

Question Paper

Portfolio Management and Mutual Funds - II (MSF2D4) : July 2007

Section D : Case Study (50 Marks)

- 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.

Case Study

Read the case carefully and answer the following questions:

1. “Building further on the initiatives taken by the previous Government, the incumbent Government is undertaking several measures to enhance the quantum of investments in the infrastructure segment.” In light of this statement, critically analyze how the investment in infrastructure funds will add value to the portfolio. ≤
[Answer](#)
≥
(9 marks)
2. Compute Sharpe ratio, Treynor ratio and Jensen’s Alpha for Tata Infrastructure fund, Birla Infrastructure fund and UTI Infrastructure fund. ≤
[Answer](#)
≥
(16 marks)
3. Decompose Jensen’s Alpha obtained above for the three funds into Fama’s return from net selectivity and return from extra diversifiable risk. Interpret the superior stock selection abilities of the fund managers of these funds. ≤
[Answer](#)
≥
(8 marks)
4. Compute the information ratio for Tata Infrastructure fund, Birla Infrastructure fund and UTI Infrastructure fund. ≤
[Answer](#)
≥
(8 marks)
5. One of the important steps in portfolio management process is the evaluation of the portfolios during the time horizon concerned. Discuss the factors that one should consider in analyzing the overall performance of a mutual fund. ≤
[Answer](#)
≥
(9 marks)

Mr. Surendar, a middle level employee of a private organization has approached Mr. Prakash, a Chartered Financial Analyst, working in Sony Research and Investment Consultants for taking advices for his investment plans. Mr. Prakash suggested him to opt for infrastructure mutual fund schemes which predominantly invest in a diversified portfolio of equity and equity related securities of companies that are participating in the growth and development of Infrastructure in India. He supported his advice by stating that the infrastructure sector is expected to explore its growth potential in the near future due to political will, funding from multi-lateral agencies and increased private participation.

Political will: The Government of India (GOI) has initiated an ambitious reform programme, involving a shift from a controlled to an open market economy. Building further on the initiatives taken by the previous Government, the incumbent Government is undertaking several measures to enhance the quantum of investments in the infrastructure segment.

Funding from multi-lateral agencies: Multilateral agencies such as the World Bank and the Asian Development Bank (ADB) are funding various infrastructure projects on a large scale in India. Other agencies include the Japan International Bank for Co-operation (JIBC) that funded the Delhi Metro (Underground Railway) Project. Various State Governments are mobilizing funds from these agencies to support rural roads and sanitation projects.

Increased private participation: To encourage private sector participation in the sector, the Government has announced several tax breaks for investments. It is also devising return schemes that are attractive for the private participants, such as annuity payments and capital grants for road projects. Laws are being enacted to improve the financing of various utilities and make their management more transparent, so as to improve returns on these facilities.

Economic Survey 2006-07 says that an investment of US\$ 320 billion would be required in the infrastructure sector during the Eleventh Five Year Plan. These investments are to be achieved through a combination of public investment, Public-Private-Partnerships (PPPs) and exclusive private investments, wherever feasible. Investment requirements in some key sectors are: US \$ 50.8 billion for modernization and upgradation of highways; US\$ 9.25 billion for civil aviation; US\$ 11.5 billion for ports;

and US\$ 69.39 billion (40 per cent of which is expected from the private sector) for railways.

The overall index of six core industries—having a direct bearing on infrastructure and accounting for 27 per cent weight in the Index of Industrial Production (IIP) registered a growth of 8.3 per cent during April-December 2006, which was higher than the 5.5 per cent registered during the same period in the previous year. In the first nine months of 2006-07, crude petroleum, refinery products and electricity generation registered accelerated growth rates.

Construction

While its global counterpart may grow a measly 5 per cent, India's construction equipment sector is growing at a scorching pace of over 30 per cent annually—driven by huge investments by both the Government and the private sector in infrastructure development.

A bulk of the National Highways Development Project; India's largest highway project ever, is well under way. Nearly 93 per cent of work on the 5846 kilometers' Golden Quadrilateral (GQ) was completed by November 2006.

Ports

The country's coastline of 7,517 kms spread over 13 States/UTs is studded with 12 major ports and 187 non-major ports. Of the non-major ports, around 60 handle traffic. The total traffic carried by both the major and non-major ports during 2005-06 was estimated at around 570 MT. The 12 major ports carry about three-fourths of the total traffic, with Vishakapatnam as the top traffic handler in each of the last six years.

Privatization of port facilities and services has now gathered momentum and India is putting together an enabling policy framework to address the sector's needs. In 2006-07, up to October 2006, cargo handled by major ports registered growth of 6.6 per cent, down from 10.4 per cent observed in the corresponding seven months of 2005-06.

Airports

The Indian civil aviation sector is showing an extraordinary growth rate. With passenger growth standing at 20 per cent—among the highest in the world, airlines are bulking up on capacity. By 2010, India's fleet strength will stand at 500-550. In the same period, the domestic market size will cross 60 million and international traffic 20 million.

