

ANALYSIS OF MAJOR CLAIMS

TEN-YEAR TRENDS IN MARITIME RISK



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The editors wish to acknowledge the considerable contribution of Carrie Greenaway in writing this report. Carrie is a specialist in marine liabilities and related areas of insurance and has worked on both the broking and underwriting sides of the industry for a number of years. Her previous work for the UK Club has included the authorship of *Port State Control – A guide for Members*, published in 1998.

INTRODUCTION

The UK Club’s analysis of major claims has, in the years since the publication of the first analysis in 1991, become an industry standard from which not only the Club’s Members but also the shipping authorities such as IMO, the maritime safety and coastguard agencies and the press draw many of their statistics. Nevertheless, the primary aim of reviewing the collective claims experience of the Club’s Members is to provide a base of information from which the Members themselves may apply risk management principles to reduce their exposure to claims.

This analysis is more extensive than our previous reports and, relying on a full ten years of data, examines the overall trends of major claims. However, even this increased body of data contains nothing to change the conclusion reached in the Analysis of Major Claims 1993 when we stated “It is possible to conclude from this and from the previous reports that it is difficult to predict whether an incident will lead to a major claim or a minor claim. The Club views the overall picture statistically... but from the perspective of an individual Member who is unlikely to suffer a major claim with any significant degree of frequency, the difficult message pointed out by the facts is that the way to avoid major claims is to concentrate on avoidance of claims of any size”.

The total avoidance of claims is an impossible task for an industry which conducts its business on the unforgiving oceans of the world, with many parties over which it has no control and who have little or no real accountability for their actions. But shipowners can aim constantly to improve their claims and safety record and reduce claims by the application of sound risk management principles. To do this it is necessary to identify and assess risk.

It has become a truism that the primary cause of maritime claims is human error, but it is interesting to recall that in 1987, when this analysis began, the Club, along with most

of the maritime world, still concentrated the majority of its loss prevention efforts on the technical aspects of the problem – for instance, advice on the watertightness of hatchcovers has been the subject of circulars and articles since the 1960s. The earlier studies brought home to us that this was, relatively speaking, a minor part of the story and that human error, in its many forms, lay as the root cause of the great majority of claims. This analysis naturally includes an update on the statistics relating to human error provided in our earlier reports, but also indicates that the Club is proposing to tackle the deeper question of why, in the marine context, people make mistakes.

This Analysis of Major Claims approaches the subject from the perspective of:

- Category of Risk
- Country of Incident
- Port of Incident
- Ship Type
- Ship Failure
- Human Error

Acknowledging the prime importance of cargo claims to all Members, we have examined cargo claims in a separate chapter. Personal injury claims, the second most frequent cause of major claims on the Club, will be examined in similar detail in a future issue of this analysis.

INTRODUCTION

A summary of the key findings in our analysis is contained in Chapter 2, although it should be noted that apart from the first three chapters each of the chapters in this report has been written as an integral document which may be read separately from the rest, so that a reader with a particular interest need study only the relevant chapter.

A number of Members have incorporated earlier reports into their internal training programmes, and this is welcomed by the Club as a most obvious and practical utilisation of our research material. As a service to Members, we have prepared a number of sets of slides and overhead transparencies of some of the graphs in this report, together with short speaker's notes. We will also be producing a CD-Rom on which the complete report is reproduced, and it will be available on the Club's website in Adobe Acrobat (pdf) format. Members wishing to obtain copies of this document or the slides and overhead transparencies in their preferred media should contact Karl Lumbers, Manager of the Loss Prevention Team:

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1. OVERVIEW

The UK P&I Club has collected information on its major claims filed over ten years – from 1 January 1987 to 1 January 1997. This report condenses those statistics to give shipowners, managers and all other interested parties in the maritime industry a clear perspective of both the cause and the trend of claim levels over that period.

While the statistics underpinning this report are taken from the UK Club database, we believe the analysis is capable of being interpreted as reflecting the experience of major claims throughout the P&I industry. This validity is derived from the sample size of the study, insofar as the Club provides protection and indemnity cover for the owners or charterers of over 5,000 ships, predominantly ocean-going, which together comprise 20 per cent of the world's deep water fleet. In fact the actual profile of entered ships changes slightly each year as existing ships get older, new ships are entered into the Club, and some ships are removed from the Club, sold, scrapped, laid up or lost at sea. Consequently averaged profiles have been utilised in the report to provide the necessary comparative measurement. Nevertheless, we believe that the ships entered in the Club are broadly representative of the world fleet overall, in terms of tonnage, ship type, trading area and flag, as well as risk profile.

What Size of Claim?

A 'major claim' in this context is one for which the amount paid and the amount of any outstanding estimate net of any deductible (including third-party expenses etc) together total at least US\$100,000.

The claim values referred to in this review are gross figures, with no allowance for reinsurance recoveries from the Pool or excess of loss reinsurance. In addition, the review does not include any of the payments (even if over US\$100,000) made by the UK Club as contributions to the Pool claims of other Clubs.

Although the cost of liability claims has increased in the years since our last report in 1993, we have decided that the threshold for this study of major claims should remain at US\$100,000. While this might give a slightly erroneous statistical bias due to the fact that inflation increases the value of such claims each year – and thus more claims exceed the threshold – we have decided to maintain it in order to facilitate comparison between this study and our earlier findings. It also presents a slightly larger number of claims for analysis, which is in the interests of the study as a whole.

Extent of Data Reviewed

To the extent that this report comments on general trends, it takes account of all major claims within the period irrespective of the type of liability involved. At 1 January 1997, there were 3,719 such claims with a gross value of US\$1,765 million. Of these claims, only those in respect of cargo, personal injury (both crew and non-crew), property damage, pollution and collision are examined. Claims in respect of fines, wreck removal and certain other events have not been examined.

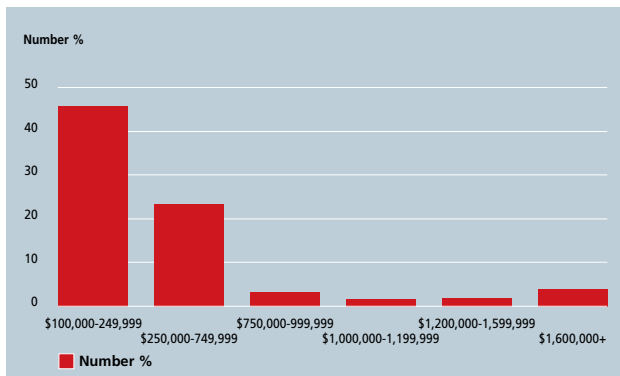
Value of Claims

As can be seen from Table 1.1 there are a substantial number of claims which, while exceeding US\$100,000, are less than US\$250,000 – almost 46%. A further 24% of claims fall into the band between US\$250,000 and US\$750,000. A relatively small number of claims fall into the remaining four value bands, although the value of these claims is nevertheless significant as it is these claims that

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tend to impact on the costs of the wider membership rather than just the record of the Member concerned.

Table 1.1 Value Bands



Period of Study

The findings in this report are based on an analysis of ten years of claims information collected by the UK P&I Club for the period 1 January 1987 to 1 January 1997. The advantage of such a significant time span is two-fold. Not only do the figures become more statistically valid when aggregating total claims values over a longer time period but we also obtain a better indication of trends and their underlying causes, which it is hoped will assist shipowners, managers and others in the maritime industry to pinpoint areas which may merit further attention.

Presentation of Data

To assist the reader, we provide an explanation of what the tables used in this report are intended to tell us. They are typically of two types – ‘snapshots’ and ‘trends’.

Trends

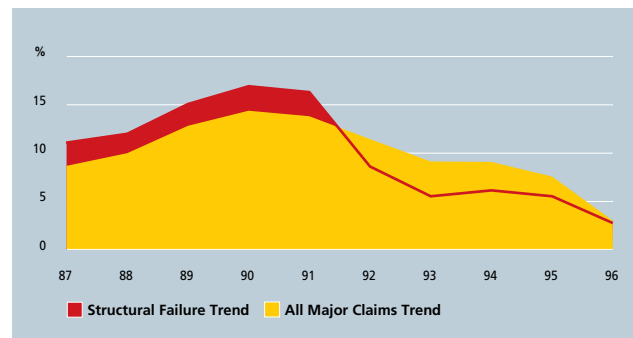
The trend charts present two items of information: the trend under analysis and a general trend. In Table 1.2 below, for example, the base curve (in yellow) represents the total of all major claims over the ten-year period of study. Superimposed on this curve is the graphical depiction of the particular feature being examined, in this case structural defects. This superimposition creates a shaded

area which represents the extent to which the frequency or monetary amount of major claims generated by the feature being examined deviates above the total of major claims during the period 1986 to 1997. The areas shaded in red are indicative of where the contemplated cause has a more prominent effect in any one particular year. Comparison may then be made between the relative rate of deviation above or below the trend for all major claims, by the relative steepness or shallowness of each line.

In this way we are able to observe which categories are improving or deteriorating and to what degree and at what rate. In the example set out below it can be seen that early in the ten-year period structural failure was significantly above the overall trend of major claims, but since 1992 this has fallen off rapidly and structural failure now is well below the general trend.

In most sections of this report, the principal trend is then subjected to further analysis in order to obtain a better understanding of the different components which make up the trend in any given year.

Table 1.2 Trend Example



The base trend most often used to provide comparative analysis of a number of specific features is the overall trend of all major claims. On occasions, however, we use others, such as “All Major Cargo Claims” or “All Major Ship Failure Claims”. Where a different base trend is utilised this fact is noted at the appropriate point in the text.

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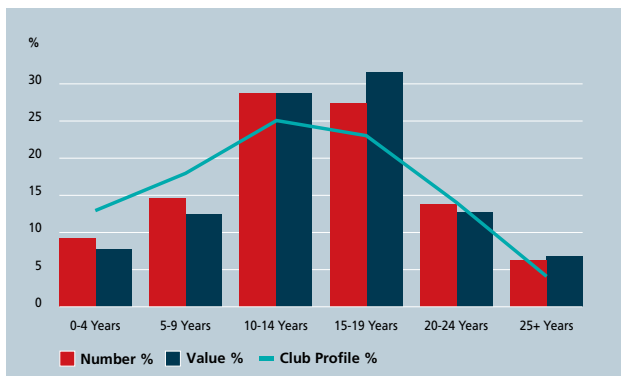
One note of caution when reviewing the trend graphs: it is an observed fact that any form of liability insurance tends to have a “long tail” when compared with “accidental damage” forms of cover. That is to say, the pattern of loss advices and payments habitually takes longer to mature on liability policies in contrast to physical damage insurance. An incident occurring in 1994, for example, might not result in manifestation of the related liability claim until 1999, therefore falling outside the scope of this research. The base trend, however, is also subject to this effect, so conclusions may reasonably be drawn based on the difference between the two sets of figures.

Snapshots

There are two kinds of ‘snapshot’ commonly utilised in this report. All of them analyse the total composition of claims over the whole ten-year period from a particular view point. With no time axis, the snapshot tables allow the comparison of various different categories.

As an example of the first kind of snapshot a comparison of the incidence of claims by ship age over the ten-year period is set out at Table 1.3.

Table 1.3 ‘Barchart’ Snapshot Example

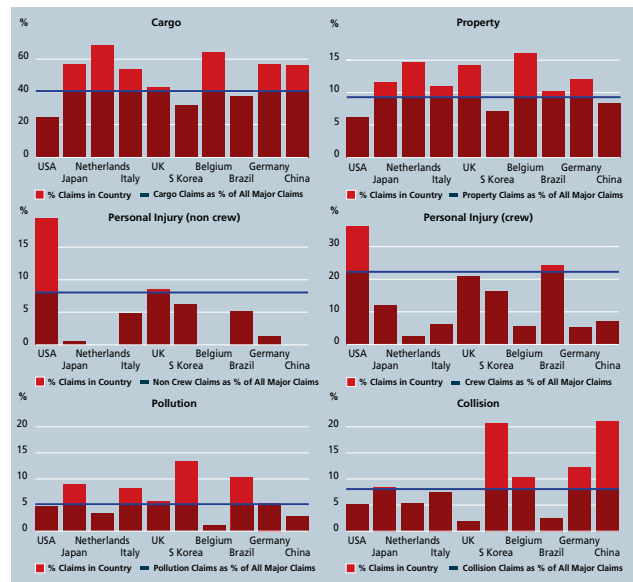


Another form of ‘snapshot’ is illustrated at Table 1.4. Here several tables are presented together to provide a composite picture of the feature being studied. In this particular example the tables reveal the percentage of claims by risk group as a percentage of all major claims in a

particular country over the period of study. In addition, the reader is able to see at a glance whether the number of claims generated in any one risk group in any one country is significantly above or below the Club average of major claims, which in these tables is denoted by a blue line.

It should be remembered that the figures in our ‘snapshot’ tables are relative. For example, in South Korea cargo claims account for 30% of major claims in that country, below the average generally for cargo claims in the Club, which stands at 40%. Similarly, property claims at 7% are below the Club average worldwide of 9% and personal injury non-crew at 6% compares with the Club average of 8%. Crew personal injury stands at 16% but is still below the Club average of 22%. On the other hand, both collision and pollution are risks which generate an above average of major claims from Korea: 20% compared with a Club average of 8% and 13% compared with 5% respectively, and it is because these two risk groups take up such a large proportion of the relative share that the other risk category groups are low.

Table 1.4 ‘Composite’ Snapshot Example



2. ANALYTICAL SUMMARY – THE CONTINUING SIGNIFICANCE OF MAJOR CLAIMS

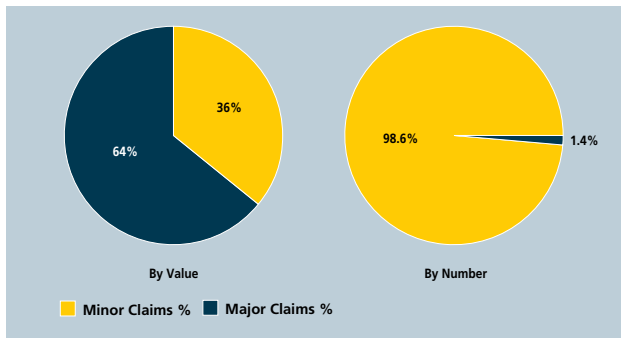
This section begins with an analytical summary of the relative significance of major claims as compared with all other claims. We then summarise the key findings in each chapter. We also speculate and comment upon the reasons for some of the trends thus revealed, and where appropriate indicate where loss prevention and risk management techniques may counter – or at least help to limit – the susceptibility in areas of identified risk.

1. Major Claims compared with All Claims

In the first Analysis of Major Claims, the importance of major losses was identified as being of even greater significance than had previously been believed. Our current studies indicate that major claims continue to be of significance because of their *proportionate* impact.

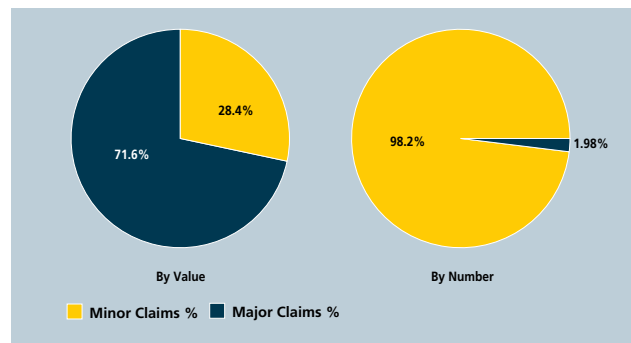
In 1990, major claims accounted for approximately 1.4% of all claims in terms of number, representing 64% of the total value of all claims.

