

Question Paper Portfolio Management and Mutual Funds ñ II (252) : April 2005

Section D : Case Study (50 Marks)

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| <ul style="list-style-type: none">• This section consists of questions with serial number 1 - 5.• Answer all questions.• Marks are indicated against each question.• Do not spend more than 80 - 90 minutes on Section D. |
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Case Study

Read the case carefully and answer the following questions:

1. When the markets are volatile, active portfolio management can help in generating higher returns. Discuss the various active portfolio management techniques that can be used by the portfolio manager of Apex Multicap Fund.

(10 marks) < [Answer](#) >

2. You are **required** to
- Calculate the ratio of average excess return to tracking error for the Apex Multicap Fund.
 - Comment on the ratio in (a) above.

(7 + 3 = 10 marks) < [Answer](#) >

3. You are **required** to
- Calculate the total value added by the portfolio manager of Apex Multicap Fund during the last quarter of FY2004-05.
 - Calculate the total value added by his selection and allocation abilities during the last quarter of FY 2004-05.

(2 + 6 = 8 marks) < [Answer](#) >

4. Calculate the changes in the proportions of systematic and unsystematic risk of the portfolio constructed by the portfolio manager of Apex Multicap using four stocks A, B, C and D. The standard deviation of returns on the market index is 15%. Assume that correlation coefficients of stock's returns with the market index remain unchanged during last year.

(12 marks) < [Answer](#) >

5. Discuss the role of benchmark in performance measurement as a means of evaluating investment portfolios and the problems faced when comparing the performances of portfolios with the chosen benchmark.

(10 marks) < [Answer](#) >

APEX CAZENOVE MUTUAL FUND (ACMF)

Apex Cazenove Mutual Fund (ACMF) was established as a Trust under the Indian Trusts Act, 1882 and registered under the Indian Registration Act, 1908, with Apex Investment & Finance Company Ltd. (AIFCL) as the Sponsor and Apex Cazenove Trustee Company Ltd. as the Trustee Company. AIFCL as the sponsor of ACMF, executed a Trust Deed dated October 17, 1996 and the Trustee Company appointed Apex Cazenove AMC Ltd. (ACAMC) as the Investment Manager in terms of the Investment Management Agreement to manage the Schemes of ACMF.

Apex Cazenove AMC Limited was a joint venture between Apex Investment & Finance Company Ltd. (CIFCL) and Cazenove Fund Management Ltd. (CFM), a wholly owned subsidiary of Cazenove & Co of the UK. AIFCL and CFM are the sponsors of the fund.

APEX MULTICAP FUND

Type of Scheme:

An Open Ended Equity Scheme

Investment Objectives:

To provide long term capital appreciation by investing in a well-diversified portfolio of equity & equity related instruments across all ranges of market capitalisation.

Asset Allocation Pattern:

Following is the broad investment pattern of the scheme. However, all investments made will be governed by the SEBI guidelines.

Type of Security	Maximum Allocation of the Corpus	Minimum Allocation of the Corpus	Risk Profile
Equity and Equity related instruments: 80%-100%, of which, - Large Cap Stocks - Midcap Stocks - Small Cap Stocks	75% 75% 15%	25% 25% 0%	High High High
Cash and money market instruments	20%	0%	Low to medium

The above asset allocation pattern is not absolute and can vary depending upon the AMC's perception of the equity and money markets as well as the general view on interest rates. The asset allocation pattern indicated above may thus be altered substantially on defensive considerations.

The weights of the asset classes in the benchmark index and in the fund and the returns generated during the last quarter are as follows:

	Asset Allocation of the Apex Multicap Fund (%)	Benchmark Asset Allocation (%)	Return of the Apex Multicap Fund (%)	Return on the Benchmark Index (%)
Large cap stocks	45.46	35.35	5.6	0.35
Mid cap stocks	23.25	16.29	12.35	11.65
Small cap stocks	20.75	23.25	6.25	6.95
Money market instruments	10.54	25.11	3.43	3.43

The returns generated on the Apex Multicap Fund and the benchmark index for the last 12 months are as follows:

Month	Return on Apex Multi Cap Fund (%)	Return on the Benchmark Index (%)
Apr-04	13.92	9.58
May-04	-5.39	-4.51
Jun-04	5.70	5.32
Jul-04	1.62	-0.52
Aug-04	0.29	-1.57
Sep-04	-9.58	-8.88
Oct-04	0.71	0.66
Nov-04	3.35	3.64
Dec-04	3.37	-0.22
Jan-05	4.77	5.07
Feb-05	-1.04	0.06
Mar-05	5.01	4.88

The portfolio manager of Apex Multicap Fund has included the following stocks in his portfolio in addition to other stocks. All these stocks were purchased on April 1, 2004 at the prices given in the following table. The correlation coefficients of these stocks' returns with the market and standard deviations of their returns were as

follows:

Stock	No. of Shares	Correlation Coefficient with the market index	As on April 1, 2004		As on March 31, 2005	
			Price per Share (Rs.)	Standard Deviation (%)	Price per Share (Rs.)	Standard Deviation (%)
A	1000	0.95	28.00	20.00	34.00	22.00
B	4000	0.85	7.00	18.00	5.50	17.00
C	2000	0.72	14.00	14.00	10.00	15.50
D	500	0.45	56.00	11.00	70.00	12.50

Liquidity:

Liquidity will be available through Sale and Repurchase of units on an ongoing basis. The Scheme will sell and redeem units on a continuous basis, subject to the prevailing load structure. Redemption cheques will be dispatched normally within 3 working days of receipt of application at the registrars' office under normal circumstances. Being open-ended schemes, the listing of units on the stock exchanges is not contemplated. An investor may purchase and get the units repurchased on any business day at NAV based prices.

