

Question Paper

Security Analysis – II (212): January 2003

Part D : Case Study (50 Points)

- This part consists of questions with serial number 1 - 6.
- Answer all questions.
- Points are indicated against each question.
- Do not spend more than 80 - 90 minutes on Part D.

Case Study

Read the case carefully and answer the following questions:

1. Perform Michael Porter's Analysis of the Indian shipping industry.

(8 points)
2. Comment on the financial health of Essar Shipping based on the financial statements and ratios given.

(10 points)
3. Based on the information provided in Annexure I, comment with justification on whether the share of Essar Shipping should be bought or sold at the points A, B, C, D and E.

(10 points)
4. Based on the information provided in Annexure II, determine whether the stock of Essar Shipping exhibits weak form efficiency or not, using runs test, at level of significance of 2%, 5% and 10%.

(8 points)
5. The EPS of Essar Shipping is expected to increase at 10% for the next 3 years, and then remain steady at 15% for two years, before reaching a constant growth rate of 6%. The payout ratio may be assumed to be 25% during this period. Determine the required rate of return of Essar Shipping's shareholders based on the price of Essar Shipping's shares on October 15, using the Dividend Discount Model.

(8 points)
6. What are the leading economic indicators that are significant for shipping industry?

(6 points)

The shipping industry encompasses overseas shipping, coastal shipping and offshore shipping. In general, when the term "shipping" is used, it refers to overseas shipping. Of the total shipping tonnage in India, almost 90% is engaged in overseas shipping, while 7% is coastal shipping and the remaining is offshore shipping. Major shipping companies in India are either totally into international shipping or have limited coastal shipping activities.

The industry is global in nature. On both demand and supply side, global scenario has to be taken into account rather than the availability/ demand of ships in a particular country.

Shipping fleet can be classified into dry bulk carriers and tankers. Dry bulk carriers are used to transport bulk goods such as grain, iron ore and coal, while tankers are used to carry crude oil, petroleum products, chemicals etc. Tankers can further be classified into crude oil tankers and product tankers depending upon their usage, ie whether they transport crude oil or petroleum products. Internationally, container shipping also plays an important role. Of the total world merchant fleet, around 10% of the fleet is engaged in container shipping, while in India this proportion stands at a negligible 1%.

The world shipping fleet stands at around 500mn grt. As against this, the Indian fleet stands at 7.08mn grt. The average age of the Indian fleet is 15 years as against the world average of 18 years.

The above case is prepared only for the purpose of examination and not to illustrate either effective or ineffective performance of the company. The case contains real information adapted and combined with other information to generate discussion or analysis on the desired topics.

The proportion of India's sea-borne trade carried by the domestic shipping industry has been steadily decreasing and now stands at 30%. This implies that foreign shipping companies conduct 70% of India's sea-borne trade.

South East Asian crisis has affected both dry bulk and tanker segments due to reduced movement of goods. Dry bulk segment is passing through one of the worst phases with freight rates nose-diving to unprofitable levels with no apparent sign of recovery. The tanker segment enjoyed profitable times in the last four years. Increased tonnage and reduced activity has now affected the freight rates in this segment also. The freight rates are not expected to rise in the near future.

Nature of The Industry

The shipping industry is truly global in the sense that any event in any corner of the world that affects the trade or the movement of goods has its impact on demand for ships and hence the freight rates. Sentiments also play an important role in shipping rates just as in stock markets. Hence, even if long-term trend is on the upswing or downswing, short-term trends can be in the opposite direction depending upon certain rumors or events taking place in any corner of the globe.

A Cyclical Industry

Shipping is a cyclical industry. When freight rates are lucrative, orders are placed for more ships. Typically, it takes around three years to build a ship. Till the new deliveries are made in the market, freight rates remain buoyant, provided there is no fall in trade. Once new deliveries come to play, freight rates decline and reach out to more realistic levels. Freight rates continue their downward journey till supply of ships becomes scarce once again, due to scrapping of older vessels.

A Capital Intensive Industry

The shipping industry is a highly capital intensive sector. The industry derives its major income from transportation of cargo and trading in ships. Worldwide economic conditions determines the income profile of the industry and value of ships can fluctuate due to changes in the economic scenario

Fleet Classification

Depending on the cargo carried by the ships, fleet can be divided in to three broad segments — dry bulk carriers, tankers and offshore vessels.

The ships in the former category carry dry cargo such as grain, coal, fertilizers, iron ore etc. Dry Bulk Charters are of further three types viz time charter (involves hiring of the ship for a specific period); voyage charter (involves hiring of the ship for a specific trip) and spotting which involves going anywhere without a time frame or a route.

Tankers carry liquid products such as crude oil, petroleum products and chemicals. The freight rates for these two categories are independent of each other and determined by the demand and supply of ships in the respective segments. Apart from these two categories which constitute 82% of Indian fleet in terms of gross registered tonnage, there are other kinds of ships such as offshore supply vessels (which cater to the offshore installations of oil companies), container ships, dry cargo ships and LPG carriers.

The classification of the Indian fleet into various segments is shown in the following table:

Dry cargo ships	6.4%
Container ships	1.6%
Crude tankers	27.1%
Offshore vessels	2.2%
Product tankers	12.8%
Dry bulk carriers	42%
Others	7.9%
Total	100%

Another emerging segment is container shipping. The proportion of this segment to the total shipping tonnage in India is very low (less than 1%) at present. However, container shipping is growing rapidly.

Carrying Capacity (dry bulk segment)

In the dry bulk segment, ships can be classified depending upon their carrying capacity, which is measured by dead weight tonnage (dwt).

Vessel type	Capacity dwt
Capesize	> 80,000
Panamax	50,000-80,000
Handymax	35,000-50,000
Handysize	10,000-35,000

Carrying Capacity (tankers)

Tankers can also be classified according to their tonnage into the following three types as shown below:

Vessel type	Capacity dwt
Very large crude carriers (VLCC)	> 200,000
Suezmax	100,000-200,000
Aframax	60,000-100,000

By nature the bulk carrier business is largely steel related and depends on world steel production. Hence, during times of recession it is the one to be affected first. On the other hand, the tanker business is based mainly on oil movements which is a function of oil prices. Oil prices in turn are affected by the production quota set by OPEC nations and production in non-OPEC nations. Business is generally at an ebb in the summer months as requirement of fuel in the developed nations is low. Offshore vessels transport men and materials to offshore oil installations. In the Indian context, offshore vessels largely depend on ONGC for business. This also determines their stability which is linked to ONGC.

Baltic Freight Index

Baltic Freight Index (BFI) [Base: 1985 = 1,000] is the barometer of freight rates for dry bulk segment. It is a weighted average of the actual freight rates of Panamax and Capesize vessels at any point of time on 11 specific routes, which represent important trade routes. BFI hovered around 2,000 in early 1995 and since then has dropped considerably.

Movements in The BFI

Date	B F I
Jan-97	2019
Apr-97	2256
Aug-97	2092
Dec-97	1622
Jan-98	1540
Apr-98	1454
Aug-98	1084
Dec-98	1486
Jan-99	1430
Apr-99	1327
Aug-99	1338
Dec-99	1225
Jan-00	1160
Apr-00	975
Aug-00	789
Dec-00	828
Jan-01	803
Feb-01	801
Mar-01	915

For smaller vessels, a separate index called Handy index is used. This index is calculated after considering actual rates of Handymax vessels on 4 specific routes.

Although BFI is the most widely used index globally, in the Indian context, Handy index would be more appropriate as most of the ships fall in that category.

