“Investment practices of life insurance companies in India: the quest for a compliant portfolio”

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Investment practices of life insurance companies in India: the quest for a compliant portfolio

Abstract

Life insurance business in India was opened up by the Insurance Regulatory Development Authority (IRDA) to the private sector participants in 1999. The investment function in India is highly regulated, especially by section 27A of the Insurance Act (1938) and the IRDA investment regulations released from time to time. Investment science has seen its evolution and refinement over a century, commencing with Bailey's principles, through Macaulay's duration and Redington's immunization and portfolio selection, put forth by Harry Markowitz. One of the greatest practitioners in investment, Warren Buffet, runs an insurance operation under his Berkshire Hathaway umbrella. While this journey from stock selection to portfolio construction has resulted in the search for an 'optimal portfolio', the life insurance sector in India is also concerned with a "compliant portfolio". This study hypothesizes a range of portfolio combinations, supplemented by insights from the investment community in the life insurance sector in India.

Keywords: insurance companies, investment, India.

Introduction

Motivation. The longevity of any life insurance companies identifies the success of its business management model. This is a combination of sound practices in functions such as underwriting, risk-pooling and investment, collectively the 'engine room' of the insurance business. The investment function encompasses the cash-to-cash cycle from collection of premiums, investment and claim settlement. In turn, investment also involves divestment and reinvestment. In perspective, the business of life insurance involves the management of its cash cycle, keeping investment fungible so as to enable claim settlement. Liquidity is of significant importance. Safety of investment implies capital protection. When combined with pensions business, yield becomes important. Such an understanding leads us to an appreciation of the time-tested and honored principles of investment in the insurance sector proposed by Andrew Bailey in the 1800s, called Bailey's principles. These principles revolve around the three simple axioms: Safety, Yield (subject to safety) and Liquidity, necessarily in that order. By nature, the investment style in the life insurance sector is conservative, as the principal stakeholders are 'widows and orphans'. Few people know that the origins of the 'mutual' fund lay in the insurance pool. Modern mutual funds operate in various style-boxes ranging from the conservative to the aggressive. However, the investment philosophy in the life insurance and pension sector is conservative, and understandably so. How is this investment philosophy linked with the ground realities of the investment environment? The motivation of this study is to understand the constraints under which an investment manager operates.

This paper is organized as follows. Section 1 presents the literature review. Section 2 (Research Problem) highlights the regulatory constraints imposed upon the investment process. Section 3 (Research Design) takes into account the contours of asset allocation. Section 4 presents secondary sources of information. This is followed by Ethnographic study (Section 5) in the small community of institutional investors that attempts to map the investment process. The final section concludes the paper.

I. Literature review

Three great investment classics owe their origins to the 1930s. First, it was Benjamin Graham, the dean of financial analysis, with his classic treatise, *Securities Analysis*, with David Dodd. Next was John Burr Williams, with his classic, *The Theory of Investment Value*. This was followed by Philip Fisher, with *Common Stocks & Uncommon Profits and Conservative Investment Philosophy*. These great works emerged from the dark shadows that prevailed over the investment world from 1929 until the post-World War II era. This triumvirate provided the basis for securities selection, under an overarching philosophy of the Bailey's principles. Bonds were analyzed using interest rate sensitivity measures such as Duration. Liability funding strategies applied Duration to a process called Immunization, aimed to counterbalance discounting risk and reinvestment risk.

In 1952, ground-breaking work by Harry Markowitz provided investment theory with the dimension of the 'portfolio'. It is the portfolio of securities that generates return, for a given quantum of risk, or the Minimum Variance Portfolio. Optimization involves maximizing the return per unit of risk.

Stock selection methods continue to be the basis of investment philosophy, with Warren Buffet and Peter Lynch as examples. Warren Buffet's investment philosophy is a combination of Graham's Val-

ue Investing (picking beaten-down stocks) and Fisher's Growth Investing (identifying winning features). Peter Lynch was an out-and-out growth stock investor, who worked hard on getting information to back-up the growth information on smaller, under-researched companies. Both Buffet and Lynch were rewarded for finding information before the rest of the market could, and for their conviction.

Apart from his legendary stock-picking skills, one of Warren Buffet's success factors is a cast-iron investment vehicle: an insurance company, under Berkshire Hathaway. Notice the cash flow pattern of a life insurance company: cash flows come in the form of insurance premiums, steadily and surely – these cash inflows are deterministic and originate from the insurance contract. By contrast, in pure life insurance, the claim is paid only on death (and not all insured clients will die on the same day, or, the probability is very low), making the outflows probabilistic or contingent. To reiterate, in life insurance, the inflows are deterministic and outflows are probabilistic. Cash remaining with the insurer are investible surpluses. By comparison, mutual funds, whose essence is investment, are relatively poor investment vehicles. Fickle investors pull money out during crashes (when one should be buying) and pile money on during boom times (when one should be selling). Thus, life insurance companies have time on their hands to buy low, sell high. Such a contrarian style is what Benjamin Graham also advocated. Life insurance companies can play a stabilizing influence in the financial markets. In recent times, the intervention of the Hong Kong Monetary Authority (HKMA) during the Asian crisis of 1998, is an example. By providing liquidity to the market, it played a stabilizing role, and even exited its position with significant gains. This is something that LIC of India emulated, when it booked significant profits in March-April 2014. In addition to the possibility of buying securities low, John Bogle of Vanguard advocated index funds to reduce transaction costs.