Listing:

No listing of units will take place since the scheme is open ended.

Investment Strategy:

The investment strategy of the scheme would be normally to invest in equity and equity related securities across the three market cap segments – large caps, mid caps and small caps. The fund will invest in a universe of stocks, which has been arrived at using various filters like enduring business model, management quality, change in business fundamentals and valuations. Using various analytical tools, management meetings and so on, the universe is continuously updated by our investment team. The strategy will be to build up diversified portfolio of quality stocks, with medium to long term potential.

The scheme proposes to invest 80% to 100% of the corpus in equity and equity-linked instruments. However, upon defensive considerations, this allocation could be reduced below 80% and correspondingly the allocation in Money market instruments will be increased subject to maximum limit of upto 20%. All investments made by the scheme will be made in accordance with SEBI (Mutual Fund) Regulations, 1996.

The overall portfolio structuring would aim at controlling risk at moderate level. Security specific risk will be minimised by investing only on those companies that have been thoroughly researched in-house. Risk will also be managed through broad diversification of the portfolios within the framework of the Scheme' investment objective and policies.

The AMC will follow a structured investment process in order to identify the best securities for investment and has developed an internal research framework for consistently examining all securities.

END OF SECTION D

Section E : Caselets (50 Marks)

- This section consists of questions with serial number 6 - 11.
- Answer **all** questions.
- Marks are indicated against each question.
- Do not spend more than 80 - 90 minutes on Section E.

Caselet 1

Read the caselet carefully and answer the following questions:

6. The caselet mentions that reforms focused on liberalizing the financial sector. However, a liberal financial system is more fragile and needs more regulation. Why is regulation important in a liberalized financial

system? Discuss.

(8 marks) < [Answer](#) >

7. The caselet mentions that there are multiple regulators in the Indian financial sector, though in many countries a move towards a single regulator has already been initiated. Should India also have a single regulator? Discuss.

(9 marks) < [Answer](#) >

Addressing the tenth annual celebration of the National Stock Exchange (NSE), the Finance Minister P Chidambaram strongly supported the establishment of a single regulator for the securities and commodities markets. Addressing the financial community on the occasion, he said that the government is working towards setting up a single regulator and a common set of regulations for both the markets.

The Indian financial sector is currently regulated by 11 regulators, which include Reserve Bank of India (RBI), Securities and Exchange Board of India (SEBI), Forward Market Commission (FMC), National Bank for Agriculture and Rural Development (NABARD), Insurance Regulatory and Development Authority (IRDA), National Housing Board (NHB), State Finance Corporations (SFCs) and the Board for Financial Supervision (BFS). For quite a few years, there has been a debate going on in the financial markets about the option of changing the present regulatory structure and moving towards a super regulator by doing away with multiple regulators. Ever since the Committee on Banking Sector Reforms (the Narasimham Committee Report – II) recommended an integrated system of regulation and supervision for banks, financial institutions and Non-banking Finance Corporations (NBFCs), there have been several suggestions for improvement in the regulatory mechanism and having a single or super regulator.

The growing intervention of financial markets and the expanded internal growth in sectors like banks, insurance and capital markets calls for a relook at the role of regulators in disciplining the markets and avoiding conflict with other regulatory bodies.

After the Scandinavian countries switched to single financial regulator in late 1980s, a few developed countries also followed the same path. Countries like UK and Japan, where the financial markets are well developed, switched to integrated financial regulator. UK switched over in 1998 and Japan in 2000. With these countries moving towards integrated financial regulator, a new trend was created in the regulatory structure—the Central Bank controlling the liquidity and monetary policy, and the regulator supervising the banks, capital markets and insurance.

The shift towards a single regulator rose due to the blurring of boundaries between the financial markets and financial products. With the integration of financial markets, banks are also venturing into the insurance sector and equity markets. Financial innovation blurred the jurisdiction of regulatory structures. The innovations in communication technology paved the way for financial markets integrating globally and calling for international cooperation among the regulators. The International Organization of Securities Commission in July 1995 adopted Windsor Declaration for cooperation between market authorities and such regulatory cooperation in emergency warrants countries to move towards a single financial regulator. With the boundaries between banking, insurance and capital markets getting blurred due to globalization of financial markets, financial conglomerates have emerged in the global financial markets making sectoral regulation less viable.

Moreover, analysts argue that in multi-regulatory set up blurring boundaries between the agencies will lead to turf wars. The conflicts among the agencies rise due to omissions, inconsistency and conflicting nature of responsibilities and authority in the activities of the agencies.

For example, in the US when Commodities Futures Trading Commission (CFTC) stepped in to impose new regulations on OTC derivatives and hedge funds, there arose a conflict between CFTC and other financial regulatory agencies, as SEC regulates the securities industry and CFTC regulates the futures industry. Later, the President's Working Group on Financial Markets was set up to resolve the uncertainty over OTC derivatives and a series of amendments to the Commodity Exchange Act were passed for regulating the financial instruments and clearing way for creating electronic trading of OTC derivatives.