Payment Terms

Freight rates depend on the nature of usage of the ship ie whether the ship is taken on Time charter or Voyage charter.

Time Charter

Time charter means that a ship is taken on hire for a particular time-period say one year. Freight rates are determined in the beginning and remain constant throughout the charter period. The advantage is that, one is sheltered from adverse swing in the freight rates. The ship owner gains if freight rates go down and vice-versa.

The overall practice of shipping companies in India is to keep significant portion of their fleet under time charter. The ship owner is responsible for running expenses of the ship such as consumables, maintenance, insurance etc but the charterer has to pay for expenses such as port dues, canal tolls, bunkers etc.

Voyage Charter

As against time charter, voyage charter means that a ship is hired for a particular voyage say from Mumbai to Singapore. In this case, the freight rates are decided separately for each voyage depending upon the general level of freight rates. The shipping companies here are exposed to greater risks, as they affect the movement of freight rates immediately.

However, there could be some opportunities to earn higher rates if a particular kind of ship is not available or a particular region faces a shortage of ships. The ship owner has to incur running expenses as well as expenses like port dues, fuel cost, canal charges etc.

Indian Industry

India's largest shipping company, Shipping Corporation of India (SCI) is a public sector undertaking. Of the total shipping tonnage in India, around 50% is in the public sector. The government owns all shipbuilding yards. The government significantly impacts the working of the industry by stipulating restrictions regarding availing of ECB for purchase of ships, age for second hand ships, depreciation rates for ships and tax provisions among others. Thus the policy impact on the industry is crucial.

The acquisition program of SCI determines the incremental shipping capacity in India. Private shipping companies are constrained by resources and in the current scenario, are not expected to add tonnage significantly. The planning commission sets targets for SCI for adding shipping tonnage and approves the outlay required for acquiring ships. Historically, SCI has fallen short of targeted levels for addition of shipping tonnage as per Five-year plans. For example, in the Sixth and Seventh plans, the target for total shipping tonnage was 7.5mn grt. However, at the end of these plans, only 5.54mn and 6.32mn grt respectively could be achieved. In the Eighth plan, against a target of 7mn grt (which was the revised figure), a grt of 7.1mn was achieved.

Growth in Shipping Tonnage

The growth in domestic shipping tonnage is shown in the following table.

Year	million grt
Apr-95	5.91
Apr-96	6.28
Apr-97	6.28
Apr-98	6.56
Apr-99	7.10
Apr-00	6.92
Apr-01	6.84

A Comparison of Major Shipping Companies in India

Company	SCI		GES		ESL		CSL		VSL	
	No	dwt	No	dwt	No	dwt	No	dwt	No	dwt
Dry bulk carriers	25	1.08	20	0.59	19	0.3	12	0.42	2	0.09
Oil/product tankers	49	3.33	17	0.71	10	0.99	-	-	3	0.04
Other ships	42	0.59	22	0.02	37	0.1	-	-	2	0.09
Total fleet	116	5	58	1.32	66	1.39	12	0.42	7	0.22
Average age (yrs)	14.6		13.2		13.7		7.4		16.7	

GES - Great Eastern Shipping

ESL - Essar Shipping Ltd

CSL - Chowgule Steamship Ltd

VSL - Varun Shipping Ltd

SCI - Shipping Corporation of India

In its tanker fleet, SCI has 1 VLCC, 4 Suezmax tankers, 11 tankers in the range of 45,000-80,000 dwt and 2 tankers in the range of 25,000-45,000 dwt. In FY98, the company had deployed 3 tankers with HPCL and 2 tankers with IOCL on the basis of time charter. Most of the other tankers were deployed on contract of affreightment basis with Indian Oil Corporation (IOCL).

Of the two Panamax vessels of the company, one was deployed in cross trade and the other one in coastal shipping. Its Handymax vessels were employed with Steel Authority of India and Vizag Steel Plant (for import of coal from Australia), Poompuhar Shipping Corporation for coastal shipping and import of wheat from Australia.

Great Eastern Shipping has 1 Panamax, 9 Handymax, 6 Handysize and 4 mini bulk carriers. Its tanker fleet consists of 1 Crude oil tanker, 1 LPG carrier while others are product tankers.

For Essar Shipping, other ships consist of 29 Barges, 3 Offshore supply vessels, 4 Tugs and 1 Carrier for oil/bulk/ ore. Among dry bulk carriers, it has 5 Handymaxes, 3 Handisizes and 10 Mini bulk carriers. It has 6 crude tankers and 4 product tankers. Chowgule Steamship's fleet of dry bulk carriers consists of 5 Panamaxs, 1 Handymax and 6 Mini bulk carriers. Apart from the fleet mentioned above, Varun Shipping has 2 Tankers and 2 Anchor handling towing and supply vessels on a bare boat charter.

Age Profile of Indian Fleet

A ship's age is an important indicator of its operational efficiency or capability. The following tables indicate the age profile of the present Indian fleet:

Age in years	Coastal		Overseas		Total	
	Nos	'000 GRT	Nos	'000 GRT	Nos	'000 GRT
Below 5	57	69	36	1,348	93	1,417
6-10	34	126	31	842	65	968
11-15	84	211	88	2,072	172	2,283
16-20	24	76	59	1,075	83	1,151
Over 20	44	169	23	800	67	969
Total	243	651	237	6,137	480	6,788

Age profile in terms of percentage of total fleet

Age profile	Coastal	Overseas	Overall
Below 5	23.5%	15.2%	19.4%
6-10	14.0%	13.1%	13.5%
11-15	34.6%	37.1%	35.8%
16-20	9.9%	24.9%	17.3%
Over 20	18.0%	9.7%	14.0%

Since then there has been further additions to the fleet and GRT has risen to 7.08mn, with the number of ships rising by another 21 to 501.

Though it is true that some old ships maintained in excellent conditions can operate more efficiently than newly built ships, age is generally considered as an indication of a ship's operational efficiency. This is reflected in charter rates also. The newly built or young ships command a premium over the older ships. In a downturn such as the one being witnessed by the dry bulk segment, the rates for old ships generally fall more drastically compared to the young ones. Hence, it is important to have a young fleet or at least the average age of the ships should be comparable to the industry.

For example, Baltic Handy Index uses the freight rates for Handysize vessels, which are less than five years old. Hence, while the actual decline in Baltic Handy Index was around 12% during 1997-98, for older Handymax vessels decline in freight rates was sharper.

A look at the age profile of India's fleet reveals that 14% of its fleet is more than 20 years old while 17% is between 15 to 19 years old. Thus, around 31% fleet is more or less due for scrapping. However, the shipping companies are reluctant to go for scrapping at present due to very low scrap rates.

Reduced Scrap Rates

Availability of large number of ships for scrapping and overall industrial slowdown (which affects the demand for scrap, which is steel) has led to reduction in scrap rates. As a result, though a lot of Indian shipping tonnage is due for scrapping, shipping companies are reluctant to scrap ships at the current rates.

Changes in India's Trade Handling By Domestic Shipping Companies

Trade handled by domestic shipping companies (as a %)

1994	35.5
1995	36.7
1996	34.9
1997	33.6
1998	28.7
1999	27.8
2000	29.8
2001(estimated)	30.0

As can be seen in the above table, the share of domestic shipping companies in India's sea borne trade is going down. This results in a loss of foreign exchange along with an increase in our freight cost.

POLICY ISSUES

Government Regulation

The shipping industry is highly regulated. Prior permission from the Directorate General of Shipping (DGS) is required for chartering out Indian vessels and for sale and purchase of ships. Earlier, shipping companies were not allowed to tap overseas funds and SCICI (now part of ICICI) was the sole source. Lead-time for acquiring ships used to be 4-5 months because of red tape.