From a corporate finance perspective, issuers approach institutional investors (i.e., life insurance companies) with proposals to issue bonds. This is facilitated by the fact that life insurers' portfolios comprise predominantly of bonds. David Durand referred to this phenomenon as institutional mechanisms that promote the issue of corporate bonds, as against equity.

Another development of the 1980s was the growing market for Catastrophe bonds (CAT bonds). CAT bonds are an alternate to reinsurance markets. An insurer may sell 1-year CAT bonds with a coupon rate up to as much as 900 basis points above the treasury rate. The salient feature is, if a loss of a predetermined magnitude is triggered, the investor in the CAT bond may lose his principal. Being a mode of funding for low-probability loss event, it captures the attention of risk-seeking investors. Berkshire Hathaway has successfully made significant investments in CAT bonds. CAT bonds make use of capital markets to transfer risk, as an alternate to the traditional insurance-reinsurance markets. Such bonds, called Death bonds, are also used to transfer risk on policyholders who die young, due to accidents or AIDS. On the other hand, pension funds use put options to protect the selling prices of bonds and stocks on the eve of each periodic payout. In 2013-14, GIC Re of India successfully issued CAT bonds. In addition, with their largely HTM portfolio, life insurance companies can sell covered call options on a small portion of their holdings, during bull markets, locking in to highly profitable exits. Alternately, they can engage in securities lending to short-sellers in bear markets. Thus, derivatives and other strategies can be added to the set of investment tools of a life insurer. The enabling factor is organized financial markets, with more and more exchange traded products, eliminating counter-party risk.

AIG was one of the large, complex financial institutions that faced a crisis during the financial meltdown of 2008. It had a London-based subsidiary engaged in financial products, and was called AIG FP (financial products). AIG FP, consisting of former members of Drexel Burnham Lambert, took to aggressive selling of credit default swaps (CDS) to cover losses from a fall in the prices of mortgage-backed bonds called collateralized debt obligations (CDO). It was based in London and opted for Euro-zone regulation. The CDS contracts resulted in AIG FP facing CDO claim liabilities from Goldman Sachs and other counterparties that led to its collapse. Being viewed as systemically important, AIG was bailed out with American taxpayers' money. It transpired that the activities of the subsidiary, AIG FP were far removed from the core life insurance business, and had the effect of harming the holding company – a classic case of the principal-agent problem. The foregoing literature survey provides the boundaries that are available for exploration by the investment function of a life insurance company, within an overall philosophy of conservatism.

With particular reference (but not restricted to) Indian literature, results of the survey are tabulated in chronological order from 2000 to 2013 below:

Table 1. Literature survey

Author and citation	Paper title	Relevance to this paper
Davis Philip E. (2000), OECD commissioned paper, presented at the XI ASSAL Conference at Mexico.	Portfolio regulations of life insurance companies and pension funds	Prudent person and quantitative restrictions are two regulatory styles. These are introduced to address ALM considerations and to induce diversification. Such regulations could result in sub-optimal portfolios, vis-à-vis mean-variance portfolios. Impact of regulation is difficult to evaluate.
Vaidyanathan R. (2001) in the Chartered Accountant, January 2001	Investing insurance funds	It is perhaps time for regulators to provide more elbow room to insurance companies, by relaxing the prescriptive regulations. It recommends greater scope for investment in corporate bonds for higher returns. This article covers all insurers, not only life insurers.
Goulet Sylvian and Mukund S. Diwan, 8th Global Actuarial Conference, Mumbai, March 2006	Asset/ liability management and innovative instruments	Government regulations and market conditions make ALM constraints more difficult to meet. Life settlements (secondary market for policies) is an innovation in improving ALM.
Neelaveni, V., Zenith International Journal of Business Economics & Management Research, Vol. 2(3), March 2012	Financial performance of life insurance companies and products	It analyzes the overall business growth of 5 selected companies across segments: life, endowment and hybrid. There is no mention of the investment strategy or pattern.
Charumathi B.(2012), Proceedings of the World Congress on Engineering 2012, Vol. 1, WCE, July, London, UK	On the determinants of profitability of life insurers – an empirical study	Life insurance is the least profitable line of business in Asia. Focus needs to be on core term insurance and a sustainable business model.
Deloitte-ASSOCHAM report, March 2013	Funding the infrastructure gap	Life insurers need to deploy up to 15% of assets under management in infrastructure and housing. In actual fact, they have invested only up to 12%. Infrastructure bonds are rated below the stipulated AA rating. SPVs also suffer from low ratings. Dilutions in equity have already taken place and there are no fresh supplies. Sales of unlisted projects attract capital gains tax. ALM considerations deter investments in infrastructure.

Literature review shows that investment limits in infrastructure and housing (up to 15%) are difficult to attain, since these are long-term in nature, extending up to 15 years. These may be in the form of project loans and not bonds, and are hence, intrinsically illiquid. Bonds, if any, are rated below the investment-grade AA, as also Special Purpose Vehicles (SPV) that are poorly rated. As a consequence, they are illiquid and add to ALM problems. A market for bonds, credit enhancement and take-out financing needs to be further developed. Companies engaged in infrastructure have already diluted their equity through large issuances and hence unable to provide fresh supply of equity stocks (Deloitte-ASSOCHAM, 2013).

2. Research problem

It can be further stated from the above literature that:

- Government securities issued by the Indian Central Government are liquid and traded.
- Government securities issued by Indian State Governments are illiquid and thinly traded.
- Infrastructure and housing sector assets are in the form of illiquid loans and bonds, hence not traded.
- Corporate bonds are illiquid and thinly traded.