In India, there is a separate agency for each main sector entrusted with the task of regulation and supervision. RBI regulates and supervises the banks. It also supervises NBFCs and Urban Cooperative Banks (UCBs). The Regional Rural Banks (RRBs) and State Cooperative Banks are supervised by RBI through NABARD. National Housing Finance is supervised by NHB. The capital markets are supervised by Sebi and insurance sector by IRDA. The State Finance Corporations are supervised by SIDBI. The Department of Company Affairs regulates deposits taking activities of non-banking non-financial companies and also certain activities of NBFCs, which do not fall under RBI's purview. For regulating forward markets, we have FMC. And there is the BFS, a supervisory body for banks, NBFCs and AIFIs. Though these regulated agencies have regulatory and

supervisory powers, they lack accountability.

Though some experts and intellectuals in the country are for moving towards a unitary regulatory body, they argue that with the regulators unwilling to part their powers it would be difficult to get mutual consent from the existing regulators right now.

Caselet 2

Read the caselet carefully and answer the following questions:

8. The caselet mentions that for the first time in the history of debt funds, the returns have been negative for a full year. Given the market expectations about future interest rate scenario, recommend which instruments the investors should invest in.

(9 marks) < [Answer](#) >

9. The caselet mentions that Dynamic Bond Funds also failed to arrest the fall in their NAVs. What according to you are the reasons for this? Discuss.

(7 marks) < [Answer](#) >

The markets are never prepared. Rather never prepared enough for any negative news. When the RBI Governor Y V Reddy announced a 25 bps hike in repo rates in the bank's monetary policy for the second half of fiscal 2005, the markets did not take kindly to it even though the hike was not way beyond expectations. The central bank's decision to raise repo rates has come in the wake of inflationary concerns and the Governor did not quite rule out the possibility of further increases in rates in case inflationary pressure persists. Strong credit-offtake also poses a threat to rates.

After the policy announcement, yields on 10-year benchmark government paper shot up from 6.68% to 6.82%. For the rest of the week, bond yields continued to inch up with the 10-year benchmark touching a high of 7% on Friday. All this, of course, is bad news for debt funds. On October 26, 2004 alone, the day when the credit policy was announced, the medium-term bond fund category lost an average 0.22%, according to data provided by Value Research which tracks mutual funds. This was thrice as much as the category's gains of 0.08% for the year till October 25, the day before the announcement came.

Gilt funds fared even worse. The category lost 0.44% on the same day. Short-term debt and gilt funds were also hit, albeit marginally (0.03%). Not just that, dynamic bond funds, which are free to keep their asset allocation flexible between cash and bonds, depending on the market mood, also lost in value as many fund managers were caught on the wrong foot. Cash/liquid funds and floating rate funds (FRFs), however, remained relatively stable. Debt funds continued to slip for the rest of the week as the sentiment remained weak. For the first time in the history of debt funds, the returns are in negative territory for a full year. Dynamic bond funds also failed to arrest the fall in their NAVs as most fund managers were caught on the wrong foot by the RBI Governor.

For the current fiscal, the RBI increased its inflationary forecast from 5% to 6.5% while reducing the GDP growth forecast from 6.5-7% to 6-6.5%, citing deficient monsoon and uncertain oil prices.

Besides, the policy stance was changed from "adequate liquidity" to "appropriate liquidity". Reddy also made it clear that the RBI would pursue an interest rate environment that is conducive to price stability and maintaining growth momentum. At the same time, the central bank will consider measures in a calibrated manner to respond to evolving circumstances to stabilize inflationary expectations.

The RBI also acknowledged that the current inflation levels are lower than potential, as higher international prices have not been reflected locally. This alignment as well as the pass-through effect should add 2.2% to wholesale price index (WPI), according to the RBI estimates.

Besides, there are uncertainties regarding commodity prices. All of this, obviously, hinted at the possibility of further tightening of rates if inflationary pressures persist. Add worries about the government's borrowing program at a time when the credit demand is strong (nonfarm credit growth is likely to be higher at 19%), and the picture looks dim.

"Reading between the lines of the policy, coupled with our in-house research view on commodities, we see risks of another hike in the repo rate in the medium-term. We expect the market to reflect this uncertainty and discount a bearish outlook on gilt yields, especially in the short-term," said a fixed-income strategy report released by Merrill Lynch last week.

Then, there are technical factors, which are weighing on the markets. Given the heightened uncertainties, risk appetite is low among traders. The demand for government paper is already low from the banking system. Mutual funds have little leeway to indulge heavily in the markets as they are having to face large scale redemptions.

The Merrill Lynch report said: “We expect to see an improvement in sentiment around Q4 FY05 and look to deferring any increase in long duration assets to later when clear signs emerge.” At the moment, fund managers are cautious in their approach, running portfolios with a maturity of one-four years in medium-term bond funds.

Caselet 3

Read the caselet carefully and answer the following questions:

10. Considering the factors relating to the possible investment pattern, discuss the issues with regard to investment planning in relation to pension funds.

(8 marks) < Answer >

11. The caselet mentions that pension funds will, therefore have to take equity risk to earn a higher rate of returns. However, this could prove to be the Waterloo for the Pension Funds. Do you agree? Discuss.