Revolutionised by liberalisation, the aviation sector in India has been marked by fast-paced change in the past few years. From being a service that few could afford, the sector has now graduated to being a fiercely competitive industry with the presence of a number of private and public airlines and several consumer-oriented offerings.

India's civil aviation passenger growth stands at 20 per cent—among the highest in the world. More diverse businesses in non-metropolitan regions are creating new demand for air services. Airlines are bulking up on capacity—ten Indian carriers placed orders for 400 aircraft worth US\$ 15 billion.

Railways

The Indian Railways, the world's second largest rail network under a single management, continues to be one of the biggest contributors to the country's economic progress. Railway performance vastly improved in the last two years due to better resource management, among other things, through increased wagon load, faster turnaround time and a more rational pricing policy.

While passenger traffic went up by 14 per cent during April-December 2006, it is projected at 6.6 billion for FY08. For the same period, freight loading target has been raised to 785 million tonnes. Moreover, 300-350 km per hour trains will be introduced and 225 stations will be developed.

Telecommunications

It is expected that India will be the manufacturing hub for telecom equipment, particularly in mobile telecommunications. With rising demand offering excellent opportunities to domestic and foreign investors, the Government has raised FDI up to 74 per cent, from the prevailing ceiling of 49 per cent to bolster investment in this already bustling sector.

Tele-density increased from 12.7 per cent in March 2006 to 16.8 per cent in December 2006. While 43.72 million telephones were added during the twelve months of 2005-06, during the current year, about five million subscribers are being added every month. This number is expected to reach 250 million by the end of 2007.

As many as 650 million telephone connections (66 million wired and 584 million wireless connections) are expected by 2012. Concurrently, 200 million rural telephone connections will translate into rural tele-density of 25 per cent. It is also envisaged that internet and broad-band subscribers will increase to 40 million and 20 million respectively by 2010.

Power

Power production was up 9.1 per cent in the last month of 2006 compared with 3.4 per cent in the same period last year. The performance of the sector in the first three quarters of this fiscal was 7.5 per cent as against 3.4 per cent in the same period last year.

The Ministry of Power, Government of India, launched an initiative for development of coal-based Ultra-Mega Power Projects (UMPPs), each with a capacity of 4,000 MW or above. Electricity generation by power utilities during 2006-07 was targeted to go up by 6.7 per cent to 663.0 billion kwh. Coal continued to remain the mainstay of the power sector, with around 67 per cent

of total power generation coming from coal-fired power stations.

Budget 2007-08 Measures:

- Allocation towards Bharat Nirman increased by 32% to Rs. 246 bn
- Increase in provision for National Highway Development Programme (NHDP) by 7.2% to Rs.107 bn
- Enhanced allocation for Jawaharlal Nehru National Urban Renewal Mission (JNNURM) to Rs.499 bn, an increase of 9%
- Corpus of Rural Infrastructure Development Fund-XIII (RIDF) for FY08 raised to Rs.120 bn
- Separate window for rural roads under RIDF-XIII to be continued in FY08 with a corpus of Rs.40 bn
- Scheme for utilization of foreign reserves towards infrastructure development
- Tax on dividend distributed by companies to be hiked from 12.5% to 15%
- Additional education cess of 1% to fund secondary and higher education
- Service tax on office space rentals

Tata Infrastructure Fund

Type of Scheme	An open-ended equity fund
Launch Date	November 25, 2004
Fund Objective	The investment objective is to provide income distribution and/or medium to long term capital gains by investing predominantly in equity/equity related instrument of companies in infrastructure sector.
Fund Investment Strategy	The fund would invest at least 70% of its net assets under normal circumstances in equity/ equity related instruments of companies in infrastructure sector. The fund can also invest up to 30% of net assets in debt/money market instruments for providing ongoing liquidity and preservation of capital.
Liquidity	Resale/Repurchase/Switch at prevailing NAV based prices with the applicable loads on all business days.
Options Available	Dividend & Growth
Load Structure	Entry Load : For investment amount less than Rs.2 crore: 2.25% For investment amount greater than or equal to Rs.2 crores: Nil. Exit Load: For each investment amount of less than Rs.2 crore: 1% if redeemed on or before expiry of 6 months from the date of allotment. For each investment amount greater than or equal to Rs.2 crores: Nil
Minimum Application Amount	Under each option minimum investment Rs.5,000/- and in multiples of Re.1/- thereafter.