Table 2.1 Comparison of Claims Above and Below \$100,000 (1987-1990)



Since that time major claims as a percentage of all claims have grown from 64% to nearly 72% in terms of value and from 1.4% to 2% in terms of number.

Table 2.2 Comparison of Claims Above and Below \$100,000 (1987-1997)



Despite the emphasis which the Club places on the 3,719 major claims which have occurred over the ten-year period of this study, it must not be overlooked that these represent only 2% by number of all the claims experienced by Members and reported to the Club. The reason for the concentration is, however, evident when value is considered – this small number of claims has contributed 72% to total claims values on the books of the Club over the period. It is thus evident that avoidance of major claims has a much more immediate and significant impact upon a Member's record than any other single action a Member can take.

2. The Continuing Significance of Major Claims

Tables 2.3, 2.4 and 2.5 all illustrate the fact that major claims are proportionately highly significant when compared with all claims. These tables comprise the frequency and value of major claims in each year over the ten-year period.

Table 2.3 All Claims by Frequency and Value

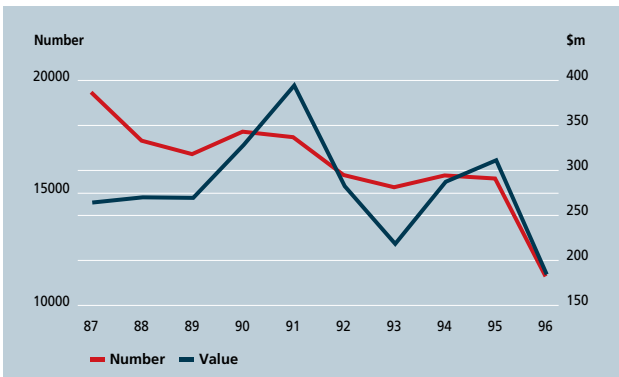


Table 2.4 Major Claims – Frequency and Value

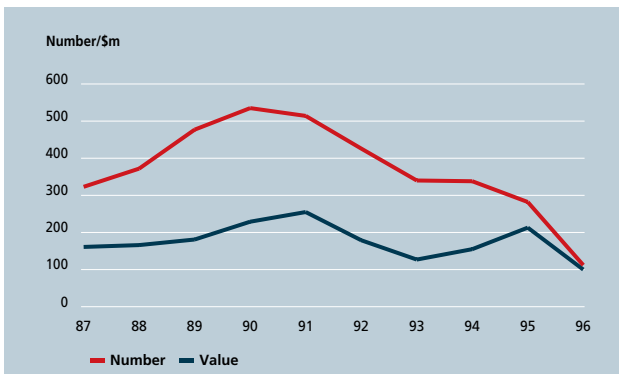
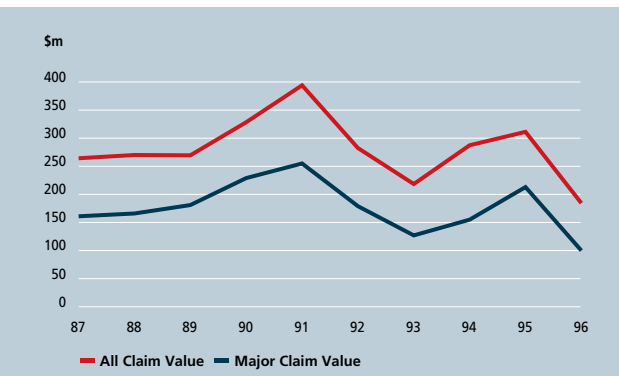


Table 2.5 All Claims v Major Claims by Value



Tables 2.6 and 2.7 show the numbers and values for all major claims, as measured in January 1997, distributed by policy year and shown in percentage terms.

Table 2.6 Major Claims as a Percentage of All Claims on a Year by Year Basis – Number

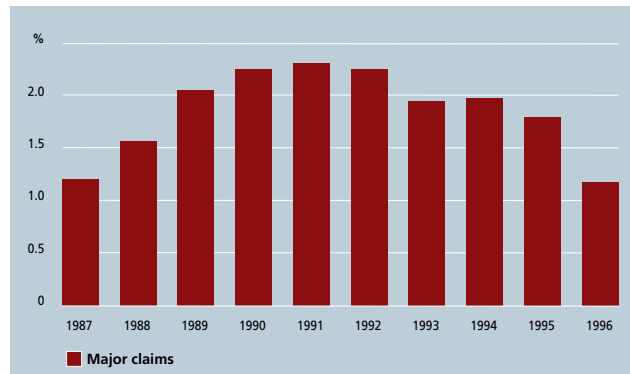
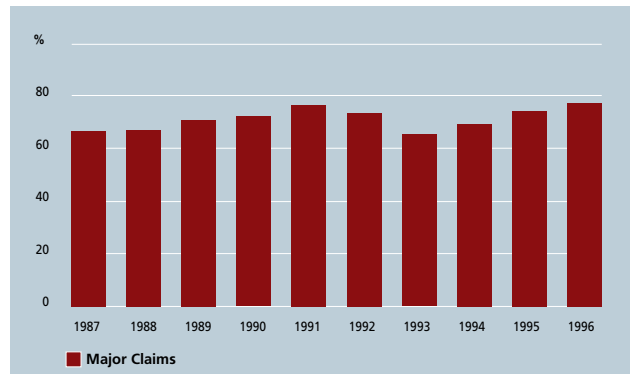


Table 2.7 Major Claims as a Percentage of All Claims on a Year by Year Basis – Value



On this year on year basis it can be seen that since 1987, the share of major claims in terms of value has climbed from approximately 67% in 1987 to over 77% by 1 January 1997. While the frequency of major claims on a year on year basis fluctuates a little each year, the number of claims rises to 2.3% in 1991. Moreover, since 1991 the frequency percentages are lower than they were in the early years of the study. In 1996 it was lower than in 1987.

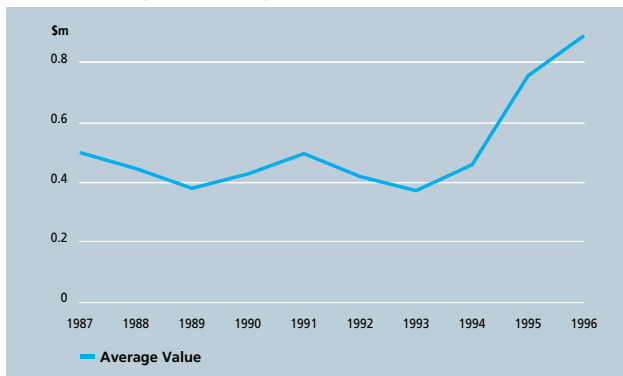
ANALYTICAL SUMMARY

The number of major claims as a percentage of all claims rose steadily in each year until 1990 and then began to fall. On the other hand, the percentage share of the value of major claims in each year climbed from approximately 67% in 1987 to over 76% in 1991, and whilst the percentage share moved downwards again in the following three years (getting as low as 65.4% in 1993), it then began to rise again the following year, with the final year in the period presenting a percentage share of 77.5%

To summarise the message obtained from these charts, it would seem that major claims, when they do occur, are increasing in value but that the number of incidents that cause such losses is tending to reduce.

To test this observation, we reviewed the average value of major claims on a year by year basis and the results of this exercise is set out at Table 2.8 below.

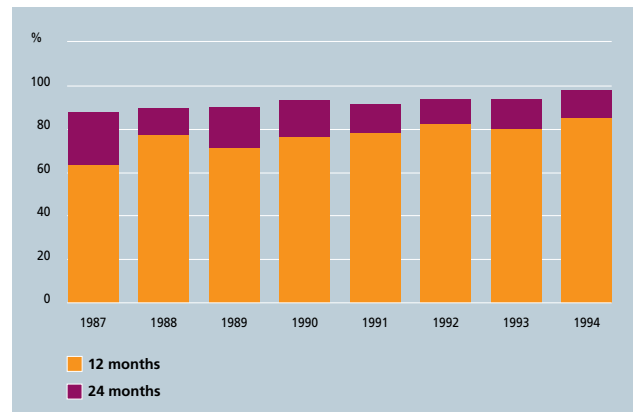
Table 2.8 Average Value – Major Claims



This reveals that the average value of major claims increased considerably in 1995 and 1996. Does the sharp increase in average value for these two years have any significance? It may be that the claims notified for these most recent years will tend to be of large and easily identifiable losses that inevitably bias the statistics towards a high average. These will eventually be diluted by a number of more modest sized claims which will only slightly exceed the US\$100,000 benchmark. However, the Club's ability to estimate the final claims position at an earlier date appears to be improving.

For example, it can be seen from the bar chart below that by the time the 1987 year had matured by 12 months, only 64% of major claims had been identified (Table 2.9). In comparison, at the same point in its development, 81% of the claims for the 1993 year had already been recorded.

Table 2.9 Notification of Claims After 12 and 24 Months Comparison



We therefore suggest that on balance the trend towards an increase in average values cannot be dismissed either as an aberration or the result of 'immature' figures and is indeed a continuing trend of some significance

3. Major Claims – Detailed Observations & Comments

As stated previously, we approach our analysis this time from the perspective of: category of risk, country of incident, port of loading, ship type, ship failure and human error. Because of their prevalence, cargo claims are examined in greater detail in a separate section. As well as reviewing the same items as in previous analyses, we have sought to identify trends and, where we are confident about it, the risk factors causing them. We also compare and comment upon any correlation there might be between any one risk factor or trend and another; for example, age and size; human error and ship failure.

For each of the five risk types analysed in detail, the distinction is drawn between claims caused by various kinds of "technical" ship failure or malfunction and those caused by various kinds of human error.

ANALYTICAL SUMMARY

The difference in the trend of human error and ship failure claims is one of the most interesting features revealed by this analysis. Both topics are covered in greater detail in chapter 8 (Ship Failure) and 9 (Human Error) and we shall comment on our findings in our summary of those sections.

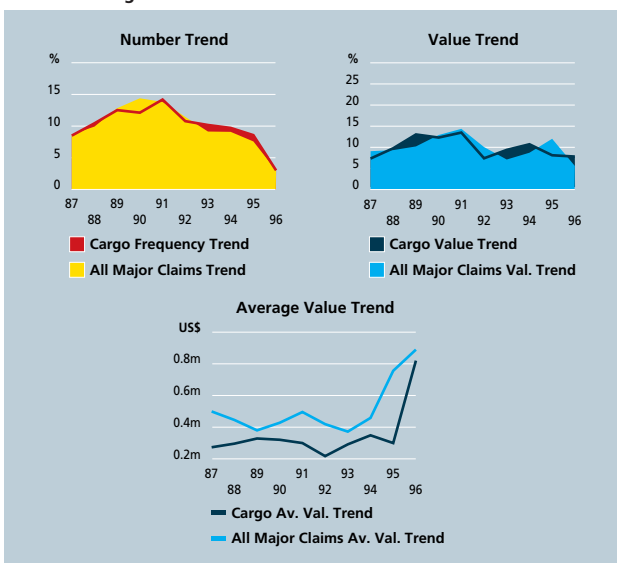
a. Principal Risk Groups

Our study begins with a review of the principal risk groups insured by the Club, namely cargo, third-party property damage, pollution, collision and personal injury.

Cargo

The incidence of major cargo claims is now lower than in the early years, but since 1992 such claims have presented at a rate above the average for all major claims, which means that although the incidence of such claims is improving, it is at a slower rate than the base trend of all other major claims. While the overall value of such claims is now below the general trend when reviewed on a year on year basis the average value for each major cargo claim is getting higher. This is particularly so since 1995, as demonstrated by the relative steepness of the curve. Even during 1992 to 1993 when average values were in the main reducing, those for cargo were already on the increase (Table 2.10).

Table 2.10 Cargo

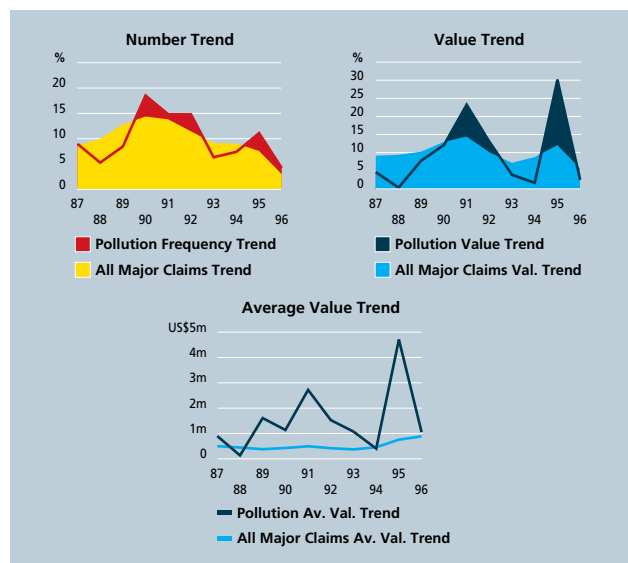


Shore person error plays a significant role in cargo damage claims. While representing only 9% of all major claims, shore person error is the principal cause of damage in some 19% of major cargo claims. Ship failure also has a significant impact – over US\$160m of paid claims have been incurred on ship failure related cargo claims, US\$34m of this sum being related to hatchcover failure alone.

Pollution

Pollution claims from all ship types decreased quite sharply in number from 1990 to 1993, but the trend reversed the following year and since that time has exhibited a frequency trend above the general trend. Interestingly the incidence of pollution from tankers has reduced significantly since 1989 (Exxon Valdez) and one may therefore conclude that bunkering and operational mishaps involving other ship types are the principal cause.

Table 2.11 Pollution



Not surprisingly, our statistics reveal that it is difficult to distil any particular trend in the value of pollution claims. It can be said with some certainty that when such claims do occur they tend to be expensive and it is possible to say that they are becoming more expensive of late.

ANALYTICAL SUMMARY

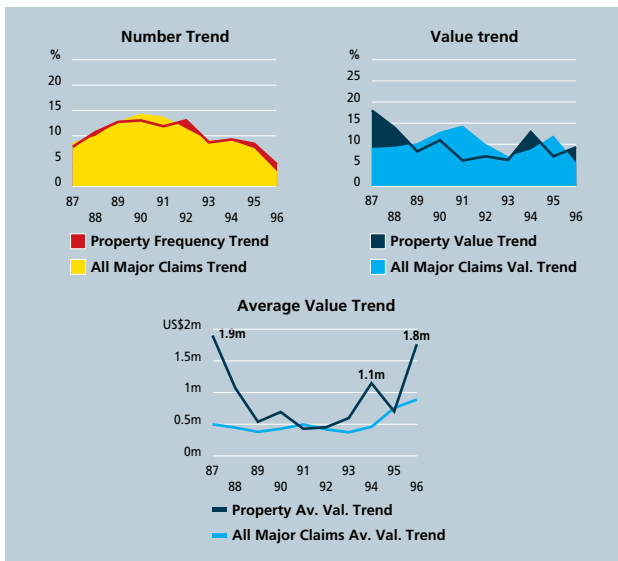
Third-Party Property and Collision

In 1993 human error, whether by shore personnel or pilot, accounts for over 80% of property damage claims. Today this stands at 78%.

The trend in the number of third-party property claims is reducing but, as with cargo claims, at a slower rate than the general trend. As with pollution, these claims can be very expensive. They exhibit an erratic trend in terms of value, which is no doubt due to the fact that the year on year average value has fluctuated from a high of US\$1.9m in 1987 down to less than US\$500,000 in 1991, only to rise steeply again thereafter to settle in 1996, at an average of US\$1.8m (Table 2.12).