(9 marks) < Answer >

Pension funds stand out as a unique investment proposal. Individuals invest in pension funds to get secured pension during old age, and the fund managers, in turn, invest the amounts so invested by individuals for securing high returns to pay pension. Another unique aspect about pension fund investment is the long duration of the investment period. Hence, these funds can safely ignore day-to-day or month-to-month volatility, as they need to focus only on the long-run average rate of return.

Thus, the basic objective of a pension fund is to ensure that pension payment promises are fulfilled. This is to be done by the fund managers at the lowest possible contribution rate with an acceptable level of risk. Achieving this objective would mean that a trade-off is involved between the expected excess return on investments as against the exposure to investment risks. The managed assets are subject to market fluctuations, which are termed “investment risk”. Considering the complexity of objectives and the process for fulfilling the same, there has to be an effective investment strategy, which includes - risk, composition, liquidity and ability.

The major risk involved in pension funds is the promise to pay a specific amount to the beneficiaries. Here, the investment risk may comprise of market risk, credit risk, operational risk and liquidity risk. As opposed to defined benefit plan, where the risk of investment is borne by the employer, under the defined contribution plan, these risks are to be shared by the employees also. One of the ways of reducing the risk is through diversification, as then, only that part of investment which is not diversified, is exposed to risk. Liquidity involves cash flows from investments which are needed from time to time for making payments against investments. Hence, the investment pattern of the pension fund should be such that it can meet the cash flow requirements of liabilities against cash flow of assets. Ability means includes the capability of pension funds to meet their present and future obligations.

In India, the major portion of investment of pension funds in India is in government securities or in special deposit schemes. For example, as per the details provided by “indiatat.com” in the year 1999-2000, the Employees’ Provident Fund (EPF) has invested Rs.1,609 cr in central and state government securities and Rs.108.80 cr in special deposit schemes out of the total accumulated investment of Rs.2,465.88 cr (see Table 4). However, the return on these investments is far lesser than (around 1%) the promised returns by these pension funds. (The current rate of EPF is 8.5%.)

The returns on these securities are, however, limited. The EPF has nearly 85% of its Rs.1.28 bn (\$28 bn) corpus invested in the Special Deposit Scheme (SDS) run by State Bank of India, against only 8% annual interest. The EPF had paid 9.5% during the year ending March 2004, including a one-off 50 bps bonus. Thus, effectively, the government has to fill 1.5% gap. Though the Government of India reduced the interest rate on EPF to 8.5% in August 2004, this step, can at best be only a stopgap solution. In the Indian context, experience has shown that terminal accretions obtained by investing in equities could be greater than those obtained by investing in government bonds. To achieve a higher rate of returns, pension funds will, therefore have to take equity risk.

However, the experience of fund managers in countries like UK, USA and Japan shows that though they followed drastically different investment strategies, they ended up with similar results: Gaping hole in pension funds! Consequently, many pension funds have become extremely risk averse. The threatening fact that lies below this fear is that despite different combinations of investment baskets in Europe, Japan and the US, there have been gaps in the funds. As a result, the pension funds are more likely to decrease their allocation to equity, i.e., moving out from equity investment to bonds.

In India, the Ministry of Labor is contemplating making a proposal to the Central Board of Trustees (CBT) of the EPFO to consider whether a small portion of the EPF funds could be invested in the stock market. However,

this could prove to be the Waterloo for the Pension Funds industry!

END OF SECTION E

END OF QUESTION PAPER

Suggested Answers

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Section D : Case Study

1. Specific Stock Selection: The source of active return is linked to the specific return of the stocks. The portfolio manager should overweigh a given stock, if he predicts that its specific reward will be positive. He should underweigh a given stock, if he predicts that its specific reward will be negative.

Industry Rotation: The source of active return is the difference of weight between the portfolio and the benchmark for a given industry. The portfolio manager should overweigh the given industry if he predicts that this industry is going to exhibit a positive excess return. He should underweigh the given industry, if he predicts that it is going to exhibit a negative excess return.

Risk Factor Selection: The source of active return is the difference of both the portfolio's and the benchmark's exposure to the risk factors. The portfolio manager should overexpose the portfolio to the risk factor if he predicts that this factor is going to exhibit a positive excess return. He should underexpose the portfolio to the risk factor, if he predicts that this factor is going to exhibit a negative excess return.

Benchmark Timing: A divergence between the betas of the portfolio and the benchmark is source of active return. The manager should increase the beta of the portfolio with respect to the benchmark, if he forecasts that the benchmark's return will be larger than the risk free rate. Similarly he should lower the beta of the portfolio with respect to the benchmark, if he forecasts that the benchmark's return will be lower than the risk free rate.

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2. a.