Birla Infrastructure Fund

Nature of scheme	An Open ended Growth Scheme
Inception Date (Date Of Allotment)	17-Mar-2006
Scheme Objective	Birla Infrastructure Fund seeks to provide medium to long-term capital appreciation, by investing predominantly in a diversified portfolio of equity and equity related securities of companies that are participating in the growth and development of Infrastructure in India.
Asset Allocation	80%-100%: Equities & Equity related securities. 0%-20%: Debt & Money Market instruments.
Investment Strategy	The corpus of the Scheme will be primarily invested in equity and equity related securities of the companies in the Infrastructure Sector. The Scheme may also invest a small portion of its corpus in money market instruments to manage its liquidity requirements. All companies selected will be analyzed taking into account the business fundamentals like nature and stability of business, prospects of future growth and scalability, financial discipline and returns, valuations in relation to broad market and expected growth in earnings, the company's financial strength and track record. The fund may also invest up to 25% of the corpus of the scheme in ADR/ GDR and equities of listed overseas companies with a market capitalization of at least \$1 billion at the time of investment. These investments will be made in line with the RBI and SEBI guidelines and will be within the limits prescribed by SEBI/RBI from time to time.
Investor Risk Profile	Medium to High

Investment Plan/Options	Dividend (Payout & Reinvestment) Growth
Investment Option by default	Dividend Reinvestment
Minimum subscription amount	Rs.5,000/- and in multiples of Re.1/- thereafter.
Minimum additional investment	Rs. 1,000/- and in multiples of Re.1/-thereafter.
Load Structure	Entry Load: For all purchase/Switch - in of units less than Rs. 5 cr. in value: 2.25%. For all purchase/ Switch - in of units equal to or greater than Rs. 5 cr. in value: Nil Exit Load : NIL

UTI Infrastructure Fund

Type Of Scheme	Open Ended Equity Fund
Date Of Inception	09/03/2004
Scheme Objective	The scheme aims to provide to investors growth of capital over a period of time as well as to make periodical distribution of income from investment in stocks of respective sectors of the Indian economy.
Asset Allocation	At least 90% in equity/equity related instruments
Face Value	Rs.10/-
Min Investment Amt	Rs. 5,000/-
Load Structure	Entry Load: 2.25% for investments made after 10.10.2004 and amount < Rs.25 lakh Nil for investments made after 10.10.2004 and amount ≥ Rs.2 crore Exit Load: Nil

APPENDIX

Date	NAV of TATA Infrastructure Fund (Rs.)	NAV of Birla Infrastructure Fund (Rs.)	NAV of UTI Infrastructure Fund (Rs.)	NSE Nifty
30-03-07	22.0208	11.30	25.72	3821.55
28-02-07	22.9287	11.37	25.98	3745.30
31-01-07	24.2357	12.33	29.30	4082.70
29-12-06	24.0048	12.09	28.55	3966.40
30-11-06	23.9503	12.08	28.18	3954.50
30-10-06	22.0003	11.25	24.07	3744.10
29-09-06	27.7388	10.77	23.96	3588.40
31-08-06	19.2019	9.90	22.30	3413.90
31-07-06	17.5540	9.02	20.33	3143.20
30-06-06	17.6842	8.94	20.23	3128.20
31-05-06	19.0913	9.56	21.99	3071.05
28-04-06	21.7425	10.99	25.39	3557.60
31-03-06	20.0401	10.49	23.39	3402.55

91 day Treasury Bills are currently trading in the market at the price of Rs.98.15 each.

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. As per the caselet, there are two categories of multi manager funds; Fund of Funds (FoF) and Manage The Manager (MTM) funds. How do you differentiate these two categories of multi manager funds?

(10 marks)

[Answer](#)

7. According to the caselet, depending on just one fund manager or a fund house to produce astounding returns is not advisable, because, different fund houses have different investment styles, and perform differently under different market conditions. This idea has resulted in the emergence of multi manager funds. Explain the advantages of multi manager funds?

(6 marks)

[Answer](#)

For the retail investor, investment options are getting complicated day by day. It is not different from mutual funds. The enormous categories, various asset classes, many product innovations and hundreds of schemes, make the investment process difficult and confusing. The need of the hour is simplification. Multi-manager mutual funds, is one such step and it has already made its way into the Indian market. Currently, multi-manager funds manage nearly \$1,400 bn worldwide. In India, a few investment houses such as Birla Sun Life, Franklin Templeton, Standard Chartered, and Pru ICICI have introduced multi-manager funds in the form of Funds of Funds (FoFs). However, the fund is distributed among their own schemes. Investment houses such as Kotak, Fidelity and ABN Amro have introduced FoFs that partly invest outside their 'in-house' schemes. On the other hand, OptiMix has products with zero brand bias, the first in India. Different fund houses have different investment styles, and perform differently under different market conditions. So, how can you rely on just one fund manager or a fund house to produce astounding returns? After all, just as the very best batsmen can play a bad shot and get out for a duck, the greatest investment manager can go through bouts of poor performance. Here's where multi-manager funds score a ton.

So, what are multi-manager funds? Multi-manager funds employ the skills of investment managers to manage the assets. A lazy way of looking at such funds would be to describe them as something that bundles the best performing managers into a single fund. Multi-manager funds aim to achieve better long-term returns than a single-manager fund, with less volatility. It's like saying the sum-of-the-parts is greater than the whole.

Investors around the world want the best investment managers manage their money for them and they want to diversify their investments across more than one manager. Multi-manager funds address these needs directly.

