BULK CARRIER ACQUISITION PROJECT - MARKET RESEARCH

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FAR EASTERN SILO CORPORATION

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SECTION 1

EXECUTIVE SUMMARY

The primary focus of the research and analysis presented in the main body of this Report is a consideration - in the context of the prospective acquisition of Handymax, Panamax and Cape class bulk carriers - of the strategic implications of optimal vessel category selection, purchase timing, newbuilding-versus-secondhand choices and the implied profit and rate of return implications.

In undertaking this exercise, a great many assessments and assumptions are involved. The Consultants have endeavoured to make these factors as clear as possible.

Nevertheless, it has to be accepted that all of the assumptions put forward contain varying margins for error. Clearly, the Far Eastern Silo Corporation must make its own allowances for these both in terms of the degree to which it accepts the Consultants' "best estimates" on trade, tonne-miles, market shares, fleet evolution, etc and its own ability and expertise - should it decide to acquire vessel tonnage - to work all of the vessel types considered both commercially and to satisfactory safety standards.

As was agreed within the terms of reference for this exercise, the Consultants have endeavoured to provide guidance and opinions on various options but the views expressed cannot be taken as anything more than this. As agreed also, no liability whatsoever can be attached to Drewry Shipping Consultants, Drewry International Ltd or its directors and staff as a result of any decisions taken by the Far Eastern Silo Corporation or any related company/individual.

1.1 Main Conclusions

The conclusions summarised below take into account the concept that Far Eastern Silo Corporation is approaching this project from the view of a ship owner contemplating a continuing trading presence - i.e. the assessment has not been viewed from the standpoint of a speculative asset-play operation or as an operation interested only in ageing, probably low quality, "bargain basement" ships.

Treating the exercise as an investment strategy for global vessel operation with no supporting captive cargo arrangements, the Consultants feel that there the most coherent argument can be put forward for the Panamax carrier. This argument includes:

- This type of bulk carrier is set to be the market's flexible workhorse of the 1990s (whereas the Handymax vessel will have more of a niche market role).

- Far Eastern Silo Corporation has experience in this sector.

- Historically, this class shows the lowest purchase price/earnings ratio - i.e. it is the least overvalued acquisition.

- The sector shows a reasonable projected profitability potential.

Less immediately clear from the Internal Rate of Return prognosis is the new versus secondhand decision. On the surface, the latter looks more favourable but, given the caveats discussed in Section 9.2.1 of the main Report, the position could be closer than indicated in the initial figures.

The ultimate decision may need to reflect some direct market "canvassing" by Far Eastern Silo Corporation as well as an evaluation of whether the wish is to enter the market within weeks/months or in 18-24 months' time. For a Panamax newbuilding a deal at perhaps US$30 million - especially if "soft" terms are possible - could be considered. For a modern secondhand unit, the Consultants' estimates are for an eventual dip to around US$20 million. Consequently, any modern units - with a reputable builder/owner history - available in the US$20-22 million bracket might also be worthy of consideration.

1.2 Key Supporting Conclusions

The supporting arguments for the conclusions reached in Section 1.1 rely on a series of assumptions concerning prospective trade volumes, tonne-mileages, cargo shares, ship supply prospects, supply/demand balance changes and their possible cost/revenue implications. The detail can be found in the appropriate sections of the main body of the Report (these being outlined in Section 1.3 below).

However, in essence the market picture foreseen is a cyclical one but set against this is a newbuilding market where progressive price increases seem to be inevitable.

Very broadly, the market pattern (as measured by freight rates or secondhand prices) assumed is for a reasonable improvement in owner's prospects during 1994 with the first signs of deterioration becoming evident in 1995. 1996 may turn out to be the nadir with 1997 seeing the start of a rebound leading to a steady improvement over 1998-2000 with 2001 possibly being the market's peak year. For 2002 and 2003 the start of a downphase in the cycle is anticipated.

■ Summary of Freight Rate Expectations - Period Charter Basis

	US dollars per day		
	Handymax	Panamax	Cape
1994	12,000	13,500	18,000
1995	12,000	13,500	18,000
1996	11,000	12,500	16,500
1997	12,500	14,000	17,000
1998	14,500	16,500	19,500
1999	15,500	18,500	22,000
2000	17,500	21,000	25,000
2001	18,000	22,000	26,500
2002	18,000	22,000	26,500
2003	17,000	20,500	24,500

Source: Drewry Shipping Consultants

■ Summary of Price Expectations

	Million US dollars								
	Handymax			Panamax			Cape		
	New	5yr	10yr	New	5yr	10yr	New	5yr	10yr
1994	26.0	20.0	15.0	32.5	23.0	17.5	53.0	35.0	23.0
1995	27.5	19.0	13.5	34.0	21.5	15.5	55.5	33.0	20.0
1996	30.0	18.0	12.0	37.5	20.0	13.5	61.0	30.0	17.5
1997	33.0	19.0	13.0	41.0	23.0	17.5	67.0	35.0	24.0
1998	34.5	21.0	15.0	43.0	25.0	18.0	70.5	37.0	22.5
1999	36.5	23.0	16.5	45.5	28.0	20.5	74.0	40.0	25.0
2000	37.0	24.0	17.0	46.5	30.0	22.0	75.5	42.0	26.5
2001	37.5	25.0	17.5	47.5	31.0	23.0	77.0	45.0	29.0
2002	38.0	24.0	16.5	48.0	30.0	22.0	77.5	44.0	28.0
2003	38.5	22.0	14.5	48.5	27.0	19.0	78.0	40.0	24.0

New - Newbuilding.

5yr - 5 years old.

10yr - 10 years old.

Assumes all secondhand vessels are well maintained, "quality" units.

Source: Drewry Shipping Consultants

The detail - and most crucially - the underlying assumptions underpinning the profitability

and internal rate of return figures offered are to be found in the main body of the Report. These judgements must be weighed up before taking any the figures quoted below too literally.

On the most reliable estimation basis (period charters), the Consultants' conclusions were:

- **Handymax:** On an "unadjusted" basis, new tonnage delivered in 1994-95 would not start to show a profit stream until 1999. Later deliveries show an early profit stream but are vulnerable to the turn of the century downturn. For modern secondhand types, 1994-95 acquisitions start to generate profit streams from 1998. Initial losses, however, are potentially quite small though these would deepen in the projected 1996 market dip. Most later period acquisitions look profitable. The pattern for ten year-old types looks to be fairly similar to that of more modern examples.

There is a contention that newbuildings will attract a premium over, say, five year-old types. Currently, there is a view that this is worth about 20% in period charter rate terms. However, there is the counter argument that modern vessels with a "track record" (e.g. 1-2 years old) effectively secure the most impressive rates. However, taking the first argument into account, the 1994-95 delivered newbuilding shows immediate positive results with this result being reversed only by the projected 1996 downturn.

- **Panamax:** In the main, the pattern emerging from the Panamax assessments is very similar in direction to that envisaged for the Handymax types. Taking into account an arguable 20% rate premium for a new delivery, a 1994 delivery would have virtually broken even - even allowing for the 10% annuity rate. A 1996 delivery (1994 order) would see profitability from 1998 onwards.

- **Cape:** This option looks by far the least attractive. Profitability comes late rather than early. On the favourable (+20%) newbuilding case, cuurent deliveries turn positive around 1999 but gains over 1999-2003 would not compensate for earlier losses.

For the basis of developing the strategic investment considerations, the Consultants' opinion is that the focus should be with:

(i) Handymax: Newbuildings or modern ships.

(ii) Panamax: Newbuildings or modern ships.

In contrast, the Consultants feel that Far Eastern Silo Corporation would be well advised not to pursue the Cape option.

Consequently, for Internal Rate of Return calculation purposes, the Consultants' have focused on:

(a) A Handymax newbuilding - Price US$26.0 million, using standard OECD financing terms.

(b) A Five Year-Old Handymax - Price US$20.0 million, on 50% over five years at Libor plus 1% (taken to be 6.25%) loan terms.

(c) A Panamax newbuilding - Price US$32.5 million, using standard OECD financing terms. This is perhaps a Japanese-type price but some buyers in this market are alleged to have managed to make the package more "competitive" by securing a Japanese trading house commitment to accept the exchange rate risk.

(d) A Panamax newbuilding - Price US$30.0 million, using standard OECD financing terms. This is thought to represent the possible discount for ordering at a lower cost Far Eastern yard (say, Korea). The discount on a Handymax is felt to be marginal.

(e) A Five Year-Old Panamax - Price US$23.0 million, on 50% over five years at Libor plus 1% (taken to be 6.25%) loan terms.

The initial results of this exercise were as follows:

		IRR
Handymax -	Newbuilding	8.79%
Handymax -	5 years old	13.39%
Panamax -	Newbuilding	7.51%
Panamax -	Newbuilding (Price Discount)	11.02%
Panamax -	5 years old	18.38%

However, the Consultants would add the following additional comments:

No freight rate premium has been attached to the newbuilding examples indicated above. If a nominal 20% was put in on this account, the IRR figures for the Handymax and Panamax Cases 1 and 2 adjust to 24.4%, 20.19% and 25.72%. In the Consultants' opinion, the Handymax sector is sufficiently "overvalued" that such a premium is unlikely. In the Panamax case, however, there may be some potential for this. In addition, the Consultants considered a "softer" loan option - there being reports of perhaps 9% over 12 years being

available - though this is even more conjectural as estimates for 2003-2006 need to be fed into the equation. However, very roughly the impact might be to lift the IRR for the Handymax and Panamax Case 1 to around 10.3% and 12.4% respectively.

In considering the profitability and rate of return opinions - and in doing this the assumptions specified in the main body of the Report must be taken into consideration - it should be kept in mind that the prospective profitability of **purchases** is rated against perceived market positions over time. Freight rates and ship values, on the other hand, are set by the market as a whole and not by "marginal" purchases.

1.3 Layout of the Main Report

The main body of the Report has been set out within nine sections, the first being this Executive Summary. The following sections set out to review key historical aspects of the dry bulk market, project prospective bulk carrier supply and demand as well as the implications for bulk carrier prices, costs and profitability. From these, strategic considerations have been explored. As a result, the Report contains:

Section 2: A historical perspective on the market; freight rate trends (voyage, trip and period charters), evolution of demand, the growth of the bulk carrier fleet (including an overview of deliveries and deletions), trends in newbuilding and secondhand prices and their relationship to freight rates plus comments on Biffex.

Section 3: Prospective Demand Evolution to 2003; including tonnages, tonne-miles, market shares, productivity and dwt demand.

Section 4: Prospective Bulk Carrier Supply to 2003.

Section 5: The Changing Supply/Demand Balance through to 2003.

Section 6: Ship Cost Trends; including price prospects and capital costs, operating costs, bunkers and port costs.

Section 7: Projected Break-even Freight Rates.

Section 8: Projected Freight Rates and Profitability Potential.

Section 9: Strategic Options; including Newbuilding versus Secondhand acquisition, Purchase timing and Internal Rate of Return implications.

Supporting the main report are Appendices, including details of shipyards and the bulk carrier orderbook.

SECTION 2

HISTORICAL PERSPECTIVE

Analysis of the performance of the dry bulk market over the last 20 years provides a number of useful pointers for assessing future potential. However, equally, this process indicates that this market sector is dynamic and undergoing a seemingly endless series of changes. At the root of this paradox are such factors as:

(a) The market overall has been typified by a series of cycles. The pattern, evidenced over the 1970s, 1980s and early 1990s, has tended to consist of rapid switches from the "boom" to the "bust" phases. However, the duration of the phases themselves has not been consistent. In practice, the trend has been for shorter periods when the market has been at its peak and longer periods when the market has been in recession.

(b) Due to the combination of charterer/shipper quests for scale economies (encouraging the use of progressively larger bulk carriers) and the willingness of owners to trade their bulk carriers part-laden in difficult market circumstances, the pattern shown by freight rate movements in different size tranches (i.e. Handy, Panamax, Cape, etc) tends to be broadly consistent.

(c) Despite this, significant changes in the size preferences of bulk carriers utilised in individual dry bulk trades have occurred with the result that historical performance (i.e. employment patterns) of the various fleet sectors show significant discontinuities.

It is important, therefore, in seeking to provide a historical perspective that the overview offered is not wholly superficial.

Looking at the trend shown by freight rates at the most basic level - this subject is explored in more significant detail in Section 2.2 - the market can be seen to split into a series of peaks and troughs. Very roughly, these were evident during:

Peaks *(High freight rate phases)*	Troughs *(Low freight rate phases)*
Mid-1973 to Mid-1974	
	Early 1975 to Early 1979
Early 1979 to Late 1981	
	Mid-1982 to Early 1988
Mid-1988 to Late 1991	

The 1992-93 position has been less easy to categorise. Certainly, freight rate levels have declined. However, the rate slide has not yet been catastrophic. It is possible - and this needs to be kept in mind when considering future prospects - that the market's fundamentals may be going through a new discontinuity. On the one hand there is less overt enthusiasm for supporting shipbuilders through subsidies, cheap finance, etc which might break the cycle of new ship over-ordering that seems to have occurred each time freight rates have peaked. On the other hand, the global economic order may be changing beyond recognition - though the twin influences of the rapid growing economies in the Asian Pacific and Asean regions and the post-cold war collapse of Eastern Europe.

2.1 Overview of Key Market Events

To gain the benefits of an appraisal of historical market trends, it is vital to have some insight into the contemporary factors at work in the market place. The difficulty of such an exercise, however, is in judging the degree of detail to go into. For the purposes of this report, it has been felt that a "broadbrush" view is appropriate given that subsequent sub-sections look in detail at more quantifiable aspects such as trade volumes, freight rates and vessel values.

The 1970s began in a fairly positive manner as far as dry bulk shipping was concerned. The US economy was strong while Japan was emerging as a major market force - especially in creating demand for long-haul, high volume industrial raw material traffic. However, the early boom phase was to be short-lived. By end-1971, reviewers took the view that the freight market had become poor. Generally, business was stagnating and it seemed that Japanese growth rates had been over-anticipated. However, more serious problems were evident in the USA. Here, a wave of strikes were evidenced - including a major strike by US coal miners, strikes by US longshoremen and stoppages at grain elevators on the Great Lakes. To add to the market's woes, import grain demand was reduced due to a good European harvest.

1972 brought a slow revival aided by a serious Soviet crop failure. However, the middle part of the year also produced some market disorientation due to a lengthy strike by Japanese seamen. The following year's events were to be dramatic and lasting. At the outset, many observers anticipated an extension of energy problems but few expected drastic measures to become a reality. The "Oil Crisis" - with its complex mix of hostilities, reductions in supply by Arab oil producers, boycotts on deliveries to certain markets and difficulties in the bunker market - had the effect, from the dry bulk sector standpoint, of extinguishing a steadily improving economic/industrial position supported by high Soviet grain import needs and associated port congestion.

This said, the dry bulk market managed something of a "delayed reaction" as 1974 saw the sector reasonably firm despite economic recession and stagnating steel production. However, the downward pressure on the market from under-employed large ships (exacerbated by the switching of combined carriers from oil to dry trading) ensured that the year finished gloomily.

The mid-decade period (1975-77) was one of sustained pessimism. Opinion seemed to be that the world economy had bottomed out in 1975. The market's only crumb of comfort came from an extremely poor Russian harvest. 1976 was a little better but dry cargo rates remained stubbornly resistant. However, 1977 turned out to be worse than expected. Another US coal strike dampened the market in early 1978 but from the second half of the year onwards signs of better times started to feature.

After a period of market weakness, the late 1970s saw the dry bulk market pulling its way out of recession. Steelmaking activity was expanding, boosting demand for the key raw material import trades; however, events in the Middle East were also to prove crucial. The Iran/Iraq war, and its associated "oil crisis", prompted considerable re-appraisal by the world's energy consumers and power utilities. Previous fears arising from oil price shocks led to energy conservation. This time, worries about price levels were seen alongside fears over continuity of supply and this prompted change. With its prices becoming competitive, demand for steam coal began the upward progress which turned out to be the major trade phenomenon of the 1980s. The 1980s, therefore, began with optimism evident in the dry bulk market. Unfortunately, the rise in freight rates this created triggered the first elements of market overreaction. Newbuilding activity, especially for Panamax bulk carriers, soared. The driving forces were seen as being the steam coal boom combined with a desire to build highly fuel-efficient ships to cope with the high oil-driven bunker price.

In the context of bulk carrier employment, the advent of the "eco-ship" was of considerable significance. The reduced levels of fuel consumed - at the same service speed of existing tonnage - could be worth thousands of dollars per day on a time charter rate basis. Some developed generator systems able to eliminate marine diesel oil (used in the auxiliaries) whilst at sea by utilising waste heat from the main engine. In practice, differentials narrowed as the older vessels began to "slow steam" as an economy measure. This said, several of the "eco-ships" had a high capital cost disadvantage. Naturally, vessel productivity fell. However, with the subsequent easing of fuel prices, other disdvantages began to surface. Many of the "eco-ships" were built with relatively low horsepower main engines. This meant that, unlike many older competing units, they could not increase their operating speeds. An inevitable "lost opportunity" cost arose. Worse still, some "eco-ships" found difficulties in maintaining acceptable performance levels during harsh weather conditions.

By 1980, the world's economies were moving into recession. The bulk carrier freight market, however, had an important cushion - severe port congestion. During October 1980, the queue of ships waiting to load coal at Hampton Roads and Baltimore on the US Atlantic seaboard increased from 80 to 129. By end-February 1981, this figure had grown to more than 180 ships (over 10 million dwt or 7% of then available bulk carrier shipping capacity). Delays of five-to-six weeks were typical. A generally unexpected strike by US coal miners, which lasted from March to June 1981, effectively burst the bubble. The queues dispersed (through port control measures, largely unsuccessful registration schemes and a realisation that demand for coal was softening) and a large volume of bulk carrier tonnage found itself back on the open market. The shock waves caused were fuelled further by more notice suddenly being taken of the influx of newbuildings. Pessimism became the order of the day.

A few false dawns followed but the open market became increasingly overtonnaged and hopelessly over-reliant on the fickleness of the grain trades. The import needs of the USSR were paramount in this context. The 1982 and 1983 crop years saw imports in the 30-31 million tonnes/year range. A devastatingly poor harvest led the 1984 season's figure to hit virtually 52 million tonnes. The next two seasons saw imports slip to around 27 million tonnes/year.

With market demand effectively collapsing and overtonnaging already a serious problem, there was to be a final self-inflicted and devastating wound. In mid-1983, in a move widely felt to be designed to support Japan's shipbuilding industry, Sanko Steamship embarked on a 100+ ship newbuilding programme in the handy/handymax carrier size ranges. Unfortunately, a host of other owners followed suit. By 1985-86 these vessels were being delivered at a frenetic pace, rates had sunk lower than even pessimists had though possible, high levels of lay-up and inactivity had become endemic and major shipping company collapses (including Sanko) were becoming regular features.

Employers of bulk carrier tonnage look back on this period with justifiable concern. Cash strapped owners accelerated the various cost cutting measures (flagging out, reducing manning levels, deferring repairs and maintenance, etc) open to them. It sowed the seeds for the problems arising from vessel neglect that have become major concerns in the early 1990s. In addition, much new vessel tonnage from this era is viewed as having been built to "minimum specifications". After the *annus horribilis* of 1986, recovery was more rapid than might have been expected. Large scale ship demolition activity was important, but from 1988 to 1990 there was a genuine upsurge in dry bulk trade volumes - with many commodity trade volumes seeing all-time highs. The 1990s began optimistically but confidence was easily eroded as the world's major economies slid deeper into recession.

2.2 The Development of Freight Rates

Dry bulk shipping and transportation is a dynamic industry. Changes in industry structure (moves to downstream product manufacture at source), changing centres of commodity supply and demand, the continuing quest for scale economies in shipping and the eccentricities of climate (whether on crop levels or demand for heating fuel) mean that few elements of the market in which bulk carriers operate are recognisable from the pattern of the early 1970s.

Clearly, this presents difficulties in trying to develop long-run data series for freight rates. For example, in the 1970s and into the 1980s, grain fixing from the US Gulf to Japan was thought of as the archetypical ±26,000 tonner route. Today, this route is thought of as a benchmark for Panamax carrier stems.

Within Section 2.2.2 the Consultants have sought to produce representative data indicating the freight rate development pattern for the representative classes of bulk carrier under consideration. However, before turning to these, the Consultants feel it is necessary to comment on some of the key factors that shape freight rate levels.

2.2.1 Factors affecting Freight Rates

The primary determinant of freight rates are changes in the market players' perceptions of the disequilibrium between the demand for shipping and available, suitably positioned (open) tonnage. The main driving force for rate movement may come from any of the different bulk carrier sectors but, ultimately, the scaling up of cargo lot sizes (through "parcel" shipments or "multi-porting") or the "cutting" of cargo by part-laden large ships ensures that the dominant trend feeds through to each sector of the bulk carrier market.

2.2.1.1 Business Cycles and the Dry Bulk Shipping Market

Looking back to the period beginning with the early 1970s, the dry bulk market can be seen to have experienced four "booms", with freight rates rising to sharp peaks in 1970, 1973-74, 1979-80 and 1989-90.