As a result, in the absence of periodic price data in respect of all asset classes except Central Government Securities, it becomes difficult to compute the returns, and hence their standard deviation. This is depicted in the table below.

Table 2. Features of various asset classes

Portfolio combination	Government securities	Infra/housing project loan/bond	Corporate bonds	Equity
Various	Daily prices available in respect of Central Government securities. Not available in the case of State Government Securities.	Project loans are illiquid. There are very few bonds, and they do not trade on a regular basis	The supply of AA and above-rated bonds has dried up. They are also thinly traded.	The supply of top-quality equity has dried up. Insurance companies quickly hit the investment limit of 10% to 15% in the investee company.
Various	Data sufficient in case of Central Government securities Data insufficient in case of State Government securities (Max permitted in all Government securities put together = 85%)	Data insufficient, illiquid market	Data insufficient, illiquid market	Data sufficient (Max permitted = 10%)

From the above, it can be seen that the mean and standard deviation of returns based on market prices is available only up to 85% of the portfolio (Government securities) and 10% (equity). This does not add up to 100%. This frustrates efforts to have a mean-variance approach and also the quest for an optimal portfolio. Hence, the approach in this paper is to suggest combinations of compliant portfolios and look for responses on a narrower range of actually chosen combinations.

The literature cited above recognizes the fact that a regulatory compliant portfolio is bound to be sub-standard. Hence, efforts may be directed towards arriving at various combinations of portfolios that would adhere to prudent norms and the quantitative restrictions placed on each asset class.

A chronology of regulatory events commencing with 1999 and ending with 2014 is depicted below.

Table 3. Chronology of regulatory events

Year	Event
1999	Amendment of the Insurance Act, 1938, incorporating Section 27 and 27A on investment patterns. Importantly, it stipulated a minimum 50% of investible (controlled) funds in Government securities
2000	IRDA Investment Regulations stipulate 15% investment in the infrastructure and social sector
2001	IRDA Investment Regulation: Of the balance 35%, not more than 15% can be in discretionary investment, other than specified debt instruments, corporate bonds and equity
2002	IRDA Investment Regulation: Investment in equities must be in listed, actively traded securities
2004	IRDA Investment Regulation: Use of derivatives permitted only for hedging of underlying investment
2008	IRDA Investment Regulation: Ratings in respect of debt instruments, with a minimum AA specified. Prudential norms include exposure limits at 10% of the controlled fund as well as in individual companies.
2012	IRDA Investment Regulation: Clarification on the 'infrastructure facility' for classification if investment IRDA to permit insurers to engage in Corporate Bond repos
2013	IRDA Investment Regulations: Single company exposure raised to 15% Solvency margin raised for debt instruments other than government securities (0.9 to 7.5 times) Solvency margin of 145% introduced as part of Solvency II Fixed income derivatives permitted to hedge interest rate risk (Interest Rate Swaps and Forward Rate Agreements) The IRDA Chairman also clarified that the Investment Law and Regulations applied equally to state-owned LIC of India, citing the principle of 'prudence' in exposure limits. Ultimately, the state-owned LIC of India's regulations will converge with the RDA regulations.
2014	GIC Re plans to approach IRDA for issuance of catastrophe bonds (CAT Bonds)

2.1. Impact of regulations. In 2011, life insurers preferred to avoid equities, as the markets were volatile, and preferred to participate in the auctions for primary debt issuances. This view was confirmed by Bajaj Allianz and LIC of India, which was cautiously investing in short-term debt as an interim measure.

Likewise, in 2013, under a rising interest rate regime, fresh supplies of corporate bonds were limited, as per Edelweiss and Future Generali. Also, the capital charge stipulations and liquidity concerns drove investors to Government securities, which also became attractive, according to Darashaw and Future Generali. This was confirmed by Prime Database and Economic Times Intelligence Group, which stated that the corporate bond IPO market had dried up due to high interest rates. Equity exposure limits neared to a close, according to Aviva Life. According to HDFC Standard Life, insurers are looking towards opportunities in the IPO markets, as and when they revive. LIC of India is particularly active in participating in the government's disinvestment program, according to two of its officers. To partly fund this exercise, it has played the contrarian game, and booked profits in companies where it is close to exposure limits, in order to participate in the government disinvestment program. LIC of India has also been investing in short-term money market instruments. According to Future Generali, markets are awaiting a rally in bond markets, betting on the success of the central bank to tame inflation.

It can be seen from the above as to how the extant law and regulations have been chiseled in to shape.

Considering the above, this paper attempts a new approach, consistent with the above-cited literature, but updated to the Indian perspective. Hence, the term 'compliant' portfolio is used to depict the boundaries of several portfolio combinations with 4 asset classes.

The foregoing literature review also indicates that securities selection was the state of the art, so far as investment management was concerned, until 1952. Subsequent developments, such as Markowitz' mean-variance portfolio, Tobin's market portfolio, the Sharpe-Lintner-Mossin CAPM and Roll-Ross Arbitrage Pricing Theory are based on 'daily returns', which, under the Efficient Market Hypothesis (EMH) should follow a normal distribution. However, this is not how Warren Buffet, who runs the investment portfolio of Berkshire Hathaway, a life insurer, looks at returns or selects securities. Nor it is possible to compute returns and measure correlations among bonds that are thinly traded (life insurance companies' investment predominantly in bonds). For a life insurer which trades infrequently owing to its long investment horizon, a substantial portion of holdings are in the

Hold-to-Maturity (HTM) mode. Besides, since the investment activity is also regulated by an insurance sector regulator, there are additional constraints under which the securities selection and portfolio construction take place. Such operating environments and constraints constitute the subject matter of this paper.