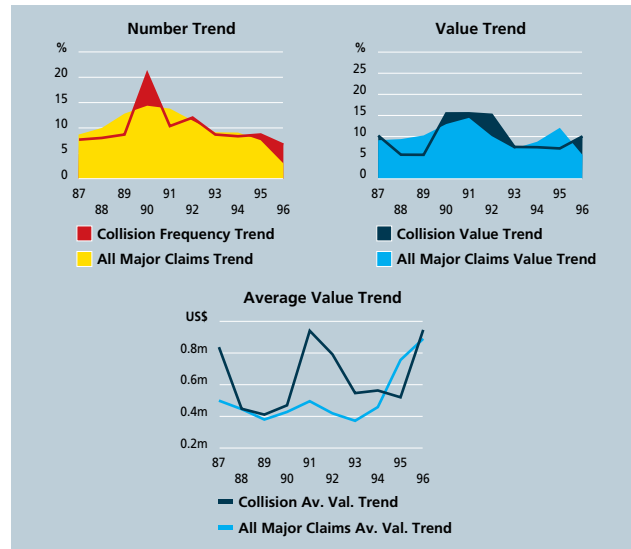
The same general comments apply to the frequency and value trends presented by the collision category of risk (Table 2.13).

Table 2.12 Third-Party Property



Not surprisingly, our statistics reveal that pollution, property and collision claims are dominated by deck officer and pilot error. Pilot error alone accounted for some US\$100m of claims during the period.

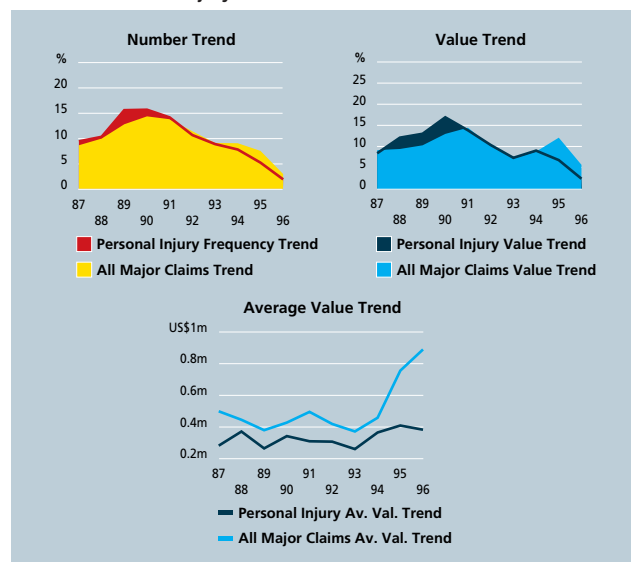
Table 2.13 Collision



Personal Injury

After cargo, personal injury is the second most frequent cause of major claims on the Club. As a risk category 'personal injury' is made up of two components – crew injury and non-crew injury; that is to say passengers, pilots, stevedores and other third parties.

Table 2.14 Personal Injury – All



ANALYTICAL SUMMARY

No less than 45% of personal injury claims fall into the category of crew error, that is to say where a crewman injures himself or a fellow worker. However, there is a welcome reduction in both the number and the average value of crew error claims, particularly the value where the reduction is better than the overall trend for all major claims which has been increasing since 1993.

What has been gained in the reduction in crew claims is not being mirrored by the non-crew claims. However, there has been a significant and sustained increase since 1993 in non-crew claims.

Taking the two types of claim together, the number of such claims is reducing at a faster rate than the general trend. It is also encouraging to note that while the average value of claims in the combined category is getting higher, it is not increasing in value at the same rate as the general trend for all major claims.

Personal injury claims exemplify the problem of human error. Mechanical or structural failures are the cause of only a small percentage of such claims, while errors made by the crew themselves account for almost half.

b. Country of Incident

We identified the countries where more than 10 incidents giving rise to major claims occurred. While incidents giving rise to major claims occurred in over 75 countries, ten countries account for nearly 50% of the total number and value of major claims seen by the Club.

In terms of frequency, the US continues to dominate. Nevertheless, there has been a quite dramatic reduction in the number of all types of major claim brought in recent years. Since the US accounts for nearly 20% of major claims, this variation in the US claims pattern has had a beneficial effect on the Club's overall figures. Detailed analysis shows that in 1990 (when major claims were still increasing) claims in the US were beginning to decrease. The numbers make impressive reading. In a period of two years the number of claims dropped from 117 in 1990 to

just 62 in 1992 with the total value of those claims reduced from US\$63m to US\$30m. Significantly, given the historically high incidence of personal injury claims, both crew and non-crew claims have reduced – even though there are still more than twice as many crew claims as cargo claims in the US. However, while the frequency trend is encouraging, average values are increasing and throughout the period have been significantly higher than the overall average percentage of such claims worldwide throughout the period.

While personal injury dominates in the US, our findings reveal that there is a greater risk of third-party damage in the UK, Netherlands and Belgium than in other countries. The risk of collision leading to a major claim is also shown to be above average in Belgium. Germany too has a significant record in this respect, but both perform better than South Korea, where one fifth of all major liability claims are due to collisions. The incidence and value of collisions in China are also above the Club average and are increasing. Around an eighth of all claims in South Korea and Brazil arise from pollution, which also plays an important role in the risk profile of Japan, Italy and Spain.

Cargo claims dominate the major claims emanating from the Netherlands and Belgium, which is of no surprise given that Rotterdam and Antwerp are two of the world's main 'hub' ports. The UK, Japan and China also feature prominently and Italy has generated a relatively high number of major cargo claims which tend to have a higher than average value. We noted this fact in our 1993 study and the trend continues.

Furthermore, our data suggests that some countries have problems with particular ship types, which is no doubt a reflection of different trading patterns. For example, Bulk carriers account for around one third of the claims in China which also has a higher than average percentage of dry cargo ship major claims. Major claims involving tankers feature heavily in Brazil, South Korea and Italy, while Germany has a high frequency of major claims from containerships.

c. Port of Incident

Over the ten years covered by this study major claims have occurred in over 400 different ports throughout the world. No one port or area of the world holds a predominant position.

There are, however, 18 ports which have witnessed the greatest number of claims over the period. Rotterdam, Antwerp, New Orleans, Houston and Singapore top the list. Clear patterns emerge which link particular ports to certain types of major claim. For example, all five of the ports listed, with the exception of New Orleans, have an above average of major cargo claims. For its part, New Orleans shows a higher than average incidence of personal injury claims; 51% of claims are personal injury-related. While this reflects the US's tendency towards such claims, the national average is significantly lower. Third-party property incidents are low but Antwerp has had twelve. Collisions account for over one quarter of all major claims incidents in the Port of Singapore, much higher than the average of 10%.

The figures also show that the busier developed ports have had surprising few claims for spills of oil or hazardous liquids.

d. Jurisdiction

Many different jurisdictions have been utilised by claimants, but thirteen are more prevalent than others. Many claims are resolved according to the contractual provisions of the parties concerned. Consequently, centres of maritime expertise such as London and New York tend to see a greater number of disputed claims than other locations.

Recently South Korea and China have become active fora. Furthermore, while the two major centres for dispute resolution are showing a downward trend, those of South Korea and China are increasing.

When looking at claims on a regional basis, it becomes apparent that Europe is more likely to give rise to more major claims than any other region. The same statistics also reveal that Africa is a region where the value of claims is

notably high, with most of the outgoings stemming from claims in Nigeria and Algeria (US\$32m).

e. Ship Type

Analysis by trade category reveals a number of distinct variations in the various ship types.

Major claims from general cargo ships and tankers compare favourably with their percentage Club entry, in contrast to bulk carriers which produce a higher percentage of claims. Major claims on passenger ships and rig and supply ships also account for a higher number of claims than their Club entry would suggest.

Bulk Carriers

While property, collision and pollution claims are individually more expensive in terms of risk category, bulk carrier claims stem mainly from cargo damage and/or loss. A major cargo claim in this ship type is 4 times more frequent than a collision claim, 15 times more likely than a pollution claim and more than twice as likely as a personal injury claim. That said, the trend for major cargo claims from bulk carriers is an improving one. The high number of such claims witnessed in the late eighties has reduced and claims now closely follow the general trend line. However, while the average value of these claims fell in the middle part of the period – from US\$495,000 in 1990 to US\$267,000 in 1995 – they have since climbed upwards again.

Though the number of claims attributable to structural failure is higher than average, human error continues to be the predominant cause. Hatchcover failure continues to play a significant role.

Dry Cargo Ships

These themes are also present in the dry cargo category. The frequency trend is one of steady improvement, albeit at a slightly slower rate than the general trend. Average values have increased of late but not as quickly as the overall trend. Human error predominates as a cause of loss. In 1993, it was over 50%; now it is 57%.

ANALYTICAL SUMMARY

By far the most numerous claims are for cargo and they are the most expensive overall. The number of claims caused by errors on the part of shore personnel and those involved in loading operations is higher than in the case of most other types of ship. Most arise from poor quality stevedoring or poor standards of care while cargo is in shore terminals or in the custody of land carriers while moving goods under a through bill of lading. Failure of hatchcovers is responsible for around half the claims in the structural failure category.

Tankers

In terms of frequency of claim, the overall trend has been one of steady improvement, particularly since 1989. Detecting a trend in the average value of major claims from tankers is extremely difficult, bearing in mind that it needs only one total loss or pollution incident to produce a very large claim.

Cargo on tankers accounts for the greatest number of claims. Collisions and damage to third-party property were the cause of 13% of claims each, the latter in particular being much higher than the Club average. Pollution claims are the most expensive (and getting more so) at 40% of value. In terms of cause of loss, human error predominates. Ship failure claims, on the other hand are significantly fewer in number.

Passenger Ships

Passenger ships have been responsible for an increasing number of major claims in the last few years. In terms of average value, the trend has been erratic but is moving upwards.

The majority of these claims are personal injury-related with 50% passenger or other third-parties and 27% for injury to the crew themselves. However, passenger ships are eight times less likely to be involved in a collision and much less likely to cause third-party property damage or a pollution incident.

Reefers

Reefers represent a relatively small category in the Club Membership, but are capable of producing significant claims.

The frequency trend is currently running contrary to the general trend, with claims consistently above it in the 90s, at times significantly so. Average values, however, are not exceptional and since 1995 have exhibited a downward trend.

Cargo dominates in terms of risk category, unsurprisingly because of the temperature sensitive nature and value of the cargo. Human error dominates as a cause, with shore side error being particularly prominent. In this category shore person error includes a failure to communicate correct temperature requirements to the ship.

Containerships

The frequency trend for containerships is not only deteriorating, it has remained above the all major claims trend line since 1993. Average values have also increased significantly. This ship type has a high number of cargo claims; 54% compared with a Club average of 40%. Further, containerships differ from most other ships in that shore error accounts for 21% of their claims (compared with an average of 9% across all ship types).

Does Size – and Age – Count?

In our 1993 analysis, we made a statistical comparison of ships involved in major claims compared the incidence of human error and ship failure and found that there was a distinct correlation of these risk factors in ships between 10-14 years of age. We also observed that the majority of major claims involved ships of between 10,000 and 30,000gt. Thus we found that age and the structural consequences of age are factors contributing to a higher incidence of major claims, but it is by no means the only factor determining either frequency of claim or quantum. We also found that size too plays a role.

Do these correlations still exist today? The overall pattern is largely unchanged from that seen in 1993, with major claims peaking in ships aged 10 to 14 years. But we can also discern what may be the beginning of a trend as the incidence of major claims moves into the next age bracket.

Table 2.15 Ship Failure/Human Failure – Age Band

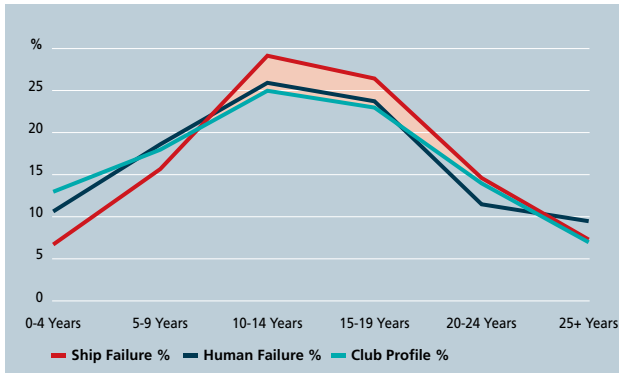
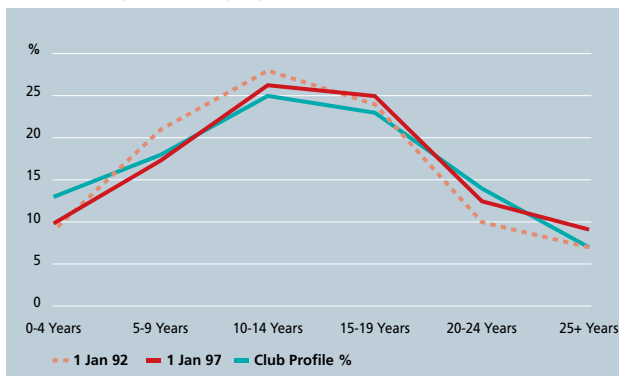


Table 2.16 Major Claims by Age Band



It would appear therefore that the correlation between age and structural failure apparent from our previous studies continues, but ships in the 10-14 bracket now have proportionately fewer claims than in 1993 while those in the 15-19 year age bracket appear to have more. Why should this be so? We speculate that it may be the result of a particular generation of ships getting older, and this is to some extent supported by the data in Chapter 8. This reviews structural failure claims and notes that ships built between 1973 and 1978 account for 41% by number and 40% by value of all the Club’s ship failure claims. It will be interesting to see if this observation turns into a trend.

Around 58% of dry cargo ship claims by number occur on ships between 10-20 years of age and 41% fall in the 10,000-30,000gt category. For bulkers the figure is 60% in

the 10-20 year bracket and 68% of such claims involve ships of between 10,000 and 30,000gt. 58% of tanker claims occur in the age band 10-20 years and the majority of incidents (62%) fall in the 10-100,000gt range.

But other ship types exhibit intriguing variations, for example, parcel carriers exhibit the same characteristics in terms of age and 50% of claims fall in the 10,000-30,000gt range, but in addition the 0-6,000gt category generates no less than 43% of major claims from this ship type.

Analysing the twin factors of age and ship size on passenger ships, one sees that claims occur mainly on ships over 25 years and from ships below four years of age.

Reefers exhibit a distinctive pattern of their own, having a poor record in the 5-9 year bracket. Why is there a disproportionate number of claims on younger ships of this type?

87% of major claims occur on containerships above 10,000gt. Small feeder ships do not suffer the same experience of major claims. This may simply be the result of the ship’s size and carrying capacity; the more cargo, the higher the quantum of damage. However, it might also be a reflection of other factors such as the fact that the bill of lading would ordinarily be issued by the ocean carrier which means that the claim would manifest itself on their record, regardless of fault. At variance with the general trend on most other ship types, 44% of containership type claims occurred on ships of less than ten years of age.

Clearly, major claims happen on ships of all ages and sizes and each ship type is influenced by a complex matrix of risk factors rather than just age alone. Trading patterns, length of voyage, more berthing discharging and loading operations are all factors which may affect a claims progress. A large ship provides a greater propensity to major claims simply because it tends to carry more cargo, as well as having more severe financial consequences if the ship hits shore-side structures etc.

ANALYTICAL SUMMARY

Human error also plays a significant role in claims from ships of all ages. For example, deck officer error and pilot error have a disproportionate impact on the record of tankers in the risk categories of property damage and collisions. Almost all the ship types reviewed exhibited a clear trend of increased claims involving shoreside personnel. Many of these claims can in one way or another be attributed to human error, and shore error claims can be very expensive, reflecting the difficult position of owners defending claims in the plaintiff's country.

This suggests that more effort should be made to improve shore management systems, recognising that the ship often has little or no control over the cargo. Loss prevention in this area requires education of shore based personnel, care in choosing sub-contractors and in preserving and exercising rights of recourse against them.