In between these peaks, the market has generally been over-tonnaged and rather weak, the depressed trading conditions causing bulk carrier freight rates to fall back to low levels in 1972, 1975, 1978, 1983, 1986 and 1992. Each of these freight market cycles lasted between four and five years, and the 1989 peak and the 1992 trough are the most recent manifestations of the cyclical nature of the freight market.

What caused the market to peak when it did? This is not an easy question to answer, but the market does appear to have been driven more by changes on the demand side than it has by fleet growth and tonnage supply.

Matching market movements to trade development, one finds that each freight market "high" in the past 20 years has followed a peak in demand growth, while the "lows" occurred in the wake of weak trade growth.

There is clearly a fairly close correlation between peaks and troughs in the dry bulk shipping market and business cycles in the world economy. Any global economic slowdown has always, after a time-lag, undermined the financial performance of the bulk shipping industry.

Supply side developments have also been influential, with the years when the net increase in tonnage supply was the greatest also being among the weakest.

Each of the market cycles in the past twenty years developed in a different way:

- The first cycle started in mid-1972 and reached its peak in October 1973, just before the outbreak of the Yom Kippur war between Israel and Egypt. Bulk carrier rates held up reasonably well during 1974, despite the rise in oil prices, fell sharply in 1975, recovered somewhat in 1976 and fell again, reaching their lowest point in late 1977.

- The second began in 1978 following positive trade growth and the stabilisation of tonnage supply, and quickly gathered momentum, driven by the strong expansion of bulk trade. There was a sustained rise in rates in 1979 and 1980 and it was not until late in 1981, that the market started to exhibit signs of weakness. Over-optimism and over-ordering were the hallmarks of this cycle.

As one observer put it: "Seduced by mass optimism, high freight rates and attractive financing terms, shipowners ignored the temporary nature of port congestion and enthusiastically ordered bulk carriers" 1982 marked the end of the cycle, with rates slumping to very low levels as newbuilding deliveries mounted and demand slumped.

- Economic recovery in the 1982-87 period, the third cycle, was swamped by over-investment in new tonnage and high rates of fleet growth. Despite an upward cycle in the world economy in 1984-85, demand growth was not sufficient to sustain a recovery in the freight market, and after a temporary improvement, bulk carrier revenues soon retreated, falling to exceptionally low levels in 1986. However, even in this protracted slump, there

was speculative ordering of tonnage, with the Japanese company, Sanko, ordering as many as 120 bulk carriers in just one year, 1984.

■ The fourth and most recent bulk market cycle was, as we pointed out earlier, precipitated by positive developments on the demand side, with a large increase in shipments of iron ore, coal, etc leading to high levels of fleet utilisation. The rise was also underpinned by a static fleet and the stabilisation of tonnage supply. By 1989, the market had reached levels not seen since 1981, and although it was weaker in 1990, 1991 was surprisingly buoyant. What sustained the freight market recovery was not demand, because this was already slackening, but supply, with relatively stable tonnage, modest orderbook and rapidly ageing fleet.

By 1992, however, the market started to reflect the severity of the worldwide business recession, with negative demand-side developments - notably the slowdown in the steel industry - depressing rates and ship values.

The low point was reached in October, perhaps marking the end of the fourth cycle and the beginning of a fifth as in the latter part of 1992, the freight market showed some modest recovery.

2.2.1.2 Seasonal Influences

In addition to the long term cycle, the market tends to have anticipations of seasonal cycles over the course of a year. This pattern tends to incorporate:

■ A spring upturn - this improvement traditionally being underpinned by increased grain trading (including the southern hemisphere seasons - e.g. from the River Plate) and other bulk shipping activity. Less so now than in the 1970s and early/mid 1980s, this period saw market demand increase in expectation of the first open water (fow) on the St Lawrence Seaway System marking the opening of the Great Lakes season.

■ In most years, the high point for freight rates has been reached in April or May, with June normally marking the onset of weaker trading conditions during the summer months.

■ The main holiday months - July and August - normally produce the market's annual low point.

■ In most years, autumn brings an improvement in trading conditions, beginning in September or October. This is often driven by the northern hemisphere grain harvest but winter fuel demand (including coal for power stations) also can sustain the market.

■ The year tends to turn on a quieter note with owners and charterers again looking to developments in the spring.

However, seasonal patterns, though expected, cannot be guaranteed. The crop intake in the major importing regions (notably the former USSR and Eastern Europe) is often a crucial factor. In 1993, the somewhat chaotic legacy of the break-up of this region has been a lack of any real market direction in the autumn months.

2.2.1.3 Underlying Shipping Costs

In the long run, any increase in the costs of purchasing, operating and trading bulk carriers will eventually be reflected, in one way or another, in the freight market and in the structure of bulk carrier rates.

In theory, the trading costs of typical bulk carriers should set a "floor" (low-cost) to the market and to freight rates, as these costs - capital, operating, voyage - determine what the owner must earn to break even and avoid trading at a loss.

In reality, however, the situation is not that simple - first, because bulk carrier trading costs can - and do - show wide variations and, second, because shipowners will sometimes accept loss-making freight rates to keep their vessels employed.

The owner of a bulk carrier may be willing to trade at a loss, for example:

■ If he is being pressured by his bankers to maintain cashflow at times of market weakness and poor trading returns.

■ If he wants to avoid the high costs which are associated with laying-up his vessel, and continues trading in the hope that trading revenues will improve in the short-term.

■ If he needs a backhaul or return cargo to bring his ship into position to load its next shipment under, say, one guaranteed by an existing freight contract.

Nonetheless, a direct relationship may be observed between the broad structure of freight rates and bulk carrier costs.

Specific instances where increases or decreases in bulk carrier costs have a direct impact on market freight rates are when:

■ There are high levels of inflation, and there is a rapid escalation of the operating costs of bulk vessels (especially in crew wages and benefits).

- There are changes in exchange rates and, in particular, any sharp appreciation or depreciation of the US dollar against other trading currencies, such as the German mark. With revenues in dollars, and a proportion of their costs in domestic currencies, most owners do better when the dollar is strong.

- There is a sudden rise or fall in the price of marine bunker fuels.

- There is an upward revision of Suez or Panama canal tolls and, consequently, an increase in the costs of transiting these waterways.

- Port charges are increased, as they frequently are by public authorities and private stevedoring concerns handling bulk cargoes.

Recently, operating costs have risen sharply and the continuing upward pressure will remain an especially difficult problem for as long as the freight market remains weak.

Real increases in crew wages and other operating costs are anticipated.

Although no major rise in bunker costs is forecast, other elements of voyage costs - port charges and canal tolls - will remain under considerable upside pressure.

2.2.1.4 Other Influences

In addition, freight rates will be influenced to some degree by a wide range of other criteria. In summary, these might include:

(a) Localised geographical trade volume or open ship availability "distortions" - e.g. enabling the "Pacific" to be stronger than the "Atlantic" and vice-versa.

(b) Cargo or ship related issues - e.g. the impact on the cargo handling terms (laytime) under the charterparty, fio versus free discharge or liner terms, more precise cargo distinctions (e.g. light grains as opposed to heavy grain/sorghum/soyabeans), ship "quality" issues, the allowance for increased cargo insurance premiums on certain types and ages of bulk carrier, etc.

(c) Influences from parallel markets - e.g. the influence of "switching" by combined carriers.

(d) The vessel's offers of lay-days and positioning.

(e) Port factors - including equipment breakdown or congestion prospects.

(f) Weather related factors - e.g. factors that might hamper cargo handling operations (e.g. heavy rainfall) or reduce available sailing drafts or restrict movements (e.g. ice levels).

(g) Political factors - e.g. labour disputes, trade bans or embargoes or cargo preference arrangements.

(h) Brokerage and commission. The "net" rate will be influenced by the number of brokers drawing brokerage commission and whether or not other deductions (e.g. address commission) apply.

In addition to these influences, there is a final consideration and one which creates the dual difficulty of being hugely important but at the same unquantifiable or unverifiable. This is rumour and sentiment. Indeed, many regard rumour and sentiment as the "life blood" of the market.

This last point has immense importance in an exercise such as that being undertaken in this Report. It results in the fact that while parallels can be seen between bulk shipping supply/demand and cost/revenue fundamentals, the process cannot in any way be considered as an exact science.

Consequently, in developing freight rate series - both historical and projected - there is a significant judgemental input borne of experience and this needs to kept firmly in mind when seeking to draw conclusions relating to investments or future profitability.

2.2.2 The Evolution of Bulk Carrier Freight Rates

2.2.2.1 Period Time Charter Rates

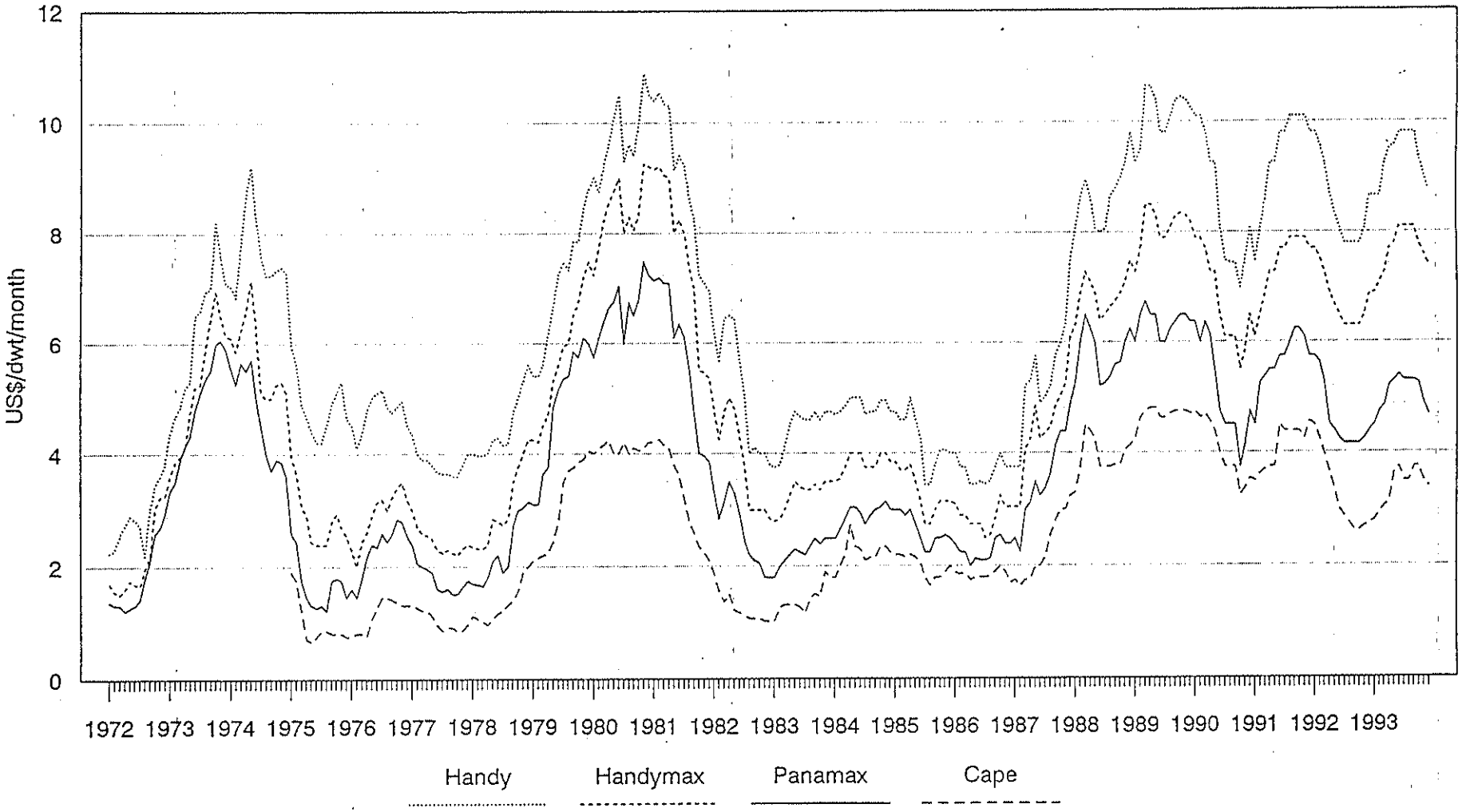
In some respects, this appears to be the easiest element of the freight market to monitor over an extended time period. A number of parameters can be fixed readily - e.g. the assumed charter period, prompt delivery, etc. So too can the representative age of the bulk carrier under consideration. However, the last point does introduce one pertinent point: namely that, in terms of fuel consumption, manning needs (and hence operating costs), etc, the "modern" bulk carrier in 1993-94 is significantly different from the similar sized "modern" bulk carrier in 1972 or even 1982.

Accepting these limitations, Figure 2.1 plots the pattern of estimates - based on contemporary market fixture reports, brokers' indications, etc - derived monthly by Drewry

Figure 2.1

TRENDS IN ONE-YEAR TIME CHARTER RATES

Based on modern bulk carriers offering prompt delivery



Source: Drewry Shipping Consultants.

Shipping Consultants. For convenience - and to avoid extensive conversion of historical statistics - the series is presented in terms of US dollars per dwt per month. The estimates assume a "modern" ship (say, approximately five years old) taken for around 12 months and offering fairly prompt delivery. (It will be noted that the Cape class data does not commence until 1975 - before then there was effectively not a fleet of around five years of age). Latterly, period charter fixture reports have moved away from the US dollar per dwt per month method of rate recording and, therefore, the statistical rate summary provided by Table 2.1 focuses on rates expressed as US dollars per day.

Table 2.1
Evolution of One-Year Time Charter Rates
(US dollars per day)

(a) **Development Summary: 1972-88***

	Handymax			Panamax			Cape		
	High	Low	Average	High	Low	Average	High	Low	Average
1972	3,955	1,825	2,550	6,300	2,565	3,785	-	-	-
1973	8,450	4,380	6,355	12,935	7,160	10,315	-	-	-
1974	8,700	6,085	6,870	12,185	7,700	10,430	-	-	-
1975	4,800	2,920	3,475	5,550	2,565	3,570	7,500	2,565	3,880
1976	4,260	2,435	3,545	6,095	3,100	4,920	5,525	2,960	4,490
1977	3,650	2,675	2,980	5,130	3,200	3,820	5,130	3,315	4,040
1978	5,175	2,830	3,665	6,735	3,525	4,805	7,895	3,750	5,150
1979	9,130	5,110	6,945	13,045	6,630	10,345	15,985	8,290	12,070
1980	11,200	8,825	10,215	16,035	12,295	14,165	16,600	15,790	16,170
1981	11,200	6,510	9,265	15,395	8,230	12,320	16,775	8,290	12,960
1982	6,085	3,470	4,710	7,485	3,850	5,605	7,300	3,950	4,885
1983	4,260	3,400	3,985	5,350	3,850	4,830	7,500	3,950	5,460
1984	4,870	4,260	4,655	6,735	5,345	6,220	10,855	7,105	8,800
1985	4,685	3,350	4,020	6,415	4,810	5,650	8,685	6,515	7,860
1986	3,955	3,100	3,490	5,450	4,275	4,840	7,895	6,710	7,260
1987	7,425	3,710	5,430	10,425	4,810	7,550	12,830	6,415	9,090
1988	9,130	7,665	8,350	13,900	11,120	12,350	17,765	13,025	15,525

Table 2.1 (cont'd)

(b) Detailed Rate Development: 1989-93

	Handymax	Panamax	Cape
J89	9,000	12,000	17,000
F	9,500	13,000	18,500
M	10,350	13,500	19,000
A	10,350	13,000	19,250
M	10,100	13,000	19,250
J	9,600	12,000	18,500
J	9,600	12,000	18,500
A	9,850	13,500	18,750
S	10,100	12,750	19,000
O	10,160	13,000	19,000
N	10,100	13,000	19,000
D	9,980	12,750	18,750
J90	9,750	12,750	19,000
F	9,750	12,000	18,500
M	9,500	12,750	18,750
A	9,000	12,250	18,250
M	9,000	11,000	17,500
J	8,000	9,500	16,000
J	7,500	9,000	15,000
A	7,500	9,000	15,000
S	7,500	9,000	15,000
O	6,785	7,500	13,000
N	7,250	8,250	13,500
D	8,000	9,500	14,250
J91	7,500	9,000	14,000
F	8,000	10,500	14,500
M	8,500	10,750	14,750
A	9,000	11,000	15,000
M	9,000	11,000	15,000
J	9,500	12,500	18,000
J	9,500	12,500	17,500
A	9,750	13,000	17,500
S	9,750	13,500	17,750

Table 2.1 (cont'd)

(b) Detailed Rate Development: 1989-93 (cont'd)

	Handymax	Panamax	Cape
O	9,750	13,500	17,500
N	9,750	13,250	17,000
D	9,500	12,500	18,125
J92	9,500	12,500	17,750
F	9,300	12,300	17,000
M	9,000	11,500	16,000
A	8,500	9,750	14,500
M	8,250	9,500	13,000
J	8,000	9,250	12,000
J	7,750	9,000	11,500
A	7,750	9,000	11,000
S	7,750	9,000	10,500
O	7,750	9,000	10,500
N	8,000	9,250	10,750
D	8,500	9,500	11,000
J93	8,500	9,750	11,250
F	8,750	10,250	11,750
M	9,000	10,500	12,250
A	9,500	11,250	12,500
M	9,600	11,500	14,500
J	10,000	11,750	15,000
J	10,000	11,500	14,000
A	10,000	11,500	14,000
S	10,000	11,500	15,000
O	9,500	11,250	15,000
N	9,250	10,500	13,750
D	9,000	10,000	13,500

* Highs and Lows calculated by converting US dollars per dwt per day from extremes of the monthly data series. Average is the mean of the 12 monthly estimates converted from US dollars per dwt per month. All figures have been rounded.

Source: Drewry Shipping Consultants

2.2.2.2 Trip Time Charter (Trip Charter) Rates

Although a frequently used charter mode, the one trip time charter (trip charter or time charter trip) is the most difficult to assess in terms of rate trends over an extended period of time. There are various reasons for this including the "spot" nature of business, its geographical specifics and its direct relationship to a specific vessel. Other than obvious cost re-allocations between the ship owner/operator and the charterer's accounts, this last point makes the trip charter the most difficult of the "spot" rate elements of the dry bulk market to assess.

Looking more specifically at the trip charter genre, the following list of variables needs to kept in mind (as "sensitivities" or potential distortions) when trying to read significance into the trends presented in Section 2.2.2.2.1.

(a) Points of delivery and redelivery can be expressed in relatively vague terms (e.g. Singapore-Japan range or Skaw-Cape Passero range) - in contrast, voyage fixtures may well nominate specific ports. This can be further "confused" by periodic switching (depending on charterer's relative market strength) between round voyages and one-leg trips (with a negotiated ballast bonus) for what is effectively the same underlying business.

(b) The particulars of ship - relative to both the performance of other similar sized ships (speed/fuel consumption, etc) and in terms of its meeting the charterer's precise needs (e.g. gear capacity, hold/hatch/crane configuration, etc) - assume greater significance. In addition, age and condition are factors which are increasing in importance with this having some impact on employment prospects/acceptability and rates. For example, currently, there is something of a belief that in the Cape carrier class the most modern ships are likely to be working the Pacific trades with most of the "veterans" being confined to the Atlantic Basin.

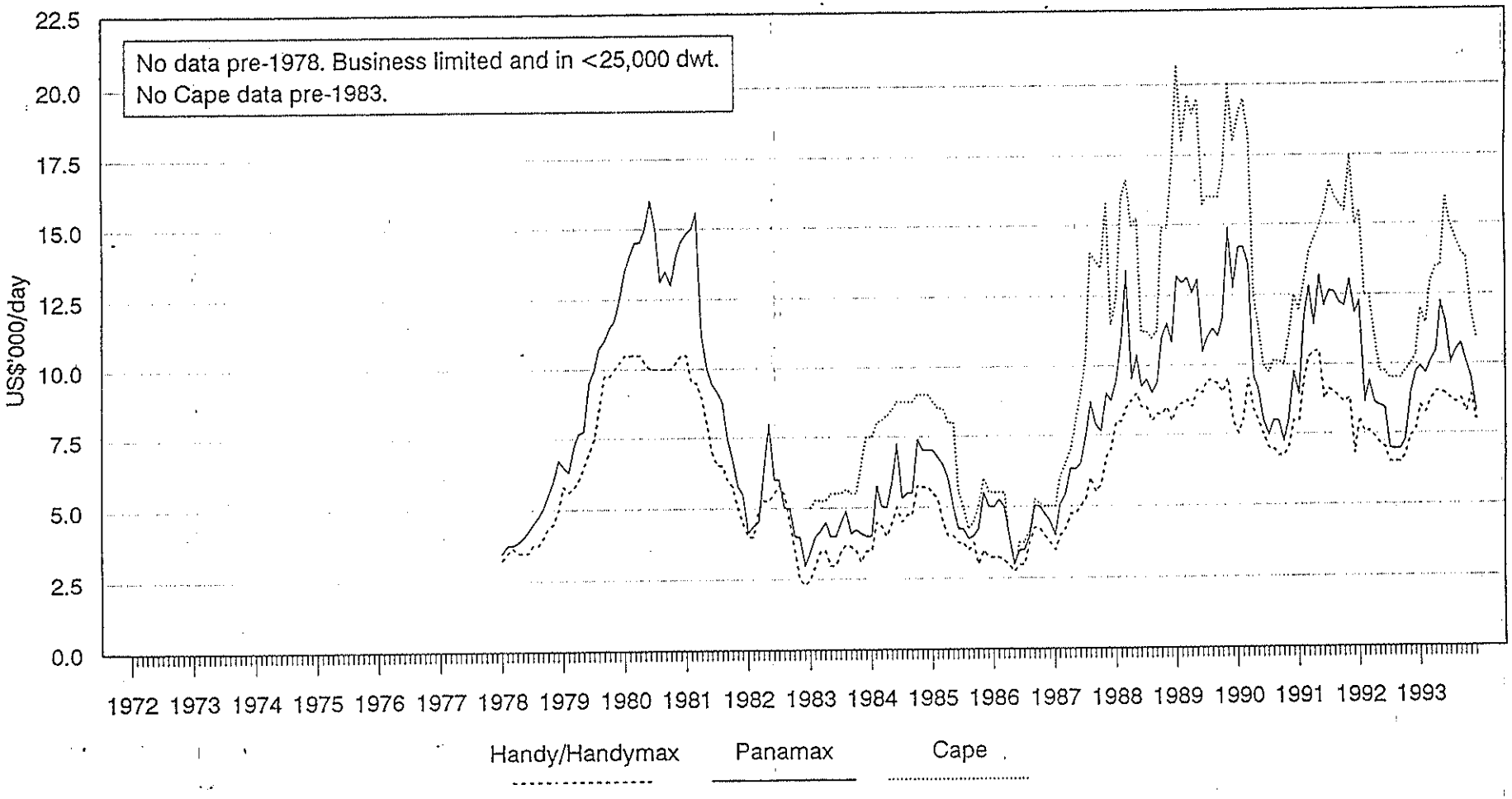
(c) Levels of commission can be more variable than for voyage charters. This may be reflected in brokerage but, often, a more significant element may be address commission. The latter - nowadays not a great deal more than a means of providing a "discount" from the owner to the charterer - can have the effect of "inflating" the reported freight rate. Commission details do not feature in any market reports.