The Indian life insurance sector had been in existence for several decades prior to the formal Insurance Act that came into effect in 1938. Prior to the nationalization of insurance in 1956, there were 129 companies, which were consolidated into the Life Insurance Corporation of India (LIC) in 1956. Prior to nationalization, malpractices were rampant, combined with bad investments in related companies in the industrial sector. The life insurance sector in India was once again opened to the private sector in 1999, with the amendment of the Insurance Act (1938), and establishment of the Insurance Regulatory Development Authority (IRDA). While the investment norms for LIC are specified under the LIC Act (1956), the investment norms for the rest of the insurance sector are specified under Section 27A of the Insurance Act. It is expected that, over time, the investment norms and other laws governing LIC shall converge with those stipulated for all life insurers. In addition to Section 27A of the Insurance Act, as amended from time to time, the extant investment-related regulations issued by IRDA are also applicable.

Table 1a (see Appendix) presents the companies engaged in life insurance activity in India. These 25 insurers represent a variety of parentage, namely, state-owned insurers, state-owned and private sector banks, with foreign insurers as collaborators in some cases.

Section 27A of the Act, together with IRDA Circulars, specify the investment criteria as it is showed in Table 4:

Table 4. Detail level I

No.	Type of Investment	Extent Limit: % of earmarked fund
1	Government securities	>=50%
2	Approved investments*	<=35%
3	Housing finance loans bonds / MBS AA and above or infrastructure equity, loans / bonds or ABS	>=15%

Note: *See detail level II below, No. 2

Table 5. Detail level II

No.	Type of investment	Extent Limit: % of earmarked or controlled fund (CF)
1	Government securities (central or state)	>=50%
2	Approved investments: Government Securities as in (1) above Municipal bonds g'teed by State Govt. Mortgages- Hsg Societies g'teed by State Govt. Loans on Life Policies, Life Interests Debentures & Bonds of Coop Societies	<=20% of controlled fund (CF)
	Debentures of select companies	Max 10% of investee company or max 10% of controlled fund, whichever is lower
	Preference shares of selected companies	Equity + Preference shares <=50% of 20% of CF
	Equity shares of selected companies	Exposure Norms: Convertible Debentures + Equity + Preference shares: Max 15% of investee company or Max 10% of CF, whichever is lower
	Equity, Debentures of all Indian Financial institutions	Max 10% of CF to investee group/industry
	Commercial paper of Indian Financial institutions Bonds (>=AA) and commercial paper (>=P1) Commercial paper, Cert. Deposit in Banks Collateralized borrowing & Lending operations (CBLO) of clearing corporation Money market instruments (Repo, Call Money) ABS of Housing Finance or Infra Companies Derivatives	Derivatives to be used only for hedging
	Other investments approved by Directors and ratified by IRDA (assumed that these can be used for (1) and (3) also, to be on the safe side.	<=15%, including derivatives exposure over and above used for hedging
3	Housing finance loan bonds / ABS AA and above or infrastructure equity, loans bonds or ABS	>=15%

After perusing Section 27A of the Insurance Act (1938), and the subsequent IRDA regulations on investment for life insurance business, a simplified interpretation leads to the following investment portfolio combinations:

a. Two asset classes: Government securities + MBS/ABS (Mortgage/Infrastructure loans) rated above AA.
b. Three asset classes: Government securities + MBS/ABS + Corporate Bonds rated above AA.

c. Four asset classes: Goverment securities + MBS/ABS + Corporate Bonds rated above AA + Equities.

The problem is formulated in the following manner:

Goverment securities + Loans / ABS / MBS + CB + EQ = 100% = 100;
Goverment securities >= 50;
Loans / ABS / MBS >= 15;
CB + EQ <= 20;
EQ <= 10.

3. Research design

This section on research design picks up the thread from the research problem as elucidated, and builds on it. A hypothetical range of possibilities is presented in this section, and confirmation is sought from secondary sources and an ethnographic study.

The hypothetical range of portfolio represents a gradual broad-basing of asset classes from two to four, in a move towards asset class diversification. As per IRDA, the minimum and maximum investment permitted, as % to the total investments (% of controlled fund, as they are called) is presented below.

Table 6. Minimum and maximum investment limits

Asset class	Minimum % of controlled fund	Maximum % of controlled fund
Government securities	50	50 + 35 = 85
Loans / Bonds / MBS / ABS of Infra / Mortgage Loans	15	15 + 35 = 50
Corporate Bonds rated AA and above	0	10
Equity	0	10

A more conservative investment approach has been followed in this paper, as explained in this section. (1) Corporate bonds suggested include only those rated AAA, since one downgrade would mean that the said bonds can still be sold when in the AA category. (2) Also, the discretionary 15% category of investments with director's approval and IRDA ratification (called Other Approved Investments) are considered in this paper as utilizable under goverment securities, MBS / ABS or AAA corporate bonds. Such an approach would keep the tenets of Bailey's principles: Safety, Yield (subject to safety) and Liquidity, uppermost in mind and to reflect a conservative approach. An *ex-ante* tilt towards Government securities precludes the need for a panic-induced sale of corporate bonds or equities at times of 'flight to quality'.