Indian flagged ships need be owned by Indian nationals or companies with less than 40% foreign holding & headed by Indian nationals. These regulations have now been relaxed considerably and ships can be acquired in 2-3 weeks on automatic approval procedure and sale can be done within the economic life of the ship. Also, the age norms for scrapping ships have been relaxed from 20-25 years and 107 ships (dwt of 2.4mn ton) due for replacement, was postponed.

The tax exemption available to shipping companies is restricted to 50% of profits from shipping operations, the balance 50% and all other profits being subject to tax. Unlike aircrafts and transport vehicles, which have the benefit of accelerated depreciation for tax calculations (40%), ships are allowed only 20% depreciation. The government also put forth restrictions on obtaining forex loans, stipulating a minimum 3 year maturity period for loans upto US\$15mn and 7 years for larger loans. The industry was expecting some succor in the form of higher depreciation of 40% (as is allowed to other transport sectors) and easy access to foreign loans, which has not come through in the recent budget.

National Shipping Policy

Shipping industry can earn and save foreign exchange. In the past, the country has not been able to add the shipping tonnage targeted in the five year plans. However, to enable the industry to grow and work in a better environment, a National Shipping Policy was proposed. The National Shipping Policy Committee (Pinto Committee) made a number of recommendations. Recently, the report was accepted by a committee of Secretaries and awaits government approval.

Shipping To Get Export Benefits

Shipping engaged in overseas trade of the country should be treated as 100 % EOU and all the benefits available to such industries should be given to the shipping industry as well. India's freight cost, as a percentage of import value is one of the highest among the developing countries. This happens because 70% of trade is carried by foreign shipping companies. Freight cost in absolute terms is also much higher and exerts pressure on India's foreign exchange reserves. The growth of domestic shipping industry will reduce freight cost and foreign exchange outflow.

Relaxation Of ECB Norms

The government has relaxed the minimum average maturity period for borrowing over US\$15mn for purchase of ships from 7 years to 5 years. However, the industry wants a further relaxation. Already, there has been increase in borrowing costs after the downgrading of India's credit rating. Hence the industry is demanding relaxation of minimum maturity period to 2.5 years for purchase of second hand ships and 4 years for new ships. The shipping policy committee has also recommended that the approvals for ECBs for ship acquisition should be eliminated so that, loans can be raised at competitive rates.

Restoration of Sec. 33 AC of Income Tax Act

Shipping companies were allowed to claim 100% deduction on the amount transferred to a special reserve from their profits (from all divisions) as per section 33AC of Income Tax Act. (The amount transferred to this reserve was supposed to be utilized for acquisition of ships). However this provision was amended, which restricted the deduction to 50% of the amount transferred and that too only for profits from shipping division. This has increased the tax liability of shipping companies, which are already passing through tough times.

The industry also expressed the need for a shipping specific development funding agency on the lines of Shipping Development Fund Committee, which was abolished in 1987 due to large scale defaults.

Procedure For Acquisition of Ships

Under the liberalized EXIM policy, import of second hand ships has already been placed under Open General License, but it still requires approval from Director General of Shipping/ ICICI as regards the viability of the ships proposed to be acquired. Many times this causes delays and involves avoidable expenses.

Age Norm Stipulation for Acquisition of Second Hand Ships

Presently second hand ships with balance economic life of at least five years can be imported. Some sections of the industry feel that this decision should be left to the shipping companies, as to who want to acquire such ships and there should be no restriction. However, it is also feared that dumping of overage foreign ships can be possible if the norms are relaxed further. Hence, at present it is proposed by the industry that the current age norms should continue.

Coastal Shipping to be Given Infrastructure Status

The committee has recommended that coastal shipping should be treated as infrastructure industry and should be given all benefits (fiscal and financial), similar to those given to other infrastructure industries such as ports, road and power. The shipping industry is of the view that coastal shipping should be granted 5-year tax holiday and 30% deduction for 5 years thereafter. The industry also maintains that not only the coastal shipping, but also the entire industry should be granted this status.

Development of Coastal Shipping

For development of coastal shipping it is proposed that a separate enactment be framed. The government has appointed a committee (headed by the Chairman, National Shipping Board) to draft a legislative framework.

Apart from this, the recommendations of Afzulpurkar Committee proposals for development of coastal shipping also need to be implemented. These provisions mainly relate to customs relief for coastal shipping. Though some of the recommended exemptions have been granted, its implementation is not taking place. This is due to the fact that, for these exemptions to be applicable it is required that loading or unloading of goods be made at exclusive coastal berths, a facility which is not available at many ports.

Recent developments

The department of shipping of the Ministry of Surface Transport (MoST) has recommended a modified tax structure for the industry wherein corporation tax is to be replaced by a tax levied on the basis of the net registered tonnage (NRT). The move is supposed to have the support of the Indian National Shipowners Association (INSA) and has been adopted by countries like Denmark, Norway and UK where it has been implemented successfully.

Factors Affecting the Performance of Shipping Companies

Apart from freight rates, other cost items that impact the profitability of the industry are:

Dry-docking

Dry-docking is one of the major expense item which needs proper planning. As per the norms, every ship has to be dry-docked twice every five years. Moreover, the duration between two dry-docks should not exceed three years. Dry-docking actually involves taking a ship out of water and undertaking repairs wherever necessary. A close inspection of the ship indicates the damage occurred and need for repairs. Dry-docking is necessary to keep the ship in good working condition. However, dry-docking involves loss of working days for the ship resulting in loss of revenue apart from dry-dock expenses.

Although dry-docking expenses depend upon the type of ships and extent of damage, under normal conditions dry-docking of a Panamax would cost anything between Rs4-8mn. If the ship is a younger one, it should take 10 to 15 days of dry-docking. Again the number of days will depend upon where the ship is being dry-docked. Normally, in Indian yards, the number of days taken for dry-docking are more due to absence of modern facilities.

Bunker Expenses

Another important cost for a shipping company is that of bunker or fuel which runs the ship. The current situation is quite favorable in this regard, as the fuel prices are quite low. However, when fuel prices are high they can significantly affect the margins of shipping companies.

On an average, a Panamax consumes 25-30 ton of bunker per day. Bunker cost can be reduced by reducing the speed of the ship, thus reducing the consumption. However, this increases the travel time for the ship and hence other costs. Hence a balance has to be struck between the bunker cost and other costs. Another way of reducing the bunker cost is to maintain the engines in excellent condition by way of continuous overhauling. The latter also involves cost, hence striking the balance is necessary.

Crew Expenses

If a ship is compared with a factory then crew will be the factory workers and their salary would be a major expense. In India, the government and the crew unions have certain norms regarding the number of crew on a vessel. Foreign shipping companies follow international norms. The requirement of crew as per Indian norms is higher compared to international norms ie Indian shipping companies have to employ more people on ships. The salaries paid by the foreign shipping companies are in foreign currencies and they enjoy tax benefits. Hence, the Indian shipping companies face the problem of employee retention, as employees tend to move to foreign shipping companies. The number of certified Indian officers are far more than those required for manning Indian ships, despite this, the Indian industry faces manpower shortage. Eg SCI in 1997-98, experienced a shortage of 23% for navigating officers and 13% for marine engineering officers. The industry is trying hard to offer tax incentives to the Indian seafarers.