They offer exposure to the investment expertise of some of the leading investment management firms selected and monitored by a specialist in the field and make them available in a convenient package to make them easy to buy and monitor. Multi-manager funds come in different forms - from aggressive to defensive - depending on the exposure to equities and Gsecs.

Multi-manager funds tend to give investors exposure to different fund management styles with inputs from the multi-manager fund itself. There are two categories of multi manager funds – Funds of Funds (FoF) and Manage The Manager (MTM).

The difference being the former invests in different funds and the latter invests in equities directly under the guidance and advice of appointed fund managers. So, the latter is most likely to have a lower-cost factor. In MTM, every manager has a specific mandate based on its expertise in a certain investment style. Therefore, it's easier to manage and is less expensive. In India, OptiMix offers MTM mutual funds, while other investment houses that have multi-manager products, offer only FoFs.

Next, let's look at costs. All funds carry an entry load and an annual charge. How much that adds up to is a grey area and fund houses are not comfortable in revealing it. However, the industry has maximum permissible charge of 2.5%, though FoFs can charge 0.75% extra. This extra charge is not applicable to MTM funds.

A good way to find out whether the fund is expensive is to look at the expense ratio. Internationally multi-manager funds have an expense ratio between 2.5% and 3.5%, which is typically higher than single manager funds that charge anything between 1.5% and 2%. The expense ratio is the figure investors must consider because it takes into account not just the annual management fees but also all other costs.

Charges are one of the important parameters in determining long term growth for your money. In MTM funds, a moot point is that the underlying manager fees are not charged to the fund separately. From a taxation point of view, MTM funds are treated similar to any other mutual fund. So, they don't come under the FoFs umbrella where there are tax issues. So, as an investor in MTM funds, you have access to the best of managers without any extra cost and the same tax benefit.

So, are multi-manager funds worth it? Since, all these funds are recently launched in India, it would be foolhardy to make a comparison of such funds with diversified mutual funds in India. An analysis among international funds however shows that since their inception, most multi-manager funds have performed more consistently than the single-manager funds. But, like a diversified portfolio is better than an individual stock, multi-manager funds may be a better idea than single manager funds.

Caselet 2

Read the caselet carefully and answer the following questions:

8. As per the caselet, there are different ways in which investors can partake in private equity exposure. Explain them in detail.

(9 marks)

[Answer](#)

9. According to the caselet, private equity provides higher return opportunities relative to traditional asset classes. Explain the advantages of private equity.

(9 marks)

[Answer](#)

Private Equity is generally regarded as an investment which offers investors the opportunity to achieve superior long term returns compared to traditional stock and bond investment vehicles. The long-term high returns of private equity represent a premium to the performance of public equities. Private equity provides higher return opportunities relative to traditional asset classes primarily through their ability to participate in a vast and growing market place of privately held companies not available in traditional investor products. They have the ability to create value by proactively influencing invested companies' management and operations, thereby providing the opportunity to gain excess return over conventional stock and bond investments.

Private equity is often structured as partnerships, a fund made up of the general partner and the limited partners. Each fund is capitalized by commitments of capital from the limited partners. Once the partnership has reached its target size, the partnership is closed to further investment from new investors (or even existing investors) so the fund has a fixed capital pool from which it can make its investments. Other common ways to gain exposure to private equity are through private equity fund of funds and direct investment in private companies. Thus, there are generally three ways in which investors can partake in private equity exposure. The first is investing in a partnership specializing in private equity. The second vehicle available to gain private equity exposure is through fund of private equity funds which provides exposure to a basket of selected private equity funds. The third way is to directly invest in private companies.

Different approaches require various investment skill sets. Private equity is a broad term for any equity type investment in a company that is not listed on a stock exchange. The purchase of shares is therefore privately negotiated. Holders of private equity investments will typically realize value normally in the form of capital gains through a sale to, or merger with, a competitor in the same sector, sale to another private equity investor or by eventual flotation on the stock market. Private Equity covers a wide range of investment opportunities, including early stage investment (angel investors and seed capital), take off (venture capital), mid-growth investment (mezzanine finance) and later stage investment (private equity). It can be anything from angel investment to buyout fund investing.

India is becoming a powerful magnet for private equity investment. To realize its potential, however, private equity investors and Indian companies must recognize what each brings to the table. By some measures, India is poised to become the next big market in private equity. There have been big deals, such as the \$900 million paid in 2006 for Flextronics Software Systems (now called Aricent) by KKR, the US leveraged-buyout pioneer.

There have been big successes, including the completion of the sale in 2005 by Warburg Pincus of its stake in Bharti Airtel for \$1.6 billion. Well over 100 private equity funds are scouting for deals, making India the fastest-growing private equity market in Asia, with a 67 per cent compounded annual rate since 2002.

Yet these numbers, while impressive, tell only part of the story. The full picture is more complex. Although it's growing fast, private equity in India has yet to show the scale of returns and deal volume that make PE a force in other global markets.

When Bain & Company analyzed nearly \$15 billion in private equity investments between 2000 and 2006, most of the largest deals - more than 70 per cent - were less than \$150 million. The average deal size was \$21 million - less than one-third the size of the average PE investment elsewhere in Asia.