2.2.2.2.1 Indicative Trip Charter Rate Trends

The historical rate trend on a trip charter basis - which, of necessity, is more "broadbrush" than the other spot market rate measures considered - is illustrated by Figures 2.2-2.5. The broad categorisations used are:

Figure 2.2

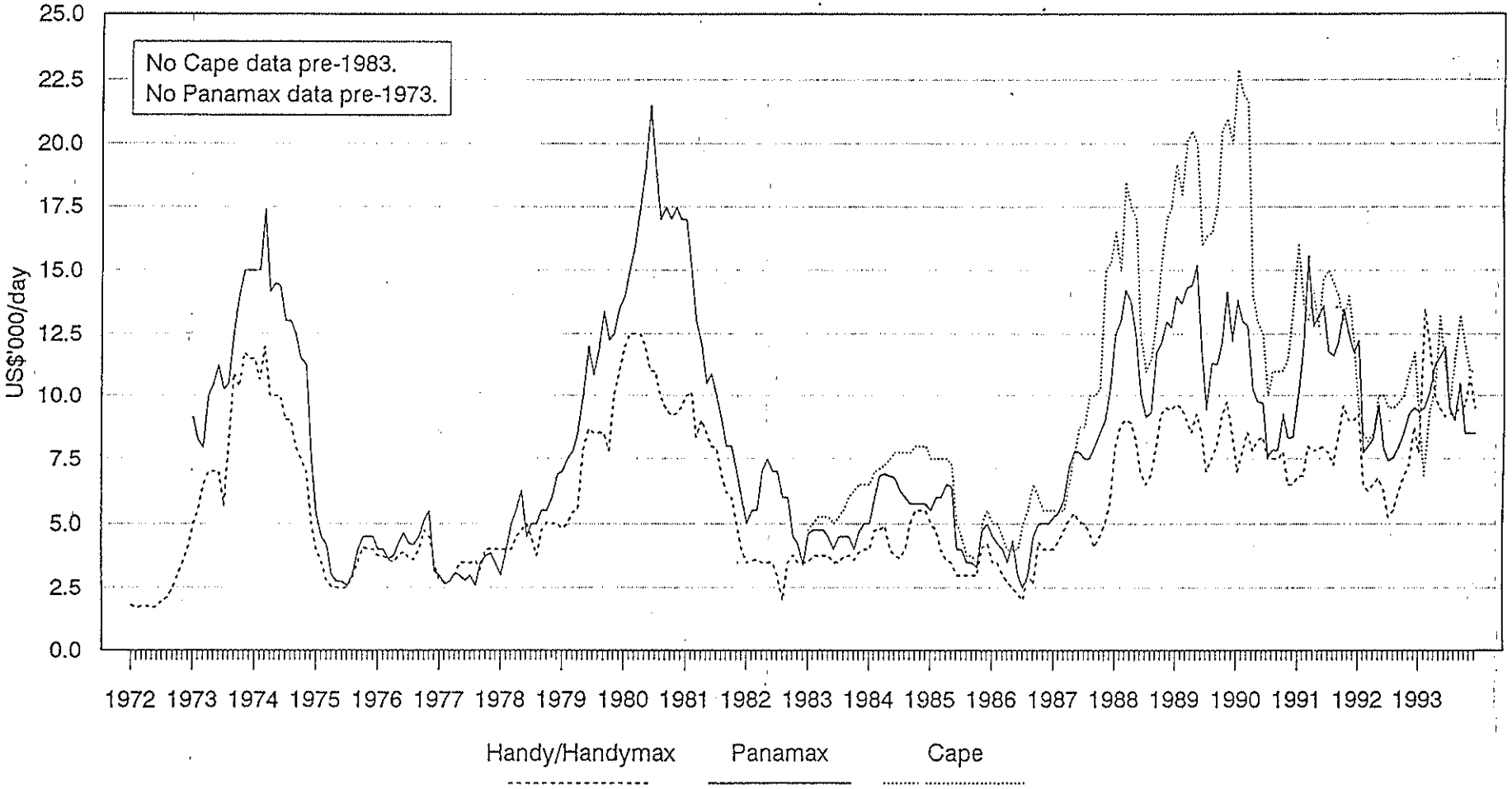
INTERPOLATED TRIP CHARTER RATE TRENDS*: TRANSPACIFIC ROUND VOYAGE



* Based on reports for modern vessels and "best" estimates. Some early years have insufficient data.
Source: Drewry Shipping Consultants.

Figure 2.3

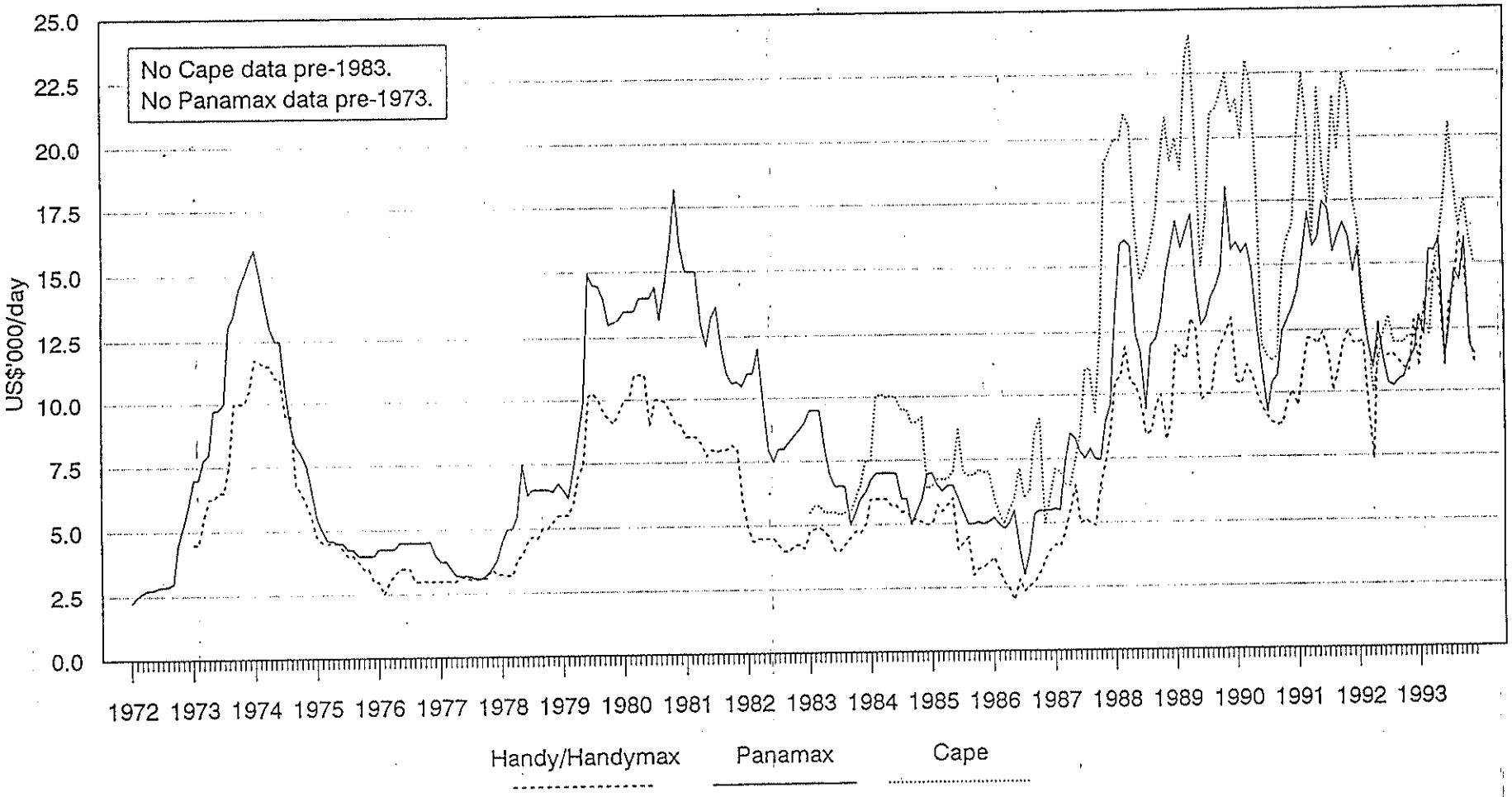
INTERPOLATED TRIP CHARTER RATE TRENDS*: TRANSATLANTIC ROUND VOYAGE



* Based on reports for modern vessels and "best" estimates. Some early years have insufficient data.
Source: Drewry Shipping Consultants.

Figure 2.4

INTERPOLATED TRIP CHARTER RATE TRENDS*: ATLANTIC/-/PACIFIC OPTIONS



* Based on reports for modern vessels and "best" estimates. Some early years have insufficient data.
Source: Drewry Shipping Consultants.

rates based on historical patterns that are no longer evident in the marketplace or guess at rates that might have occurred in the distant past if ships which were not used at the time had been used.

The Consultants feel sure that the Far Eastern Silo Corporation would not wish time and effort on this assignment to be given over to virtually meaningless academic exercises.

2.2.2.3.1 General Voyage Rate Trends

For a number of years, the Consultants have sought to gain an indicative measure of the underlying rate trends in the single voyage market for Handy, Panamax and Cape types. This has been conducted on a relative simple basis, focusing on prevailing rate levels - unadjusted for bunker price changes, etc. Even so, the changing nature of the market has meant that over time adjustments have been necessary to the rate index that has been compiled and published. This said, it is felt that the index is a useful guide and, consequently, the trend is reproduced through Figure 2.6.

The indices, based on January 1981 = 100, show that each sector follows a broadly similar path. Where the trend - in a sense - shows a slight failing is that, at first sight, it implies that the Cape sector is the market's worst performer. In reality, this is a reflection of the market's position in late 1980/early 1981 (discussed in Section 2.1) when Cape class rates were exceptionally high.

In reality, it is very rare for any particular commodity/trade route to generate demand for the whole gamut of the bulk carrier sector. One example, illustrated by Figure 2.7, is the US Gulf-ARA range grain trade. Traditionally a Handy carrier run, this route has gravitated to the Panamax sector with demand being supplemented by part-laden Capes working 65-85,000 tonnes of cargo. Occasionally, a Handy stem rate comes to light. Obviously, the most recent Handy figures contain a good measure of estimation but they are felt to be representative. Overall, the general pattern discussed earlier is again witnessed.

2.2.2.3.2 Indicative Handy/Handymax Bulk Carrier Single Voyage Rates

As the Handy and Handymax types of bulk carrier have seen their role as the main-haul dry bulk market "workhorse" superseded by the larger Panamax units, they have conceded their once dominant position on key grain routes such as US Gulf-Japan and US Gulf-ARA.

In trying to give some form of indicative mapping of single voyage freight rate trends for this class of ship, Figure 2.8 is obliged to offer a somewhat disjointed picture. Moreover,

(i) Transpacific round voyage - delivery and redelivery Far East (say, Singapore-Japan range). In the main, the assumption is that the trip is via the USNP but where necessary trend guidance may have been sought from other regional round trips (e.g. via Australia).

(ii) Transatlantic round voyage - delivery and redelivery in Europe (Skaw-Cape Passero range). In the main, the assumption is for either trips via the US Gulf or the River Plate. The relative importance of these options will vary seasonally driven by the marketing of the northern and southern hemisphere grain crops.

(iii) Delivery Atlantic/-/Redelivery Pacific.

(iv) Delivery Far East/-/Redelivery Skaw-Cape Passero range.

2.2.2.3 Voyage Charter Rates

Freight rate trends arising from single voyage chartering activity are also difficult to monitor accurately. There are many reasons for this, the more important including:

(a) For various reasons, this is the sector of greatest near-term volatility.

(b) Variations arise from specific port rotations, changing draft availabilities and handling terms.

(c) Supply/demand change variations can be distorted by external cost changes - e.g. changes in the price of bunkers, port cost changes (either through tariff amendments or currency parity movements) and increases in canal or other seaway tolls.

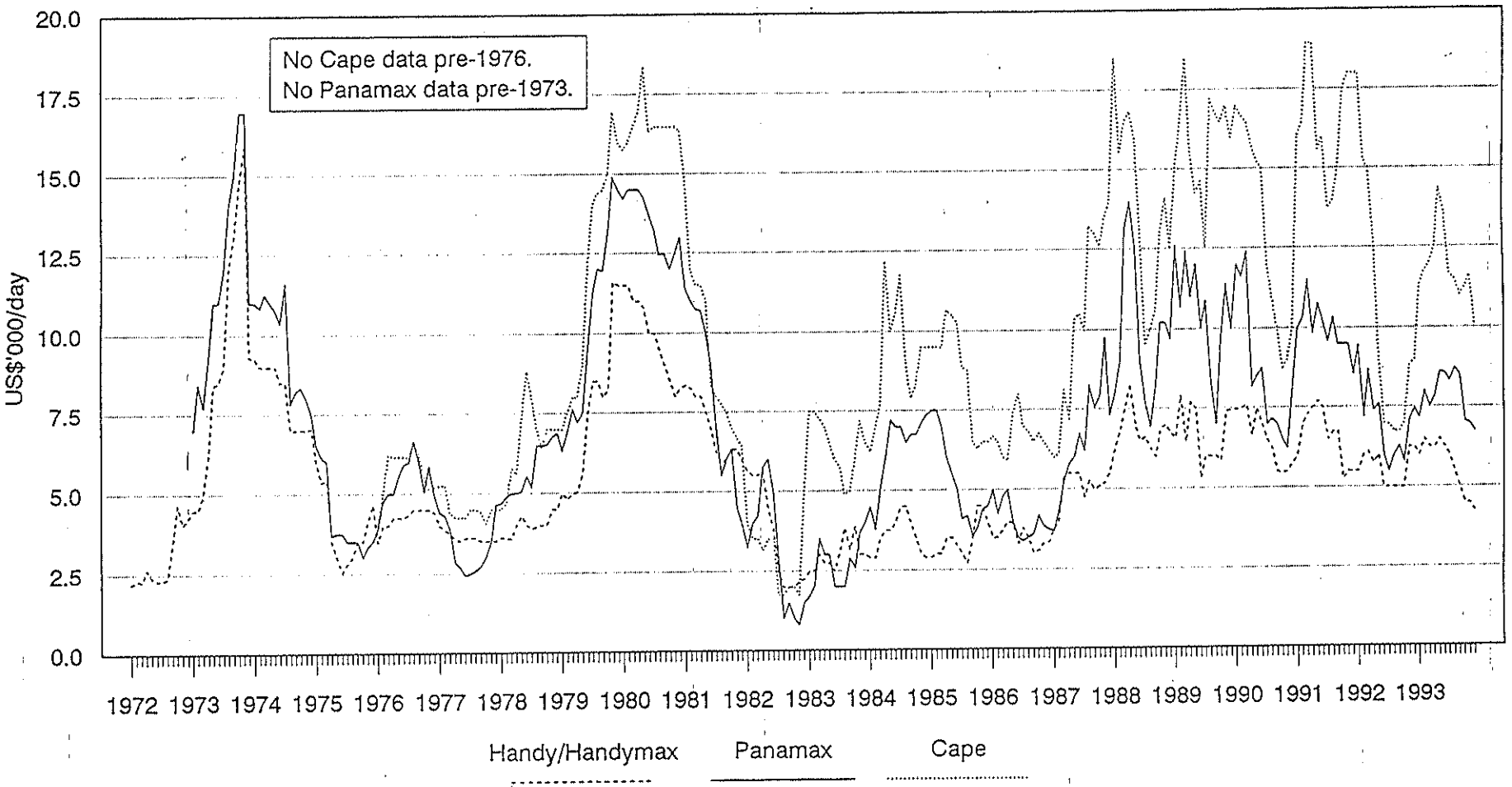
(d) Changes in ship size preferences. This is considered further in Section 2.2.3 but it is the case that the combination of port improvements and the quest for scale economies in shipping do mean that for a given cargo on a designated trade route the representative rate series in the 1990s may be significantly different from that seen in the 1970s.

In essence, the difference lies with this form of business being cargo-related whereas in Sections 2.2.2.1 and 2.2.2.2 the business assessed has been ship-related (i.e. in the time and trip charter cases, the ship size consideration is more of a constant).

Unavoidably, this means that the compilation of a 20 year data series is handicapped by the presence of market discontinuities. In the considerations that follow, the Consultants have made allowance for this by modifying the length of the data series to a timespan which can be considered as consistent and valuable. The alternative is to either project

Figure 2.5

INTERPOLATED TRIP CHARTER RATE TRENDS*: PACIFIC/-/ATLANTIC OPTIONS

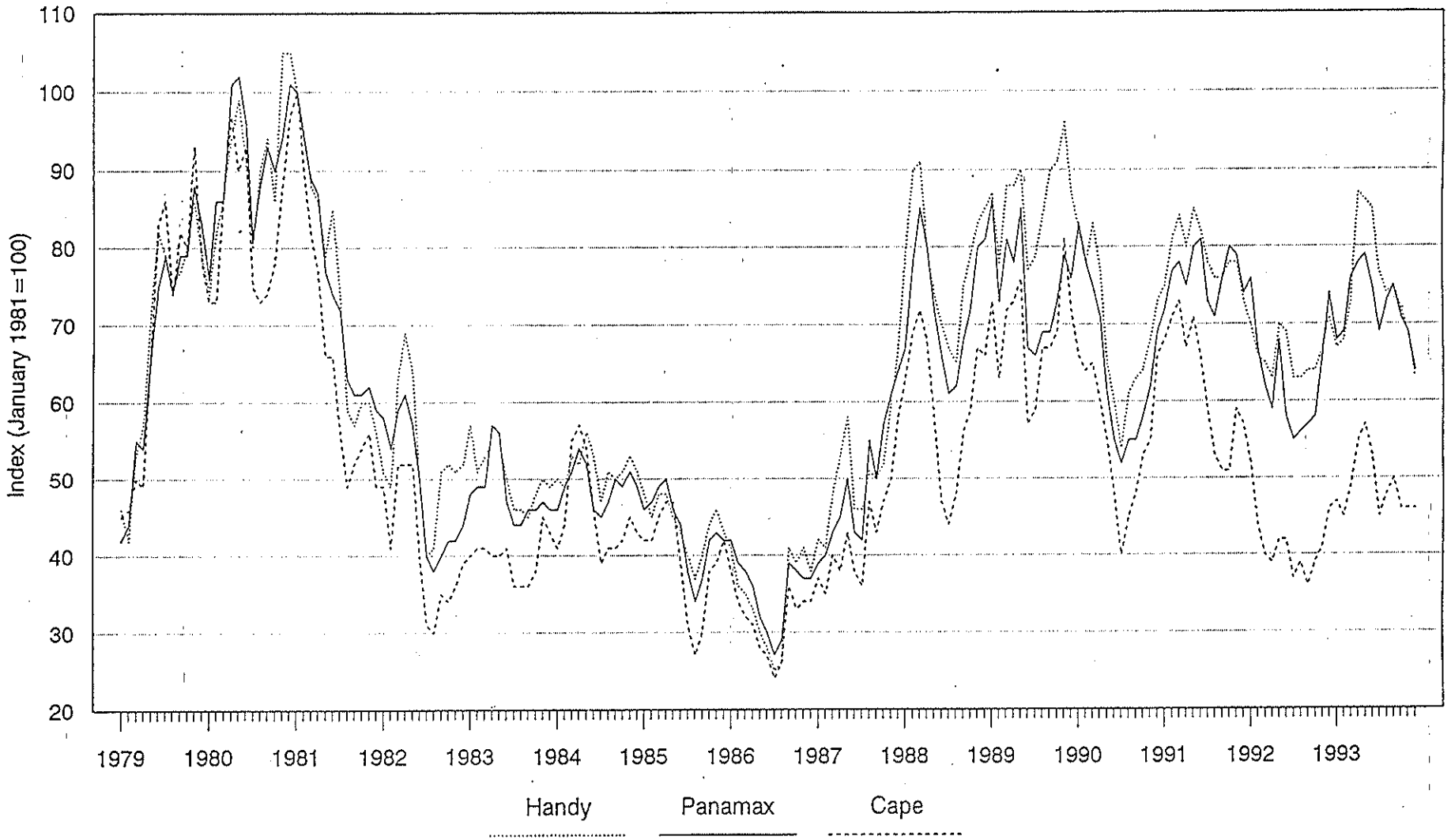


* Based on reports for modern vessels and "best" estimates. Some early years have insufficient data.