Month	Return on Apex MultiCap Fund (%) (Y)	Return on the Benchmark Index (%) (X)	Excess Return (Y-X)	$(Y-X) - (\bar{X}-\bar{Y})$	$[(Y-X) - (\bar{X}-\bar{Y})]^2$
Apr-04	13.92	9.58	4.34	3.57	12.742
May-04	-5.39	-4.51	-0.88	-1.65	2.721
Jun-04	5.70	5.32	0.38	-0.39	0.156
Jul-04	1.62	-0.52	2.14	1.37	1.876
Aug-04	0.29	-1.57	1.86	1.09	1.189
Sep-04	-9.58	-8.88	-0.70	-1.47	2.164
Oct-04	0.71	0.66	0.05	-0.72	0.521
Nov-04	3.35	3.64	-0.29	-1.07	1.121
Dec-04	3.37	-0.22	3.59	2.82	7.956
Jan-05	4.77	5.07	-0.30	-1.07	1.143
Feb-05	-1.04	0.06	-1.10	-1.87	3.490
Mar-05	5.01	4.88	0.13	-0.64	0.411

Average Excess
Return

0.77

35.492

Variance (Y-X)

3.226

S.D (Y-X)

1.796

Information Ratio

0.4287

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- b. Managers take risk, and potentially add value, by deviating from the benchmark index. They may hold fewer securities, and they may weigh them differently than their index weights. They may buy and sell them at different times. In other words, they add value through security selection and timing decisions (when to buy, when to sell). By doing so they may generate excess return over and above the benchmark or incur losses. This also results in tracking error. The ratio of average excess return to tracking error is known as information ratio. The ratio thus is a measure of timing and selection skills of the portfolio manager. An information of ratio of 0.5 is considered to be indicative of average performance whereas if it is around 0.75 it indicates a good show and an information ratio of 0.90 and above is indicative of brilliant portfolio management. In the above case the information ratio is less than 0.5 which indicates below average deference.

3. a.

Asset class	W_{pj}	W_{ij}	Return R_{pj} (%)	Return R_{ij} (%)	$W_{ij} R_{ij}$	$W_{pj} R_{pj}$
Large Cap Stocks	45.46	35.35	5.6	0.35	0.1237	2.5458
Mid Cap Stocks	23.25	16.29	12.35	11.65	1.8978	2.8714
Small Cap Stocks	20.75	23.25	6.25	6.95	1.6158	1.2969
Money Market Instruments	10.54	25.11	3.43	3.43	0.8613	0.3615
	100	100			$I = 4.4986$	7.0756

Total Value added = $7.0756 - 4.4986 = 2.577\%$

Asset class	Value added through Allocation ($W_{pj} - W_{ij}$) ($R_{ij} - I$)	Value added through Security Selection $W_{pj} (R_{pj} - R_{ij})$	Total
Large Cap Stocks	$(0.4546 - 0.3535) (0.35 - 4.4986)$ = -0.4194	$0.4546 (5.6 - 0.35)$ = 2.3866	1.9672
MidCap Stocks	$(0.2325 - 0.1629) (11.65 - 4.4986)$ = 0.4977	$0.2325 (12.35 - 11.65)$ = 0.1627	0.6604
Small Cap Stocks	$(0.2075 - 0.2325) (6.95 - 4.4986)$ = -0.0613	$0.2075 (6.25 - 6.95)$ = -0.1452	-0.2065
Money Market Instruments	$(0.1054 - 0.2511) (3.43 - 4.4986)$ = 0.1557	$0.1054 (3.43 - 3.43)$ = 0	0.1557
Total	0.1727	2.4041	2.5768

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4. Total investment

A	1000×28.00	28000
B	4000×7.00	28000
C	2000×14.00	28000
D	500×56.00	28000
		112000

Equal amount of investment is made in each of the stocks.

$$\text{Beta of stocks} = \rho \frac{\sigma_i}{\sigma_m}$$

$$\beta_A = 0.95 \times \frac{20}{15} = 1.267$$

$$\beta_B = 0.85 \times \frac{18}{15} = 1.02$$

$$\beta_C = 0.72 \times \frac{14}{15} = 0.672$$

$$\beta_D = 0.45 \times \frac{11}{15} = 0.33$$

$$\begin{aligned} \text{Portfolio Beta, } \beta_P &= \frac{1}{4} (1.267 + 1.02 + 0.672 + 0.33) \\ &= 0.823 \end{aligned}$$

Systematic risk of the portfolio

$$\begin{aligned}
&= \beta_p^2 \sigma_m^2 \\
&= (0.823)^2 \times (15)^2 \\
&= 152.40 (\%)^2.
\end{aligned}$$

To calculate the covariance between two stocks, we have to use the following formula

$$\begin{aligned}
\text{Cov}_{AB} &= \beta_A \beta_B \sigma_m^2 \\
\text{Cov}_{AB} &= 1.267 \times 1.02 \times 225 = 290.78 (\%)^2 \\
\text{Cov}_{AC} &= 1.267 \times 0.672 \times 225 = 191.57 (\%)^2 \\
\text{Cov}_{AD} &= 1.267 \times 0.33 \times 225 = 94.07 (\%)^2 \\
\text{Cov}_{BC} &= 1.02 \times 0.672 \times 225 = 154.224 (\%)^2 \\
\text{Cov}_{BD} &= 1.02 \times 0.33 \times 225 = 75.735 (\%)^2 \\
\text{Cov}_{CD} &= 0.672 \times 0.33 \times 225 = 49.90 (\%)^2
\end{aligned}$$

Total risk of the portfolio

$$\begin{aligned}
&= (0.25)^2 \times (20)^2 + (0.25)^2 \times (18)^2 + (0.25)^2 \times (14)^2 + (0.25)^2 \times (11)^2 + (0.25)^2 (2 \times 290.78 + 2 \times 191.57 \\
&+ 2 \times 94.07 + 2 \times 154.224 + 2 \times 75.735 + 2 \times 49.90) \\
&= 25 + 20.25 + 12.25 + 7.5625 + (0.25)^2 (581.56 + 383.14 + 188.14 + 308.448 + 151.45 + 99.8) \\
&= 65.0625 + 107.034 = 172.097 (\%)^2 \\
\text{Unsystematic risk} &= 172.097 - 152.40 = 19.697 (\%)^2
\end{aligned}$$

$$\text{Proportion of Systematic risk} = \frac{152.40}{172.097} = 88.55\%$$

$$\text{Unsystematic risk} = \frac{19.697}{172.097} = 11.45\%.$$

After one year

When the price of stock changes, the weightage of the stocks value also changes and as the S.D. of the stock changes their beta also changes.