Meanwhile, skepticism of private equity still runs deep among many Indian entrepreneurs as they weigh whether the potential advantages PE partners bring to the table justify diluting their financial interest and control or not.

Can PE firms and the Indian companies, they are courting, bridge the gap? The answer, undoubtedly, is yes. The right question, in fact, is not whether private equity will blossom in India but when? Based on our experience, that will depend on the readiness of private equity firms to adjust their approach to India, and the willingness of Indian companies to see the opportunities in tapping the expertise of private equity partners.

The challenge for Indian companies is to recognize that PE firms bring more than money to a deal-they also bring international networks that can help fill gaps in growth strategies, build alliances and add management depth. For their part, PE firms need to adapt their approach, picking targets carefully in industries where they can bring their distinctive skills to bear.

Caselet 3

Read the caselet carefully and answer the following questions:

10. As per the caselet, passively managed funds/index funds are aligned to a particular benchmark index like the S&P CNX Nifty or the BSE Sensex. Explain the different techniques of constructing an index fund.

[≤](#)
[Answer](#)

(9 marks)

[≥](#)

11. As mentioned in caselet, investing in actively managed funds demands a deeper review and understanding of the fund house's investment philosophy; also the investor needs to decide on the kind of funds he wishes to invest in. Explain the active management styles followed by a portfolio manager.

[≤](#)
[Answer](#)

[≥](#)

(7 marks)

Mutual funds can be broadly classified into two categories in terms of the fund management style i.e. actively managed funds and passively managed funds (popularly referred to as index funds). Actively managed funds are the ones wherein the fund manager uses his skills and expertise to select invest-worthy stocks from across sectors and market segments. The sole intention of actively managed funds is to identify various investment opportunities in the market in order to clock superior returns, and in the process outperform the designated benchmark index.

On the contrary, passively managed funds/index funds are aligned to a particular benchmark index like the S&P CNX Nifty or the BSE Sensex. The endeavor of these funds is to mirror the performance of the designated benchmark index, by investing only in the stocks of the index with the corresponding allocation or weightage.

In the Indian context, index funds have never really caught the retail investor's fancy. The mutual fund industry is dominated by actively managed funds; index funds occupy a smaller share of the market. Actively managed funds have been successful in outperforming index funds by a huge margin. This could be attributed to the fact that the Indian markets are still in an evolutionary phase and there exist a number of inefficiencies. These inefficiencies are in turn utilized by competent fund managers to outperform the index. This explains why many actively managed funds manage to outperform the index over the long-term (3-5 years). This is in complete contrast to developed economies like the United States for instance wherein index funds form "staple diet" for retail investors. And the reasons for the same aren't very difficult to guess. In the United States, stock markets are more efficient, so investment opportunities are at a premium and are relatively difficult to identify. Consequently, a number of actively managed funds fail to outperform the broader stock market. Also other factors like no loads and lower expenses are further the cause of index funds.

Investing in index funds is less cumbersome as compared to investing in actively managed funds. Broadly speaking, investors need to consider two important aspects i.e. the expense ratio and the tracking error (i.e. the difference between the returns clocked by the designated index and index fund). Conversely, investing in actively managed funds demands a deeper review and understanding of the fund house's investment philosophy; also the investor needs to decide on the kind of funds he wishes to invest in – a large cap/mid cap/small cap fund among others. Hence, investors would do well to understand that, though the actively managed funds category has delivered impressive performances over the long-term, there are duds within the category whose performance is nothing to write about.

This in turn, necessitates that investors add to their portfolios well-managed diversified equity funds with proven track records over longer time frames and market phases. Given the performance of diversified equity funds and how domestic markets are placed, risk-taking investors would do well to hold a larger portion of their portfolio in actively managed (diversified equity) funds. Index funds, on the other hand can occupy a smaller portion therein, but purely from a diversification perspective.

END OF SECTION E

END OF QUESTION PAPER

Suggested Answers

Portfolio Management and Mutual Funds - II (MSF2D4) : July 2007

Section D : Case Study

1. • India is on the verge of witnessing a sustained investment phase in infrastructure buildup. With a slew of announcements in housing, road, port and airport development, we are seemingly on a path of sustained higher economic growth on the back of improvement in infrastructure construction in the country.
- Since government spending on infrastructure is the most important growth driver for construction companies, the proposed increase in allocation will translate into awarding of more projects.
- Though infrastructure development will be across sectors, the key drivers would be roads, water supply & sanitation and irrigation.
- Real estate investments account for about 60% of the total construction investments. Demand-supply gap for residential housing, favorable demographics, rising affordability levels, availability of financing options as well as fiscal benefits available on availing of home loan are the key drivers supporting the demand for residential construction. In addition to this, demand for office space from IT/BPO segment is expected to continue due to emergence of India as a preferred outsourcing destination. Also, boom in organized retail is expected to result in huge demand for real estate construction.
- Leveraging of foreign exchange reserves for infrastructure development results in increased availability of funds with the government and thereby results in faster infrastructure growth for the country.
- Higher education cess and dividend distribution tax have impact on net profits and retained earnings respectively.
- Increase in service tax on office spaces has negative impact for construction companies as this is likely to increase rentals in metros, which are already in the range of Rs.300-350 per sq. feet. This will negatively impact commercial real estate demand in metro cities.