Source: Drewry Shipping Consultants.

Figure 2.6

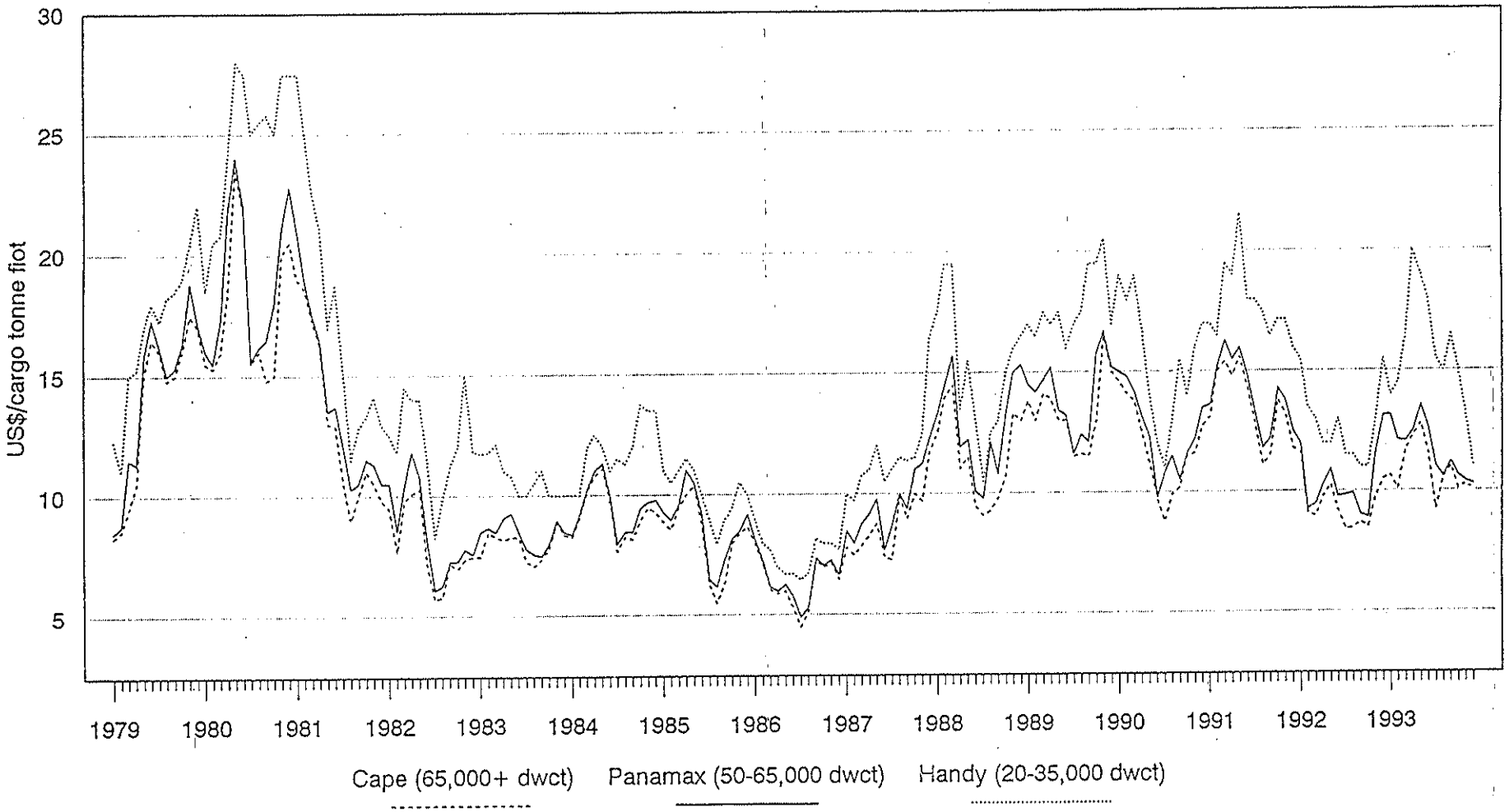
DREWRY SINGLE VOYAGE RATE INDICES



Source: Drewry Shipping Consultants.

Figure 2.7

DEVELOPMENT OF INDICATIVE SINGLE VOYAGE RATES: US GULF - ARA RANGE (GRAIN), 1979-93



Source: Drewry Shipping Consultants.

with this market sector becoming steadily more niche market oriented, the picture conveyed by Figure 2.8 leans more heavily on judgemental interpolation than is required for the larger sizes of ship under consideration.

The longest run data shown relates to the "traditional" US Gulf-Japan trade (now effectively defunct for this size of ship) and the US Gulf-ARA run (although some allowance is made where appropriate for times when shipments in this sector were driven by loadings on the US Atlantic coast).

The other routes shown, which are representative of the middle or later years under review, focus on grain shipments from the US Gulf (and sometimes Atlantic) to the Mediterranean and the emerging scrap trade from the US Gulf/Atlantic to South Korea. However, a degree of caution needs to be taken when considering the trends shown by these trades as, while not recorded in contemporary market reports, this business contains a wider than usual mix in terms of cargo composition and precise port rotations.

This said, Figure 2.8 does point to a relatively consistent pattern despite the wide diversity of market demands and uncertainties.

2.2.2.3.3 Indicative Panamax Bulk Carrier Single Voyage Rates

In today's market, where Panamax carriers have become the "workhorse", thoughts of typical, mainstream employment routes tend to focus on grain shipments out of the US Gulf (either to ARA range in North Europe or to the Far East and particularly Japan) and the West Coast of North America (Nopac) to Japan. However, a decade or so ago if asked to nominate the archetypical Panamax route the immediate response would almost certainly have been coal from Hampton Roads to Japan. Once US coal loading facilities were expanded - the large ship trade also being supported by the topping-off process at the South African port of Richards Bay - and sailings moved to the Cape route, this longstanding Panamax carrier rate "marker" all but disappeared.

This reiterates yet again the point made that discontinuities within the market make the development of unbroken 20 year data series for a particular cargo/route combination either impossible to develop or too uncertain to be relied upon.

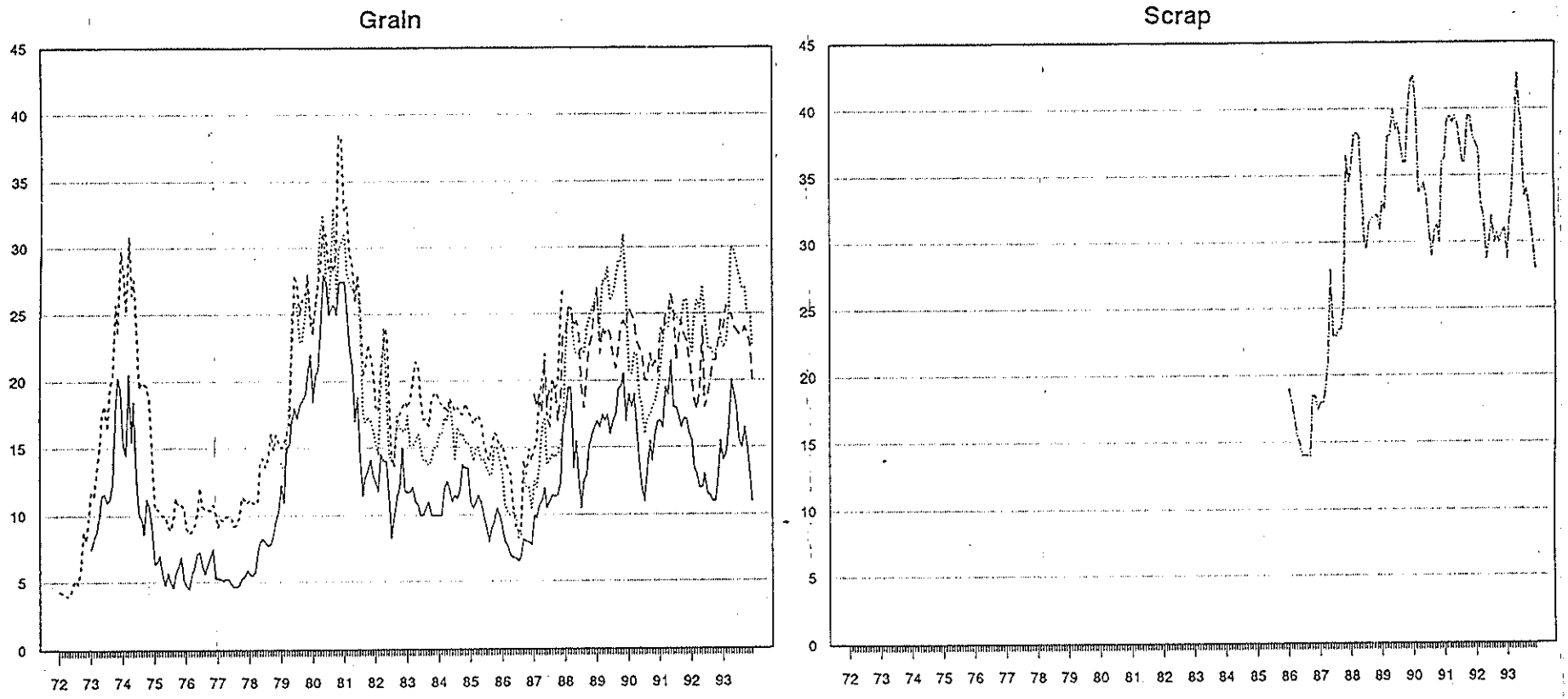
Inevitably, this means that any trend presented has to be something of a composite. As a result, Figure 2.9 has been developed showing the longest reasonable trend - based on available representative data reports and estimates - for four routes:

(a) US Gulf to Japan, grain.

Figure 2.8

REPRESENTATIVE SINGLE VOYAGE RATES: HANDYMAX BULK CARRIERS

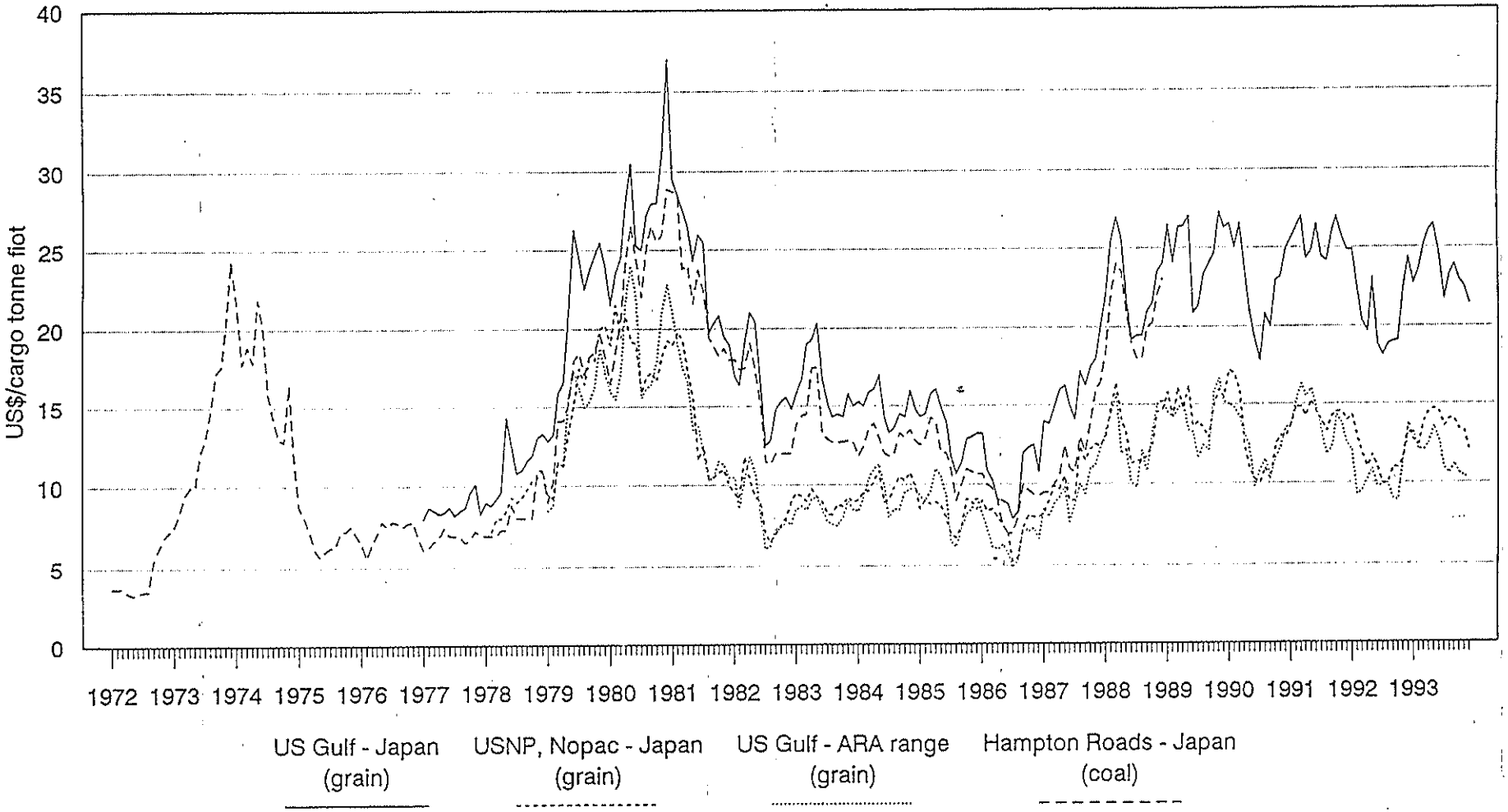
US$/cargo tonne fiot



* Eastern Med./Black Sea (excluding USSR). ** Algeria (commercial charterers).
Source: Drewry Shipping Consultants.

Figure 2.9

REPRESENTATIVE SINGLE VOYAGE RATES: PANAMAX BULK CARRIERS



Source: Drewry Shipping Consultants.

(b) USNP (Nopac) to Japan, grain.

(c) US Gulf to Antwerp-Rotterdam-Amsterdam (ARA) range, grain.

(d) US Atlantic (Hampton Roads) to Japan, coal.

The conclusion that emerges from Figure 2.9 is that the rate pattern on each of the routes moves broadly in unison although the US Gulf-ARA and Nopac-Japan rate movements do illustrate the influence of Atlantic versus Pacific "changing strength" nuances.

2.2.2.3.4 Indicative Cape Bulk Carrier Single Voyage Rates

Developing a long run rate series in terms of single voyage rates for cargoes carried by Cape class bulk carriers creates significant problems. In the early phase of the time period under review, the Cape size fleet was relatively small but - more significantly - was made up primarily of modern ships employed under long term contracts. Consequently, while there was something of a market for these ships on period terms, "spot" options were not regular features. Indeed, it is perhaps the later years of the 1970s before this market started to develop more consistently - i.e. once the "older" ships in the fleet were released from their initial long-term commitments.

A further difficulty arises from changes in the typical cargo stem lifted by Cape types on key routes - changes generally reflecting either an upgrade of port capabilities and/or deepening work.

As a result, while Figure 2.10 can be viewed as indicative, it needs to be kept in mind that the longest of the data series shown are "composites". In order to minimise the impact of these discontinuities on the rate trend, efforts have been made to track the latest preferences back as far as appears realistic. In practice, at the "change over points" the differential between the new and old rates tend to be relatively small and hence not materially significant. This is not too surprising as, unless change occurs because of the opening of a wholly new mine, port facility, etc, the move to larger individual cargo stems tends initially to be a gradual occurrence. As a result, the larger "stems" tend to encroach on the existing market by slightly undercutting the rate. Later, the new stem preference creates its own market as the availability of suitable ships increases.

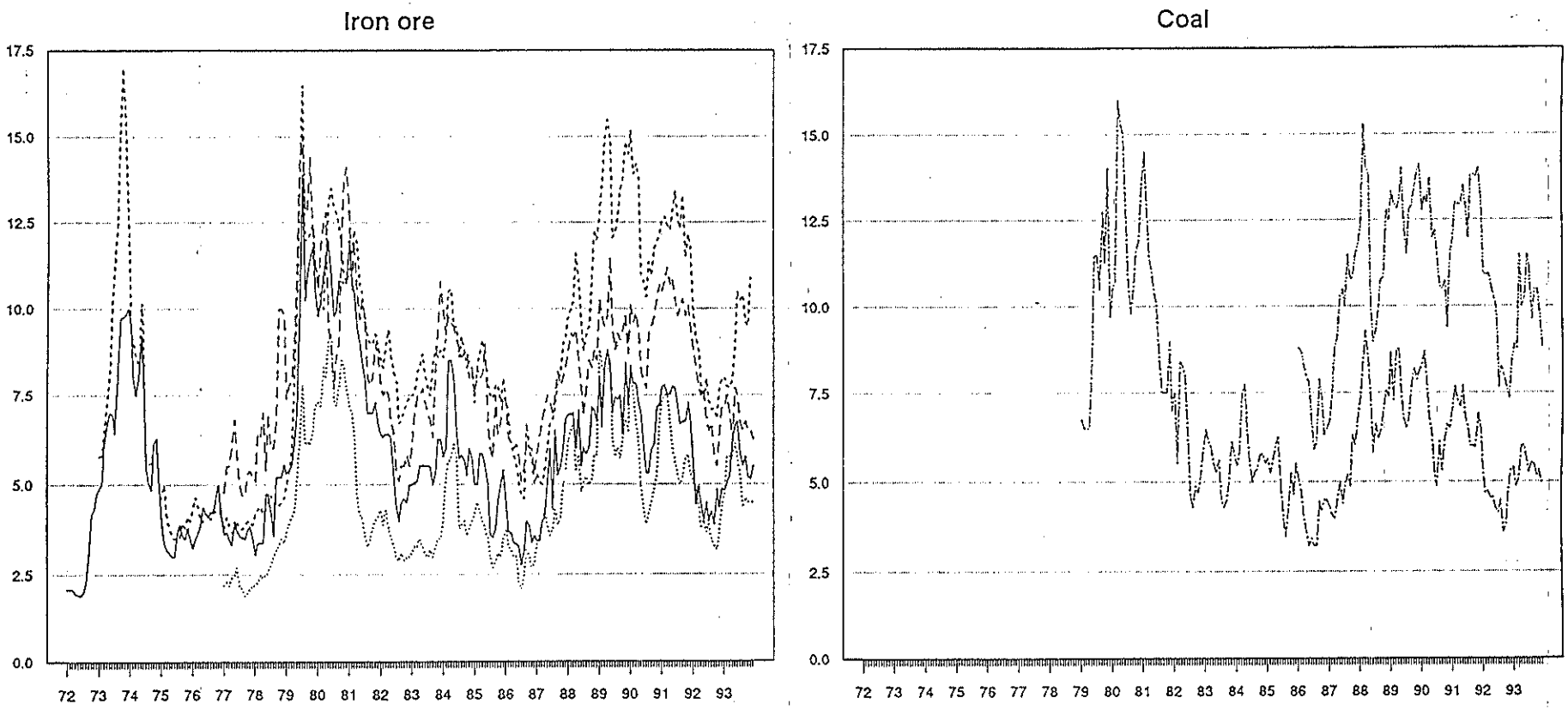
By way of further explanation, the components used to develop Figure 2.10 are:

(a) Brazil to Antwerp-Rotterdam-Amsterdam (ARA) range, iron ore. From January 1985 onwards, rates assume a cargo of 125-175,000 tonnes. Over the period from January 1981 to December 1984, the basis is of a maximum cargo of about 100,000 tonnes. From

Figure 2.10

REPRESENTATIVE SINGLE VOYAGE RATES: CAPE BULK CARRIERS*

US$/cargo tonne fiot



* Series based on typical largest stems that Cape ships might carry (see text for details).

Source: Drewry Shipping Consultants.

January 1972 to December 1980, the typical stem is based on a maximum cargo of around 80,000 tonnes.

(b) Brazil to Japan, iron ore. From January 1989 onwards, rates assume a cargo of 120-160,000 tonnes. From January 1977 to December 1988, this adjusts to 90-110,000 tonnes. Earlier data relates to an assumed lifting of 80-100,000 tonnes.