Profit or Loss on Sale of Ships

For acquisition of new ships or improving their cash flows or for getting rid of age old ships, shipping companies sell ships to realize profits or losses. Normally ships are sold depending upon the company's expectations about future freight rates and ship prices. Profits from sale of ships accounts for a high proportion of profits to shipping companies.

Company	GES		ESL		VSL		SCI	
	Rsmn	%	Rsmn	%	Rsmn	%	Rsmn	%
Dry-docking	N.A	-	221	10.1	na	-	-	-
Bunker charges	369	5.8	na	-	51	3.3	2431	10.1
Crew expenses	374	5.8	na	-	224	14.4	2778	11.5
P/L on sale of ships	340	5.3	221*	10.1	198*	12.7	192	0.8

(%) is percentage to shipping income

* Including profit on sale of other assets

The figures for all the expenses are not available because the annual reports do not give proper classification of expenses. eg dry-docking expenses may be clubbed with repairs and maintenance and not shown separately.

Development of Ports

India's infrastructure bottlenecks include inadequate port facilities. Shipping companies are the major victims of this bottleneck. Delayed clearing at the ports leads to increase in costs for them, affecting bottom-line of the company. The problems associated with Indian ports are lack of adequate capacity compared to the traffic growth (against a traffic of 251mn ton in 1997-98, the capacity stood at 215mn ton), poor labor productivity leading to poor turnaround of ships, lack of modernization and lack of adequate drafts to receive ships of larger size.

The capacity requirement of ports at the end of the Ninth Plan is estimated to be 424mn ton. This indicates a huge gap to be bridged. A part of that gap is expected to be met by increasing productivity. Hence, to improve productivity the upgradation of existing cargo handling equipment is necessary. Ports can be turned into specific commodity handling centers.

To make such ports operationally efficient, corporatization of major ports is expected to be undertaken. The new Ennore port, JNPT and Haldia ports are expected to be run on this basis. Similarly it is considered important to form joint venture with foreign ports or between Indian ports.

Apart from improving productivity, mechanization, training of port personnel, the multiplicity of agencies at

ports has to be eliminated for unified cargo handling labor. The beginning has already been made at Mumbai and some other ports by merging Dock Labor Boards with Port Trusts. Development of minor ports is also considered essential. The Central government will provide technical assistance to the state governments for development of minor ports.

Finally, attempts are being made to attract private investment for development of ports. The government has issued detailed guidelines to ensure transparency and uniformity in private sector participation.

OUTLOOK

Dry Bulk Carriers

As mentioned earlier, the barometer for freight rates for the dry bulk segment is the BFI. The dry cargo freight market was in the doldrums for most of the last two years. In the Panamax segment, earnings fell to below operating costs while it remained marginally above for the Handysize segment. The table below indicates the freight rates for the past few years.

Year	Capesize	Panamax	Handysize
1997	13.2	10.6	8.4
1998	16.3	13.8	9.4
1999	9.4	9.2	7.3
2000	11.3	9.6	6.9
2001	7.3	6.5	5.9

Rates in '000 US\$ per day

The BFI has recovered to be around the 1350-1400 levels. This has happened with an improvement in the trade of commodities. Improvement in grain fixtures helped push the BFI up apart from the fact that Asian economies are now on the recovery path. But to put things in perspective, it must be said that freight rates are at the same levels as they were four years ago.

ESSAR SHIPPING LTD

Background

Global shipping industry, is one of the most cyclical industries. Companies have to operate in a very dynamic environment, which is influenced by global political and economic factors. Capital costs involved are very high. The industry is also subject to stringent regulations. Panama has the highest fleet capacity. Japan, which is the leading ship builder, owns the maximum number of vessels and the youngest fleet. Significant tonnage additions and the slowdown in South East Asian economies have adversely affected international trade and also freight rates.

The domestic shipping industry has mainly conducted itself on overseas trade and has grown in a fairly insulated environment, thanks to the government sponsored quota system (for tankers) and cost-plus freight rates. The average age of Indian fleet at 14.2 years is lower than the world average of 17 years. And though tonnage has been going up, the share of Indian ships in world trade has been progressively reducing. Fiscal incentives provided earlier have now been restricted and government support is also expected to be gradually withdrawn. Coastal shipping which is expected to pick up will have a marginal impact.

ESL is one of the companies under the Essar group, which does not have a good reputation in terms of their business acumen. ESL has established itself as a leading player in the private sector. However, the company's policy of taking debt for funding projects has affected its bottomlines. This has had a negative effect on the stock's valuations.

ESL, with its large fleet of tankers, is well placed to take advantage as the oil sector is thrown open for the private sector players. ESL with a fleet of six Suezmax tankers is one of the largest owners and operators of crude tankers in the world. Secondly, an upturn in the bulk market is also a positive development and is expected to continue till the first few months of 2000. The Baltic Freight Index, an indicator for dry-cargo freight rates, has also improved to around the 1300 mark indicating better freight rates. However, there is concern as far as the diversification plans for ESL goes and the cloud over the group operations.

Essar Shipping Ltd (ESL) was formed with the amalgamation of Essar Bulk Carriers, a company formed in 1969, with Karnataka Shipping Co. Ltd in 1983. The promoters – the Ruias – acquired management control in South India Shipping Corporation in FY91. ESL has one of the largest fleets in the country with a dead weight tonnage of 1.42mn. The company has close to 90% of its fleet catering to the petroleum trade. It has a modern fleet of six double hull Suezmax tankers with it.

Current Business and Future Outlook

ESL has around 90% of its fleet catering to the petroleum trade. The company has one of the largest fleets in the country with a dead weight tonnage of 1.42mn. The company's current fleet is diversified and has an average age of around 9 years as against the industry average of 15.

ESL is setting up an all weather, natural deep draft port at Vadinar in Jamnagar. The facilities in the project would include crude receiving Single Buoy Mooring (SBM) terminal, petroleum, oil and lubricants (POL) handling terminal and associated storage tanks, pipelines and railroad facilities.

The dry bulk freight market is dependent on the growth in GDP and industrial production of developed and developing countries. For the past two years, the industry has seen stagnant fleet growth. More often than not these have been through replacements. Also due to difficulty in raising equity, expansion plans has been affected. However, one positive development for companies like ESL is the opening up of the oil-refining sector to private players. This would increase demand for the tanker segment. There is also a possibility of substantial capacity additions in LPG and LNG carriers. ESL is already building a port terminal project for group company Essar Oil and has also bidded for another port project. However, this may entail higher debt or hike in equity stake for ESL.

Profit & loss account (Rs mn)

Period ended	03/99	03/00	03/01	03/02
No. of months	6	12	12	12
Gross Sales	2,185.5	4,287.7	4,088.9	4,438.0
Net sales	2,185.5	4,287.7	4,088.9	4,438.0
Other income	340.9	112.2	608.4	384.1
Total income	2,526.4	4,399.9	4,697.3	4,822.1
Employee cost	23.6	49.1	478.3	604.8
Advertising/ promotion/ public	39.3	74.9	80.6	104.6
Other expenses	1,121.3	2,336.6	2,143.1	1,635.9
Cost of sales	1,184.2	2,460.6	2,701.9	2,345.3
PBIDT	1,342.3	1,939.3	1,995.4	2,476.8
Interest & finance charges	503.0	753.1	760.8	690.6
PBDT	839.3	1,186.2	1,234.6	1,786.2
Depreciation	334.8	656.9	695.3	693.9
PBT	504.5	529.3	539.3	1,092.3
Provision for taxation	53.0	49.0	54.9	89.7
Adjusted PAT	451.5	480.3	484.4	1,002.7
Dividend payout	109.0	-	-	-
Forex inflow	2,763.0	5,795.6	9,570.2	5,135.9
Forex outflow	1,167.1	3,716.8	4,827.8	3,310.2
Book value of quoted investments	3,705.3	3,705.3	3,701.8	3,701.8
Market value of quoted investments	1,093.2	690.3	788.4	397.2
Investment in affiliate/ subsidiary	-	-	-	4,575.6
Contingent liabilities	37.4	41.5	52.7	59.8