In summary, while there is a correlation between a ship's age and its propensity to experience major claims, it is not the only factor and in any event, such claims are not restricted to ship failure alone. Furthermore as so many claims arise from incidents in port, which underlines the need for a high degree of seamanship and professionalism in the operation and management of such ships, particularly when in port and when working cargo.

f. Flag States

In relation to ship failure claims it is clear from the data that there is a significant difference between flags.

Cyprus, USA, Bahamas and Panama fare worst in the overall statistics with a persistently higher percentage than would be expected, given their 'share' of Club tonnage. Russian and Chinese flagged ships on the other hand have been responsible for relatively few claims, although that trend may be increasing.

g. Ship Failure and Human Error

The data continues to suggest, as in our previous studies, that both ship failure and human error continue to play a significant role in the patterns and trends of major claims.

For the purpose of our analysis, we adopted the same broad definitions of what constitutes structural failure and human error as in previous reports. Where there is a direct human act or decision which is immediately causative of the incident giving rise to the major claim, the claim is attributed to human error. Where the incident is directly caused by structural, mechanical and/or equipment failure, we have attributed the claim to ship failure. As before, we acknowledge that there is a sense in which these definitions are artificial in that cases of structural failure or of machinery failure may themselves be caused partly or wholly by poor design or poor standards of maintenance or poor operational practices.

i) Ship Failure

The dramatic reduction in ship failure claims is one of the success stories of recent years. The data now reveals that there has been a significant reduction in such claims during the 90s. Over the last 10 years, ship failure has cost the Club US\$368m in major claims but of all the ship failure claims made since 1987, only one third of them have been presented since 1990. Ship failure claims are showing a clear downward trend in both numbers and values – from 127 in 1990 to 56 in 1995 and down from a high value of US\$69m in 1990 to US\$18m in 1994.

Whether this improvement is a direct result of the Club's efforts to raise standards (such as the ship inspection programme) is difficult to ascertain, but the fact remains that the number of claims which have their origin in the ship's structural integrity has been reduced by two thirds.

Not all ship types have performed equally well however. Of the principal ship types, bulk carriers and tankers have performed well, as have dry cargo ships, particularly since 1994. On the other hand, passenger ships, parcel carriers and containerships have experienced more erratic trends in terms of both frequency and value.

Looking more closely at the three components of ship failure it is clear that two of them – structural and mechanical – have been improving at a faster rate than

equipment failure. However, not all ship types have performed equally well across all three components. For example, mechanical failure on board passenger ships has been significantly higher than on most other ship types over the last few years.

ii) Human Error

As in previous years, human error dominates the underlying causes of major claims. The incidence of such claims is improving but at a slower rate than the trend for those claims whose underlying cause is attributable to ship failure. Consequently because of the diminution of ship failure claims the relative impact of human error as an underlying cause of loss is of increasing importance.

Table 2.17 Human Error Compared with Ship Failure Frequency

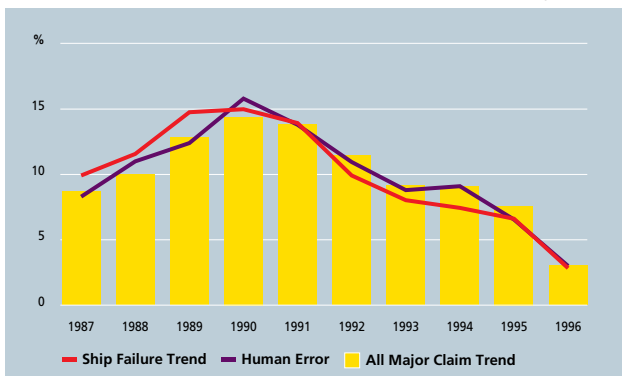


Table 2.17 shows the trend of incidents ascribed to human error and ship failure. Human error, whether of the crew, deck officers, shore person or pilot, account for a significant percentage of recorded incidents.

Our analysis shows that the majority of crew error claims, as stated previously, involve personal injuries to the crew members themselves. Nevertheless, the overall trend is one of sustained improvement at a faster rate than the overall trend. On the other hand deck officer error follows the overall trend downwards but at a slower rate. We speculate that increasing demands put upon them slows down the rate of improvement. Pilot error continues to be a source of concern, costing on average US\$16m per year. This finding has changed little from those in the Club’s earlier analysis.

Shore person error trend is the most noteworthy trend, because it is increasing and such claims are less susceptible to the influence of the shipowners own risk management and loss prevention programmes. Since 1993, major claims attributable to shore person error have consistently exceeded the all major claims trend and show no sign of improvement. The Club notes the extent to which an owner’s record may be adversely affected by persons over whom he has little control or effective redress.

Although the Club’s experience shows that the frequency of major claims attributable to human error is falling (even if the value of some types of claim is rising), further gains will be easier to make if we know more about ‘why people make mistakes’. We therefore intend to supply this deficiency in our understanding through a study into ‘human error’ related major claims in order to identify as far as possible the root causes in each case. It is hoped that this will ultimately produce objective information as to the factors that contribute to human error. This will eventually enable us to provide the Club’s Members with better advice on how to minimise their exposure to major claims.

h. Cargo

By far the most prevalent type of claim involves damage to cargo. In the last eight years cargo has accounted for almost 40% of all claims, nearly double that of the next most common type, personal injury.

We last examined major cargo claims in our 1993 analysis, when we identified the following features: cargoes associated with the greatest frequency of major cargo claims were dry bulk, reefer, containerised, generals and steel; ships aged between ten and fourteen years were a greater risk, as were ships of 10,000gt to 30,000gt; the US was the most prominent country of incident; bad stowage, bad handling and leaking hatchcovers were the most frequent cause of damage: major cargo claims were caused more by human error than by ship failure. To what extent has the picture changed since then? Are any of these findings contradicted by the enlarged data set that is now available?

ANALYTICAL SUMMARY

Many of the findings are open to interpretation. For example, bagged bulk claims increased dramatically above the all major cargo claims trend in the early nineties. Claims have abated of late but show no signs of decreasing to pre-1989 levels. However, the fact that bagged bulk claims are now far more frequent than in the late 80s might not be entirely attributable to lower quality operations on board or on the dockside – a significant increase in the popularity of a particular cargo type will naturally affect the percentage of claims for which it accounts. Similarly, container claim values have doubled in the last five years, a fact that could be attributable to the rise of containerised cargo.

The trend in dry bulk cargo has improved since our last review. Prior to 1991 this type of cargo manifested an above average number of claims but since 1990 the number of claims has decreased and now exhibits a trend consistently below the overall cargo claims trend.

Physical damage and wet damage maintain their pre-eminence as causes of loss. The loss category entitled 'physical' includes damage caused by crushing, denting, bending, breakage etc. This is the type of damage most often suffered by general, reefer, steel and containerised cargoes, often as a result of bad stowage.

Wet damage to steel continues to be expensive, apportioned mainly between bulk carriers and dry cargo ships in terms of number and value. Hatchcover leakage is still responsible for most (35%) of wet-damaged cargoes – and half of such claims involve steel and dry bulk. Geographically, steel discharged in the USA and Japan accounts for almost half the number of water-damage claims, while ships loaded in Brazil, Turkey or Romania produce 30% of such claims. The average value of water-damaged steel claims is now over US\$250,000.

Over the ten-year period of this study, bad stowage, hatchcovers, damage prior to loading, fire, inadequate hold/tank cleaning and lashing failure have all played a role in the cause of major cargo claims. Bad stowage, pre-shipment quality disputes, carriage at the wrong temperature and the

use of an unsuitable ship for the cargo in question contribute to a significant number of claims.

Bad handling and problems in shore terminals account for about 9 per cent of the claims. If this percentage is added to that of bad stowage (12%), 21% (over one fifth) of all major cargo claims can be traced back to stevedore/shore person error.

Human error continues to impact significantly as a cause of major claims. The second most frequent category of human error after deck officer error is shore person error, pointing to the fact once again that a shipowner's record can be adversely affected by the errors of others and undermines the loss prevention techniques developed to manage risk on board. Structural failure, though, is a major contributor, accounting for some 15% of major cargo claims, although 46% of these claims involve hatchcovers.

Two thirds of large cargo claims have been made in just four countries (USA, Netherlands, Japan and Italy). Around half of cargo claims made in the US over the last ten years occurred between 1987 and 1989, with subsequent years showing a marked improvement. On the other hand, there have been more claims in the Netherlands in recent years, while the average cargo claims value in China is also on the increase. Other countries which present a frequency trend above the norm are South Korea, Spain and Brazil. In South Korea, eight out of 31 major claims involve reefer cargoes. These large reefer claims are a relatively new phenomenon in South Korea occurring only since 1991 and all occurring in Busan. Just three ports (Antwerp, Hamburg and Rotterdam) account for a third of all cargo claims.

Bulk carriers, parcel carriers and reefers are involved in proportionately more major cargo claims than tankers and gas carriers. Dry cargo ships present the greatest number of claims but they also have the largest Club entry. Reefer, parcel carriers and bulk carriers present more claims than their percentage share of Club tonnage. Containerships also show a higher frequency than the overall trend and the trend has been deteriorating of late.

ANALYTICAL SUMMARY

Ships in the 15-19 year old bracket produce more major cargo claims than their Club profile, as do 10 to 14 year old ships. However, since 1991, there has been a noticeable downward trend in the latter while cargo claims involving the older category appear to be increasing. Ships in the 0-10 year category show a marked improvement over the late 80s. Since 1990, ships over 15 years of age have had more major claims proportionally than prior to 1990; the exact opposite of the trend exhibited by the younger ships. Major cargo claims have been increasing on ships in the 20 to 24 year old age bracket, quadrupling from 7 a year in 1987 to 32 a year in 1994. Ships in the over 25 age band also display an upward trend.

In terms of value, the 10-19 year category is getting more expensive, in contrast to those in the 5-9 category. The trend reverses in the 20-24 band and then displays a steep upward curve on the 25 year old plus ships.

Summary

The purpose of this report is to present the data in an objective manner. With such a wide range of statistics and trends, it is tempting – but perhaps unwise – to draw sweeping conclusions. Members will be pleased to note that many areas that have proved costly to them in the past, are now more under control. But perhaps more importantly, the analysis has identified those areas that now account for an increasing number of claims, allowing more focus to owners' loss prevention efforts.

3. PRINCIPAL CAUSES WITHIN THE FIVE MAJOR RISK CATEGORIES INSURED BY THE UK CLUB

What factors are the cause of major claims and what discernible trends are there, if any, during the ten-year period of this report?

1. Human Error Compared with Ship Failure

In this chapter we look closely at the causes of major claims and in particular at the role which human error and ship failure play in the cause of losses within the five principal risk categories insured by the Club, namely cargo, third-party property damage, pollution, collision and personal injury. As in all other sections of this study we have defined ship failure and human error as follows:

Ship Failure consists of three components, as follows:

- i) **Structural Failure:** failure of the ship’s fabric, including hatchcover problems.
- ii) **Mechanical Failure:** heavy machinery failure, including main engine and steering gear.
- iii) **Equipment Failure:** non-heavy machinery failure, eg: bridge equipment.

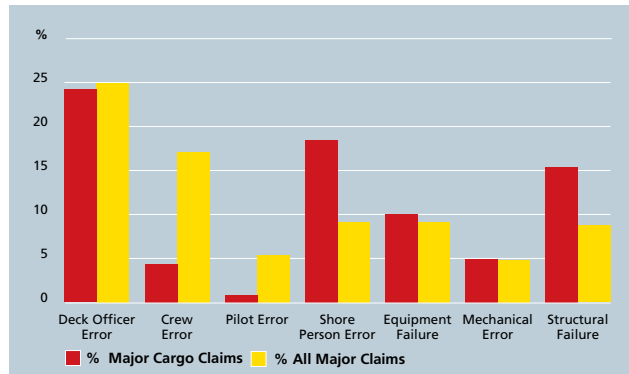
Human Error encompasses any human act or omission identifiable as the direct and/or contributory operating cause of the event from which the loss giving rise to the claim from the Member arises.

2. Five Principal Risk Categories

Cargo

Table 3.1 reveals how shore person error plays a significant role in cargo damage claims. While representing only 9% of all major claims, shore person error is the principal cause of damage in some 19% of major cargo claims.

Table 3.1 Principal Cause – Cargo



Some of this “shore person error” is almost certainly weighted towards those parts of the industry where ships’ crews have little or no control over loading and unloading of cargoes and which the speed of turn round makes it difficult to impose effective control. It may also reflect the lack of accountability, in both a contractual and a practical sense, of the stevedores handling the cargo.

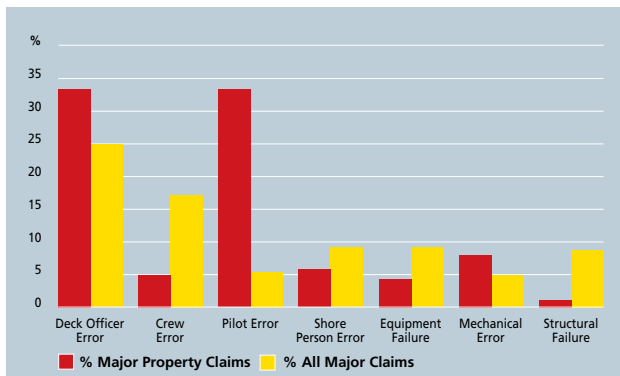
Ship failure also appears to have a significant impact on cargo claims. In the ten-year period of this study over US\$160m of paid claims have been incurred on ship failure related cargo claims, almost US\$34m of this sum being accounted for by hatchcover failures alone.

PRINCIPAL CAUSES

Property

Property claims are clearly affected by deck officer error and pilot error (Table 3.2). Indeed, nearly a third of all property claims were caused by or related in some way to pilot error, accounting for over US\$100m of claims over the past ten years.

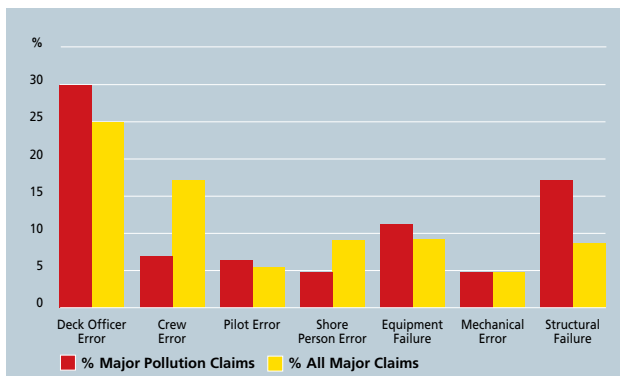
Table 3.2 Principal Cause – Property



Pollution

Table 3.3 reveals that major pollution claims often fall into the category of deck officer error, structural failure or equipment failure. Deck officer error and structural failure account for far more pollution claims than their average Club wide percentage of all major claims. The converse is true as regards major pollution claims caused by shore person error, but this is perhaps more apparent than real. The statistics may in fact be masking the extent to which liability for terminal spills is successfully displaced onto the ship’s crew, a factor worth bearing in mind when gathering evidence at the time of such an incident.

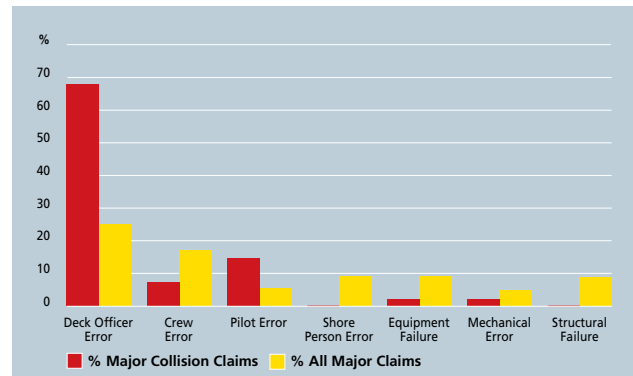
Table 3.3 Principal Cause – Pollution



Collision

Table 3.4 presents deck officer error and pilot error as accounting for around 83% of major collision claims; hardly surprising given their role in manoeuvring and navigating the vessel through difficult and/or congested waters.