NB: The rates quoted out of Brazil relate to the longer established loading terminals (principally Tubarao, Sepetiba Bay or Ponta da Ubu - where possible Tubarao is utilised in the data as there are slight rate differentials with the other loading ports) and do not include Punta da Madeira.

(c) East Canada (St Lawrence River) to ARA range, iron ore. Data series commences in January 1977 and relates to shiploads of 110-140,000 tonnes.

(d) Western Australia (Dampier, Port Hedland, Port Walcott) to ARA range, iron ore. Data series commences in January 1977 and relates to shiploads of 120-140,000 tonnes.

(e) Eastern Australia (Hay Point, Abbot Point, Dalrymple Bay, etc) to ARA range, coal. This data extends back only to January 1986. Shipments are assumed to be about 110-130,000 tonnes. Prior to 1986, available data points to the suggestion that stems would in the main have favoured "Panamax" liftings.

(f) Hampton Roads to ARA range, coal. From January 1987 onwards, the rate series is based on an assumed lifting of 80-110,000 tonnes. Between January 1979 and December 1986, it is assumed that a part loaded Cape (constrained by draft limitations at US loading ports) would fit into the 60-80,000 tonne rate trend. Prior to this period, it is assumed that this would have been a "Panamax" carrier dominated operation.

Despite any problems that the methodology necessary to create Figure 2.10 might have introduced, the overall cyclical pattern seen in the other voyage rate data series is again in evidence.

2.3 Evolution of Dry Bulk Trade and its Shipping Requirements

2.3.1 Defining Dry Bulk Trade

One of the odder aspects of the dry bulk trades is that there is no clear-cut or undisputed definition of what constitutes dry bulk cargo. Obviously, given this, the identification of dry bulk trade can be open to different interpretations.

Terms such as major, minor, secondary and neo-bulk cargoes are put forward as generic terms but their component parts are not subject to universal agreement.

With the major dry bulk trades, the debate centres on whether there are three or five. No one disputes the inclusion of iron ore, coal (coking and steam) and grain - although whether the last should include sorghum, soyabeans and wheat flour alongside maize, wheat, barley, oats and rye is a debatable point. Traditionalists have tended to add bauxite and alumina (the principal sources of aluminium) and phosphate rock (the leading fertiliser raw material). The latter are sometimes questioned due to (a) the dramatically smaller trade flows compared with iron ore, coal and grain, (b) the trade flows involved might be exceeded by other "minor" products and (c), especially in the case of phosphate rock, the relatively low transport contribution made by other than the smallest bulk carriers.

Table 2.2
Representative Dry Bulk Commodities of Significance to International Seaborne Trade

Iron Ore		
Coal	-	Coking (metallurgical) and Steam (thermal) coal.
Grains and Meals	-	Maize, wheat, barley, etc.
Aluminium source material	-	Bauxite (ore) and Alumina (intermediate product).
Phosphate Rock		
Fertilisers and Raw Materials	-	Including finished fertilisers, sulphur and potash salts.
Other Ores and Minerals	-	Including ores/concentrates of such metals as manganese, copper, lead, zinc, titanium, nickel and chromium. Salt and other chemical industry minerals. Gypsum. Various quarry products.
Agribulks	-	Including rice, sugar and tapioca.
Forest Products		
Other neo-bulks	-	Including iron and steel products, ferrous scrap, cement and petroleum coke.

Source: Drewry Shipping Consultants

Clearly, if a product does not meet the major bulk definition, it would be viewed as one of the minor bulks. However, here again there are splits. The most basic is between free-flowing and non free-flowing materials - effectively the distinction between secondary and neo-bulk products. The position is not always totally clear-cut, however, as while forest products tend to be accepted as neo-bulk sector materials, woodchips are free-flowing.

The final debatable item is which products are included under the minor bulk headings. There is a need for a marker definition and that which fits best is that dry bulk cargoes are defined as being commodities transported in some degree as full shiploads of homogeneous product. An indication of the range and scale of the materials that fall under this definition can be interpreted from Table 2.2.

One crucial factor that emerges from this form of assessment of the dry bulk trades is that it does not follow that the carriage of dry bulk cargo is synonymous with the employment of dry bulk carriers. Dry bulk cargoes, as defined above, can be carried on general cargo ships (whether 'tweendeckers, freighters, roll on/roll off types or even containerships). Equally, bulk carriers will be used to ship cargoes that do not fall into the categories identified in Table 2.2.

2.3.1.1 Other Trading Opportunities for Dry Bulk Carriers

For the vast majority of the bulk carriers of 10,000+ dwt (the traditional split between near and deep sea - but, yet again, this is a debatable point) the employment focus lies with the carriage of bulk cargo - either as complete shiploads or with bulk cargo parcels. However, some - mainly smaller, flexible types - will extend their trading role beyond this sector. Some might actually carry conventional general cargo. A more likely diversion, especially if the bulk carrier has squared-off holds, good cargo handling gear and strengthened hatch covers, is the carriage of containers. Such operations could form part of an advertised liner service. Alternatively, the use may lie with the repositioning of empty boxes on behalf of a liner service operator. Finally, to add to the confusion, some "bulk" cargo (e.g. some forest and steel products) may be loaded into containers for shipment.

Obviously, with there being no guarantee that any bulk carrier tonnage will be fully employed in the non-bulk arena, it is difficult to assess the impact with great certainty. However, an approximate insight can be gleaned from a recent issue of Drewry Shipping Consultants Ltd's *Dry Bulk Market - Quarterly Report*, which noted:

"A significant number of bulk carriers are employed in the non-bulk trades and when looking at the size of the trading fleet it is important to consider these vessels. The

majority of bulk carriers utilised in this sector are geared vessels of less than 40,000 dwt, many of which are fitted for the carriage of containers, which is the main activity in the non-bulk trades. General cargo, manufactured goods, consumables or high value commodities as well as break-bulk trades also provide employment for many of these vessels. It is estimated that at present approximately 6.0 million dwt of dry bulk carriers are employed in the non-bulk trades."

Of the active fleet in the 10-50,000 dwt range at end-1992, this form of operation accounts for around 6-8% of available tonnage. In the total active fleet (of 10,000+ dwt) context, including combined carriers trading in dry, this percentage reduces to perhaps 2.5-3%.

While the carriage of aluminium ingots or other metal slabs might not create too much surprise in the context of bulk carrier employment, inevitably there will be the occasional "total surprise." One such example which gained publicity in 1990 centred on the use of bulk carriers (14 sailings in total were planned) to transport 3,000 mobile homes from the US port of Mobile to Israel. Various handy sized units were noted as having taken on 220 units, with the mobile homes lowered by mobile cranes into the holds or stacked three high using a specially built on-deck racking system.

2.3.2 The Evolution of Dry Bulk Trade

From the discussion put forward in Section 2.3.1, it should not seem too surprising to learn that the compilation of data series relating to dry bulk cargo volumes is not wholly straightforward. In addressing this subject within this sub-section, the Consultants have been mindful of Far Eastern Silo Corporation's reference to an emphasis on major cargoes. As a starting point, Table 2.3 indicates the overall evolution of the major (individually and collectively) and minor (collectively) seaborne dry bulk trades.

The incompleteness of Table 2.3 is due to the need to use varying data sources to cover the time period under review. This creates the added problem that some historical data will be subject to revision due to the need to make amendments in the light of receiving data from "tardier" information suppliers. However, as subsequent discussion will endeavour to show, this is not a major obstacle within the context of the needs of this report.

To provide a little further insight, Table 2.4 expands a little further on the recent composition of trade in the minor bulk category.

Clearly, the trend evident in Table 2.3 reflects the progress through various economic/ industrial and agricultural cycles. In addition, however, it points to a number of other important developments, including:

Table 2.3

Evolution of Seaborne Dry Bulk Trade: 1970-92

(Million tonnes)

	Iron Ore	Coal	Grain	Bauxite & Alumina	Phosphate Rock	Major Bulks	Minor Bulks	Total
1970	247	101	89	34	33	504	n/a	n/a
1971	250	94	91	35	35	505	n/a	n/a
1972	247	96	108	35	38	524	n/a	n/a
1973	298	104	139	38	43	622	n/a	n/a
1974	329	119	130	42	48	668	n/a	n/a
1975	291.9	127.4	137.2	41.2	37.6	635.3	n/a	n/a
1976	293.8	126.8	146.4	42.0	37.2	646.2	n/a	n/a
1977	275.5	131.8	147.3	46.4	44.4	645.4	n/a	n/a
1978	278.4	126.5	169.3	45.6	47.1	666.9	n/a	n/a
1979	327.5	159.4	182.2	45.6	48.3	763	n/a	n/a
1980	314.4	188.4	198.1	48.3	47.9	797.1	n/a	n/a
1981	302.6	211.0	205.9	44.7	41.6	805.8	499.3	1,305.1
1982	277.5	208.7	199.8	38.0	39.8	763.8	479.4	1,243.2
1983	258.6	202.2	199.5	35.8	43.3	739.4	503.8	1,243.2
1984	303.0	239.8	206.7	44.1	44.3	837.9	529.8	1,367.7
1985	319.8	276.7	181.9	39.1	41.7	859.2	547.2	1,406.4
1986	303.0	282.7	181.5	39.6	41.4	848.2	544.4	1,392.6
1987	317.6	285.6	196.4	47.9	41.6	889.1	606.3	1,495.4
1988	344.3	305.4	218.3	48.7	42.4	959.1	638.4	1,597.5
1989	365.3	309.7	220.3	53.8	40.5	989.6	652.3	1,641.9
1990	351.2	339.3	191.5	53.2	34.9	970.1	624.7	1,594.8
1991	357.1	367.2	200.2	51.2	31.2	1,006.9	615.4	1,622.3
1992(p)	338.2	365.9	204.5	50.5	28.8	987.9	604.1	1,592.0

(p) Provisional

Sources: Drewry Shipping Consultants
Fearnleys A/S

Table 2.4

Development of Seaborne Minor Bulk Trade: 1985-92

(Million tonnes)

	1985	1986	1987	1988	1989	1990	1991	1992(p)
Agribulks	72.1	73.1	87.6	94.5	100.7	97.1	96.5	103.1
- including								
Sugar	26.5	24.6	27.7	26.7	27.8	27.6	27.2	27.4
Soyameal	17.5	17.2	19.5	26.1	25.7	26.3	27.1	28.3
Rice	10.8	12.1	12.3	11.6	15.0	12.2	12.9	15.1
Tapioca	7.5	7.6	7.4	9.1	10.9	9.3	7.6	9.5
Forest Products(1)	141.0	135.4	154.0	162.7	169.2	156.5	153.5	151.0
Fertilisers & Raw Materials	64.6	64.5	76.0	81.6	81.0	81.5	79.2	76.1
- including								
Ferts.	41.4	40.5	46.2	49.4	52.3	50.3	48.8	47.5
Potash	12.9	13.4	16.9	17.8	16.8	17.9	18.3	17.7
Sulphur	10.3	10.6	12.9	14.4	11.9	13.3	12.1	10.9
Ores & Minerals	48.5	52.0	55.6	58.7	60.9	57.6	59.3	55.7
- including								
Salt	15.2	16.5	19.2	17.9	19.7	20.1	21.5	20.5
Gypsum	10.5	12.1	12.5	13.5	13.2	12.6	12.8	12.5
Concentrates(2)	9.2	8.9	10.3	10.8	10.4	10.7	11.4	10.8
Manganese ore	7.5	8.3	6.9	8.7	9.2	7.5	6.7	5.8
Iron & Steel	123.5	118.2	124.1	131.8	131.2	127.7	125.3	121.0
- including								
Scrap	25.5	25.2	27.2	28.5	29.1	28.3	28.8	27.5
Others	97.5	101.2	109.0	109.1	109.3	104.3	101.6	97.2
- including								
Cement	41.1	39.7	43.5	41.0	39.8	37.4	36.0	34.0
Pet. Coke	12.9	15.5	16.5	17.1	17.5	16.9	17.6	16.2
Total	547.2	544.4	606.3	638.4	652.3	624.7	615.4	604.1

(1) Includes logs, lumber, panel/board products, chips, pulp and paper/paperboard.

(2) Copper, lead and zinc containing only.

(p) Provisional.

Source: Drewry Shipping Consultants

(i) The longstanding dominance of the iron ore trades.

(ii) The rapid growth of the coal trades - especially steam coal grades - during the 1980s. As a consequence, the 1990s have seen coal become the largest tonnage seaborne dry bulk commodity traded.

(iii) The sizeable but erratic nature of the principal grain (wheat, maize, barley, oats, rye, sorghum and soyabeans) trades.

(iv) The importance - collectively - of the minor bulk sector.

While the aforementioned statistics are of more than passing interest, in looking to provide a historical perspective relevant to an appraisal of Handymax, Panamax and Cape class types, there is a need to develop this overview a few stages further.

The key points to be considered are:

(a) The development of ship size preferences within the dry bulk trades.

(b) The impact on the demand for vessel tonnage.

However, before turning to these points mention is made in passing to a further aspect of the evolution of dry bulk trade - this time in the context of the charter market. As this is something of an aside, it is not proposed to go into a discussion on the nature and rationale of different chartering options. The reason for comment arises from the reference in Far Eastern Silo Corporation's original outline to cargo developments in the freight rate context.

The importance of spot chartering in different commodity trades differs dramatically. It is reasonable to expect fairly high levels of spot traffic in much of the agribulks sector given the uncertainties of crop yields and climatic conditions. For others, the norm is the long term contract. Here spot traffic may owe more to opportunism or distress than any real change in the traffic pattern. Limiting comment purely to reported single voyage chartering, Table 2.5 summarises the activity: total trade relationships for selected dry bulk cargoes.

Obviously, care has to be taken not to read too much into the figures detailed in Table 2.5. There are, for various reasons, periods when large volumes of business are concluded on private and confidential terms so the charter volumes are an inevitable understatement. In addition, no allowance is made for elements of this business being performed by ships

Table 2.5

Seaborne Trade Volumes Versus Reported Single Voyage Chartering for Selected Commodities

Commodity	Year	Estimated Trade (Million tonnes)	Reported S.V. Charters* (Million tonnes)	%
Grains/Meals**	1986	181.5	50.9	28.0
	1987	196.4	46.4	23.6
	1988	218.3	42.6	19.5
	1989	220.3	37.1	16.8
	1990	198.7	37.7	19.0
	1991	221.5	29.1	13.1
	1992	218.2	42.3	19.4
Sugar	1986	24.6	2.1	8.5
	1987	27.0	1.4	5.2
	1988	26.7	1.8	6.7
	1989	28.3	1.8	6.4
	1990	28.3	2.0	7.1
	1991	27.3	1.3	4.8
	1992	27.0	1.2	4.4
Fertilisers & Raw Mats.***	1986	105.9	3.0	2.8
	1987	118.4	3.8	3.2
	1988	126.2	4.5	3.6
	1989	124.6	5.8	4.7
	1990	113.9	3.7	3.2
	1991	105.9	3.5	3.3
	1992	106.0	2.3	2.2
Iron Ore	1986	310.5	37.6	12.1
	1987	318.6	36.7	11.5
	1988	348.3	40.7	11.7
	1989	365.2	33.5	9.2
	1990	351.2	42.8	12.2
	1991	357.1	43.5	12.2
	1992	349.0	48.3	13.8

Table 2.5 (cont'd)

Commodity	Year	Estimated Trade (Million tonnes)	Reported S.V. Charters* (Million tonnes)	%
Coal	1986	282.7	35.8	12.7
	1987	285.6	27.6	9.7
	1988	305.2	25.3	8.3
	1989	311.9	20.5	6.6
	1990	339.3	31.8	9.4
	1991	367.2	34.6	9.4
	1992	376.5	40.8	10.8
Forest Products	1986	135.4	-	-
	1987	154.0	-	-
	1988	162.7	0.1	0.1
	1989	161.8	0.1	0.1
	1990	160.4	-	-
	1991	159.1	-	-
	1992	157.8	-	-

All 1992 trade estimates are provisional.

* As recorded in Drewry Shipping Consultants' "Shipping Statistics and Economics".

** Wheat, maize, barley, oats, rye, sorghum and soyabeans.

*** Phosphate rock, sulphur, potash and finished products.

Source: Drewry Shipping Consultants

taken under trip charter arrangements (while these may constitute an alternative chartering option they can also act as a duplication with holders of single voyage charters then taking in tonnage to perform the operation. Equally, there is a chance that tonnage will be trip chartered in anticipation of securing a voyage charter).

However, there are a few trends of interest. Note might be made of the traditional importance to the short term market of single voyage grain chartering. Given also that smaller vessels are utilised here than in the iron ore and coal sectors, this importance takes on greater significance in terms of numbers of bulk carriers required. The sugar figures indicate that trading agribulks does not mean that a lot of spot business will be openly reported. This is a tightly controlled and competitive market sector.

The forest products and, to some extent, the fertiliser sectors point to the influence of term

contracts. However, given the importance of long term arrangements normally attached to iron ore and coal trading, the reported spot proportion is relatively high. In part, this lies with traffic arising from contract of affreightment (COA) holders using chartered ships to work individual voyages. The reality, therefore, is that much of this activity is sub-letting. With relatively few large bulk carriers genuinely open to the market, it is important for the industry to keep freight rate indications in circulation. The increase in proportionate use of this chartering mode in 1986 and, if the trade estimates prove correct, 1992 may be a little more significant as both represent periods of perceived market recession. Owners' resistance to locking into long term contracts at low freight rate levels will be at its strongest. Equally, charterers seeing no immediate need to protect themselves against rising freight rates might also resist long term ties - especially if there are doubts about owners' abilities to survive financially.

As a longer run guide to the scale of short term market activity, Table 2.6 summarises combined contributions of the reported single voyage and trip charter sectors.

Table 2.6

Reported Short-term Chartering Activity in the Dry Bulk Freight Market

	Single Voyage (Million cargo tonnes)	Trip Charter (Million dwt)
1975	78.5	30.2
1976	85.7	48.3
1977	81.7	53.7
1978	76.1	62.0
1979	76.5	59.0
1980	88.2	54.7
1981	108.7	52.4
1982	106.5	38.1
1983	109.4	49.6
1984	133.9	58.8
1985	144.7	66.5
1986	138.3	72.8
1987	148.4	84.7
1988	122.4	86.3
1989	105.8	95.8
1990	122.0	85.0
1991	110.0	101.5
1992	141.0	82.0

Source: Drewry Shipping Consultants - "Shipping Statistics and Economics"

To give a sense of perspective - and, as previous comments have noted, some caution is needed when aggregating voyage and trip information - when comparing the sum of reported single voyage chartering and trip chartering (adjusted to assume a full bulk load) with total seaborne trade in identified dry bulk commodities (which is a topic with its own caveats), the reported short term to total volume relationship over the 1981-92 period has fallen into the 11-15% range.

2.3.3 Changing Ship Size Preferences in the Dry Bulk Trades

The desire to achieve scale economies by attaining the optimum sized cargoes for a specific commodity on a particular trade route has been the principal driving force behind the process that has led to the bulking of cargo and the progressive utilisation of larger sized carriers. The prime movers of this policy will be cargo-controlling interests (shippers) responding to the competitive needs of their own industry. However, the achievement of these goals is also a function of the constraints imposed by existing and planned port infrastructure and related cargo handling, storage and distribution facilities.

The pace of change will be variable. The scale can be gradual or dramatic. To illustrate these points, reference needs to be made to specific commodity trades.

2.3.3.1 Iron Ore

The changing size preferences seen in the iron ore sector are illustrated through Figure 2.11.

Due to its low inherent value, iron ore has always needed to be a big ship trade. In the 1960s, big ships were 30-40,000 tonners. Today, they are 150-300,000 tonners. Unfortunately, available data on ship size preferences tends to change over time due to changing perceptions of what is typical in the trade. Figure 2.11, therefore, contains a little interpolation.

To add to the picture presented, Table 2.7 summarises the position for the last five years of available data in more detail.