Investment value

A	34 × 1000	34000
B	5.50 × 4000	22000
C	10 × 2000	20000
D	70 × 500	35000
		111000

New Weights of the stocks in the portfolio

A	34000/111000	0.306
B	22000/111000	0.198
C	20000/111000	0.180
D	35000/111000	0.316

Beta of the stock after one year

D	$0.45 \times \frac{12.5}{15}$	0.375
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New Covariances between Stock's return

$$\text{Cov}_{AB} = 1.393 \times 0.9633 \times 225 = 301.922$$

$$\text{Cov}_{AC} = 1.393 \times 0.744 \times 225 = 233.19$$

$$\text{Cov}_{AD} = 1.393 \times 0.375 \times 225 = 117.53$$

$$\text{Cov}_{BC} = 0.9633 \times 0.744 \times 225 = 161.256$$

$$\text{Cov}_{BD} = 0.9633 \times 0.375 \times 225 = 81.278$$

$$\text{Cov}_{CD} = 0.744 \times 0.375 \times 225 = 62.775$$

New total risk of the portfolio

$$(0.306)^2 \times (22)^2 + (0.198)^2 \times (17)^2 + (0.18)^2 \times (15.5)^2 + (0.316)^2 \times (12.5)^2 + 2 \times 0.306 \times 0.198 \times 301.922 + 2 \times 0.306 \times 0.18 \times 233.19 + 2 \times 0.306 \times 0.316 \times 117.53 + 2 \times 0.198 \times 0.18 \times 161.256 + 2 \times 0.198 \times 0.316 \times 81.278 + 2 \times 0.186 \times 0.316 \times 62.775$$

$$= 45.32 + 11.33 + 7.78 + 15.6023 + 36.59 + 25.69 + 22.73 + 11.494 + 10.17 + 7.38 = 194.086(\%)^2$$

Portfolio beta

$$= 0.306 \times 1.393 + 0.9633 \times 0.198 + 0.18 \times 0.744 + 0.316 \times 0.375 = 0.8694.$$

Systematic risk of the portfolio

$$= \beta_p^2 \sigma_m^2$$

$$= (0.8694)^2 \times (15)^2 = 170.067 (\%)^2.$$

$$\text{Unsystematic risk} = 194.086 - 170.067 = 24.019(\%)^2.$$

$$\text{Proportion of systematic risk} = \frac{(170.067)}{194.086} = 87.63\%.$$

$$\text{Unsystematic risk} = \frac{24.793}{178.54} = 12.37\%.$$

Clearly proportion of systematic has decreased from 88.34% to 87.63% and unsystematic risk has increased from 11.45% to 12.37%. Thus the portfolio has become less aggressive. Given the boom in the market this is not an advisable strategy as it would generate lower returns.

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5. Benchmarks play an important role in performance measurement as a means of evaluating investment results. When reporting the performance of mutual funds, for example, investment management companies are required to use specific, industry-accepted indices or benchmarks that correspond to the appropriate fund category. This is a prudent regulation, as it limits the potential for fund companies to manipulate relative performance by "cherry-picking" an index. However for management of separate, customized portfolios for individuals, families and trusts with varying performance objectives and unique circumstances, a variety of benchmarks should be constructed to accurately compare performance results with the broad markets as well as with other investment managers. It is important to differentiate between an index and a benchmark. An index is simply a means of approximating the valuation of the market. By contrast, a benchmark serves to measure investment performance and reflects the risk characteristics and asset allocation strategies that an investor and a portfolio manager are seeking. For example, to compare investment strategies, one might relate the return of a growth and income fund to the Sensex but since the fund's goal is to provide both capital appreciation and income, a better benchmark might include an appropriately weighted combination of both stock and bond indices. Over-reliance on a particular index can also lead to a distorted view of performance. Again, consider the example of the Sensex, contrary to popular perception, the Sensex does not represent the broad stock market. It is merely a weighted index of 30 large-capitalization stocks, with the biggest companies driving a proportionately larger share of the index's price movements. The Sensex gives relatively little weight to the performance of smaller companies, and it does not at all reflect the performance of the thousands of small-cap companies that trade

on the nation's exchanges or over the counter. If one's goal were to accurately gauge the performance of the market, it would be more logical to use a broader index such as the S&P CNX 500 which includes 500 stocks. Similarly, the most popular international equity index is the EAFE (Europe, Australasia, Far East) Index from Morgan Stanley Capital International (MSCI). Most mutual funds and pension funds that invest internationally are benchmarked to the EAFE. As the name implies, EAFE covers a lot of ground, but it does not include regions with well-established markets such as Canada, South Africa and South America. Therefore, we prefer to use the EAFE in combination with the ACWI Free, ex-U.S. Index (All-Country World Index, freely traded, excluding the U.S.), which includes emerging markets as well as Canada. While it is necessary to use EAFE because of its wide acceptance, we believe the ACWI Free, ex-U.S. Index, reflects the broad set of investment opportunities available internationally more accurately. In many cases, a combination of indices is most appropriate for gauging the performance of a portfolio that includes several asset classes. While standardization may be desirable for comparing one portfolio manager to another, it would be incorrect if one compares return of his portfolio with a benchmark that had little or no relevance to the individual goals driving the management of their portfolios. Ultimately, if a benchmark is to provide valid information, the measurement must fit the investment.

