis of LIC's investments from **2000 to 2024** highlights a **clear preference for the public and private sectors**, with a noticeable decline in investments in the **joint and co-operative sectors**. The steady rise in **stock exchange investments** suggests an increased focus on **market-driven returns**, while the reduction in loans points to a **shift towards more secure and diversified investment avenues**. Overall, LIC's strategy reflects a **balanced approach** with a dominant focus on **government securities and market-linked investments** to ensure **stability and growth** of its portfolio.