Thus, as the infrastructure sector is expected to have substantial growth potential, barring minor negative impacts due to education cess, dividend distribution tax and service tax, investment in infrastructure fund can be justified.

2.NIFTY

Year	NIFTY	R _{NIFTY} (%)	{ NIFTY - NIFTY }	{ NIFTY - NIFTY }
31-03-06	3402.55			
28-04-06	3557.6	4.56	3.40	11.56
31-05-06	3071.05	-13.68	-14.84	220.23
30-06-06	3128.2	1.86	0.70	0.49
31-07-06	3143.2	0.48	-0.68	0.46
31-08-06	3413.9	8.61	7.45	55.50
29-09-06	3588.4	5.11	3.95	15.60
30-10-06	3744.1	4.34	3.18	10.11
30-11-06	3954.5	5.62	4.46	19.89
29-12-06	3966.4	0.30	-0.86	0.74
31-01-07	4082.7	2.93	1.77	3.13
28-02-07	3745.3	-8.26	-9.42	88.74
31-03-07	3821.55	2.04	0.88	0.77
	TOTAL	13.91		427.22
	AVERAGE	1.16		

Variance = = 38.84 (%)²

Standard Deviation =

TATA INFRASTRUCTURE FUND

Year	NAV of TATA (Rs.)	R _T (%)	{ TATA - TATA }	{ TATA - TATA }	{ TATA - TATA }
31-03-06	20.0401				
28-04-06	21.7425	8.49	6.65	44.22	22.61
31-05-06	19.0913	-12.19	-14.03	196.84	208.21
30-06-06	17.6842	-7.37	-9.21	84.82	-6.45
31-07-06	17.554	-0.74	-2.58	6.66	1.75
31-08-06	19.2019	9.39	7.55	57.00	56.25
29-09-06	27.7388	44.46	42.62	1816.46	168.35
30-10-06	22.0003	-20.69	-22.53	507.60	-71.65
30-11-06	23.9503	8.86	7.02	49.28	31.31
29-12-06	24.0048	0.23	-1.61	2.59	1.38
31-01-07	24.2357	0.96	-0.88	0.77	-1.56
28-02-07	22.9287	-5.39	-7.23	52.27	68.11

31-03-07	22.0208	-3.96	-5.80	33.64	-5.1
	TOTAL	22.05		2852.15	473.21
	AVERAGE	1.84			

Standard Deviation =

Covariance between the returns of Tata Infrastructure Fund and Market = $(\%)^2$

BIRLA INFRASTRUCTURE FUND

Year	NAV of BIRLA (Rs.)	R _B (%)	$\frac{R_B - \bar{R}_B}{\sigma_B}$	$\frac{R_M - \bar{R}_M}{\sigma_M}$	
31-03-06	10.49				
28-04-06	10.99	4.77	3.92	15.37	13.33
31-05-06	9.56	-13.01	-13.86	192.10	205.68
30-06-06	8.94	-6.49	-7.34	53.88	-5.14
31-07-06	9.02	0.89	0.04	0.0016	-0.03
31-08-06	9.9	9.76	8.91	79.39	66.38
29-09-06	10.77	8.79	7.94	63.04	31.36
30-10-06	11.25	4.46	3.61	13.03	11.48
30-11-06	12.08	7.38	6.53	42.64	29.12
29-12-06	12.09	0.08	-0.77	0.59	0.66
31-01-07	12.33	1.99	1.14	1.3	2.02
28-02-07	11.37	-7.79	-8.64	74.65	81.39
31-03-07	11.3	-0.62	-1.47	2.16	-1.29
	TOTAL	10.21		538.15	434.96
	AVERAGE	0.85			

Standard Deviation =

Covariance between the returns of Birla Infrastructure Fund and Market = $(\%)^2$

UTI INFRASTRUCTURE FUND

Year	NAV of UTI (Rs.)	R _U (%)	$\frac{R_U - \bar{R}_U}{\sigma_U}$	$\frac{R_M - \bar{R}_M}{\sigma_M}$	
31-03-06	23.39				
28-04-06	25.39	8.55	7.39	54.61	25.13
31-05-06	21.99	-13.39	-14.55	211.70	215.92
30-06-06	20.23	-8.00	-9.16	83.91	-6.41
31-07-06	20.33	0.49	-0.67	0.45	0.46
31-08-06	22.3	9.69	8.53	72.76	63.55
29-09-06	23.96	7.44	6.28	39.44	24.81
30-10-06	24.07	0.46	-0.70	0.49	-2.23
30-11-06	28.18	17.08	15.92	253.45	71
29-12-06	28.55	1.31	0.15	0.02	-0.13
31-01-07	29.3	2.63	1.47	2.16	2.60
28-02-07	25.98	-11.33	-12.49	156.00	117.66
31-03-07	25.72	-1.00	-2.16	4.67	-1.90
	TOTAL	13.93		879.66	510.46
	AVERAGE	1.16			