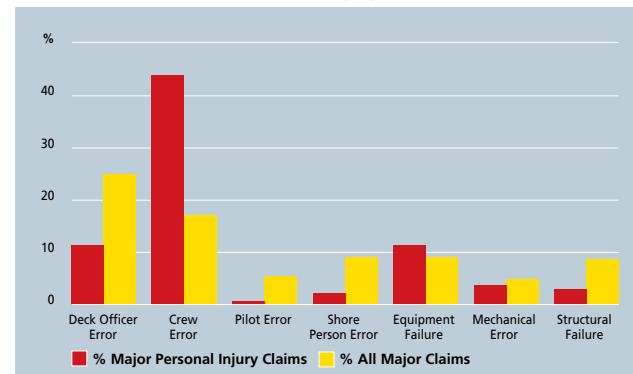
Table 3.4 Principal Cause – Collision



Personal Injury

Table 3.5 reveals that a significant number of major personal injury claims fall within the category of crew error, which means that crew error, where a crewman injures himself or a fellow worker, accounts for nearly 45% of major personal injury claims. Deck officer error and equipment failure are insignificant by comparison, structural failure even more so.

Table 3.5 Principal Cause – Personal Injury



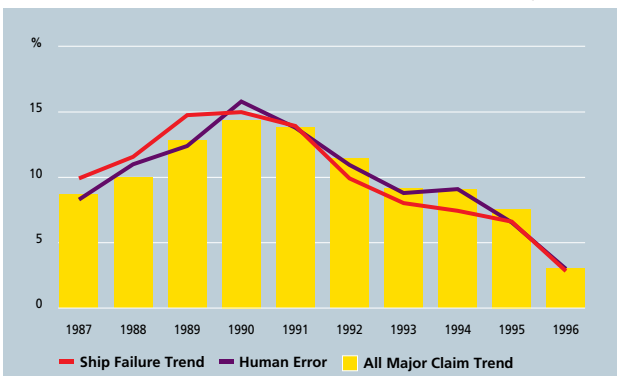
PRINCIPAL CAUSES

These claims can be difficult to quantify because of the long period often involved between the incident giving rise to the injury and the final settlement of a claim when the consequences of that injury have been fully evaluated. Personal injury claims underline the problems which can be caused by human error in its multifarious forms – lack of training, poor systems, fatigue, emotional problems etc. The obvious conclusion is that untrained, poorly managed or fatigued seamen appear to be a danger to themselves as well as an expense for the shipowner. This is clearly an area where the cost of safety programmes should be viewed as a cost benefit rather than as an expense.

3. General Trends

Are we able to discern any trends in the causes of major claims? Table 3.6 illustrates the fact that human error as a cause of loss presents an overall downward trend over the

Table 3.6 Human Error Compared with Ship Failure Frequency



ten-year period of this study, but while so doing, it is not improving at the same rate as the overall trend. Moreover, the relative rate of improvement is made more marked by the fact that there has been such a dramatic improvement in ship failure which is now decreasing. Human error as an overall trend, as distinct from ship failure, accounts for 58% of major claims.

Table 3.7 Principal Cause – Frequency

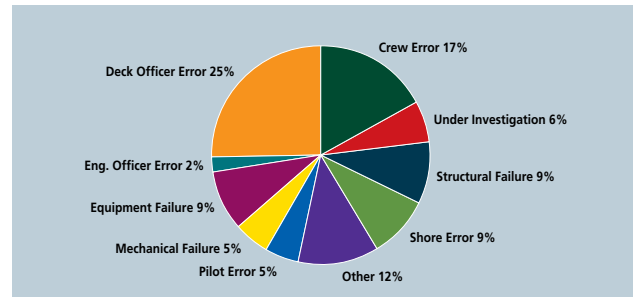
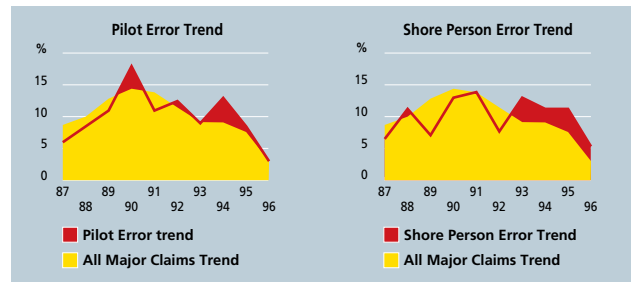


Table 3.7 sets out the principal causes of major claims in terms of frequency. Are we able to discern any trends if we also compare the number of major claims by year throughout the ten-year period across the categories of pilot error, shore person error, crew error and deck officer error as well as structural, mechanical and equipment failure?

Table 3.8 Human Error – Non Ship Crew



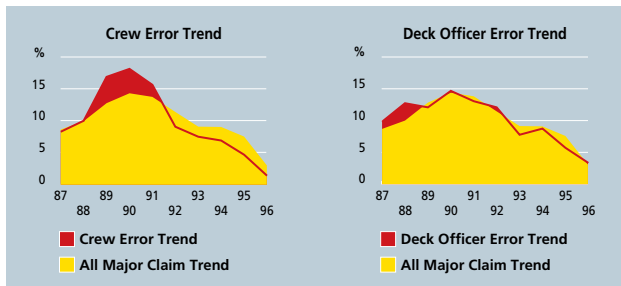
Shore person error and major claims attributable to pilot error have generated a larger number of major claims in recent years compared with the late 80s.

Since 1993, major claims attributable to shore person error have consistently exceeded the all major claims trend and show little sign of improvement. As for pilot error, no clear trend is discernible but generally major claims attributable to this category of cause appear to be moving upwards, with 1994 in particular showing a steep rise (see Table 3.8). By way of contrast, while the claims for crew error were above average from 1989 to 1991, they fell in 1992, after

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which such claims have followed closely the all major claims trend. Deck officer error on the other hand appears generally to follow the all major claims trend with no particular deviation up or down apart from 1987 and 1988.

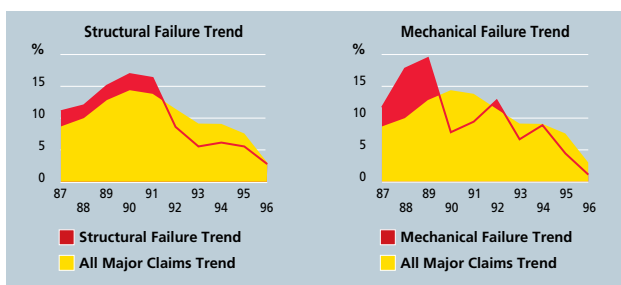
Table 3.9 Human Error – Ship Crew



The human error trend is accentuated by the dramatic reduction in the number of ship failure claims in recent years across all three categories, structural, mechanical and equipment failure. The number of major claims in these categories had reduced by two thirds from a peak in 1990.

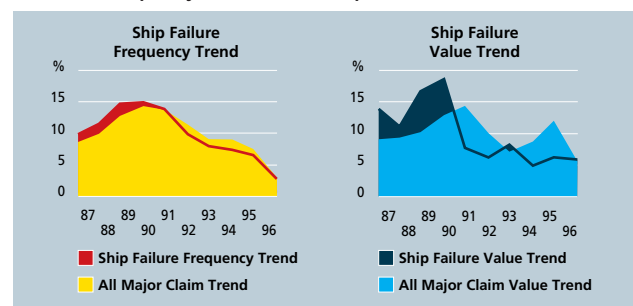
Structural failure peaked in 1990, remained steady in 1991 and dropped dramatically one year later by over 50%. Similarly, the number of mechanical failure claims dropped by almost a third in 1990, almost halving in value at the same time. This dramatic downward trend slowed in 1991 and 1992 but mechanical failure claims have never returned to the heights of the late 80s and remain comfortably below the general trend.

Table 3.10 Structural Failure/Mechanical Failure Trends



If we group these three trends together under the title of ship failure we see in Table 3.11 below that hardware-related claims reached a peak in 1990 with 127 claims: by 1995 they had dropped to 56 claims. Even more dramatic is the reduction in the value of such claims. In 1990, ship failure was costing the Club some US\$69m a year. By 1994 this had reduced to US\$18m.

Table 3.11 Frequency/Value Trend – Ship Failure



Summary

It would appear that in the causes of major claims human error continues to be the principal challenge. Although there has been a welcome reduction in crew error claims, this is offset by an apparent increase in pilot and more especially shore person error claims. On the other hand ship failure claims are not the problem they once were. There has been a dramatic reduction in such claims in the last few years largely as a result of improvements in the work of the classification societies and the attitude of owners to adequate maintenance. It is recognised that changes in human practices are however not so quickly achieved.

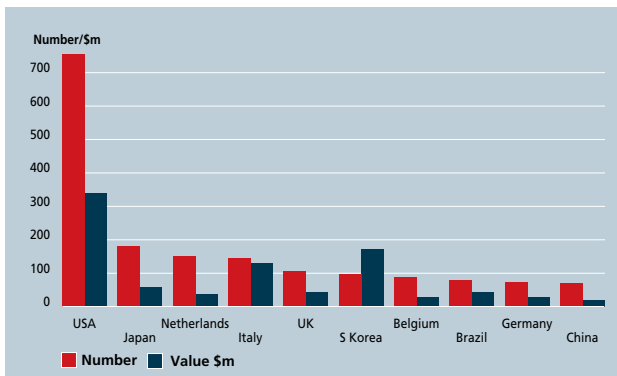
4. COUNTRY OF INCIDENT

Where do major claims occur? Geographical analysis in terms of country of incident reveals some interesting statistics.

1. General

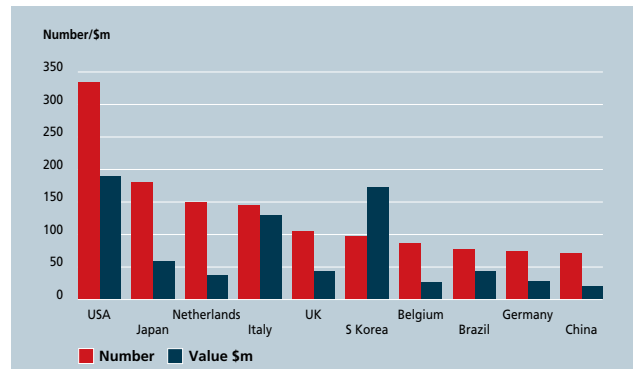
During the ten-year period of this study, incidents giving rise to major claims have occurred in over 75 different countries. Table 4.1 identifies those countries which have seen the highest frequency of claims. The table sets out the total number and value of major claims in each country concerned. These ten countries are significant in that they account for nearly 50% of both the total number and value of major claims seen by the Club, being 1,742 by number and US\$904m by value.

Table 4.1 Claims by Country of Incident – 10 Most Frequent



It is readily apparent that the United States of America dominates in terms of both the number and value of claims, but this statistical finding should be treated with caution for three reasons. First, given the size of the US economy, its position at the ‘top of the table’ is to some extent inevitable. Second, the figures represent trade to a continent: smaller countries with fewer ports cannot be expected to be so conspicuous. Third, the figures reflect the impact of the particularly high number of personal injury claims which occur in the US. When personal injury claims are taken out of the statistical sample (Table 4.2) the US record is not quite so disproportionately high as it appears in Table 4.1 and the high value of claims in South Korea stands out more clearly.

Table 4.2 Claims by country of incident – 10 Most Frequent (USA PI Claims excluded)



2. Country of Incident and the Five Principal Risk Groups

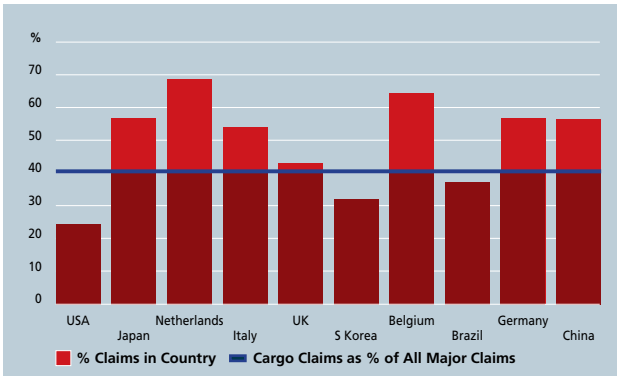
In Tables 4.3-4.8 we examine the data by means of the five principal risk categories insured by the Club, in order to present a relative picture as regards each risk type in the ten countries concerned. In Tables 4.9-4.14 we look at ship type to explore the interrelationship between ship type and major claims in the ten countries identified. In all these tables we overlay the average percentage of major claims generated by the relevant risk category or ship type across the Club. This percentage is represented by a horizontal blue line.

Cargo

The Netherlands, Belgium, Germany, Italy, Japan, China and the United Kingdom appear to generate a higher proportion of major cargo claims than the average of all major claims. Cargo handling in the Netherlands and in Belgium is manifestly a major risk category, but perhaps this is to be anticipated given that two of the largest international ports are located within those two countries.

COUNTRY OF INCIDENT

Table 4.3 Cargo Claims

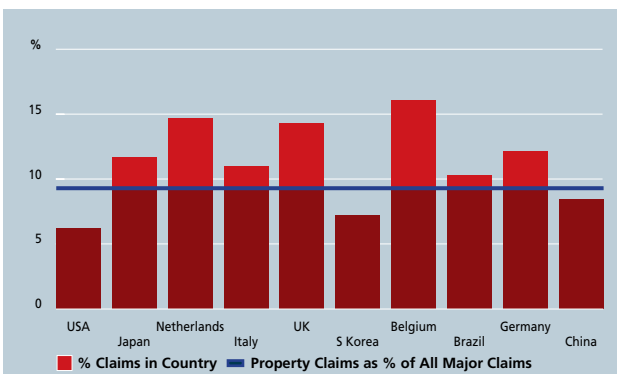


On the other hand, cargo claims in the US and South Korea are not as prominent. This is illustrated by the fact that during the ten years under review there have been 184 major cargo claims in the US, in contrast with Italy which over the same period had 79 major cargo claims. Given that these statistics contrast trade to a continent against one (albeit highly industrialised) country, the disparity is interesting.

Third-Party Property Damage

Third-party property damage giving rise to major claims is higher in the UK, Belgium and the Netherlands than the Club average of all major third-party property claims. This will come as little surprise to Members who regularly trade to these countries and who are frequently faced with claims for damage to berths, dolphins, locks etc.

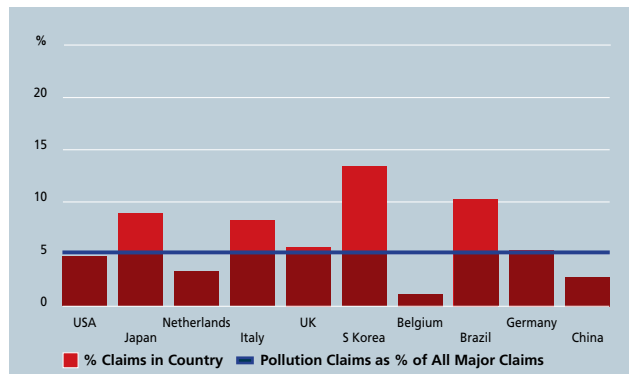
Table 4.4 Property Claims



Pollution

The US seems not to be deserving of its reputation as regards pollution claims, at least by frequency. This particular category of risk accounts for only 4% of major claims by number in the US, which is much in line with the overall Club average for such claims. South Korea and Brazil head the list, with a significant number of all major claims in those two countries arising from pollution. However, the figures are relative and, as stated previously, the figure for the US is to an extent depressed by the disproportionate number of major claims for personal injury. Pollution plays an important role in the risk profile of Japan and Italy.