Period ended	03/99	03/00	03/01	03/02
RATIOS				
As % of net sales				
Gross sales	100.0	100.0	100.0	100.0
Net sales	100.0	100.0	100.0	100.0
Other income	15.6	2.6	14.9	8.7
Total income	115.6	102.6	114.9	108.7
Employee costs	1.1	1.1	11.7	13.6
Selling expense	1.8	1.7	2.0	2.4
Other expenses	51.3	54.5	52.4	36.9
Cost of sales	54.2	57.4	66.1	52.8
Profitability ratios (%)				
PBIDT excl. other income	45.8	42.6	33.9	47.2
PBIDT	61.4	45.2	48.8	55.8
PBDT	38.4	27.7	30.2	40.2
Profit before tax	23.1	12.3	13.2	24.6
Profit after tax	20.7	11.2	11.8	22.6
Growth ratios (% yoy)				
Net sales	(69.1)	96.2	(4.6)	8.5
PBIDT	(62.0)	44.5	2.9	24.1
PBT	(54.1)	4.9	1.9	102.5
PAT	(53.6)	6.4	0.8	107.0
Payout ratios (%)				
Tax (% of PBT)	10.5	9.2	10.2	8.2
Dividend (% of PAT)	24.1	-	-	-

Cash flow statement

(Rs mn)

Period ended	03/99	03/00	03/01	03/02
No. of months	6	12	12	12
Pre tax income from operation	163.5	417.1	(69.0)	708.3
Depreciation	334.8	656.9	695.3	693.9
Expenses (deferred)/written off	10.5	20.9	3.5	2.6
Other income/prior period adj	340.9	112.2	608.4	384.1
Tax	(53.0)	(49.0)	(54.9)	(89.7)
Cash profits	796.8	1,158.2	1,183.2	1,699.1
(Inc)/Dec in trade working capital				
-Inventories	5.1	(8.9)	(22.2)	(26.4)
-Sundry debtors	175.9	(594.1)	(145.9)	280.8
-Sundry creditors	(279.2)	164.8	260.7	(74.3)
-Others	2.3	(136.6)	32.6	(178.7)
Net adjustment	(95.9)	(574.9)	125.2	1.4
Operating activities	700.8	583.3	1,308.4	1,700.5
(Inc)/Dec in fixed assets	(2,963.2)	(7,283.7)	(3,973.8)	11,272.5
(Inc)/Dec in investments	6.1	0.0	3.5	(4,718.6)
(Inc)/Dec in loans & advances	1,774.9	386.4	(101.4)	119.4
Investing activities	(1,182.2)	(6,897.3)	(4,071.7)	6,673.2
Inc/(Dec) in debt	590.8	6,294.3	3,034.4	(8,497.6)
Inc/(Dec) in equity/premium	0.0	0.1	0.2	(100.0)
Direct add/(red) to reserves spl item	(7.0)	0.0	0.0	0.0
Dividends	(109.0)	-	-	-
Financing activities	474.8	6,294.4	3,034.6	(8,597.5)
Cash generated/(utilised)	(6.5)	(19.6)	271.3	(223.8)
Cash at start of the year	81.9	75.4	55.8	327.1
Cash at end of the year	75.4	55.8	327.1	103.3

Balance sheet

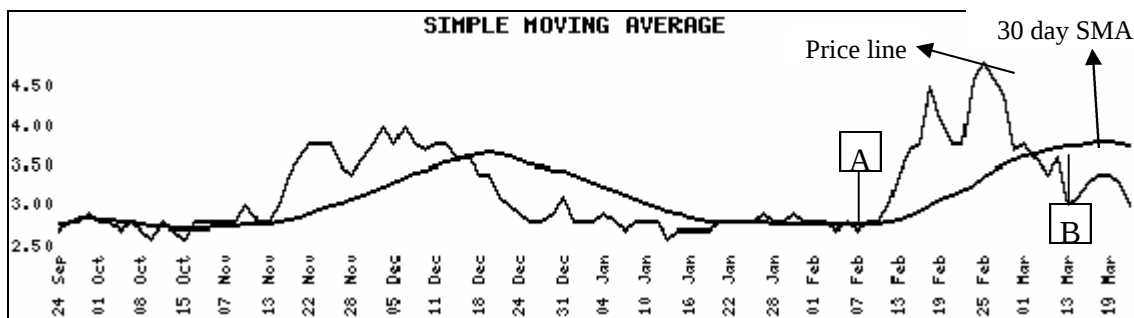
(Rs mn)

Period ended	03/99	03/00	03/01	03/02
No. of months	6	12	12	12
SOURCES OF FUNDS				
Equity capital	1,967.3	1,967.3	1,967.4	1,967.4
Preference capital	100.0	100.0	100.0	-
Share premium account	2,158.9	2,159.0	2,159.1	2,159.1
Revaluation reserve	287.5	224.1	160.6	126.0
Profit & Loss/ General reserve	3,201.0	3,875.2	1,993.9	1,705.6
Other reserves	2,224.3	2,030.5	4,396.2	5,687.2
<i>Reserves and surplus</i>	<i>7,871.8</i>	<i>8,288.8</i>	<i>8,709.8</i>	<i>9,677.9</i>
<i>Net worth</i>	<i>9,939.0</i>	<i>10,356.1</i>	<i>10,777.1</i>	<i>11,645.3</i>
Secured loans	5,512.9	9,491.8	14,730.5	6,478.2
Unsecured loans	1,166.7	3,482.0	1,277.8	1,032.5
<i>Total debt</i>	<i>6,679.6</i>	<i>12,973.9</i>	<i>16,008.3</i>	<i>7,510.7</i>
Capital employed	16,618.6	23,330.0	26,785.4	19,156.0
APPLICATION OF FUNDS				
Gross block	11,660.1	9,850.4	12,228.6	14,569.4
Accumulated depreciation	(3,898.7)	(4,093.5)	(4,584.6)	(5,025.7)
Capital work in progress	4,572.8	13,140.7	14,468.6	568.0
<i>Total fixed assets</i>	<i>12,334.2</i>	<i>18,897.6</i>	<i>22,112.6</i>	<i>10,111.7</i>
<i>Investments</i>	<i>3,709.4</i>	<i>3,709.4</i>	<i>3,705.9</i>	<i>8,424.5</i>
Inventories	24.8	33.8	56.0	82.3
Sundry debtors	455.3	1,049.4	1,195.3	914.5
Cash & bank balance	75.4	55.8	327.1	103.3
Total loans & advances	917.6	531.2	632.6	513.2
Sundry creditors/ Acceptances	(393.0)	(557.8)	(818.5)	(744.2)
Other liabilities	(408.4)	(384.7)	(414.6)	(231.7)
Provisions	(123.7)	(10.9)	(13.5)	(17.7)
<i>Net current assets</i>	<i>548.0</i>	<i>716.9</i>	<i>964.4</i>	<i>619.8</i>
Miscellaneous expenses	26.9	6.0	2.6	-
Capital deployed	16,618.6	23,330.0	26,785.4	19,156.0