Standard Deviation =

Covariance between the returns of UTI Infrastructure Fund and Market = $(\%)^2$

Sharpe Ratio: $\frac{R_{Fund} - R_{T-bill}}{\sigma_{Fund}}$

Annual T-bill rate =

Monthly T-bill rate =

Tata Infrastructure Fund =

Birla Infrastructure Fund =

UTI Infrastructure Fund =

Treynor's Ratio : $\frac{R_{Fund} - R_{T-bill}}{\sigma_{Fund}}$

Tata =

Birla =

UTI

UTI =

Tata Infrastructure Fund =

Birla Infrastructure Fund =

UTI Infrastructure Fund =

Jenses's Alpha: $R_{\text{Fund}} - \beta \times R_{\text{MARKET}}$

Tata Infrastructure Fund = %

Birla Infrastructure Fund = %

UTI Infrastructure Fund = %.

3. Return due to total selectivity :

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Tata Infrastructure Fund = %

Birla Infrastructure Fund = – %

UTI Infrastructure Fund = %

Return due to net selectivity =

Tata Infrastructure Fund = –0.1597%

Birla Infrastructure Fund = – 0.375%

UTI Infrastructure Fund = –0.2305%

Return due to extra diversifiable risk :

Tata Infrastructure Fund = $0.6217 - (-0.1597) = 0.7814\%$

Birla Infrastructure Fund = – – (– 0.375) = 0.0544%

UTI Infrastructure Fund = – (–0.2305) = 0.1298%

Return due to net selectivity is negative for all funds indicating that the stock selection ability of all fund managers is not good. Among the three funds, Tata Infrastructure fund is comparatively better performer.

4. Residual Risk (e_i) :

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Tata Infrastructure Fund = $259.29 - 1.11^2 \times 38.84 = 211.435 (\%)^2 = 14.54\%$

Birla Infrastructure Fund = $48.92 - 1.02^2 \times 38.84 = 8.51 (\%)^2 = 2.92\%$

UTI Infrastructure Fund = $79.97 - 1.19^2 \times 38.84 = 24.97 (\%)^2 = 5\%$

Information ratio =

Tata Infrastructure Fund = 0.043

Birla Infrastructure Fund = – 0.11

UTI Infrastructure Fund = – 0.02.

5. Mutual funds are available with different investment objectives and policies. One has to consider the following qualitative and quantitative factors for analyzing the performance of mutual funds.

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Fund Objectives: There are various funds available in the market such growth, income, balanced and money market mutual fund. A classification of mutual fund based on their investment objective is required to avoid comparing apples with oranges. A mutual fund should be always compared with a fund of same category having same type of investment objective and philosophy.

Asset Allocation: The asset allocation of a particular mutual fund is to be considered to know whether the fund is fulfilling the investment objectives as outlined in the prospectus. For example, if an income fund invest more in equities than fixed income securities then it is deviating from its investment objectives.

Dividend Policy: Analyzing the dividend history of the fund helps in understanding the performance of that fund.

Diversification: This aspect is very important when analyzing a mutual fund. A diversified fund can withstand the worst times. Diversification of a mutual fund helps in giving a smooth return to investors.

Market timing: One important question arises while evaluating mutual fund is market timing. A successful mutual fund manager will be successfully utilizing the market timing to gain better returns.

Excess return per unit of risk: An other basis for performance evaluation is the excess return per unit of risk given by a mutual fund. The risk could be denoted as total risk or systematic risk.

Superior stock selection: Superior stock selection ability of a fund manager enhances the chances that a mutual fund will perform better than other funds in the same category.

Load: The amount of entry or exist load also decides the amount of return available to the investors. It also matters whether the load is front-ended or back-ended.

Section E: Caselets

Caselet 1

6. SNo	Manage the manager funds	Fund of funds
1.	Portfolios are populated with segregated managers	Portfolios are populated with (retail) funds
2.	Can assign customized restrictions to selected managers	Portfolios are diversified across market sectors and asset classes
3.	Require substantial assets; have access to managers that fund of funds cannot access	Little or no seed capital required
4.	Focused on managers skills for future returns	Mostly focused on historic returns of funds
5.	Closer Monitoring, better risk control on overall portfolio and access to portfolio holdings	Has no influence on the underlying Fund Managers. Not possible to monitor some essential risk factors
6.	Complete control over managers • high flexibility by easy exchange of managers • greater level of transparency	No control over manager (or investment team), custodian and administrator. Very easy exchange of funds
7.	Most likely lower costs, if asset base is big	Higher costs, due to additional layers of fees

7. By investing in a multi-manager fund, we will benefit from a comprehensive manager research and selection process. They establish a dedicated team of specialists to bring the best investment management capabilities available. There is a chance for a broad level of diversification that helps reduce investment risk and improves the likelihood of achieving consistent returns by having exposure to a number of investment managers, and not relying on the performance of any one investment manager or style.