Consistent with the minimum and maximum limits specified in the investment guidelines stipulated for various asset classes, various combinations have been listed. Considering increases and decreases intervals of 2.5%, 48 combinations are listed below.

Table 7. Combinations of asset classes (% of controlled fund), IRDA-compliant portfolios

COMBI	G SEC	MBS/ABS	CB AAA	EQUITY	TOTAL
1	85.00	15.00	0.00	0.00	100.00
2	82.50	17.50	0.00	0.00	100.00
3	80.00	20.00	0.00	0.00	100.00
4	77.50	22.50	0.00	0.00	100.00
5	75.00	25.00	0.00	0.00	100.00
6	72.50	27.50	0.00	0.00	100.00
7	70.00	30.00	0.00	0.00	100.00
8	67.50	32.50	0.00	0.00	100.00
9	65.00	35.00	0.00	0.00	100.00
10	62.50	37.50	0.00	0.00	100.00
11	60.00	40.00	0.00	0.00	100.00
12	57.50	42.50	0.00	0.00	100.00
13	55.00	45.00	0.00	0.00	100.00
14	52.50	47.50	0.00	0.00	100.00
15	50.00	50.00	0.00	0.00	100.00
16	50.00	47.50	1.25	1.25	100.00
17	50.00	45.00	2.50	2.50	100.00
18	50.00	42.50	3.75	3.75	100.00
19	50.00	40.00	5.00	5.00	100.00
20	50.00	37.50	6.25	6.25	100.00
21	50.00	35.00	7.50	7.50	100.00
22	50.00	32.50	8.75	8.75	100.00
23	50.00	30.00	10.00	10.00	100.00
24	52.50	27.50	10.00	10.00	100.00
25	55.00	25.00	10.00	10.00	100.00
26	57.50	22.50	10.00	10.00	100.00
27	60.00	20.00	10.00	10.00	100.00
28	62.50	17.50	10.00	10.00	100.00
29	65.00	15.00	10.00	10.00	100.00
30	65.00	15.00	12.50	7.50	100.00
31	65.00	15.00	15.00	5.00	100.00
32	65.00	15.00	17.50	2.50	100.00
33	65.00	15.00	20.00	0.00	100.00
34	65.00	15.00	20.00	0.00	100.00
35	62.50	17.50	20.00	0.00	100.00
36	60.00	20.00	20.00	0.00	100.00
37	57.50	22.50	20.00	0.00	100.00
38	55.00	25.00	20.00	0.00	100.00
39	52.50	27.50	20.00	0.00	100.00
40	50.00	30.00	20.00	0.00	100.00
41	52.50	27.50	17.50	2.50	100.00
42	55.00	25.00	15.00	5.00	100.00
43	57.50	22.50	12.50	7.50	100.00
45	60.00	20.00	15.00	5.00	100.00
44	62.50	22.50	12.50	2.50	100.00
45	60.00	25.00	12.50	2.50	100.00
46	57.50	27.50	10.00	5.00	100.00
47	55.00	30.00	7.50	7.50	100.00
48	52.50	32.50	10.00	5.00	100.00

From the data presented above, (Government securities) and MBS / ABS under various combinations are showed in Figure 1.

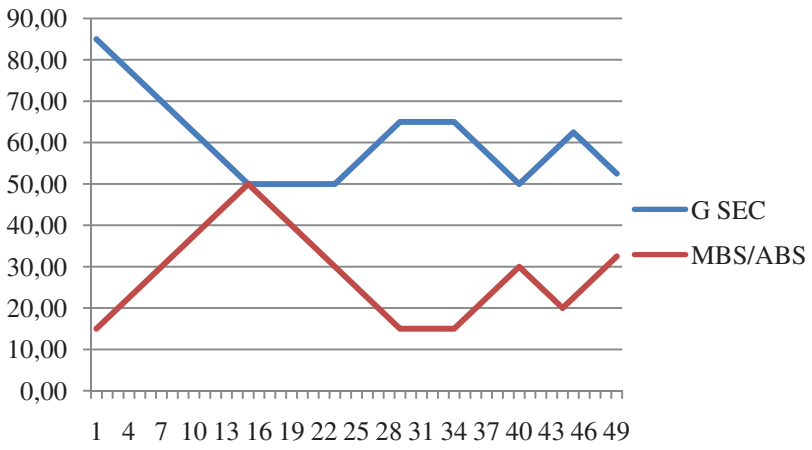

Fig. 1. Portfolio combinations with two asset classes

Combinations from 1 to 15 consist exclusively of Government securities and MBS / ABS, being two asset-class portfolios. The two lines are mirror images, complementing each other in the total portfolio.

In the next graph, AAA rated corporate bonds are also introduced in the portfolios. The introduction of corporate bonds, from combination 16, reduces the quantum of Government securities or MBS / ABS in the portfolio.

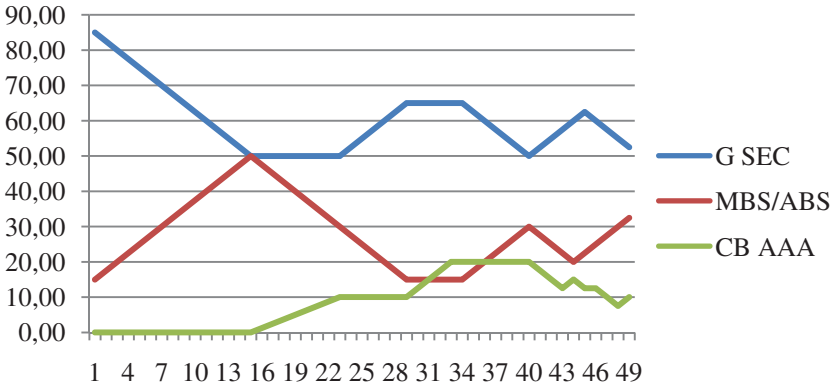

Fig. 2. Portfolio combinations with three asset classes

Equities are introduced from combination 16 to 32 and again from 41 to 48. When all four asset-classes are plotted in a line-graph, the following figure is derived.