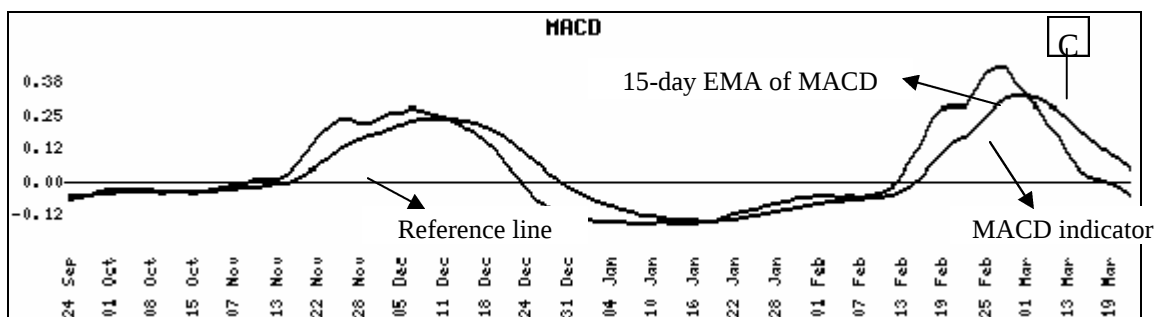
Period ended	03/99	03/00	03/01	03/02
RATIOS				
Turnover ratios (x)				
Net sales to total assets	0.1	0.2	0.2	0.2
Net sales to fixed assets	0.2	0.2	0.2	0.4
Net sales to working capital	4.0	6.0	4.2	7.2
Net sales to inventory	88.1	127.0	73.1	53.9
Gross sales to debtors	4.8	4.1	3.4	4.9
Liquidity ratios (x)				
Current ratio	1.6	1.8	1.8	1.6
Debt-equity ratio	0.7	1.3	1.5	0.6
Interest coverage	2.7	2.6	2.6	3.6
Return on (%)				
Networth (post tax)	4.5	4.6	4.5	8.6
Capital employed (pre tax)	6.1	5.5	4.9	9.3
Per share (Rs)				
Net earnings (EPS)	2.3	2.4	2.5	5.1
Cash earnings (CPS)	4.0	5.8	6.0	8.6
Dividend payout	0.6	-	-	-
Book value (NAV)	50.5	52.6	54.8	59.2
Asset composition (%)				
Net fixed assets	74.3	81.0	82.6	52.8
Working capital	3.3	3.1	3.6	3.2

ANNEXURE I TECHNICAL ANALYSIS CHARTS OF ESSAR SHIPPING

a. Simple Moving Average



b. Moving Average Convergence-Divergence



c. Daily Prices



ANNEXURE II
Essar Shipping : Share Prices

3-Sep-02	6.50
4-Sep-02	6.60
5-Sep-02	6.55
6-Sep-02	6.45
7-Sep-02	6.30
10-Sep-02	6.35
11-Sep-02	6.30
12-Sep-02	6.20
13-Sep-02	6.00
14-Sep-02	5.80
17-Sep-02	5.50
18-Sep-02	5.00
19-Sep-02	5.40
20-Sep-02	5.35
21-Sep-02	5.10
24-Sep-02	5.05
25-Sep-02	5.20
26-Sep-02	5.25
27-Sep-02	5.20
28-Sep-02	5.35
1-Oct-02	5.20
3-Oct-02	5.50
4-Oct-02	5.40
5-Oct-02	5.25
8-Oct-02	5.20
9-Oct-02	5.10
10-Oct-02	5.25
11-Oct-02	5.40
12-Oct-02	5.30
15-Oct-02	5.60

END OF PART D

Part E : Caselets (50 Points)

- This part consists of questions with serial number 7 - 14.
- Answer **all** questions.
- Points are indicated against each question.
- Do not spend more than 80 - 90 minutes on Part E.

Caselet 1

Read the following caselet carefully and answer the following questions:

7. What do you understand about socially responsible investing (SRI)? Explain.
(5 points)
8. According to the caselet, “The SRI activists have to draw a line somewhere between a stellar financial performance and the striving of a company to address issues that are important to them”. Is such a compromise required always and for all screening methods? Explain.
(7 points)
9. Is it feasible to apply the three screening techniques mentioned in the caselet in the current Indian scenario? Explain.
(5 points)

The practitioners of SRI are basically concerned about building portfolios with stocks that are selected after being subjected to certain guidelines called “screens” that ensure their commitment to ethical values. This is being accomplished through:

- **Negative screening** – it is the most common approach wherein investors develop guidelines aimed to weed out companies involved in activities such as air pollution, alcohol, defense and weapon contractors, gambling, nuclear power, tobacco products etc., that they find objectionable. This is what most of the investors mean when they express they are interested in “ethical” investing.
- **Activist screening** – it is also called as advocacy investing. It is the opposite of avoidance investing. Investors in this category desire to invest in companies with the intention of changing objectionable corporate behavior by exercising one’s ownership privileges through shareholder resolutions. Undoubtedly, this strategy demands constant persuasion by the investors even after the investment is made to ensure that the desired changes have indeed been implemented.
- **Positive screening** – “Reward the good guys”— this is what the strategy of positive screening aims at. This is a proactive strategy where investment opportunities are scouted in organizations which are working to achieve societal goals, that are considered important by the investors. Companies that take-up community housing projects, manufacture pollution-control products, search for alternatives energy sources, or have “fair and unbiased” employment/promotion practices are examples of areas aimed at by proactive investing.

SRI and its embedded conflicts

Socially responsible investment is embedded with conflicts for, as to what constitutes social responsibility lies in the eye of the beholder. A Catholic may not want to support a company involved in abortion or birth control while a Muslim may not want to invest in a bank due to his religious principles that proscribe the charging of interest and someone else may chose not to invest in industries such as tobacco, alcohol, defense etc. It is these individual considerations that are generating conflicting interests among the SRI mutual funds of the US while selecting stocks in identifying companies as socially valuable or otherwise.

Secondly, SRI practices are bound to restrict the scope to diversify one’s risk. Even for that matter gilt securities may not find a place in such a portfolio for there would be much for orthodox people to be concerned about the way their governments spend money on activities such as supporting artists engaged in blasphemous exhibits, abortion programs, undermining traditional family values through humanistic educations, etc. The next question is, “can the SRI activists leave their money in the bank having found no other acceptable investment avenue?” To stretch the argument further, “what if, the bank has made loans to businesses engaged in practices abhorrent to SRI beliefs?” It really takes some sleuthing to find companies that support SRI concerns for no one company or industry is going to be 100 percent squeaky clean. So what is needed here is “moderation”—a reasonable balance between the two extremities. The SRI activists have to draw a line somewhere between a stellar

financial performance and the striving of a company to address issues that are important to them. In resolving these conflicts, they may find a solace in the hymn, “be completely humble and gentle; be patient, baring with one another in love, make every effort to keep the unity of the spirit through the bond of peace”.

Caselet 2

Read the following caselet carefully and answer the following questions:

10. The caselet refers to conflicts of interest faced by analysts and the need for reform to stop the conflicts. What are the conflicts of interest and what is the reform required to stop it?

(7 points)

11. What are the common methods in which companies window-dress their accounts?

(6 points)

12. Standard and Poor’s formulated a concept called core earnings, which overcomes the defects in the way companies report earnings. What are core earnings? Explain.

(6 points)

The news relating to corporate scandals, inflated revenues, phony earnings and other accounting gimmicks and conflicts of interests of investment banks that came into light after the fiascos of Enron, K-mart, Worldcom, Adelphia and Edison Schools had crushed the investors’ confidence in stock markets. These revelations point out that the entire system is a failure where every check imposed on corporates has failed and now investors feel that stock market is a casino where they play a loser’s game.