Table 4.5 Pollution Claims



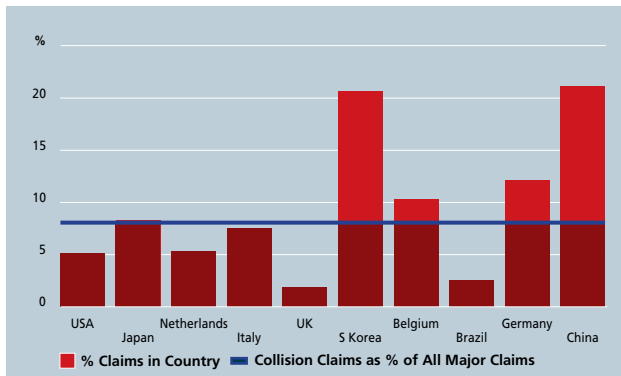
Collision

The risk of collision in Germany and Belgium giving rise to a major claim is higher than the Club average for such claims. It is to be noted that both Germany and Belgium have long river transits with restricted navigation which inevitably increases the risk of collision. However, both perform better than South Korea and China, where one fifth of all major claims in both countries are due to collisions – only cargo claims have a higher incidence. We

COUNTRY OF INCIDENT

speculate that this may be due to a relatively undeveloped infrastructure and management of waterways, as well as a large number of unregulated country craft. The UK and Brazil exhibit a relatively low percentage of such claims.

Table 4.6 Collision Claims

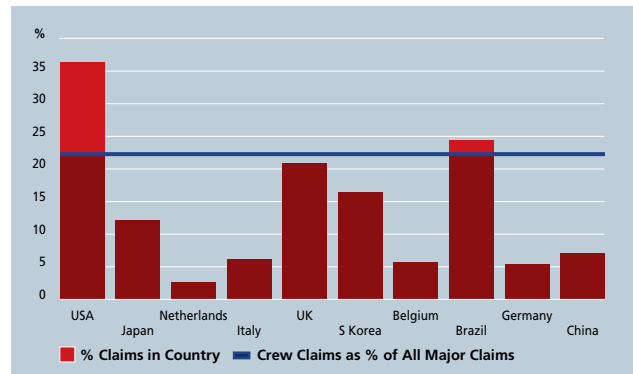


Personal Injury

Tables 4.7 and 4.8 demonstrate that personal injury dominates major claims occurring in the US. No doubt this is partly due to the geographical size of the United States and the scope of its economy, but is perhaps also due to the fact that the jurisdiction encourages claimants through its contingency fee legal system and jury-based award process.

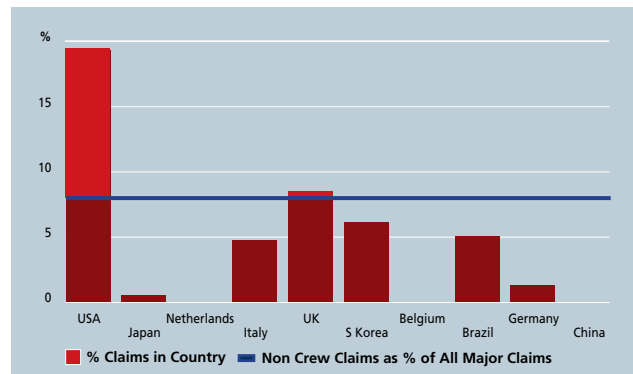
Crew injury claims are more than twice as prevalent in the US as are other personal injury claims, with injuries to crewmen accounting for around 40% of all major claims emanating from the US. [19% of personal injury major claims from the US are non-crew related.] Both crew and non-crew categories are significantly higher than the overall average percentage of such claims Club wide.

Table 4.7 Personal Injury (Crew) Claims



However, it is to be noted that crew claims also account for a substantial proportion of major claims in Brazil, the United Kingdom and South Korea.

Table 4.8 Personal Injury (Non-Crew) Claims



3. Country of Incident and Ship Type

Having reviewed each country in terms of risk category, we now turn to review ship types to see if any particular ship type exhibits a higher than average tendency to claims in any one of the ten countries identified in Table 4.1.

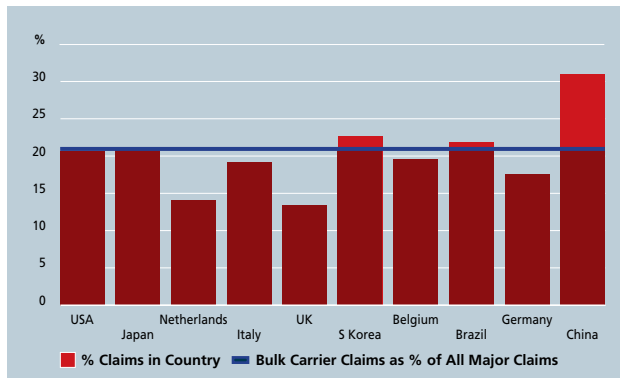
Tables 4.9-4.14 demonstrate that some countries appear to have problems with particular ship types, no doubt a reflection of different patterns of trade.

COUNTRY OF INCIDENT

Bulk Carriers

Bulk carriers seem to be involved in a similar proportion of incidents giving rise to major claims in most of the countries analysed, with the exception of China where claims from bulk carriers account for almost a third of major claims – a relatively high proportion. In Germany, the United Kingdom and Netherlands (all countries with high bulk imports), bulk carrier claims account for a relatively low proportion of major claims – a testament, no doubt, to the high quality of bulk handling operations in these countries and strict quality regimes enforced by Port State Control in that region.

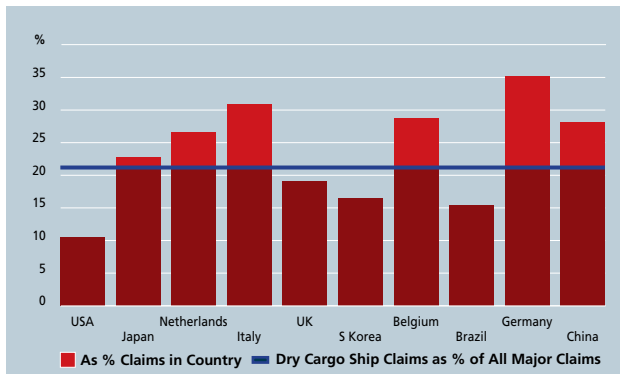
Table 4.9 Bulk Carriers Claims



Dry Cargo

Dry cargo ships, which comprise 30% of the Club’s entered tonnage and 20% of major claims overall, account for 35% of major claims in Germany and 31% in Italy. Yet in the USA and Brazil they account for less than 16%.

Table 4.10 Dry Cargo Claims

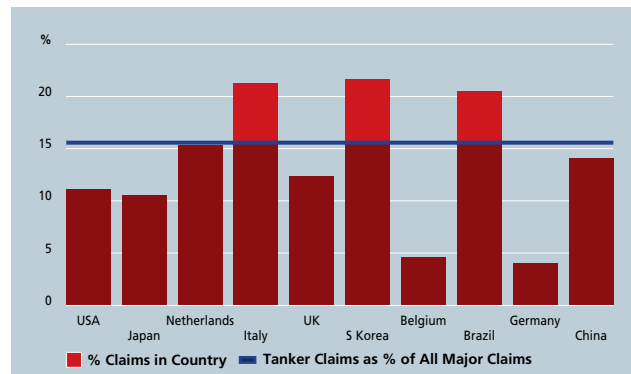


Dry cargo ship claims in China also present a profile higher in this ship type than the Club average percentage of all major claims, possibly because the sino ports are as yet relatively unsophisticated and containerised trade has not yet fully developed and so, consequently, China receives a higher proportion of dry cargo ships than containerships.

Tankers

Major claims involving tankers feature frequently in Brazil, South Korea, and Italy. In contrast, the USA and Japan fare well, and the claims frequency as regards this ship type in Belgium and Germany is remarkably low.

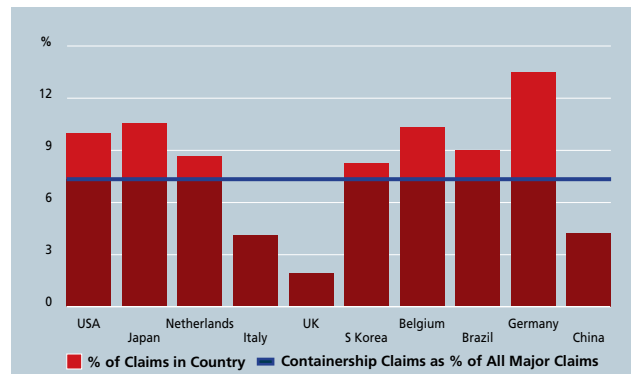
4.11 Tanker Claims



Containerships

Containerships appear to be involved in few major claims in the United Kingdom but many more claims in Germany, the USA, Japan and Belgium.

Table 4.12 Containerships Claims

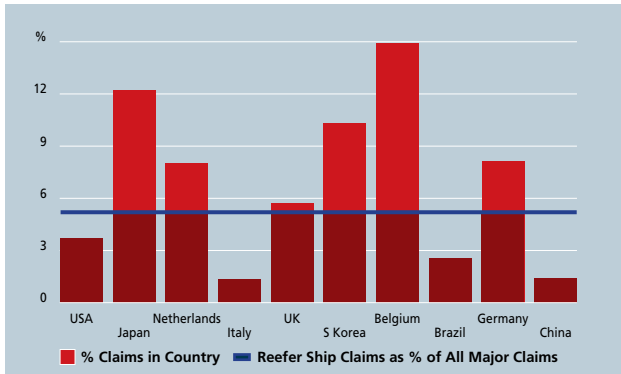


COUNTRY OF INCIDENT

Refrigerated Ships (Reefers)

Major claims from reefer ships are most prominent in Belgium, South Korea and Japan, once again a reflection of trading patterns.

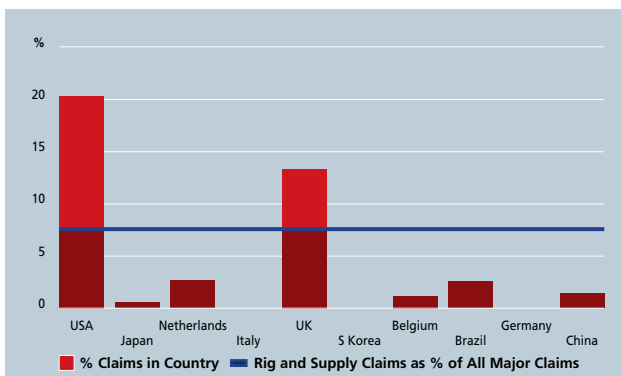
Table 4.13 Reefer Ship Claims



Rig & Supply Boats

Finally, rig and supply boats. Unfortunately, the sample size is too small for us to draw any meaningful conclusions although the US and UK dominate the table below simply by virtue of the prevalence of drilling rig/offshore Club Members from these two countries.

Table 4.14 Rig & Supply Boat Claims



4. Trends

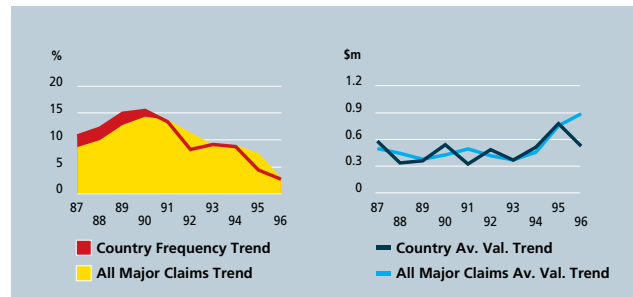
Have major claims in the countries remained constant or are they increasing or decreasing? In Tables 4.15-4.20 we have taken the six countries which generate the most major claims by frequency and compared their major claims record with the overall major claims record of the Club.

USA: 754 Claims, Value US\$341m

The US accounts for around 20% of major claims presented to the Club, when analysed by country of incident. Out of 754 major claims, 27 (3.6%) were over US\$1.6m. Nine of these were personal injury claims valued at US\$31m, eight were third-party property claims valued at US\$51m and four were pollution related claims valued at a total of US\$30m. Significantly, no cargo claims in the US exceeded US\$1.6m.

However, the total number of major claims emanating from the US in recent years has reduced (Table 4.15). They decreased from 117 in 1990 to just 62 in 1992 and the total value of those claims reduced from US\$63m to US\$30m over the same period. Significantly, given the high incidence historically of claims in the personal injury category, both crew and non-crew personal injury claims have reduced. However, average values are increasing.

Table 4.15 Frequency/Average Value Trends – USA

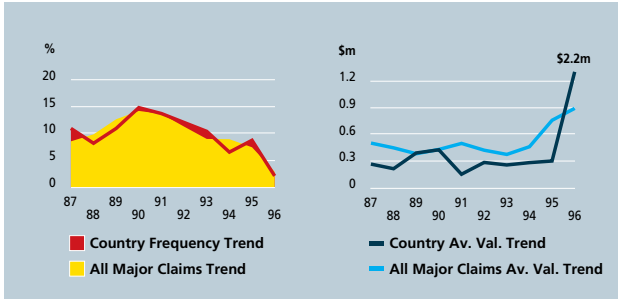


COUNTRY OF INCIDENT

Japan: 180 Claims, Value US\$59m

Table 4.16 demonstrates that major claims in Japan have followed the overall major claims trend.

Table 4.16 Frequency/Average Value Trends – Japan

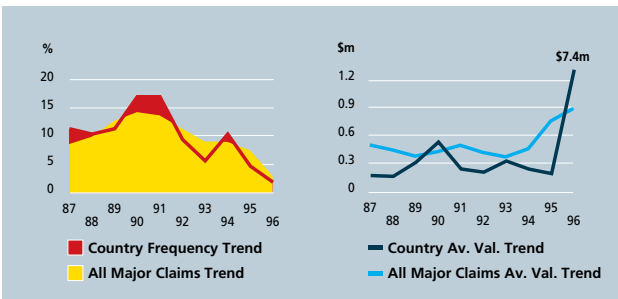


Throughout the ten-year period, the average value of such claims has been below the average for all major claims Clubwide, except for one cargo claim which accounts for the curve rising sharply in 1996. In the ten-year period, Japan has only had four (2.2%) very large claims over US\$1.6m, three collision claims valued at US\$7m and one cargo claim valued at US\$8m.

UK: 105 Claims, Value US\$44m

Major claims in the UK have witnessed a significant improvement from 1992 onwards. With the exception of 1990, the average value of UK incidents has been below the average value trend, except for 1996 when the value table displays a dramatic rise as a result of one very large dock damage claim.

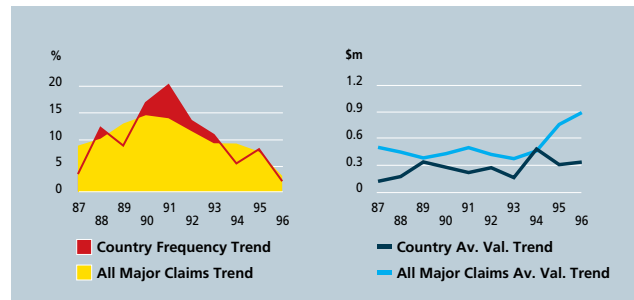
Table 4.17 Frequency/Average Value Trends – UK



Netherlands: 150 Claims, Value US\$38m

The number of major claims arising in the Netherlands exceeded the overall major claims trend between 1990 and 1993, but witnessed a significant improvement since then, except in 1995. The average value of these claims has generally been below the average value trend throughout the period, but converged towards it in 1989 and 1994. The Netherlands has only had three (2%) major claims over the period, accounting for over US\$1.6m in terms of value. Those claims were a wreck removal, a collision claim and a cargo claim respectively.