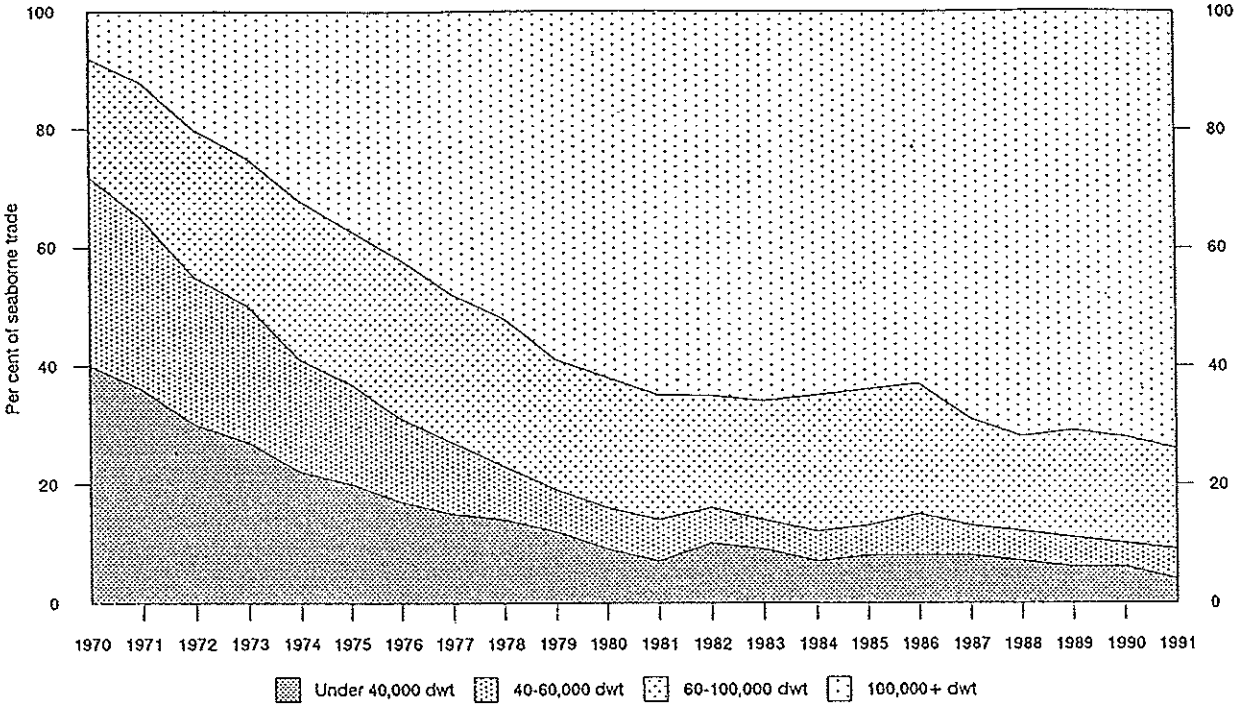
In summary, the critical changes in the iron ore sector can be noted as:

- The minimalisation of the small ship sector (and this includes Handy/Handymax and, to a degree, Panamax types).

- The huge and rapid market penetration of Cape and Very Large (Vlbc) bulk carrier

Figure 2.11

CHANGING SHIP SIZE UTILISATION IN THE IRON ORE TRADES



Source: Fearnleys "World Bulk Trades", Drewry Shipping Consultants.

Table 2.7

Ship Size Utilisation in the Iron Ore Trades: 1987-91

(% of seaborne trade)

	Size Range (Thousand Dwt)					
	<50	50-80	80-100	100-150	150-200	>200
1987	9	17	5	33	22	14
1988	7	16	5	33	23	16
1989	7	17	5	32	22	17
1990	7	17	4	31	23	18
1991	8	14	4	31	23	18

Source: Fearnleys AS - "World Bulk Trades"

tonnage during the 1970s. This period marked the arrival of Japan as the dominant force in the iron ore import market through its development of vast coastal integrated steelmills. This period also saw other key port upgrading programmes - both on the export (notably in Australia and Brazil) and import (principally North West Europe but also in parts of the Far East) side of the equation - which in conjunction with newbuilding programmes for large bulk carriers built against long-term cargo contracts produced irreversible changes.

- A second, albeit less pronounced, upward size shift in the late 1980s boosted by the market entry of ore from Brazil's Carajas deposit.

- Since 1985, the main share "gainers" have been vessels in the 150-200,000 dwt and 200,000+ dwt size bands.

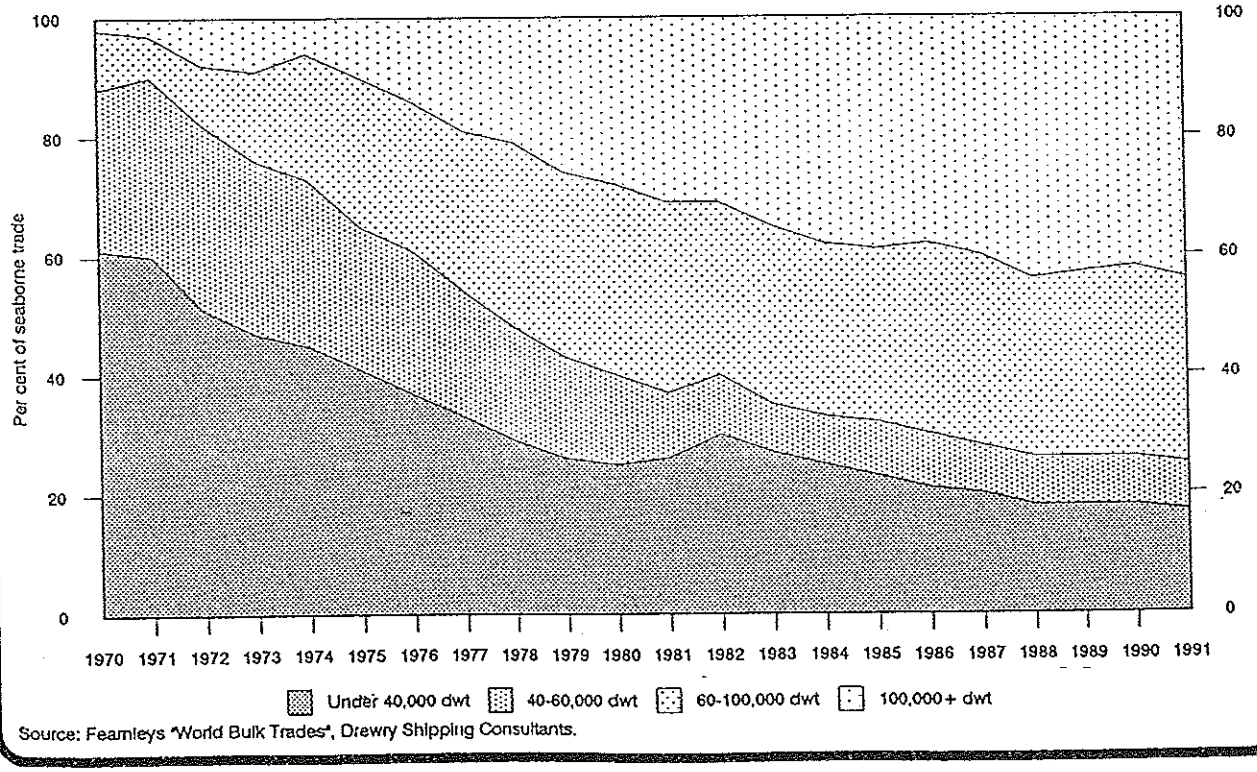
2.3.3.2 Coal

The corresponding ship size preference trend for coal traffic is illustrated through Figure 2.12. However - as Section 2.3.3.2 will elaborate - the evolution of seaborne coal business has two driving forces, namely metallurgical grade (or "coking") demand from blast furnace based integrated steelmills and thermal grade (or "steam") demand from power utilities and certain other industrial users. Of the two, steam coal has been the later arrival as a force in the development of seaborne trade; its rate of trade growth, however, has been dramatic.

For much of the 1970s the main coal trades were thought of as a mainstay of the employment of Panamax bulk carriers. The erosion of this position stems to a degree from port developments at the loading end (notably in South Africa, British Columbia, Queensland and New South Wales and more recently in Colombia and Indonesia) since

Figure 2.12

CHANGING SHIP SIZE UTILISATION IN THE COAL TRADES



Source: Fearnleys "World Bulk Trades", Drewry Shipping Consultants.

coking coal discharge has been able to benefit from steelmill berth upgrades to handle the larger iron ore carrying ships. The apparent stabilisation of smaller ship shares is influenced by the fact that direct deliveries (as opposed to cargo discharged at major ports such as Rotterdam for onbound shipment) to many power utilities, cement works, etc are not suited to large ship utilisation.

One other interesting point to note from Figure 2.12 is the temporary reversal of the small ship use trend over 1980-82. This was the point when various market factors combined to create major coal port congestion (especially at the US loading facilities at Baltimore and in Hampton Roads) creating lengthy delays - effectively removing a large volume of Panamax and Cape class ships from the transport equation - and thereby encouraging quite large volumes of coal to be shipped out of more restricted ports not noted as being at the forefront of the coal trade.

Table 2.8 reinforces the description of the recent position by noting the last five years of available data.

Table 2.8
Ship Size Utilisation in the Coal Trades: 1987-91
(% of seaborne trade)

	Size Range (Thousand Dwt)					
	<50	50-60	60-80	80-100	100-150	>150*
1987	24	4	27	5	30	10
1988	22	4	25	5	32	12
1989	23	3	26	5	31	12
1990	23	3	27	5	30	12
1991	22	3	26	5	31	13

* From 1988-91 inclusive, 1% is attributed to >200,000 dwt ships.

Source: Fearnleys AS - "World Bulk Trades"

To summarise the key points relevant to the coal sector it is noted that:

- The trend for coal is similar to that of iron ore but the pace of change has been less dramatic.

- The differing needs of the two products areas - coking and steaming coal - has been influential in slowing the overall move to larger ship use. Through to the mid-1970s, the Panamax carrier was pivotal. Thereafter, Cape size penetration began to make its

presence felt. The initial impetus lay with the feeding of high throughput integrated steelmills. The requirements, and storage capabilities, of power utilities and cement makers have supported the use of smaller carriers (Handymax and Panamax). However, progressive load port expansion (in Australia and, especially, at Richards Bay in South Africa) have enabled steam grades to provide Cape class cargo openings.

■ Since 1985, changing shipper size choice has been relatively marginal in percentage terms - though trade volumes have increased noticeably.

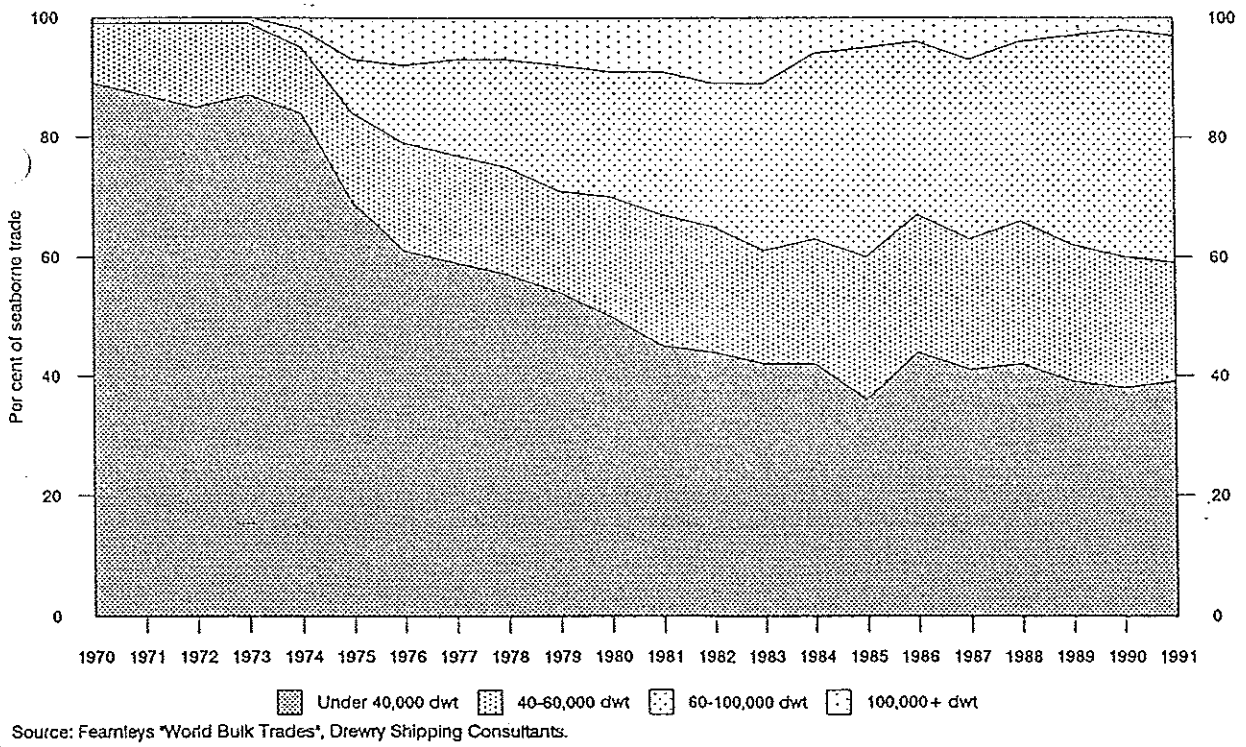
2.3.3.3 Grain

As Figure 2.13 illustrates, the past two decades have produced substantial changes in size of vessel preferred in the grain sector (in this case taken to include wheat/wheat flour, maize, barley, oats; rye, sorghum and soyabeans - although the last is clearly not a grain it is included because of the industry's tendency to arrange many charters on the basis of stems described as heavy grain/sorghum/soyabeans or hss).

Looking at the chart, the main feature to surface is the growing importance of Handymax ships - but more crucially the rapid and dramatic development of Panamax carrier use. Within this market sector there have two main underlying influences at play. First, on the

Figure 2.13

CHANGING SHIP SIZE UTILISATION IN THE GRAIN TRADES



Source: Fearnleys "World Bulk Trades", Drewry Shipping Consultants.

main long haul routes (especially USA-Japan) cargo sizes have been upgraded to Panamax carrier stems through combination port options (i.e. the use of one or two ports or terminals at the discharge end of the voyage). Second, most of the growth markets for grain (notably in the Far East but also in regions such as North Africa) have developed their import and storage facilities around a capability to handle Panamax loads. With the latter pointing the way forward for much of the grain trades, this trend should continue.

Another point worthy of note is the "rise and fall" of large bulk carrier (>100,000 dwt) use in the grain trades. In practice, the opportunities for ships of this are very limited and consist almost entirely of cargo from the lower Mississippi River/US Gulf to NW Europe (principally Rotterdam) although in 1993 there have been reports of some "small Capes" being booked to work grain stems from Argentina. The Argentine business clearly involves grains that have been brought down the River Plate by other means to Buenos Aires or Bahia Blanca. However, the size of cargo lifted is unclear. From the Mississippi, draft limitations ensure that Cape vessels are only part loaded - typically to around 70,000 tonnes though instances of up to about 85,000 tonnes are not that uncommon. In the main, however, this trade tends to be more prominent in poor market conditions. While freight rates for 65-85,000 tonne stems may seem relatively favourable to shipowners in comparison with 50-65,000 tonne indications, they do involve a high level of under-utilisation. For preference, owners would like to fully utilise the earning power of their ships - essentially requiring cargoes of coal or ore. A further development that may curb large carrier use is the fact that grain carriage requires stringent hold preparation, etc and suggests that "sub-standard" ships would be unfixable. Clearly, with charterers in the ore and coal market also obliged to focus more on securing "quality" ships for their own business, the availability of these ships to the grain sector will come under further restriction.

Table 2.9

Ship Size Utilisation in the Grain Trades: 1987-91

(% of seaborne trade)

	Size Range (Thousand Dwt)				
	<50*	50-60	60-80	80-100	>100
1987	55	8	28	2	7
1988	56	10	28	2	4
1989	48	12	36	2	2
1990	49	13	34	1	3
1991	50	10	36	1	3

* The share of <40,000 dwt ships is probably of the order of 35-40%.

Source: Fearnleys AS - "World Bulk Trades"

Table 2.9 continues the description of the recent position by noting the last five years of available data.

In summary, major points to note include:

- As with the trade itself, the ship size preference trend emerging from the grain sector has been erratic although overall the move to larger shiploads is in evidence.

- The real event has been the increased dominance of the Panamax carrier.

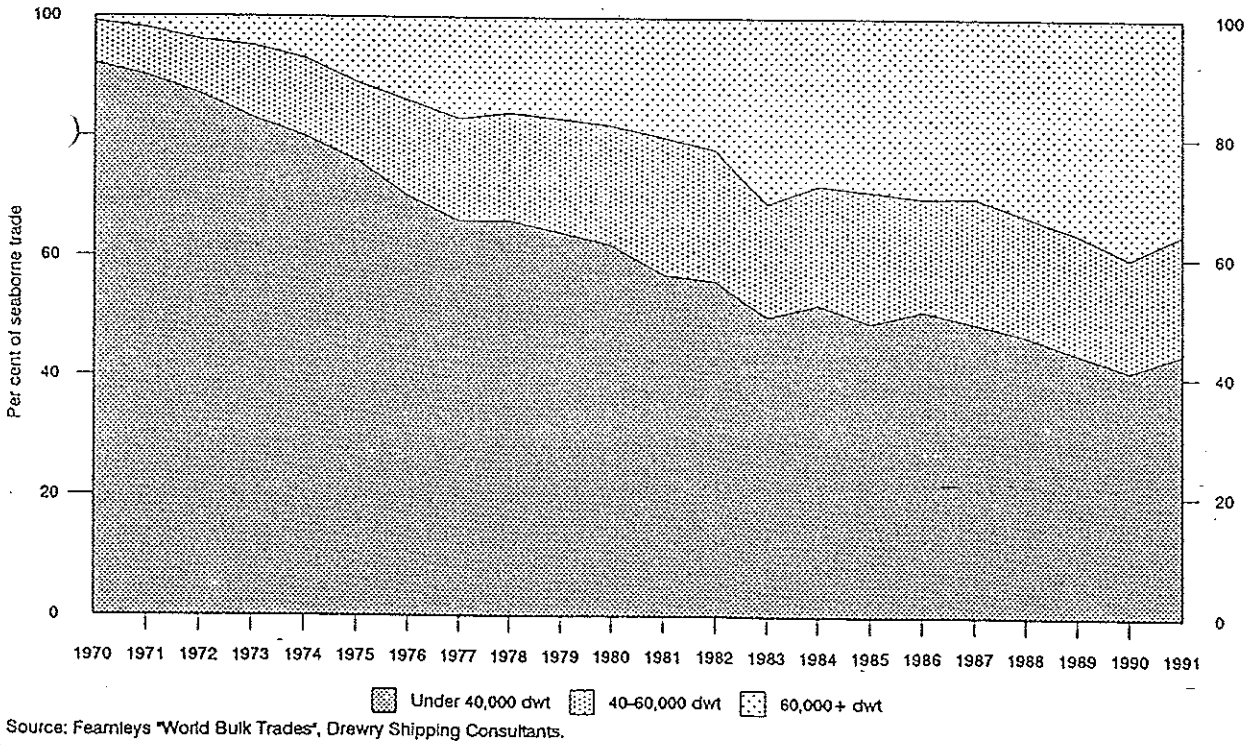
- Where "newer" substantial importers are emerging, investment enabling ports to be capable of accepting 50-70,000 dwt bulk carriers seems to be prevalent.

2.3.3.4 Bauxite and Alumina

Continuing the theme of the preceding sub-sections, Figure 2.14 outlines moves in the shipments of bauxite (the principal ore from which aluminium is obtained) and alumina (its intermediate smelter product). As one would expect, the largest individual cargoes tend to refer to long-haul shipments of the lower value material (bauxite). However, much of this market is typified by the presence of restricted draft ports with the result that (i)

Figure 2.14

CHANGING SHIP SIZE UTILISATION
IN THE BAUXITE AND ALUMINA TRADES



Source: Fearnleys "World Bulk Trades", Drewry Shipping Consultants.

the largest shipments are likely to be in Panamax ships of about 65,000 dwt and (ii) the majority of shipments continue to be as small cargo stems though the role of Handymax types has been increasing. The trade relies to a large extent on long term contractual arrangements and this will act as a brake on the pace of change in terms of ship size preferences.

To summarise:

- Bauxite and alumina movements are moving along the path to larger vessel utilisation. Much of this has been due to the development of Panamax carrier-capable export loading ports in Guinea, Australia and Brazil.

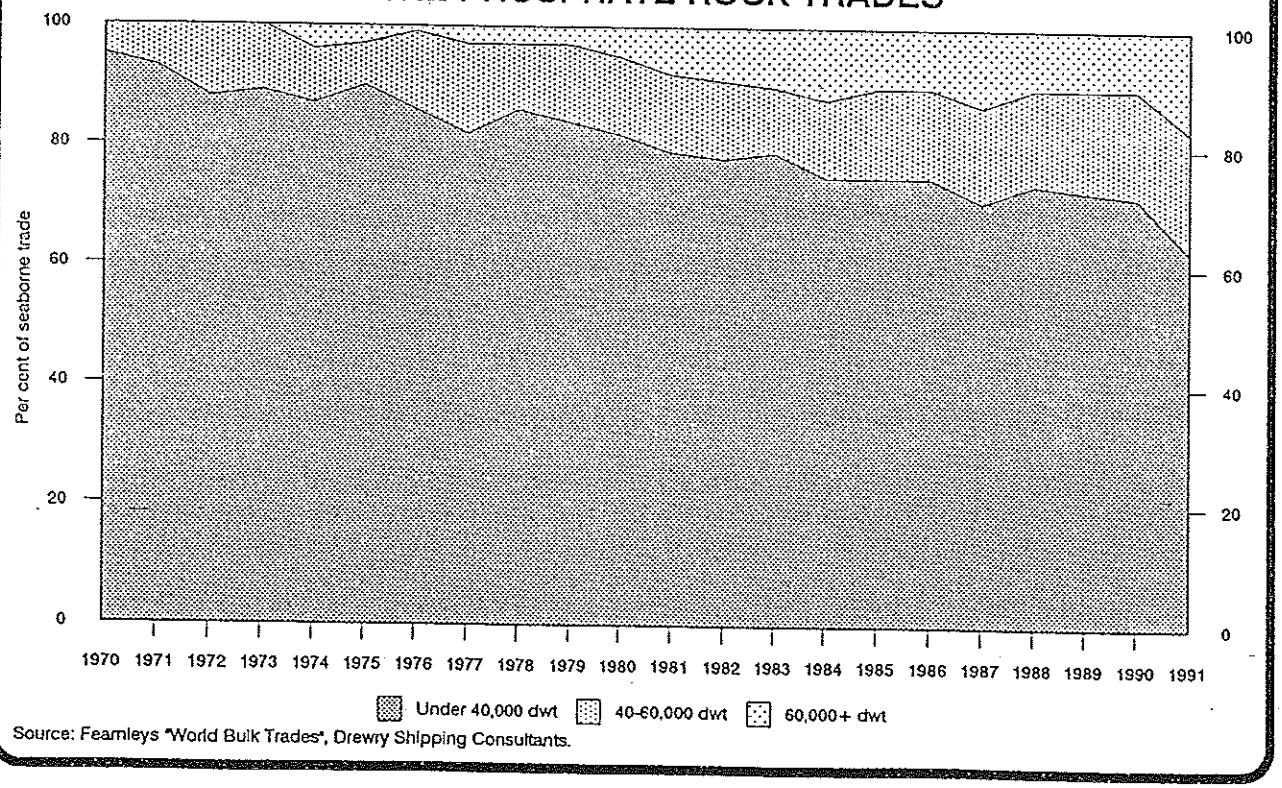
- The principal check on this trend lies with any "downstream" switching of shipments - i.e. bauxite exporters progressing to becoming shippers of alumina or perhaps even aluminium ingot - which could re-focus the traffic more closely on the Handymax sector.