Caselet 2

8. Investing in Private Equity Funds: Investors can get exposure to private equity investment through investing in a partnership specializing in private equity. When an investor commits to a private equity fund, the commitment is typically to provide cash to fund on notice from the general partner. Redemptions and transfers usually are subject to strict limitations; it is not uncommon for general partner consent to be required for all transfers/redemptions and for the general partner to have complete discretion with respect to granting such consent.

Investing in Private Equity Fund of Funds: Investors can also get exposure to private investment through a pooled fund vehicle, fund of private equity funds. The advantages of investing in fund of funds are greater diversification, access to top fund managers, less cash commitment and reduced due diligence work. The drawback of investment in fund of funds is that investors may have to bear two layers of fees, at both fund level and fund of funds level.

Directly Investing in Private Companies: The third way available for investors to gain access to private equity investment is direct investment in privately held companies. However, compared with investing through funds it requires more capital (to achieve similar diversification and exposure), a different skill set, more resource and different evaluation techniques. This strategy is only suitable to experienced private equity investors.

For most investors, the use of private equity funds or fund of funds would be preferred.

- 9.
- Companies backed by private equity are developed or made more efficient with the active participation of the private equity manager's team working alongside management, to pre-agreed plans and targets.
 - Private equity-backed companies have a limited number of highly-incentivised shareholders, including management, all working to achieve the same objectives.
 - Companies backed by private equity can grow, or be restructured, out of the public eye – and that of competitors – without the constraint and distraction of performance being honed for quarterly or six monthly reporting.
 - Private equity managers conduct detailed market, financial, legal, environmental and management due diligence, typically over 8 to 20 weeks before investing. They know most of the risks and opportunities of the investment they are making.
 - The private equity manager has control over the timing of a sale of the business.
 - Private equity firms have access to high calibre management from around the world for portfolio

companies.

- The investment in private equity will provide above average potential return and low correlation with other asset classes.
- The investment in private equity is long term oriented and provides participation in the companies of the future.

Caselet 3

10. There are several techniques used in building index funds based on Equity indices. These techniques fall into three categories: full replication, sampling and optimization. Full replication is the most straight forward approach as its name implies, all of the securities in the benchmark are purchased in the index fund in their proportionate weightings. An Index fund based on Sensex or Nifty that is created by using full replication will hold position in all 30 or 50 stocks in amounts proportionate to their value relative to the market value of all stocks in the index. Proponents of this approach argue that only by holding all the securities in an index can one ensure close tracking of the actual index.

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Funds can also be constructed using a sampling approach. A fund constructed in such a way usually hold positions in all of the larger securities in the benchmark, but samples the smaller companies such that the characteristics of the fund closely match those of the benchmark. A simple approach to constructing S&PCNX 500 index fund would be to buy the larger companies stock in their exact proportion while sampling the smaller stocks in such manner so that industry breakdown of the portfolio mirrors that of the index. If one believes that securities within given industries tend to move in a similar manner, then controlling for industry diversification should lead to good tracking. In practice, the criteria for sampling can be far more complex than this, and one can control for any number of factors such as industry breakdown, market capitalization, yield, growth orientation and the like. Proponents of sampling argue that if one can create a portfolio that captures the essential characteristics of a benchmark, without holding positions in each and every security, one can approximate the performance of the benchmark quite closely while keeping administrative and trading costs down.

The third approach to constructing an equity index fund is to use quadratic optimization model. Given data on securities, such a model attempts to create a portfolio with the minimum possible residual risk vis- a- vis the selected benchmark (i.e return variability not explained by the benchmark itself). The attraction of this approach is that a portfolio can be constructed with a fewer securities than one would use in full replication or even sampling, and with a very low prospective tracking error. A potential problem however, is that data used to derive this type of model are historic in nature and if the future does not replicate the past as is usually the case, the prospective tracking error on these funds can differ significantly from the actual tracking error.

11. Top-Down: Managers are commonly referred to as top-down if their emphasis is on sector, industry, or theme bets as opposed to individual stock selection. Stocks are actively selected, but they are chosen in large part to bring out a theme. An example is a manager who wants to emphasize companies with a high component of foreign earnings to benefit from his belief that the domestic currency weaken. He then looks for companies with that characteristic.

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An internal manager pursuing a top-down approach might structure his process as follows:

- Identify broad global themes that will influence world markets.
- Incorporate those themes into specific economic and market forecasts for each country.
- Factor in currency forecasts.
- Use an asset allocation-type model to determine optimal country allocations.
- Given economic forecasts, determine sector weightings for each country.
- Select stocks within these weightings.

Bottom-Up: A bottom up manager takes the opposite track from the top-down manager. His emphasis is on selecting attractive securities. Industries, sectors, and countries (in internal portfolios) are incidental considerations.

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