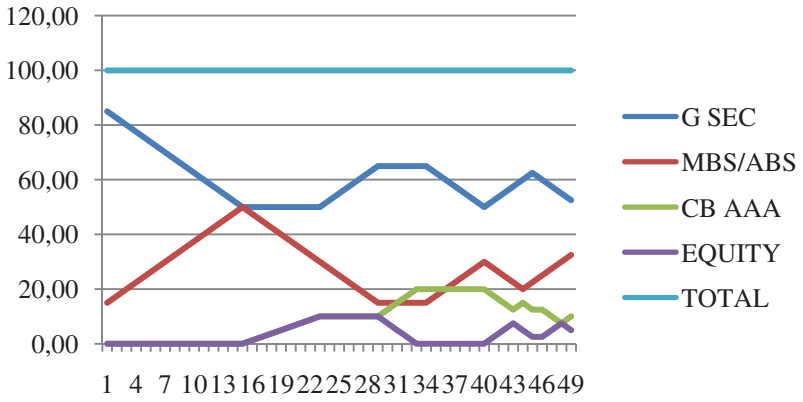

Fig. 3. Portfolio combinations with four asset classes

From combinations 30 to 48, the corporate bonds and equities are almost a mirror image of each other.

All these portfolios comply with IRDA-specified limits. As seen in the graph, combinations from 1 to 15, represented in the horizontal axis, depict portfo-

lios in two asset classes, Government securities and ABS/MBS represented on the vertical axis. Moving from left to right along the horizontal axis, combination 15 represents a 50:50 portfolio of Government securities and MBS/ABS. Subsequently, corporate bonds and equities are introduced from combination 16 onwards. Again, the zero-equity portfolios (combinations 33 to 40) represent portfolios in three asset classes. The most conservative portfolio is combination 1, a bond fund, with 85% in Goverment securities and 15% in MBS/ABS rated AAA. The most aggressive portfolio is combination 23, having 50% in Goverment securities, 30% in MBS/ABS rated AAA, 10% in corporate bonds rated AAA and 10% in equities.

The 48 combinations depicted are all 'compliant' portfolios in the context of regulatory requirements. The literature of financial economics, particularly by Markowitz, is about 'optimal' portfolios. Optimality is understood as the point(s) of highest 'Return' per unit of 'Risk' (Return/Risk). The term Return comprises of the daily price changes, whereas Risk is the variance in the daily price changes. This daily Marking to Market (MTM) of prices works well when assets are Held-for-Trade (HFT), and fluctuating asset prices are a matter of immediate business consideration. However, insurance portfolio assets are Hold-to-Maturity (HTM) in nature, and daily price fluctuations are not a critical matter of business consideration, barring permanent declines in value. Moreover, insurance claims are contingent in nature, and there is a time lag between the intimation of claims, the assessment of claims and their settlement. Most of the claims of small and routine nature can be paid out of insurance premium inflows that come in on a daily basis, plus dividends and interest income. This is supplemented by G Sec holdings in the form of Treasury Bills, being cash equivalents. The higher-yield securities of longer term maturity are generally not required to be sold, and hence, daily prices that cause fluctuations in Return and Risk are not immediately relevant to the business framework of life insurance companies. As mentioned earlier, these portfolios, besides being regulatory-compliant, are also conceptually sound, in tune with Bailey's principles, namely Safety, Liquidity and Yield, in that order.

Considering the long-term nature of this portfolio, and a conservative 8% yield on a 10-year G Sec, the G Sec portion of the portfolio doubles every 9 years. The doubling period reduces in case of AAA-rated bond where yields are higher. Since the principal investment is protected, there is scope for equity investment, of 2.5% to 10% of investments in a Warren Buffet-style, focused portfolio consisting of 12 to 15 equity stocks with a proven track record of sustainable earnings. Following a contrarian strategy of buying 'great stocks at good prices' during market downturns, the earnings yield (on the initial entry price) gets magnified over years. This is the Benjamin Graham-Warren Buffet style of identifying equities with bond-like characteristics of steady returns.

Benjamin Graham advocated a '50:50' portfolio, comprising of bonds and stocks, respectively. Graham was a supporter of Harry Markowitz' concept diversification and John Bogle's concept index funds. Markowitz' diversification advocated negative or low correlations between assets in the portfolio, to create the minimum variance portfolio, where one needs to consider the correlations between asset classes, namely bonds and stocks. From a Markowitz standpoint, a negative or low correlation between bonds and stocks makes a case for diversification into equities. Going further, the daily returns are used to compute the mean and standard deviation of each asset. Uncorrelated returns between two assets reduce the risk of the portfolio. Since pairs of asset need to be considered, this method is laborious from a computational perspective. A by-product, the CAPM, also uses the daily price movements as return. Both, the Markowitz' diversification and the CAPM are based on the Efficient Market Theory or EMT.