2.3.3.5 Phosphate Rock

Completing the picture for the major bulk cargoes (taking the wider market interpretation), Figure 2.15 indicates the pattern created in the phosphate rock trades.

Figure 2.15

CHANGING SHIP SIZE UTILISATION
IN THE PHOSPHATE ROCK TRADES



Source: Fearnleys "World Bulk Trades", Drewry Shipping Consultants.

Here, little change of substance is apparent. Port facilities tend to be restrictive - especially at the receiving end. In addition, the path to added-value "downstream" product production and exporting (as, for example, di-ammonium phosphate or other finished fertiliser) is very much in evidence.

2.3.3.6 Minor Bulk Trades

Attempting to monitor the ship size preference profile in the minor dry bulk trades is a more than a little uncertain exercise. As a very general guide it is thought that around two-thirds to three-quarters of identified traffic (based on the commody groupings indicated in Table 2.4) is carried by bulk carriers. Of the bulk carrier share, around 80% lies with the sub-50,000 dwt sector. Virtually all of the balance is worked in Panamax hulls though a very small percentage will be catered for by the >100,000 dwt category.

2.3.4 Assessing Dry Bulk Ship Demand

Ship demand is not solely a function of the volume of relevant cargo entering seaborne trade. In addition to considerations of shipper size preferences, two other topics have to be taken into consideration - the geographical pattern of dry bulk trade and the likely productivity of the ships utilised.

2.3.4.1 Trade Patterns and the Concept of Tonne-Miles

The major part of dry bulk cargo traffic consists of either agricultural products, industrial raw materials or some form of intermediate or semi-finished product. The geographical trade patterns created by this business create very few "balanced flows" (i.e. trading options allowing ships to work laden round voyages are rare). As a result, bulk carriers tend to look at "triangular" or "multi-leg" operating patterns designed to minimise their unremunerative (sailing in ballast) time. This process introduces a key variable into the ship demand equation - laden voyage distances. Consequently, the impact on demand of a small cargo tonnage increase to be worked over a long distance may have a more substantial impact than a larger cargo volume increase on a short haul route. The key measure therefore becomes the tonne-mileage performed rather than just the tonnage shipped.

Given the comments made earlier relating to (i) the definition of dry bulk commodities and (ii) the sizeable changes that often arise in certain trade sectors between provisional and final annual trade volumes, one needs to exercise caution in evaluating long run tonne-mile data series. Table 2.10 seeks to provide some indications covering the period from 1985 onwards. The Consultants believe that the tonne-mile information shown is

Table 2.10
World Dry Bulk Trade - Assessed Tonne-Mile Demand: 1985-92

(Thousand million tonne-miles)

	1985	1986	1987	1988	1989	1990	1991	1992 (p)
Iron Ore	1,726.9	1,636.2	1,715.0	1,893.7	2,045.7	2,001.8	1,999.8	1,893.9
Coal	1,443.1	1,485.9	1,520.8	1,630.5	1,660.0	1,722.5	1,836.9	1,836.1
Grain	959.1	948.3	1,063.5	1,182.1	1,192.9	1,019.1	1,027.0	1,068.5
Bauxite & Alumina	146.2	148.8	169.5	175.0	195.8	192.1	182.6	183.6
Phosphate Rock	131.8	129.2	133.1	140.8	136.1	123.3	113.5	106.0
Total-Major	4,407.1	4,348.4	4,601.9	5,022.1	5,230.5	5,058.8	5,159.8	5,088.1
Agribulks	277.5	295.8	341.6	386.3	408.1	394.2	388.6	419.9
Forestry	391.3	391.0	468.2	494.6	521.1	494.1	490.5	488.8
Fertilisers, etc.	242.1	251.6	301.1	338.8	334.1	342.8	333.0	324.1
Ores & Minerals	134.2	143.1	152.9	165.5	171.4	158.8	163.1	151.6
Iron & Steel	520.5	483.0	502.9	547.6	559.8	552.9	541.8	524.5
)hers	238.6	257.6	286.2	303.4	317.3	309.8	304.7	294.4
Total-Minor	1,804.2	1,822.1	2,052.9	2,236.2	2,311.8	2,252.6	2,221.7	2,203.3
Total	6,211.3	6,170.5	6,654.8	7,258.3	7,542.3	7,311.4	7,381.5	7,291.4

(p) Provisional.

Source: Drewry Shipping Consultants

consistent with the volumes and geographical distribution of the the dry bulk cargo tonnage figures presented earlier. (Prior to this period, the Consultants were unable to maintain detailed records on a number of minor bulk commodities so any figures offered for prior periods would show a "discontinuity" of the data series - hence their exclusion from this Report.)

I)vever, a further factor to be taken into account when seeking to assess bulk carrier demand is that a proportion of the identified trade and tonne-mileage will be transported by other ship types or vessels of under 10,000 dwt. Allowing for this, the Consultants' estimates of bulk carrier tonne-mileage performance since 1985 is as follows:

Thousand million tonne-miles

1985	5,651.8	1989	6,881.8
1986	5,615.4	1990	6,687.3
1987	6,036.7	1991	6,768.8
1988	6,608.4	1992(p)	6,696.5

(p) Provisional

Source: Drewry Shipping Consultants

Splitting these figures into the main bulk carrier size brackets of interest in this report, the indications point to tonne-mile shares (in thousand million tonne-miles) as follows:

Size Range	30-50,000 dwt	50-100,000 dwt	100-150,000 dwt
1985	1,261.8	1,665.6	1,041.4
1986	1,288.1	1,695.2	1,024.0
1987	1,392.8	1,747.6	1,090.1
1988	1,506.2	1,890.4	1,221.0
1989	1,507.6	2,096.2	1,233.6
1990	1,432.3	2,025.2	1,195.5
1991	1,414.1	2,059.9	1,267.3
1992(p)	1,392.3	2,061.3	1,259.3

(p) Provisional.

Source: Drewry Shipping Consultants

2.3.4.2 Bulk Carrier Productivity

One of the more difficult aspects to evaluate when assessing and seeking to project bulk carrier demand - and by implication subsequent estimates of market movements and hence profitability - is the translation of perceived shipping needs into a measure that be compared with the projected development of the fleet itself. The position gains added complexity from the fact the performance of the fleet at any given time is influenced by a wide array of factors including not just trade volumes and distribution and cargo lot size preferences but also market/rate levels (affecting the level of laid-up tonnage, tonnage being used as floating storage, tonnage trading part-laden or a multiple port basis, tonnage "awaiting orders", etc) and other considerations such as fuel prices (which can encourage slow steaming), port congestion or tonnage undergoing repairs. The result is that the demand/supply equation is not a simple equation such as Demand = Supply - Tonnage Laid-Up or Under Repair; it is both more complex and impossible to quantify with any great level of certainty.

There are a number of approaches that can be taken to try and obtain a meaningful productivity measure which can be used to convert tonne-miles into a deadweight tonnage equivalent measure. Some analysts favour a variant on the optimum ship performance measure. Here, for a typical vessel at a given service speed, average load factor and an assumed number of at sea trading days a productivity level can be derived and applied. It is a method with the obvious merit of relative simplicity but critics tend to take the view that the result will grossly overstate the level of surplus tonnage not least because not all

tonnage is equally flexible in its ability to trade - whether the ship is commited to a long term contract or trading spot, etc will introduce significant variants.

Perhaps a better approach - and this is the one favoured by the Consultants - is to explore as meticulously as possible the actual pattern as exhibited by the fleet (or sectors of the fleet) overall and use this as a marker. From this, there is a better chance to perceive relative changes - which are often the key to identifying freight rate or ship value trends.

Table 2.11 considers the concept of bulk carrier productivity in the context of annual laden tonne-miles performed per active vessel deadweight tonnage (with due adjustments made to allow for vessel inactivity, the role of combined carriers and the use of bulk carriers in non-bulk trades).

Table 2.11

Productivity of the Active Dry Bulk Fleet

(Thousand tonne-miles per dwt/year)

1972	41.9	Market strong, fleet relatively small. Focus with major bulks. Pre-first oil crisis.
1974	38.1	
1975	35.8	
1976	33.8	
1977	32.0	
1978	32.8	
1979	32.6	
1980	28.2	Period of high fuel costs - second oil crisis - encouraging slow steaming. Followed by deteriorating market. Advent of eco-ships.
1981	28.6	
1982	28.2	
1983	26.5	
1984	29.9	
1985	27.4	Market approaching its nadir.
1986	28.3	Surplus cut by increased scrapping and from 1988-90 surging trade levels - often record highs.
1987	31.1	
1988	32.5	
1989	32.8	
1990	31.5	
1991	31.1	Market coming under oversupply pressure.
1992(p)	30.9	

(p) Provisional.

Source: Drewry Shipping Consultants

The value of the trend indicated in Table 2.11 is as a pointer to prospective "real" bulk carrier demand trends rather than being an end in itself. Clearly, the numbers shown are derivations from assessments of tonne-mileages performed and the identified available fleet. Actual bulk carrier performances will reflect the state of the market at the time. For the future, the market will respond to "perceived" changes in the supply/demand imbalance. By setting a known productivity constant against projected trade and tonne-mile estimates a measure of relative demand changes can be derived. By contrasting this pattern with the likely development of bulk carrier supply, perceptions of widening or narrowing supply/demand "gaps" come to light with these offering guidance on the direction and pace of potential market movements.

2.4 Development of the Bulk Carrier Fleet

2.4.1 The Growth of the Dry Bulk Carrier Fleet

The oceangoing dry bulk carrier fleet (taken in this instance to relate to singledeck vessels of over 10,000 dwt) has been in existence since around the end of the second world war although several of early entrants were not purpose-built but were in fact converted tankers. However, by the start of the 1960s, the fleet was still of a modest scale with - including ore/oil carriers and converted tankers - the available tonnage totalling little more than 8.5 million dwt. Around 75% of this tonnage was accounted for by ships of between 10-25,000 dwt. Only about 20 ships exceeded 40,000 dwt. Virtually half of the then available tonnage had been delivered between 1956 and 1960.

In contrast, by mid-1993 the fleet of bulk carriers (excluding ore/oil and ore/bulk/oil types) totalled around 214.5 million dwt. Around 370 ships exceeded 100,000 dwt. Moreover, some 27.2 million dwt of bulk carrier capacity was composed of ships of >150,000 dwt. With contributions from the ore/oil sector of the fleet, vessels of over 300,000 dwt can now be found in the dry bulk market.

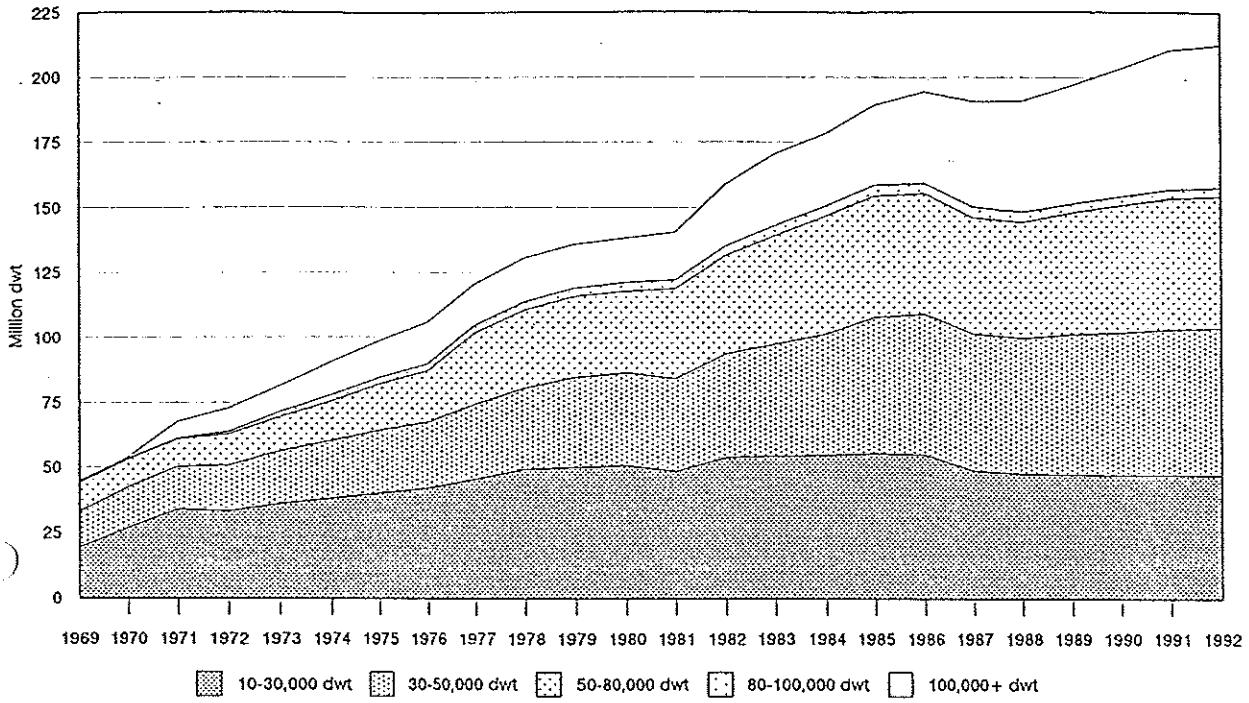
An indication of the pace of change over the period from 1969 can be gleaned from Figure 2.16. The chart plots the increase of the overall fleet as well as those of different sector size bands. For convenience, these have been considered as:

(a) 10-30,000 dwt. This encompasses the small and handy sized sectors of the fleet.
(b) 30-50,000 dwt This relates to the medium and handymax sectors of the fleet.
(c) 50-80,000 dwt The Panamax sector.
(d) 80-100,000 dwt The "quasi-large" sector.

Figure 2.16

DEVELOPMENT OF THE DRY BULK CARRIER FLEET*

As at mid-year



* Excluding combined carriers but including ore carriers and other specialised bulk carriers.
Source: Drewry Shipping Consultants.

(e) 100,000+ dwt — The large bulk carrier sector. This category might also be sub-categorised into 100-150,000 dwt (Cape types) and 150,000+ dwt (very large types).

Within the industry, generic terms such as handy, handymax, Cape, etc. are frequently encountered. However, different owners and charterers may vary the corresponding size bandings - for example it is not necessarily incorrect to consider 25-40,000 tonners as handysize and 40-50,000 tonners as handymax units.

The Panamax sector is centred around vessels with size configurations suitable for a transit of the Panama Canal. The most significant of these constraints is the vessel's beam (32.3m). The 80-100,000 dwt sector has never developed as this size of bulk carrier is not economic on the alternative shipping routes - hence the concentration on the size that is - namely the Cape class.

An added statistical summary is provided via Table 2.12.

Of the bulk carrier tonnage considered above, currently around 10% of the fleet in tonnage terms offers some degree of specialisation. As at end-1992 (and the current position is believed to be little changed), the identified specialist sector comprised:

Table 2.12
Development of the Dry Bulk Carrier Fleet*: 1982-92
(Mid-year)

Size ('000 dwt)	10-30		30-50		50-80		80-100		100+		Total	
	No.	M Dwt	No.	M Dwt	No.	M Dwt	No.	M Dwt	No.	M Dwt	No.	M Dwt
Mid-year												
1982	2,502	54.0	1,067	39.8	608	37.7	44	3.5	185	23.8	4,406	158.8
1983	2,533	54.5	1,143	42.7	669	41.7	47	4.0	206	27.4	4,598	170.3
1984	2,532	54.8	1,239	46.4	727	45.4	46	3.9	208	27.7	4,752	178.2
1985	2,537	55.5	1,400	52.4	746	46.4	48	4.1	227	30.8	4,958	189.2
1986	2,509	55.0	1,447	54.1	738	46.2	46	3.9	253	35.1	4,993	194.3
1987	2,209	48.9	1,408	52.6	710	44.7	47	4.0	282	40.5	4,656	190.7
1988	2,149	47.6	1,397	52.2	707	44.5	45	3.9	293	42.5	4,591	190.7
1989	2,131	47.4	1,424	53.7	740	46.9	40	3.4	306	45.4	4,641	196.8
1990	2,119	47.2	1,448	54.8	771	48.9	38	3.3	329	49.2	4,705	203.4
1991	2,115	47.1	1,479	56.1	792	50.5	40	3.4	353	53.2	4,779	210.3
1992	2,110	47.0	1,493	56.7	793	50.5	41	3.5	360	54.5	4,797	212.2
1993	2,089	46.6	1,498	57.0	797	50.7	42	3.6	371	56.6	4,797	214.5

* Excluding combined carriers.

Source: Drewry Shipping Consultants

	No.	Thousand dwt
Ore Carriers*	87	10,169
Slurry carriers	3	373
Woodchip carriers	106	4,389
Open hatch (gantry craned)**	127	4,565
Continuous self-discharge*	38	1,688
Gypsum carriers	10	225
Cement carriers	46	934
Total (of above)	417	22,343

* Excludes vessels confined to Great Lakes only trading.

** Includes three totally enclosed forest products carriers.

Source: Drewry Shipping Consultants

2.4.1.1 The Influence of Combined Carriers

The preceding discussions has centred solely on general purpose and specialised dry bulk carriers. However, in evaluating the available fleet - and hence the true supply position - mention must be made of combination tonnage - i.e. ships able to alternate between dry and liquid bulk cargo sailings. In fact, these ships are of considerable importance to the dry bulk fleet, especially in the larger size ranges.

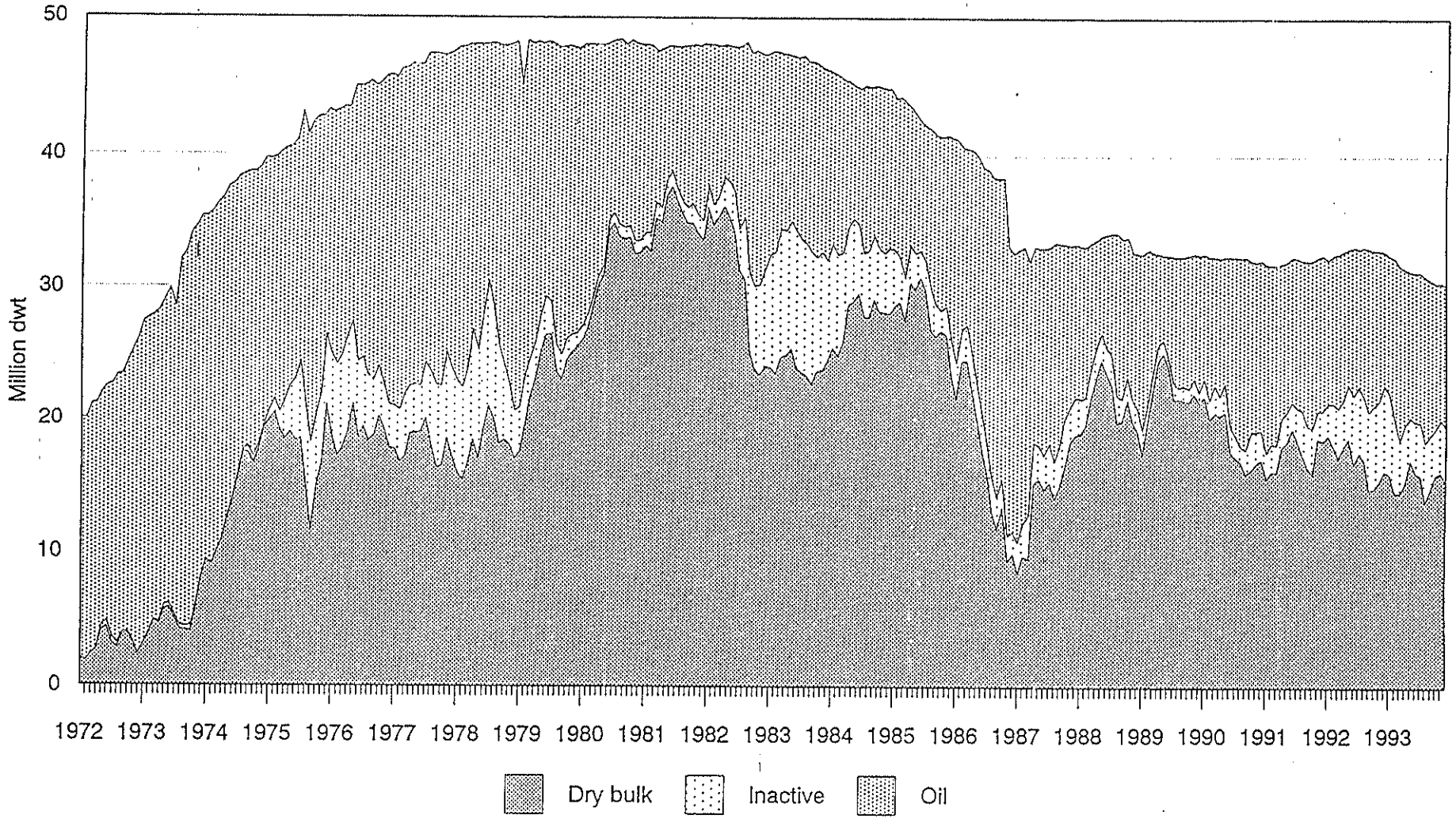
In theory and, partially in practice, this tonnage provides "swing" capacity between the oil and dry bulk markets. Some units are employed regularly on dry/wet round voyage permutations but these tend to be in the minority. More common is the switching between all dry and all wet trading depending on the relative strength of the two markets - largely on an "opportunist" spot trading basis.