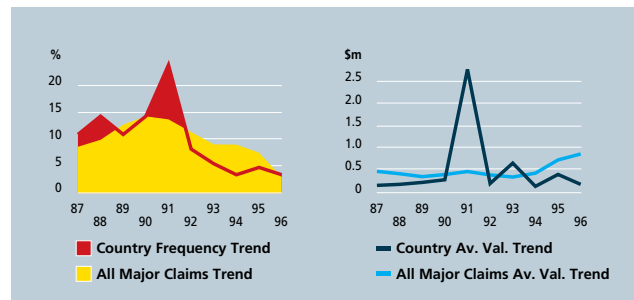
Table 4.18 Frequency/Average Value Trends – Netherlands



Italy: 146 Claims, Value US\$130m

Italy is a relatively small country in terms of land mass (in comparison with the USA or Brazil, for example). However, it is a large importer of goods and consequently has generated a relatively high number of major claims which tend to have a higher than average value. That said, the average value trend for Italy is distorted somewhat by the 1991 year, which shows a very high average value due to two very large claims. Italy had six (4%) major claims over the ten-year period of the study, over US\$1.6m distributed evenly across the spectrum of claims analysis by the Club, but including one very expensive pollution and one very expensive cargo claim.

Table 4.19 Frequency/Average Value Trends – Italy

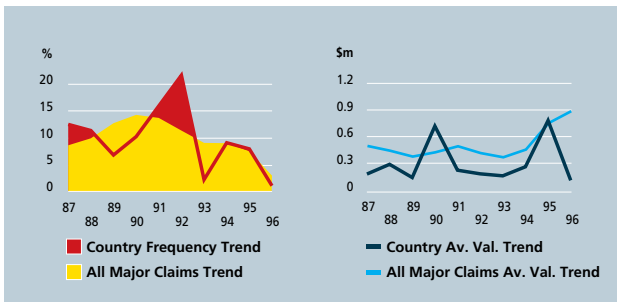


COUNTRY OF INCIDENT

Belgium: 87 Claims, Value US\$27m

The incidence of major claims in Belgium exhibits a clear upward trend from 1989 to 1992, falling back sharply in 1993. In terms of average value, the trend has been steady and generally below the average with the exception of 1990.

Table 4.20 Frequency/Average Value Trends – Belgium



5. PORT OF INCIDENT

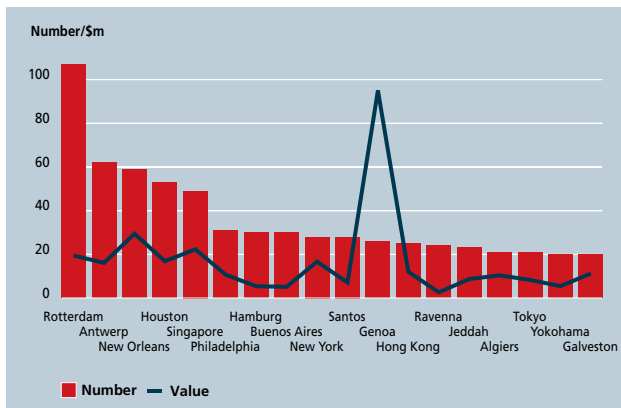
Is there any particular port which shipowners should be aware of as being particularly susceptible to high frequency or value of claims? Geographical analysis of major claims by port reveals that major claims can and do occur everywhere.

1. General

Over the 10 years covered by this study, major claims have occurred in over 400 different ports throughout the world, indicating that no one port or area of the world holds a predominant position as a cause for concern. This fact tends to indicate that no shipowner should become complacent as regards trading patterns.

Table 5.1 sets out the 18 ports which have witnessed the greatest number of major claims over the ten-year period. They have all seen on average more than two major claims a year, ranging from Galveston which has had 20 to Rotterdam with 107 overall.

Table 5.1 Claims by Port



In this chapter we review the data presented from the first five ports – Rotterdam, Antwerp, New Orleans, Houston and Singapore. Major claims are reviewed by the five principal risk categories analysed by the Club – cargo, property, pollution, collision and personal injury (Tables 5.2-5.7) – followed by a review of major claims by ship type (Tables 5.8-5.15). The reader is once again reminded that the “snapshot” bar graphs used in this chapter tell a relative picture and each one should be read in conjunction with the others.

We also review the claims frequency trend exhibited by these five ports against the overall major claims trend (Tables 5.16-5.21). These tables also compare the average value of all major claims over the last ten years with the average value in each of the five ports, illustrating how one expensive major claim can have a significant effect – for example, the high peak for Genoa, results from the Haven and the Pegasus incidents in 1994.

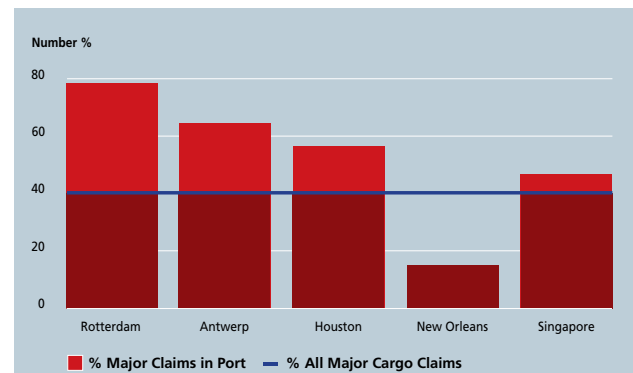
Note – care must be taken when reading some of the tables where the sample sizes are low.

2. Ports and the Five Principal Risk Categories

Cargo Risk

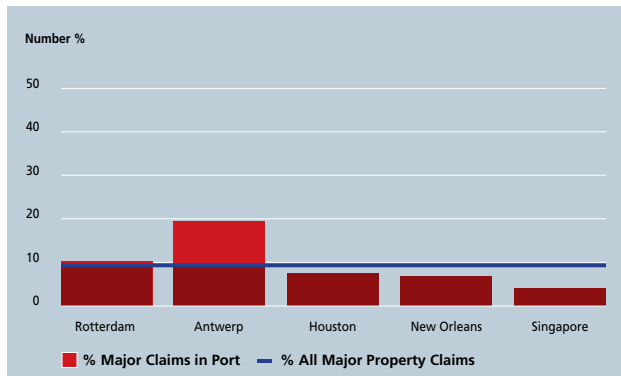
As cargo is the most frequent category of claim that the Club has to deal with, it is not surprising that this risk category features so prominently as a major claim in the five ports analysed. All five ports, with the exception of New Orleans, have an above average occurrence of major cargo claims. The ‘low’ personal injury related figures for Rotterdam and Antwerp (Tables 5.6, 5.7) are explained by the fact that they both have a very high incidence of cargo related claims. Indeed, in Rotterdam 80% of major claims are cargo related.

Table 5.2 Cargo



PORT OF INCIDENT

Table 5.3 Property



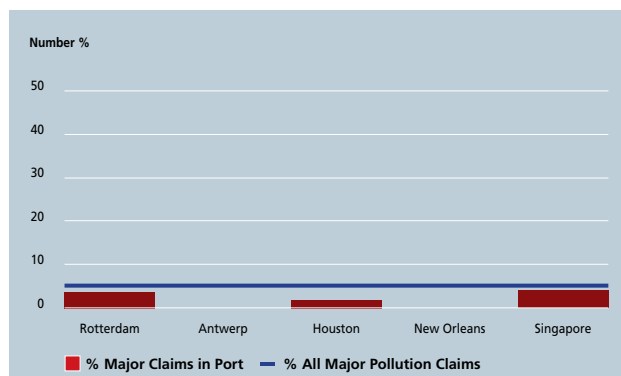
Third-Party Property Damage

The number of incidents in this category is low, with only twelve such claims in Antwerp, for example. It is interesting however, that Antwerp features so prominently when compared with the other ports analysed. This is likely to result from the difficult approaches to the port of Antwerp.

Pollution

The number of pollution incidents in ports which give rise to a major claim are low. For example, Singapore has had just two such incidents during the ten-year period of this study. Interestingly, Table 5.4 indicates that pollution claims are not necessarily prevalent in areas of high traffic: more ships does not necessarily mean more pollution incidents, perhaps a reflection of the degree of control exercised by the developed ports.

Table 5.4 Pollution

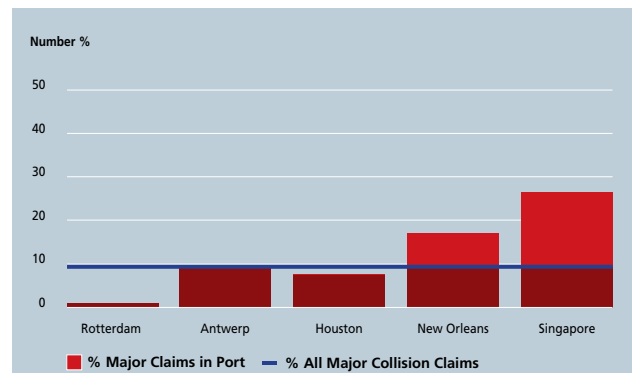


Some of the ports mentioned are well known as bunkering ports and as areas of high movements of polluting liquids. It is a reflection on the sophisticated working practices in these ports that they have seen so few major pollution claims.

Collision

Collisions account for some 26% of all major claims incidents in Singapore, significantly above the Club average for major collision claims of 10%. Only cargo risks, accounting for 47% of incidents, exceed this figure. In some ways, this is not surprising bearing in mind the high concentration of ship movements in this port. However, the same might be said of Rotterdam, an area known for its high volume of traffic and congested approaches. This can best be explained perhaps by the fact that Singapore is extremely close to a major East-West traffic confluence which distorts the figures.

Table 5.5 Collision



PORT OF INCIDENT

Personal Injury

With the exception of New Orleans, crew injury generally accounts for less than 10% of personal injury major claims in each of the five selected ports. In New Orleans however 51% of major claims are personal injury related. The fact that the percentage of claims from non-crew related incidents in New Orleans is so much higher than the Club average (27% in contrast to 8%) is surprising. This high percentage may be accounted for by the relatively large number of stevedore claims.

Similarly, Houston has an above average of non-crew personal injury claims profile, in contrast with Rotterdam and Antwerp, also both very large ports, which have had no major claims related to third-party (non-crew) injury. Again, this is probably the result of a higher preponderance of stevedore and shoreside personnel claims in these areas.

Table 5.6 Personal Injury (Non-Crew)

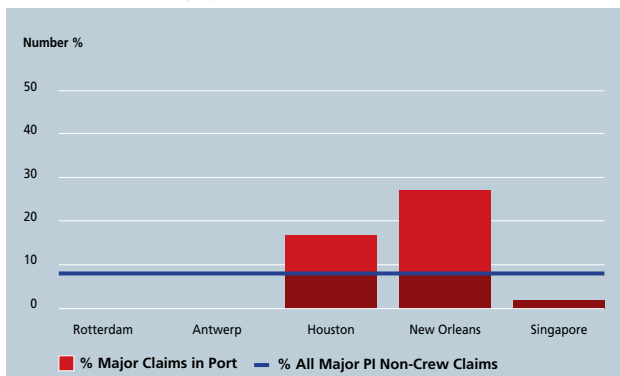
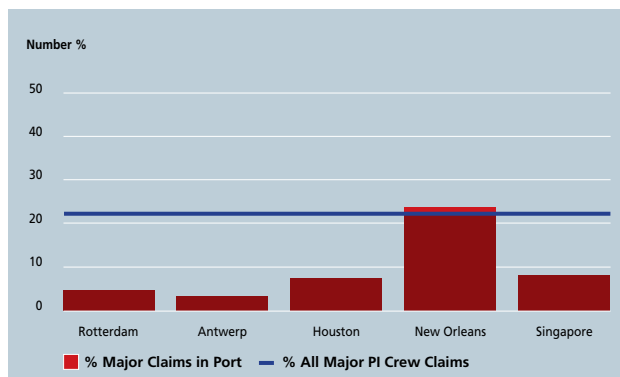


Table 5.7 Personal Injury (Crew)

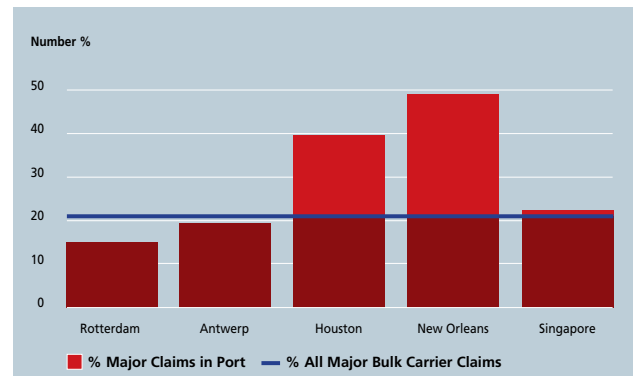


3. Ports and Ship Type

Bulk Carriers

Bulk carriers feature prominently as the ship type upon which most major claims occur in Houston and New Orleans. The latter location in particular exhibits a percentage significantly in excess of the Club average for this ship type (49% in contrast with 21%). It is interesting to note this ship type presents more claims in these two ports than the two major bulk ports of Europe, Rotterdam and Antwerp.

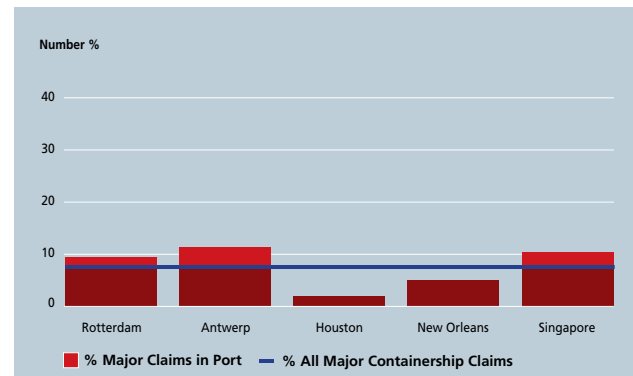
Table 5.8 Bulk Carrier



Containerships

The frequency of major claims is low as far as containerships are concerned. Only Rotterdam and Antwerp exceed (just) the (low) Club average. Several of the ports mentioned are major container ports and so it is interesting that none of them exceeds the average by any significant margin.

Table 5.9 Containerships

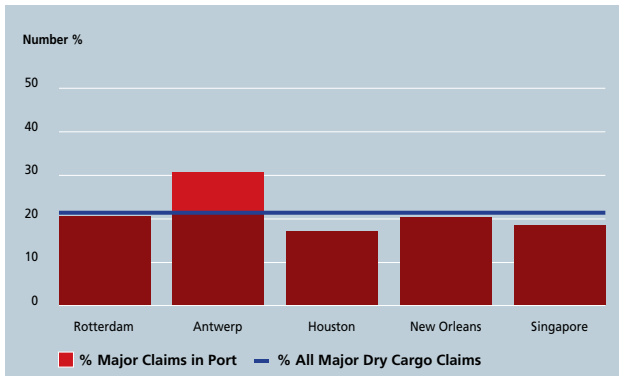


PORT OF INCIDENT

Dry Cargo

Dry cargo ships exhibit a consistent record across all ports, accounting for around 20% of major claim incidents, with the exception of ships calling at Antwerp, where dry cargo ships account for 30% of major claims.