Warren Buffet's style, however, is generally long-term or Hold-to-Maturity (HMT). Daily price-movements, and its offshoots in the form of Markowitz diversification and the CAPM, hold less relevance to the context of long-term investment. Buffet also advocates against over-diversification, but laid solid emphasis on stock-picking skills in a focused portfolio. In the pre-Markowitz era, stock-picking was based on financial statement analysis techniques of Benjamin Graham, Securities Valuation based on dividend flows by John Burr Williams, and evaluation of the quality of management by Philip Fisher. Both Buffet and Graham advocate investment in stocks with bond-like qualities. Such an approach or philosophy may be more relevant for constructing the portfolio of a life insurance company, as Warren Buffet has been running, for Berkshire Hathaway.

These discussions are summarized in the Table 8 below.

Table 8. Securities selection and portfolio approaches

Benjamin Graham	Emphasis on Financial Statement Analysis, stock-picking and an asset allocation that is spread over bonds and stocks, in a ratio of 50:50. Also, buying stocks of established companies at low prices, to provide a margin of safety in the form of bond-like yields.
John Burr Williams	Advocated a Theory of Investment Value, based on the Dividend Discount Model.

Table 8. (cont.). Securities selection and portfolio approaches

Philip Fisher	Brought in the dimension of qualitative assessment of management, to identify companies with sustainable growth opportunities.
Harry Markowitz	Diversified portfolio consisting of stocks and bonds that are uncorrelated in their returns, measured on the basis of daily price returns.
Warren Buffet	Runs a life insurance company, Berkshire Hathaway, with a portfolio of bonds and stocks. Stock investments are based on a blend of styles from Benjamin Graham and Philip Fisher. Advocates a focused portfolio of 12 to 15 stocks with a very long term horizon.

Having gained the theoretical and regulatory insights, the perception of practitioners in India is gauged. From the 48 hypothetical portfolios, can one narrow down to the preferences of practitioners?

4. Secondary sources of information

What are the ground realities in which practitioners operate? A practitioner's perspective is presented in the section below.

With reference to the regulation of the life insurance sector in India, two important developments took place in the Indian financial markets at the turn of millennium year 2000:

1. Private sector insurance companies coexist with the sole government-owned company. A total of 25 life insurers operate, 2 large entities from the public sector and 23 smaller entities from the private sector.
2. A new set of life insurance laws and regulations came into force from 1999, with ongoing regulatory pronouncements on investment patterns.

Since a life insurer's portfolio is predominantly comprised of fixed income securities, some important developments in debt markets and their implications are mentioned below:

1. The National Stock Exchange (NSE) became fully operational in the 1990s, with an electronic trading platform.
2. A wholesale debt market emerged under the NSE. Since 2011, primary issuances in the corporate bond markets began to pick up significantly.
3. In 2013, all three major stock exchanges in India, namely NSE, BSE and the MCX-SX launched dedicated corporate bond platforms.
4. However, the secondary markets in Corporate Bonds are thinly traded. It is not feasible to compute daily returns (mean and standard deviations) under the Markowitz and CAPM frameworks.
5. Some experts have stated that it is not advisable to move out of bonds when yields are low, into stocks, if equities are trading at close to their peak levels. It is more feasible to recycle the gains into short-term bonds.

During the first 10 years of their existence, life insurance companies in India tried to emulate mutual funds by selling wealth management products such as the Unit-Linked Insurance Plan (ULIP), under the guise of insurance. Investment losses were passed on to ULIP-holders, through an MTM mechanism and declaration of the Net Asset Value (NAV) on a daily basis. Having learnt the lessons, new life insurance companies, in their second decade of evolution, will be paying more attention to life insurance as their core business. The correction will bring the focus from asset management to liability management, with plain vanilla term insurance and strong underwriting practices. The liability side of an insurer is purely contingent and probabilistic, and the asset side is less aggressive and more conservative in order to maintain safety, liquidity and lastly, yield.

In a situation where the investment regulations between those by the IRDA and the government-owned LIC of India, established under the LIC Act, the regulations of IRDA shall prevail, as per the Chairman of IRDA, reported in the Financial Chronicle dated February 2, 2013. As reported in the Business Standard dated February 8, 2013, IRDA is likely to introduce risk-based capital adequacy norms called Solvency II, along the lines of the Basel III norms for banking. This is based on a report by an expert committee and will be a significant departure from the existing investment regulations. It may steer greater investment towards government securities. The proposed norms are presented in Table 9.

Table 9. Capital charge for various debt instruments

Category of debt	Capital charge %
Goverment securities	0
AAA	0.9
AA	1.1
A	1.4
BBB	2.5
BB and below	7.5
Unrated	7.5

Interestingly, there is no capital charge on equities; however, the quantum of equity investment cannot exceed 10% of the controlled fund. With a renewed public insurance in term life insurance policies (and away investment-oriented policies), the tendency towards equities is likely to decline from the current levels.

A report in Business Standard dated October 3, 2013 states that India being a high-inflation economy, interest rates are likely to remain high or edge

upwards, based on the central banker's outlook. Government securities yields have also inched up higher, making them more attractive. Moreover, corporate bond prices are less liquid and experience steeper falls in price when yields rise. This makes G Sec also a safer haven. This was also confirmed by a respondent from Future Generali Insurance.

A combination of all of the above point out to the fact that G Sec are the most liquid and least risky asset class for an insurer to consider.

Considering the above, the investment portfolio of a life insurance company is bound by the following constraints.