Figure 2.17 offers some guidance on the market role of the combined carrier fleet but there is a caveat that needs to be noted both in connection with Figure 2.17 and the general bulk fleet presented previously. This is that the "true" status of a number of combined carriers remains unclear. A number of vessels built as ore/oil or bulk/oil ships have given up the maintenance of their oil-carrying certificates and as a result have been absorbed in the ore or bulk carrier sectors of the bulk carrier fleet. A number of ships that are still "officially" described as combined carriers are believed also to be confined solely to the dry trades. Consequently, one should be aware that an implied "balancing item" exists whereby the bulk carrier fleet may be understated but the combination fleet contains a compensating over-allowance in its dry cargo trading attribution.

Figure 2.17

CHANGES IN COMBINED CARRIER EMPLOYMENT

Vessels of over 30,000 dwt



Source: Drewry Shipping Consultants.

2.4.2 Bulk Carrier Deliveries and Deletions

Monitoring ongoing changes in the size and structure of the bulk carrier fleet is a difficult and, at times, imprecise or uncertain task. The timespan between vessel completion and delivery to its owner is variable - especially when owners seek delays or yards fall behind schedule or disputes arise - and frequently first "reported sailings" can occur sometime after delivery, especially if a lengthy positioning voyage in ballast occurs.

Similarly, the timespan between a reported sale to a shipbreaker and confirmation of the ship's arrival at the breaking site (often some time after the actual event has occurred) also creates uncertainties.

As a result, the data offered relating to the development of the fleet at mid-year arises from a mix of continuous data monitoring and a regular consolidation exercise. The drawback of this approach is that the equation involving the addition of "apparent" deliveries and the subtraction of scrapped ships, losses and converted and re-classified vessels does not necessarily fit precisely with the mid-year series.

Consequently, given the specific mention in the terms of reference put forward by Far Eastern Silo in terms of the relationship between delivery and deletion trends, the Consultants have made reference to an alternative source to cover this topic by utilising a more consistent data series.

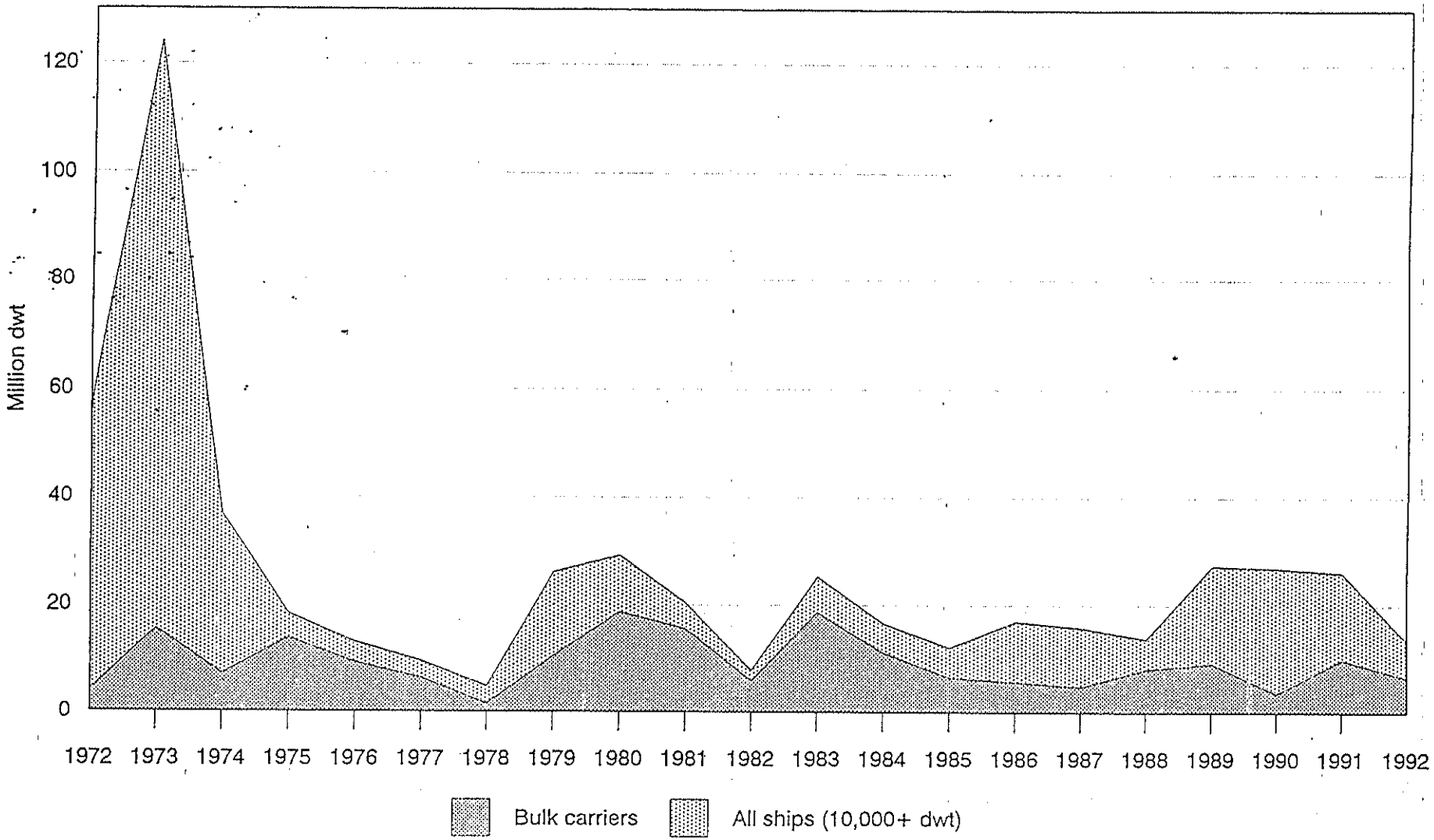
2.4.2.1 Newbuilding Activity

Mention is made elsewhere in this Report of the problem, but within this area of bulk carrier fleet information there is considerable difficulty in deriving a consistent data series stretching back over two decades. In practice, there are essentially two main reasons for this: (i) in the early 1970s bulk carriers were a relatively modern phenomenon and hence not much information was available and (ii) over time sources tend to look for ways to improve the quality of the data they present - which tends to result in adaptations to meet changing market patterns and data series discontinuities.

With the overriding criterion felt to be a consistency in the data series, the Consultants have made reference to information issued in the *World Bulk Fleets* documents issued annually by Fearnleys A/S. Table 2.13 notes two aspects of newbuilding activity - levels of contracting and levels of deliveries. In additon, Figure 2.18 illustrates the level of bulk carrier contracting in the context of overall ordering levels for bulk vessels (bulk carriers, combined carriers and tankers) of over 10,000 dwt.

Figure 2.18

CONTRACTING FOR BULK CARRIER NEWBUILDINGS



Source: Derived from Fearnleys A/S data.

Table 2.13

Bulk Carrier Newbuilding Activity Levels: 1972-92

	Bulk Carrier Orders			Bulk Carrier Deliveries		
	No.	Thousand Dwt	% of all bulk types	No.	Thousand Dwt	% of all bulk types
1972	n.a.	4,000	7.1	243	9,326	24.5
1973	351	15,529	12.5	224	9,717	20.7
1974	175	7,087	19.4	220	8,651	16.1
1975	381	13,716	75.1	215	8,241	14.7
1976	271	9,252	71.1	298	11,623	21.2
1977	200	6,341	66.7	387	13,562	38.4
1978	37	1,378	28.8	224	7,593	41.5
1979	201	10,415	40.2	112	3,603	33.4
1980	329	18,670	64.5	135	4,698	38.6
1981	349	15,586	76.5	206	10,551	55.2
1982	139	5,832	74.6	273	14,371	68.6
1983	457	18,683	74.2	247	11,293	66.0
1984	198	11,177	67.0	331	14,229	81.7
1985	103	6,468	53.7	339	14,739	76.1
1986	70	5,664	33.2	200	11,649	61.2
1987	77	4,715	29.8	108	6,618	50.4
1988	95	8,133	59.1	56	3,956	34.7
1989	146	9,244	34.0	98	6,728	43.0
1990	57	3,533	13.2	119	9,643	52.6
1991	107	9,979	38.4	86	5,578	29.8
1992	89	6,517	48.1	62	4,331	20.4

Source: Derived from data published by Fearnleys A/S

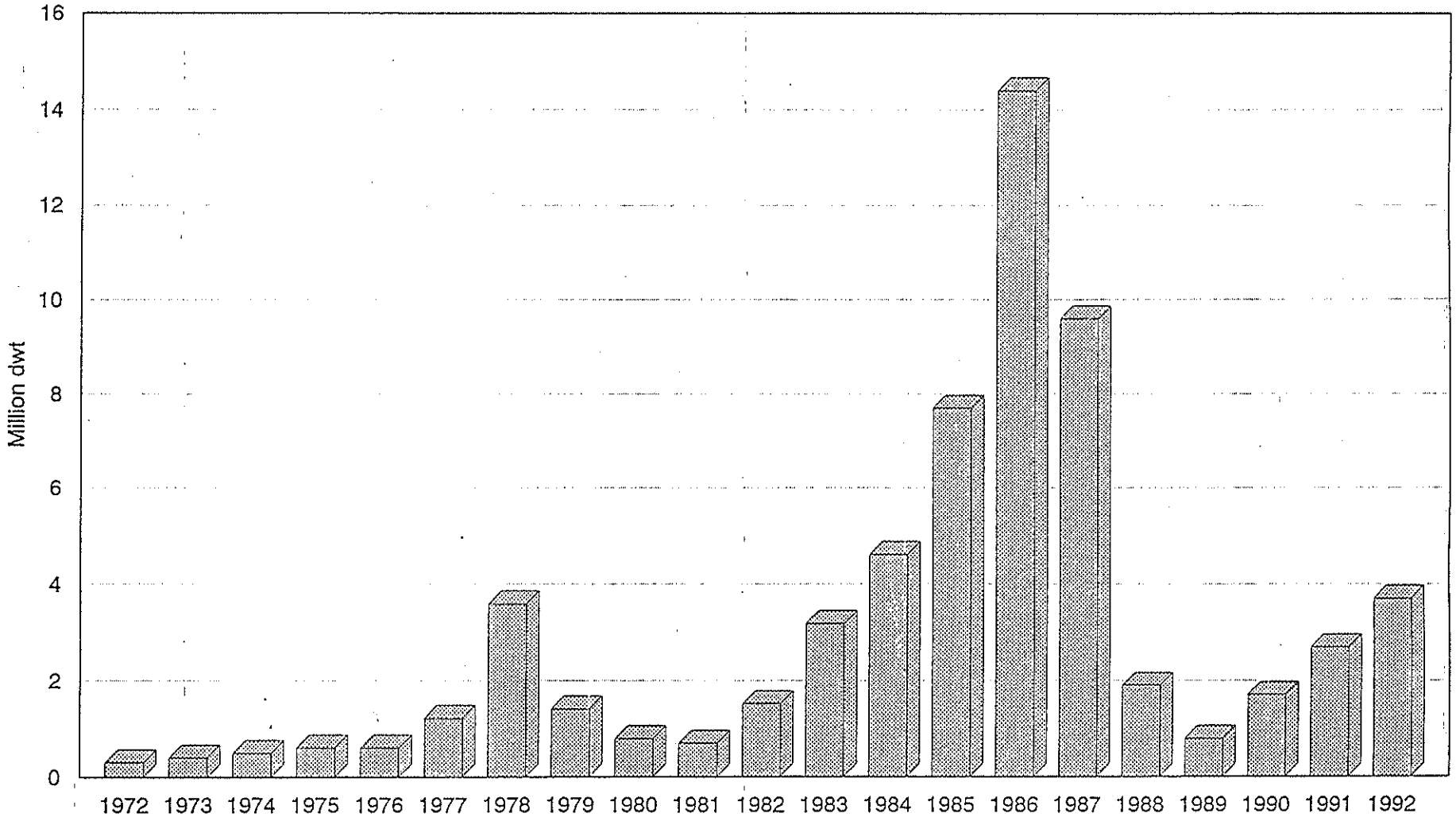
2.4.2.2 Fleet Deletions

In practice, the compilation of a long run data series relating to bulk carrier deletions (statistics tend to aggregate scrappings and losses) is more problematical than for newbuilding activity. In the main, this can be attributed to the fact that for much of the last 20 years the bulk carrier fleet in general will have been regarded as being relatively modern. Consequently, initially, this would have been considered as a peripheral issue. Indeed, Fearnleys A/S data - which offers information on newbuilding

Figure 2.19

BULK CARRIER DELETIONS

Bulk carriers scrapped and lost



Source: Derived from H. Clarkson and Fearnleys A/S data.

activity dating back to 1972 - only covers deletions back to 1980 and then only in million dwt terms. To extend the series the Consultants have taken the Fearnleys A/S data series and added indications for earlier years as recorded by H. Clarkson & Co. Ltd. (This was felt to provide the least inconsistent option.) The data is illustrated as Table 2.14 and Figure 2.19.

Table 2.14
Bulk Carrier Tonnage Broken Up or Lost
(Million Dwt)

1972	0.3	1983	3.2
1973	0.4	1984	4.6
1974	0.5	1985	7.7
1975	0.6	1986	14.4
1976	0.6	1987	9.6
1977	1.2	1988	1.9
1978	3.6	1989	0.8
1979	1.4	1990	1.7
1980	0.8	1991	2.7
1981	0.7	1992	3.7
1982	1.5		

Sources: H. Clarkson & Co. Ltd. (1972-79)
Fearnleys A/S (1980-92).

In terms of the overall ship demolition picture (for all bulk types of over 10,000 dwt), the percentage contributions made by bulk carriers - according to Fearnleys A/S data - since 1980 have been:

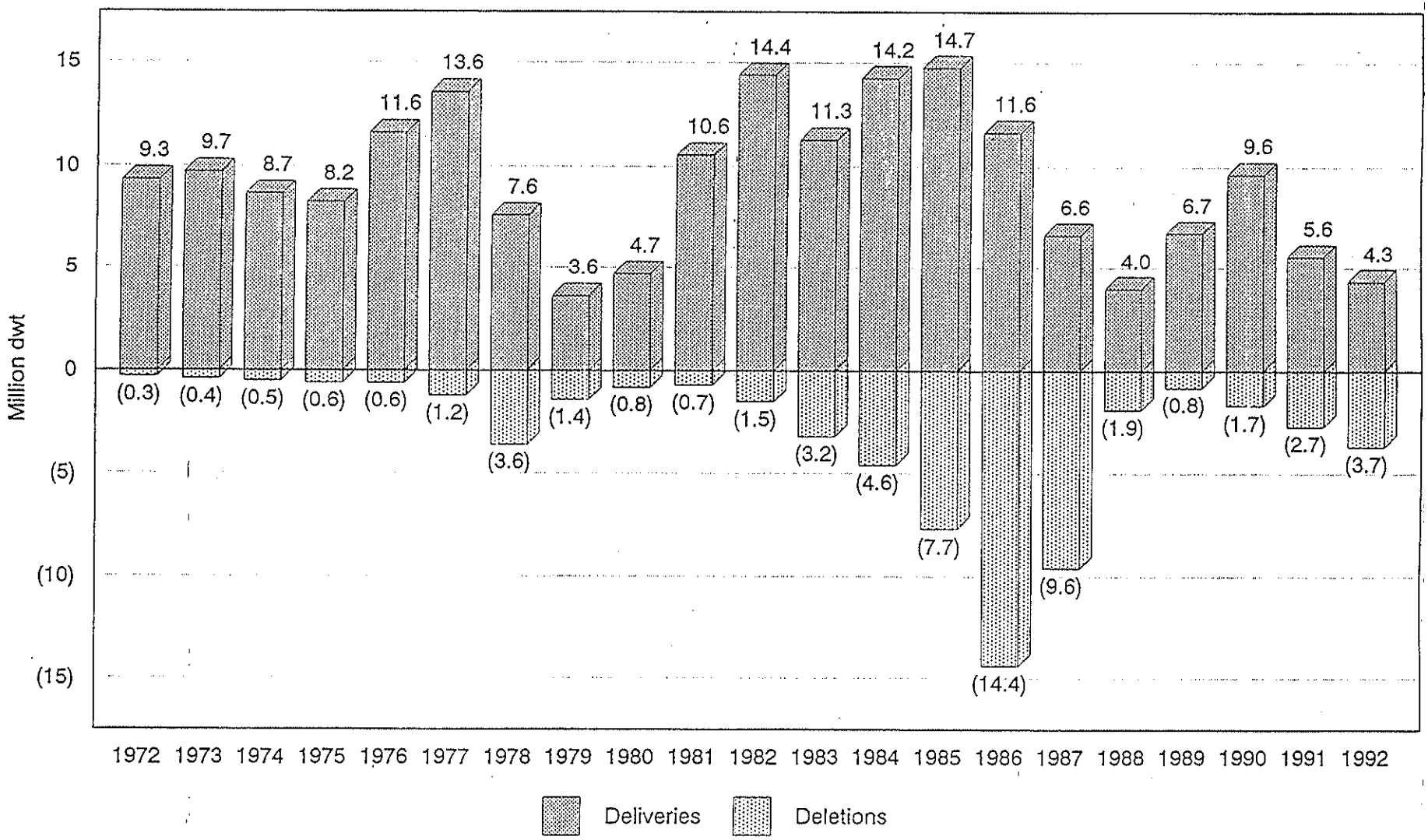
1980	7.8%	1985	20.2%	1990	47.2%
1981	5.5%	1986	48.9%	1991	45.8%
1982	5.6%	1987	50.8%	1992	25.7%
1983	11.0%	1988	34.5%		
1984	19.2%	1989	32.0%		

2.4.2.3 The Delivery/Deletion Pattern: 1972-92

In order to draw the preceding discussion together, Figure 2.20 plots the year-on-year changes in terms of overall bulk carrier deliveries and deletions.

Figure 2.20

BULK CARRIER DELIVERIES AND DELETIONS



Source: Derived from H. Clarkson and Fearnleys A/S data.

2.5 The Development of Bulk Carrier Newbuilding and Secondhand Prices

As will have been evident from the discussion on freight rate trends, there are a wide array of factors and vessel characteristics that can move the earnings and values of individual bulk carriers either above or below the "industry average". Consequently, it is inevitable that in seeking to develop a data time series for new and secondhand ships that some compromise assumptions will be built into the selected "generic" types chosen. Broadly speaking, the selections shown relate to the following:

Handy: A 26-27,000 dwt bulk carrier with conventional hold/hatch configurations and typical safe working load (swl) capability (for the time of build) cargo handling gear - generally cranes.

Handymax: A ±40,000 dwt bulk carrier with conventional hold/hatch configuration and good capability cranes.

Consequently, the Handy and Handymax categories do not include sophisticated open-hatch forest product trade-oriented types.

Panamax: A ±64-66,000 dwt gearless bulk carrier of conventional configuration.

Cape: A ±120,000 dwt gearless ore-strengthened bulk carrier of conventional configuration.

In practice, some of the historical data relating to the earliest years under consideration may not fit these definitions precisely.

2.5.1 Newbuilding Prices

2.5.1.1 Factors affecting Newbuilding Prices

The world's shipbuilders operate in a highly competitive market. However, this market is subject to a number of "distortions" which result in the prices quoted being determined by factors other than the degree of imbalance between order volumes and available yard capacity. For instance, there are certain countries where there is a "political" motivation to increase the country's share of world newbuilding activity. Elsewhere, preservation of employment in the yard and its supporting industries may be a concern. In addition, other considerations (including "aid" to receiving countries) feature with the result that the price picture in reality will be influenced and adjusted to account for various subsidies and credit arrangements.