In the past, each bubble or market crash were followed by laws and regulations that tried to abstain the players from committing similar crimes in a similar situation. Major ones include the South Sea bubble of 1720 after which there were stringent rules on the formation of new companies and in fact, formation of new corporations was banned for 100 years. The crash of 1929 led to revolutionary changes including the creation of SEC and Glass-Steagall Act. Now the biggest question is whether the present crisis is similar or a more serious one than the previous ones. The present crisis needs to be addressed and necessitates real reforms to restore investor confidence. But the sluggishness showed in introducing reforms in some of the recent cases is disheartening. For instance, in the case against Merrill Lynch the New York attorney general has charged the investment banking major with \$100 mn but refrained from taking any bold measures to address the issue of conflicts of interests faced by the analysts.

The measures that can restore investor confidence are at first, major accounting reforms that would abstain companies to manipulate numbers in their financial statements and accounts. Over funded pensions, restructuring charges and the pro-forma earnings also need great deal of attention. Addressing these aspects means more accountability of auditors, and instilling a system of adhering to the spirit of law and not merely the letters. Another area that calls for reforms is the conflicts of interests faced by analysts.

The rising number of many such cases raise the question on the role of SEC as the regulating agency. The SEC has launched serious probe in several cases. However, the SEC itself suffers from many lacunae, the prominent one being lack of suitable personnel and at the same time high employee turnover and a poor salary structure.

Any number of rules will not change the world and make it flawless. The world will not change until the directors take a decision to reform themselves. They should go beyond the rules. They should never forget that their position in the company makes them responsible for everything related to the company, whether it could be success, failure or any scam that might effect both their position and the company’s future.

Caselet 3

Read the following caselet carefully and answer the following questions:

13. How do inverse floaters help in hedging the exposure for an investor having a long position in floating rate bonds?

(8 points)

14. When should an investor invest in inverse floaters? What is the risk involved in investing in inverse floaters?

(3 + 3 = 6 points)

Indian stock markets have seen the entry of quite a few innovative financial instruments since liberalization in the early 1990s. As the markets mature and investors grow sophisticated there is no dearth of complicated, high risk, high return variations to flood the markets. In a phased manner we have seen the entry of derivatives, options, futures and other hybrid instruments. The latest example of financial engineering to make a firm entry in the Indian scene is "Inverse floaters".

During August 2002, there have been three major bond issues, that have been structured along the inverse floating bonds. Two companies of the Aditya Birla Group, Grasim and Hindalco have recently tapped the markets using these instruments. Grasim Industries, India's third largest cement manufacturer is raising Rs. 50 cr through the issue of inverse floating rate bonds maturing in five years. Grasim followed this issue with yet another issue of similar size and structure. Hindalco soon followed Grasim's issue with another mop up of Rs. 50 cr using the same structure.

In the financial services sector too inverse floaters have found sudden favor. Cholamandalam Investment and Finance Company Ltd (CIFCL) became the first NBFC (non-banking finance company) to raise funds through the use of inverse floaters and use it for hedging the floating rate exposure. CIFCL is raising an aggregate of Rs. 122 cr from the markets through privately placed debentures carrying three different interest structures, fixed, floater and inverse floater. While Rs.62 cr of the funds are mopped up through the fixed interest rate structure, the remaining amount is placed through two different floating rate interest payment structures.

Understanding inverse floaters

Inverse floaters as the name suggests are instruments that carry a floating rate of interest that is inversely related to the short-term interest rates. That is, lower the market rates, higher the return for the investor. The actual rate payable is arrived at by subtracting the floating rate from a fixed benchmark. The floating rate could be the Mibor (Mumbai inter-bank offer rate) or some other rate. Thus, if Mibor falls the return for the investor rises and vice versa. Let us say the fixed benchmark is 14%. Considering that the six-month Mibor is at 5.75%, the return earned by the investor who puts his money in the inverse floater with this structure would work out to be 8.25% (14 – 5.75). The returns are also affected by the sensitivity of the underlying benchmark to interest rates.

END OF PART E

END OF QUESTION PAPER

Suggested Answers

Security Analysis – II (212): January 2003

Part D : Case Study

1. Threat of Entry:

- The industry is highly regulated and needs approvals for acquisition of ships. Hence, regulatory barriers to entry are high.
- The industry is cyclical and is currently in a downtrend due to global economic slowdown. This may not encourage many players to enter.
- The industry is highly capital intensive, which also acts as a barrier to entry.

Bargaining power of Buyers:

- These who transport in bulk, like the oil companies may have significant bargaining power when the industry is in a downtrend.

Bargaining power of Suppliers:

- Of all the suppliers, government institutions that provide infrastructural facilities like parts are the most powerful.
- As the industry is in downtrend, ship builders may not have much bargaining power.

Threat of substitutes:

As of now, there are no known substitutes to bulk transportation over the seas – transportation by land is often not possible due to geographical factors and air transport is comparatively very expensive.

Competitive Rivalry:

- Competitive rivalry is likely to be intense due to the current downtrend and under – usage of the available capacity.
- Existing from this industry can also be difficult, due to large size of the investment and problems involved in the sale of investments.

2. a. The profitability of the company has been increasing steadily. The profit after tax as well as sales have increased steadily in the past four years. Cost of sales is however, showing a fluctuating trend, through offer expenses are under control.
- b. Return on networth, return on capital employed, EPS and CPS have all shown positive trends in the recent past, through they are not yet at high levels.
- c. The current ratio of the company is not very comfortable, but not very disturbing too. Debt-equity ratio and interest coverage ratio are at comfortable levels.
- d. The turnover ratios have been steadily improving, both relating to fixed assets as well as working capital. The inventory turnover ratio, however, is declining.
- e. Though operating activities, as can be expected, have been generating a substantial portion of the cash flows, in the last year, investment activities too contributed to cash, possibly due to asset sales.
- f. In the last year, a substantial portion of the debt too appears to have been repaid. This is reflected in the sharp drop in the debt-equity ratio and improvement in the invest coverage ratio during the last year.
3. A. The simple moving average has already flattened out. Hence, a crossover by the price line points towards a change of direction, that is, from bearish to bullish. The indication is to buy.
- B. The price line falls below a rising moving average. Hence it is only a secondary reaction and is not a bearish signal. Hence, the signal is to buy.
- C. The MACD indicator moved above the reference line as well as the EMA. Hence, it is a buy signal.
- D. The price line, immediately before this point, reaches a peak, then reacts immediately. It rises again, but fails to rise above the previous high and falls below the trough between the two peaks. This is a double top and is a bearish indication.
- E. The price line sees a trough, rises above and then falls again, but does not reach the previous through. This is a double bottom and is a bullish indication.