Table 10. Investment constraints

G Sec	MBS/ABS AAA	Corp. bonds AAA	Equities	Total
50% to 85%	15% to 50%	0 to 20%	0 to 10%	100

5. Ethnographic study

In order to gauge the inclination of investment managers in insurance companies towards various combinations of asset classes, a one-to-one survey was carried out. The single question asked of the respondents was:

Considering the 48 Combinations, which one would you be most likely to adopt?

The actual allocation styles of investment managers in the life insurance sector in India are sought from finance professionals in the insurance sector in India.

Table 11. Allocation styles

G Sec	MBS/ABS AAA	Corp. Bonds AAA	Equities	Total
50% to 85%	15% to 50%	0 to 20%	0 to 10%	100
?	?	?	?	?
65%	15%	15%	5%	100

The specimen answer (65 + 15 + 15 + 5 = 100) represents Combination 31 in Table 10.

The above question was drafted and disseminated on August 25, 2013 across investment practitioners in the insurance sector, which is a very small community (statistically, the number of life insurance companies is 25, which is less than 30, ruling out any study of an empirical nature). However, this is somewhat compensated by the long years of experience and expertise of the respondents. Most investment managers in India had worked with either of the large nationalized insurance companies prior to joining the private-sector insurance companies. It became necessary for the researchers to explain the nature of the question to potential respondents from Mumbai in face-to-face meetings, rather than emailing them, so as to elicit meaningful responses. This makes it an ethnographic study, wherein the researcher experiences the contextual setting, background and response to a research question. Since the number of persons with experience and expertize was few, close interactions with 12 practitioners took place over an extended period of 2 months, and responses captured around October 25, 2013. Some of the companies covered are: Aegon Religare, Aviva Life, Birla Sun, Canara HSBC Oriental, Future Generali, GIC Re, IndiaFirst Life, Kotak Mahindra OM, LIC, Reliance Life, Star Union Daiichi and Tata AIA. The researchers witnessed these practitioners live at their place of work and made note of how they absorbed and assimilated information flows into the investment decision-making process.

Conclusion

The major finding from this experience is that there seems to be a broad consensus opting for Combinations 29 to 42, i.e., investments in the following range.

Table 12. Consensus of combinations

G Sec	MBS/ABS AAA	Corp Bonds AAA	Equities	Total
55% to 65%	15%to 25%	10% to 15%	5% to 10%	100

The underlying logic captured is that the penchant for equities is low, but not zero, leading to an allocation of 5%. Corporate bonds rated AAA are a good way of enhancing yield, particularly since the private placement (primary issuances) have picked up significantly since 2011. An allocation of 15%, together with the 5% equity allocation, adds up to 20%, which is the maximum limit for corporate paper. The minimum quota of Infra Loans/Bonds ABS/Housing/MBS, being long-term in nature, is taken up to the extent of 15%, since these are of longer term maturity of 10 to 15 years and are more illiquid. The resultant balance of 65% is kept for G Sec. This is the broad consensus established. Such a consensus has been nudged into place by the extant investment regulations issued by the regulator. These revolve between combinations 29 to 42.

The phase-down of investment-linked plans has led to reduced allocations towards equities. Since life insurance business is all about liability management and not based on returns per se, most of the allocable funds are directed towards debt.

The low penchant for equities is guided by Bailey's principles, namely Safety, Yield (interest, subject to safety) and Liquidity. The business model must revolve around diversified assets and liabilities. Emphasis must be on term plans for plain vanilla life insurance business, as per Bailey's principles.

Infra-bonds/ABS and Housing bonds/MBS are long-term (i.e. 10 years and upwards), with the attendant project-execution risks. Hence, the minimum 15% is preferred, and allocable funds are split between MBS/ABS of infrastructure/housing sectors and corporate bonds. There has been a significant increase in the primary issuance of corporate bonds to Institutions through primary placements, with year 2010 as the inflection point.

A minimum 50% allocation towards G Sec is a given. G Sec is also the default choice for absorbing the excess from unallocated funds. This will be further bolstered by regulatory risk-weighting of corporate bonds with higher capital charges.

To conclude, in the quest for the 'compliant portfolio', there is an overwhelming preference for bonds, particularly G Sec, which offer safety as well as liquidity. Yield occupies a subordinate position, but returns are maintained in a high inflation-high interest regime. The preference for equities within the overall portfolio is minimal. At this point in time, there appears to be a remote awareness or possibility of use for other instruments and derivatives, though permitted under the regulations.

This study can be replicated in other emerging economies and developing economies. Insights gained from such studies could be used to widen and deepen the capital markets. In particular, bond markets are predominantly, institutional markets.

This study is limited to the life insurance business. Companies in India run other lines of business such as pension and investment products, with separately earmarked or 'controlled' funds. These other lines of business are kept out of scope of the current study. Empirical studies in each of these lines of business could be areas for further research.

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Appendix

Table 1a. Life insurers in India

No.	Company
1	Aegon Religare
2	Aviva Life
3	Bajaj Allianz

Table 1a (cont.). Life insurers in India

No.	Company
4	Bharti AXA
5	Birla Sun
6	Canara HSBC Oriental
7	DLF Pramerica
8	Edelweiss Tokio
9	Future Generali
10	HDFC Standard
11	ICICI Prudential
12	IDBI Federal
13	India First Life
14	ING Vysya
15	Kotak Mahindra OM
16	LIC of India
17	Max Life
18	PNB Metlife
19	Reliance Life
20	Sahara Life
21	SBI Life
22	Shriram Life
23	Star Union Daiichi
24	Tata AIA
25	GIC Re

Source: www.irda.gov.in