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Section E: Caselets

Caselet 1

6. Regulation means establishment of rules, usually enacted and approved through legislation. And supervision is monitoring and enforcement of these rules by an administrative body established for that purpose. Moreover, financial systems' basic functions include the effective transferring of capital resources among the sectors, quick clearing and settlement of payments, pooling of resources for diversification and managing the risk and maintaining confidence in the financial system and also development of financial markets.

The basic objectives of setting up a financial sector regulator by a country is to safeguard the country's financial system from risks, to protect the investor (customer) interests and promoting competition across the financial system by curtailing the monopoly power yielded by the financial conglomerates. An effective supervisory or regulatory system set up for achieving these objectives must have clear responsibilities and authority.

Though there have been theories to explain the forms of regulation, more or less the basic objective of regulation has remained the same: Maintain financial stability, protect investors and reduce financial crime by disciplining the financial markets.

Providing financial stability is important as the costs of financial distress are very high and this has been proven time and again. The social costs to investors during the period of 'great depression' and when the stock market crashed in 1929, 1970s and in 1996 and the tech bubble in 2001 were very high and this also affected the financial markets of many countries. India too experienced them when markets crashed in April 1992 and in 2000 and recently in May 2004.

In pursuit of providing financial stability, protecting the investors and disciplining the markets by fostering competition, nations have set up regulatory structures to regulate the financial markets for better financial and economic stability.

By regulating the financial markets, the system regulates both macro and micro factors of stability. The macro factors include controlling the flow of foreign exchange, regulating interest rates and the payment system. These are generally controlled and regulated by the Central Bank. The micro factors are controlled by supervising the clearing houses and settlement systems in the country.

The second objective of financial regulation is to bring in transparency in the market and protect the investor. Transparency involves dissemination of timely and correct information to the investors and also the dissemination of information regarding takeovers and public offers.

The third objective of financial regulation is promoting competition by preventing the formation of cartels and disciplining the markets from abuse by dominant positions and from restricting the market accessibility to a few selected individuals.

The fourth objective is developing capital markets and making arrangements for availability of capital for investment in the markets. Developing countries, where the capital markets are yet to be fully developed, have to devise plans and direct the financial institutions in arranging and providing the capital for

development of markets and regulating the flow of capital towards needy industries and markets. This requires setting up of financial institutions not only for arrangement and providing capital but also to protect the market from money laundering and other irregularities.

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7. In India, there is a separate agency for each main sector entrusted with the task of regulation and supervision. Even with these many regulatory agencies, it was proved from time to time that they failed in stopping the financial crime from taking place—the Harshad Mehta stock scam, Ketan Parikh scam and the latest GTB (Global Trust Bank) fiasco. These experiences with scams and growing challenges in the financial sectors are prompting a move towards a unitary regulatory authority.

The regulation of financial markets occurs at a cost. The cost is towards setting up administration, and also for allocating super safe assets (like depositary insurance) and future adjustment costs. The economies of scale and ability to allocate the scarce regulatory resources effectively and efficiently call for having a single regulator. Moreover, in an environment of changing and expanding markets, the cost of regulation is increasing and the cost could be enormous if there are many regulators. With a single regulator, there are clear signs of savings in administrative costs. After the establishment of FSA in UK, its spending was £10 mn below the budget, and the trend continued.

The multiple regulator set up reduces the clarity of role and leads to lack of accountability on the part of regulators. A single regulator could enhance the accountability and the fragmentation of supervision could be avoided leading to healthy competition among financial markets offering different services.

By reducing multiple regulator to single regulator, the setup allows for effective pooling of human resources specialized in supervision of various segments of the financial markets. Moreover, among the regulators across the world a unified agency aids in international cooperation.

But even the single regulator is not far from disadvantages. A single regulator could result in concentration of power leading to autocratic functioning disturbing the democratic policies. Second, unitary regulator may lead to diseconomies of scale due to autocratic and bureaucratic style of functioning. Third, the objective of the agency could be narrowed down.

A single regulator, being a monopoly regulating body, may function like an autocrat and at times not pay attention to the market feedback, which may lead to chaos in capital markets. With centralized authority, it could lead to nepotism and unilateral decisions which could result in instability in the functioning of the financial markets.

So all these aspects should be looked into before the move towards a single regulator is made.

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Caselet 2

8. This may not be a good time to put your money in debt funds at all. Clearly, medium- and long-term debt and gilt funds are completely avoidable. For investors who are not too keen on liquidity, the RBI savings bonds should be the best option.

From a one-year perspective, the best alternative is fixed maturity plans because they effectively give better tax-adjusted returns while having the same characteristics as that of fixed deposits. FMPs are also available for short-time frames. The other alternative could be short-term debt funds.