4. Essar Shipping

3-Sep-02	6.50	
4-Sep-02	6.60	+
5-Sep-02	6.55	–
6-Sep-02	6.45	–
7-Sep-02	6.30	–
10-Sep-02	6.35	+
11-Sep-02	6.30	–
12-Sep-02	6.20	–
13-Sep-02	6.00	–
14-Sep-02	5.80	–
17-Sep-02	5.50	–
18-Sep-02	5.00	–
19-Sep-02	5.40	+
20-Sep-02	5.35	–
21-Sep-02	5.10	–
24-Sep-02	5.05	–
25-Sep-02	5.20	+
26-Sep-02	5.25	+
27-Sep-02	5.20	–
28-Sep-02	5.35	+
1-Oct-02	5.20	–
3-Oct-02	5.50	+
4-Oct-02	5.40	–
5-Oct-02	5.25	–
8-Oct-02	5.20	–
9-Oct-02	5.10	–
10-Oct-02	5.25	+
11-Oct-02	5.40	+
12-Oct-02	5.30	–
15-Oct-02	5.60	+

Positive price changes = $n_1 = 10$

Negative price changes = $n_2 = 19$

Total price changes = $r = 15$

$$\text{Mean} = \mu_r = \frac{2n_1n_2}{n_1 + n_2} + 1 = \frac{2 \times 10 \times 19}{10 + 19} + 1 = 14.10$$

$$\begin{aligned} \text{Standard error} = \sigma_r &= \sqrt{\frac{2n_1n_2(2n_1n_2 - n_1 - n_2)}{(n_1 + n_2)^2(n_1 + n_2 - 1)}} = \sqrt{\frac{2 \times 10 \times 19(2 \times 10 \times 19 - 19 - 10)}{(19 + 10)^2(19 + 10 - 1)}} = \sqrt{\frac{380 \times 351}{29 \times 29 \times 28}} \\ &= 2.38 \end{aligned}$$

Hence t table is used with $(29 - 1) = 28$ degrees of freedom

At 2% significance

$$Z = 2.467$$

$$\text{Lower limit} = 14.10 - 2.467 \times 2.38 = 8.23$$

$$\text{Upper limit} = 14.10 + 2.467 \times 2.38 = 19.97$$

Prices are independent at 2% level of significance, because r fall within the upper and lower limit.

At 5% significance

$$Z = 2.048$$

$$\text{Lower limit} = 14.10 - 2.048 \times 2.38 = 9.226$$

$$\text{Upper limit} = 14.10 + 2.048 \times 2.38 = 18.974$$

Since the number of runs falls within the upper and lower limit, we conclude that prices are independent at 5% level of significance.

At 10% significance

$$Z = 1.701$$

$$\text{Lower limit} = 14.10 - 1.701 \times 2.38 = 10.05$$

$$\text{Upper limit} = 14.10 + 1.701 \times 2.38 = 18.15$$

Prices of still independent, as 15 is in between 10.05 and 18.15.

5. Stock price on October 15, 2002 = Rs.5.60

Current EPS = Rs.5.10

$$\text{DPS} = 5.10 \times 0.25 = \text{Rs.1.28}$$

According to Dividend Discount Model

$$5.60 = \frac{1.28 \times 1.10}{(1+k)} + \frac{1.28 \times 1.10^2}{(1+k)^2} + \frac{1.28 \times 1.10^3}{(1+k)^3} + \frac{1.28 \times 1.10^3 \times 1.15}{(1+k)^4} \\ + \frac{1.28 \times 1.10^3 \times 1.15^2}{(1+k)^5} + \frac{1.28 \times 1.10^3 \times 1.15^2 \times 1.06}{(1+k)^5(k-0.06)}$$

By trial and error, $k = 37.75\%$.

6. The leading indicators for the shipping industry are as follows:

- a. Utilization of manufacturing capacity
- b. Corporate profits
- c. General level of stock prices
- d. Money supply
- e. Interest rates

Ships are used to carry oil, heavy raw materials and plant and machinery. Utilization of manufacturing capacity will determine the requirement of raw material and plant and machinery. Level of corporate profits may indicate increase in demand of goods. The performance of the shipping industry is dependent largely on prevailing economic conditions. Therefore, shipping industry will perform well, when the economy is either recovering or performing nicely. State of economy is indicated by the level of stock prices, money supply and interest rates.

Part E: Caselets

Caselet 1

7. Socially responsible investing involves avoiding companies involved in industries that are not considered socially desirable, like manufacture of cigarettes, alcohol, etc. Depending on the religious or moral values of the investors, industries like manufacture of weapons and warplanes may also be avoided. On the flip side, investments may be made in companies in lines of activities that are considered to further the cause of the society, like production of fertilizers, housing, etc. The objective is to channel the funds into lines of activities that do the greatest good to the society rather than those that provide the maximum returns. However, what is desirable or not desirable depends on individual perceptions, and is hence subjective. For example, production of weapons may be undesirable in the view of one investor, while it may be essential in the view of another, in the interest of national defense.
8. A compromise between a stellar financial performance and fulfillment of social objectives becomes necessary only if industries that meet the social objectives are not as profitable as the others. That is, if the investor applies negative screening methods, he will have to forgo some investment opportunities, provided comparable investments are not available in other lines of activity or industry. The availability of such opportunities can be judged using positive screening techniques. In activist screening, investors try to force socially disciplined behavior. If that can be achieved without hurting the business interests too much, it may be possible to build companies that are both socially responsible and financially rewarding.
9. It is possible to apply all the three, in a theoretical sense. Investors may desist from investing in stocks relating to, let us say cigarette industry (negative screening) and also choose fertilizer industry stocks or housing industry stocks (positive screening), if they want. However, there may be some practical problems in applying activist screening, as investors are not yet very active. Garnering the support of other like-minded investors and forcing the required decisions at general meetings is not an easy task. This is particularly difficult due to the investors being geographically dispersed over a large area and their unwillingness to travel to attend general meetings, and also not being very responsive to social causes.

Caselet 2

10. Analysts give recommendations on whether a stock is a 'buy', 'hold' or 'sell', based on, ostensibly, their analysis of the company's present condition and future prospects. In practice, however, they are subject to many pressures and manipulations. Analysts, who work for investment bankers are often pressurized into preparing favorable reports on companies from which the investment bank expects other types of business, to establish favorable relations with the companies. Thus, the analysts face a conflict between what their organization wants from them and what they owe to the investors at large. The reforms are: Analysts should not invest in the stocks recommended by him. They should be unbiased and give a true report to investors.
11. Some of the common methods of window-dressing are:
 - Booking revenue expenses as capital expenses and vice-versa
 - Booking revenue before it accrues - pushing stock on to distributors and reporting it as sales ("channel stuffing")
 - Reporting income from sale of assets as revenue
 - Changing accounting policies relating to valuation of inventories
 - Changing accounting policies relating to charging of depreciation
 - Amortizing R&D expenses too quickly or too slowly
12. Core earnings denote the profits earned from the firm's core earnings. They are determined by reducing from the reported earnings items that do not arise from the normal business of the firm and reducing from earnings items which should normally have been reduced. The items that are deducted from earnings, which firms normally do not are – stock options issues, which are now being recognized more and more as

expenses, expenses relating to restructuring, and portfolio gains. Writing down of the values of assets, if found more than warranted, is added back. Core earnings of firms, determined in this manner, have been found to be significantly different from the earnings reported by them.

Caselet 3

13. Normal floating rate bonds carry interest that moves in the same direction as the movement in the benchmark rate. Inverse floaters, in contrast, carry interest (or coupon) that moves in the opposite direction to the movement of the benchmark interest rate. So, if an investor holds both the types of instruments, the bonds with inverse movements will save him from losses that may arise due to normal floating rate bonds, and vice-versa. However, if the investment is hedged in this manner, it may not be possible to get any returns from the investment, as the gains (losses) from one may be wiped off by the losses (gains) from the other.
14. Investments in inverse floaters should be made when the interest rates are expected to fall. This is because, when interest rates fall, the coupons on the inverse floaters increase. But, the risk involved is that if interest rates move in the direction opposite to the direction expected, the investor may lose. This, however, is a risk associated with any investment floating rate bonds – even with normal floating rate bonds, if interest rates fall, instead of rising, the investor loses.