In fact, even for investors who are willing to hold on for a year or more, short-term debt funds today are better than medium-term bond funds as expenses are relatively lower in short-term funds. While the yield to maturity is about 6.75% on an average for debt funds, the same for short-term plans is about 6%. However, the higher expense ratio of 1.7-1.9% for bond funds compared to less than 0.8-1% for short-term plans will ensure that returns will effectively be higher in the latter.

For investors looking for more ambitious returns, Monthly Income Plans (MIPs) which invest about 20% of their investment in equities could be a good option. Dynamic bond funds, which seek to maximize returns for investors by actively managing duration, may be avoidable as they have failed to perform till now.

Among debt-oriented funds, liquid funds and floating-rate funds continue to be the safest. Returns under liquid funds would improve after the increase in repo rate. Though FRFs would take some time to show higher returns as higher returns would be reflected only after their reset period.

Besides, floaters have seen tremendous inflows in the recent months. Market participants say that in the absence of adequate floating-rate instruments which are actively traded in the market, fund managers are forced to buy into interest rate swaps.

Since these are illiquid (and not marked-to-market on a daily basis), such funds could be vulnerable if they are subject to serious redemptions. In any case, nearly half the assets of floaters is actually deployed in fixed-rate liquid instruments and cash, making them look more-or-less like liquid funds.

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9. Dynamic bond funds failed to arrest the fall in NAVs as most fund managers were caught on the wrong foot by the RBI Governor. In many cases, the fall in the NAV of dynamic funds was as much as in vanilla bond funds. The biggest fund in the category, Standard Chartered's Dynamic Bond Fund, fell 0.34% between October 25 and 27, 2004 as against a fall of 0.23% in its Medium-term Plan and 0.47% in its Super Saver Income Fund. The fund, which was managed like a liquid fund since inception, hiked its portfolio maturity just ahead of the credit policy.

This happened because the fund manager took a view on the market based on the strength of the rupee, not anticipating the sudden surge in oil prices. The fund's portfolio was running at an average maturity of 4.4 years when the policy announcement came. Same was the case with many of the other dynamic bond funds. Deutsche was hard hit with NAV falling 0.59%. Kotak's Dynamic Fund and Prudential ICICI's FlexFlexible Income Plan were down 0.23 and 0.36%. Tata Dynamic Bond Fund and ABN Amro's Flexi Deb Fund were the least affected with marginal losses of 0.09% and 0.009% respectively.

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Caselet 3

10. Considering the above factors relating to the possible investment pattern for pension funds, let us discuss the tricky issues with regard to investment planning in relation to pension funds. These are:

- Inflation index bond is designed to protect against inflation risk. These securities offer investors the guarantee of returns that will not be thinned due to inflation. This inflation rate could be based either on the Consumer Price Index (CPI) or the Wholesale Price Index (WPI).
- For hedging inflation risk instruments, Chicago Mercantile Exchange has prompted the CPI future. CPI future contract is one which enables participants to hedge short-term inflation exposure.
- Markets for indexed bonds all over the world tend to be small and have relatively low amounts of trading activity. But, in a country where these types of bonds are available, it is a reflection of a high-level of investment by pension funds. In December 1997, RBI issued a capital indexed bond at a coupon rate of 6% maturing in the year 2002. From the year 2004 onwards, it has decided to continue this type of bond.
- It's a fact that the indexed bonds are particularly attractive to specific groups that tend to buy the bonds and hold them until they mature. The indexation strategy is more complicated in case of condition indexation, which involves suspending indexation when the funding ratio falls below the specified levels.
- Finally, investment in bonds requires high contribution. This may be put at risk for long-term commitment of the sponsor of the scheme.

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11. The danger of investing in equity market is that high equity allocations expose them to extreme risks, which can lead to a situation where contribution rates in some years reach levels that endanger the pension scheme's sustainability. In fact, in terms of a strategic long-term investment perspective, investments in equity may be far from optimal.

The similarity in case of all the above three countries is that there are loopholes in their pension funds. In case of Japan, a number of critical problems remain to be resolved. The most important is the huge shortfall in pension funds. The deficits are so threatening that questions are being raised about the sustainability of the pension system itself. Added to this, are the dwindling payments made towards National Pension contributions. In the case of US, during the years 2000 to 2002, the fall in the value of assets of corporate and public pension funds and endowment funds was to the extent of more than \$1 tn. The effect has been so disastrous that many corporate pension funds are now unable to pay the assured pension. In the case of the UK, the steep fall in the stock markets has led to a loss of £65 bn in pension funds of big corporate houses.

The experience of fund managers in countries like UK, USA and Japan shows that though they followed drastically different investment strategies, they ended up with similar results: Gaping hole in pension funds! Consequently, many pension funds have become extremely risk averse. The threatening fact that lies below this fear is that despite different combinations of investment baskets in Europe, Japan and the US, there have been gaps in the funds. As a result, the pension funds are more likely to decrease their allocation

to equity, i.e., moving out from equity investment to bonds.

What has been seen in the case of pension funds in other countries such as Japan, UK and the US, which have gaping holes in them despite following investment strategy of whether to invest or not in equity, should be an eye-opener for the fund managers in India. They must be aware of the fact that despite the CBT's possible suggestion that certain funds could be invested in equity market in India, there is also a threat that this could well prove to be their Waterloo.

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