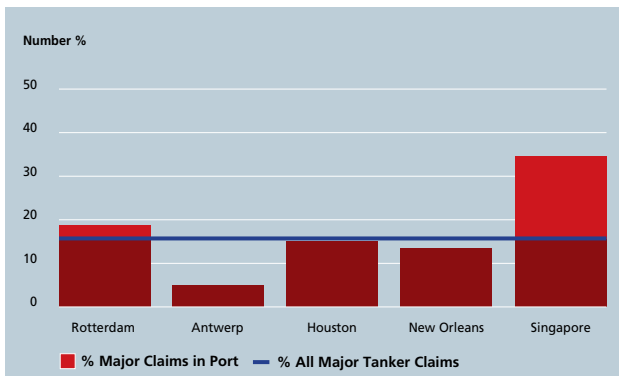
Table 5.10 Dry Cargo



Tankers

Major claims involving tankers account for an above average share of the number of major claims emanating from the port of Singapore. Numbers are low though and should be treated with caution.

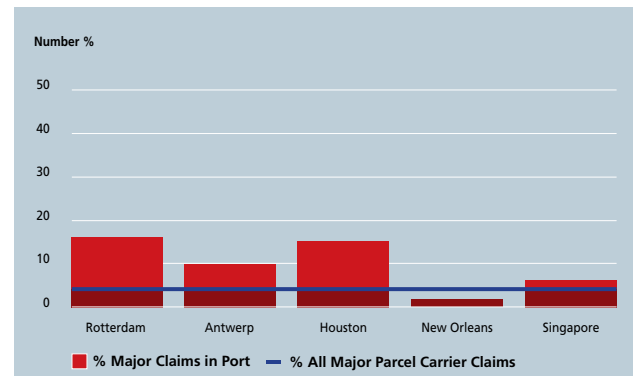
Table 5.11 Tankers



Parcel Carriers

Parcel carriers clearly play a significant role in major liability claims in Rotterdam and Houston, and to a lesser extent in Antwerp. Claims in these three ports far exceed the average in terms of their frequency.

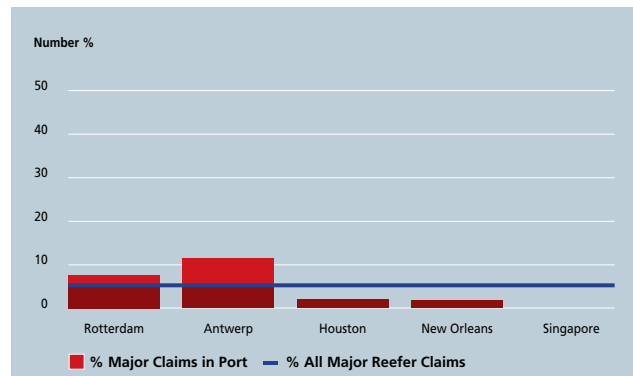
Table 5.12 Parcel Carriers



Reefers, Ro Ros, Rig & Supply Boats

The sample sizes of major claims of Reefer ships, Ro Ro ships, and Rig and Supply boats in each of the five ports concerned are too low for any meaningful conclusions to be drawn.

Table 5.13 Reefer



PORT OF INCIDENT

Table 5.14 Ro Ro

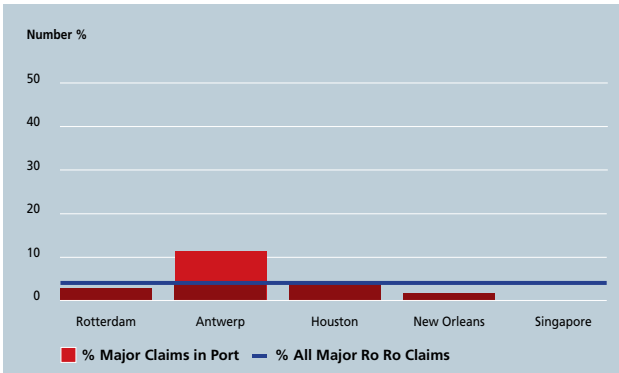
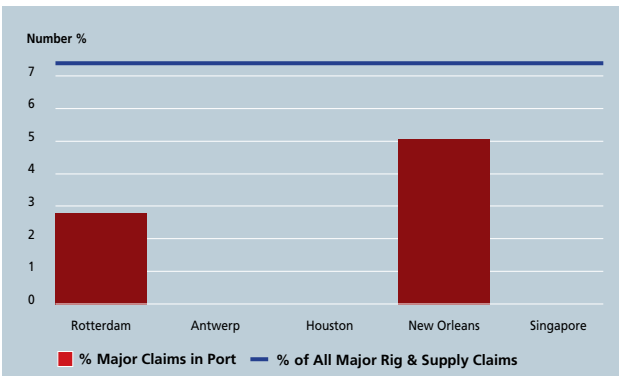


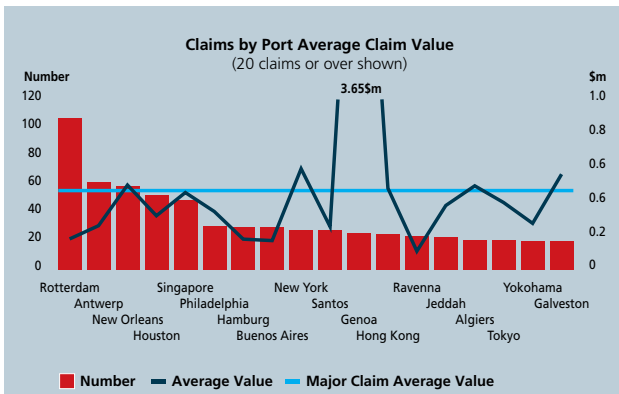
Table 5.15 Rig & Supply



4. General Trends

Table 5.16 compares the average value in all ports which witnessed 20 or more major claims. We then go on in Tables 5.17-5.21 to review the frequency and value trends in the 5 selected ports.

Table 5.16 Port – Average Value

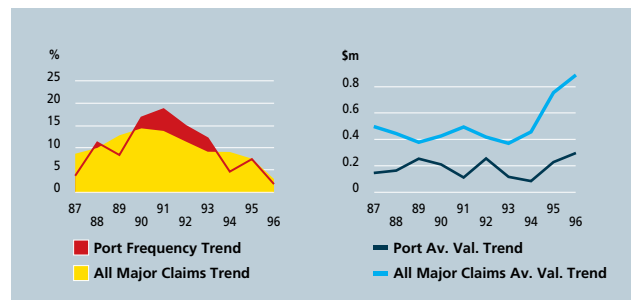


Rotterdam: 107 Claims, Value US\$19m

In terms of the frequency of major claims the trend for Rotterdam is a declining one. Major claims presented a challenge in the early period of this study, rising sharply in 1990 and 1991 but stabilising in '92 and '93. However, they began to rise again in 1995 but have not risen to the levels of the early 90s.

An interesting point revealed by the historical trend for average value is that in 1989, when the major claims average value was reducing worldwide, it was increasing in Rotterdam. In terms of value, the average for major claims in this port has consistently been below the major claims Club average value.

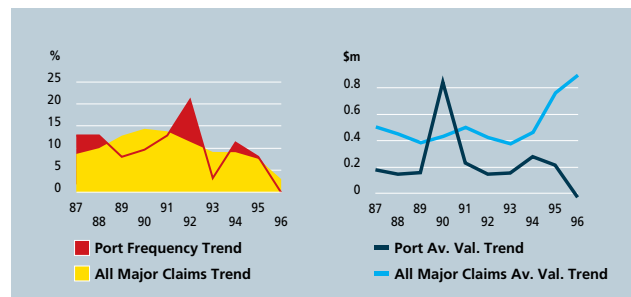
Table 5.17 Frequency/Average Value Trends – Rotterdam



Antwerp: 62 Claims, Value US\$16m

Overall Antwerp exhibits an upward trend in the number of claims from 1990 onwards. However, the trend is erratic, with frequency deviating sharply above the general trend in 1992 and then reducing sharply in 1993 to well below the Club average, only to rise above it in 1994. The average value of claims increased in 1990 but since that year have been consistently below the overall average value trend line.

Table 5.18 Frequency/Average Value Trends – Antwerp



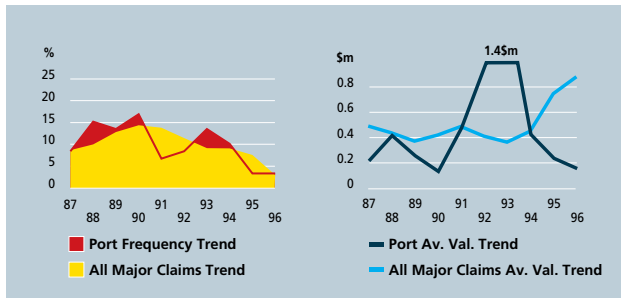
PORT OF INCIDENT

Of interest perhaps is the fact that 79% of these claims occurred on ships in the 10,000 to 30,000gt and 0 to 6,000gt size categories, falling fairly evenly over the two. It is also interesting to note that pilot error accounted for the largest value of claims in this port.

New Orleans: 59 Claims, Value US\$29m

Major claims in New Orleans display an erratic trend with claims between 1988 and 1990 being above the average trend, as well as in 1993/4. While claims witnessed a decrease in 1991 and 1992, it is perhaps worth pointing out that both the number and quantum of claims in this port are subject to erratic movement – particularly in the personal injury category where the average value at this port is US\$499,466 for crew injury incidents and US\$356,166 for non-crew.

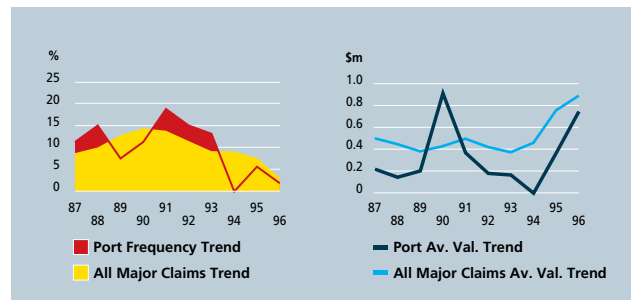
Table 5.19 Frequency/Average Value Trends – New Orleans



Houston: 53 Claims, Value US\$17m

Houston witnessed an increasing trend in terms of frequency between 1989 to 1991 with claims numbers above the norm for the ten-year period between 1991 and 1993. As quickly as claims had risen high, they dropped in 1994, returning to follow the major claims trend in 1995. Some 68% of these major claims occurred on ships of 10,000 to 30,000gt.

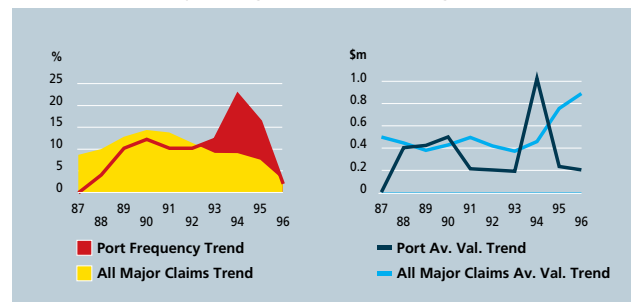
Table 5.20 Frequency/Average Value Trends – Houston



Singapore: 49 claims, Value US\$22m

The sample size is low, ranging from two claims in 1988 to 11 in 1994. Despite the low numbers, there does appear to be a clear upward trend with claims up in the mid 90s.

Table 5.21 Frequency/Average Value Trends – Singapore



6. JURISDICTION

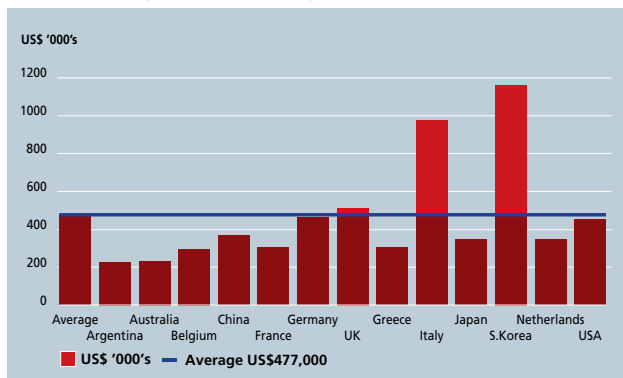
Our statistical data reveals that many different legal jurisdictions have been utilised by claimants, but there are thirteen which are more prevalent than others.

Claims occur all over the world and to a great extent the actual location of the incident is a matter of fortuity. However, the jurisdiction in which a claim is heard is rarely arrived at in such a random fashion. In many cases both jurisdiction and the “proper law” which governs the dispute are written into the contract between the parties. If the parties to the dispute have not already agreed on a forum, this is decided according to the rules of local and private international law. Jurisdiction can affect the merit of the claim (from a legal view point) as well as its quantum, to such an extent that a claim which is a small claim in one jurisdiction may be a major claim in another by virtue of the amount of damages awarded.

1. General

Because there are so many different considerations at work it is difficult to draw comparisons between one jurisdiction and another. However, Table 6.1 provides an overview of the average value of settlement in each of the thirteen jurisdictions that witness the greatest number of disputed claims.

Table 6.1 All Major Claims – Average Settlement Value

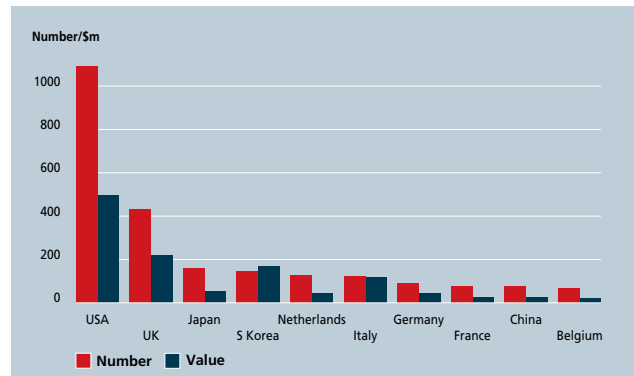


Some jurisdictions within Table 6.1 display a tendency to higher than average values because of the effect of a small number of relatively high value major claims. By the same principle, the average value of other countries in the table

can be diluted by the effect of a greater frequency of claims. For example, the jurisdictions of South Korea and Italy produce major claims significantly higher in value than almost any other country – US\$1,162,000 and US\$973,000 respectively, whereas the US produces a below average “average value” – of US\$453,000.

Table 6.2 identifies the jurisdictions where more than 10 disputes involving a major claim occurred. The table sets out the number and value of the claims in each jurisdiction showing the percentage of each. In terms of number of claims the United States continues to dominate the major claims seen by the Club. As has already been noted elsewhere in this report, this is partly a factor of the size of the United States economy and the fact that it represents

Table 6.2 Claims by Jurisdiction – 10 Most Frequent

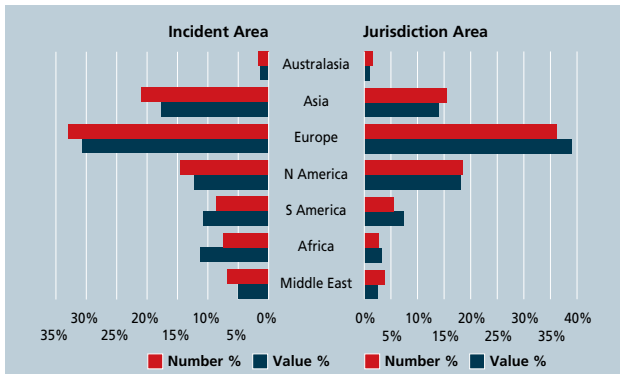


trade to a continent whereas smaller countries would not be expected to be so conspicuous. Secondly, it also reflects the relatively large number of personal injury claims brought in the US. The US is a jurisdiction which not only gives substantial rights to individuals but through its contingency fee legal system and a jury-based award process it encourages claimants in some cases of dubious merit. It also results from the fact that the US (New York) and the UK (London) are established centres of maritime arbitration and dispute resolution.

JURISDICTION

It is possible to produce a more balanced view if the claims are looked at on a regional rather than a country basis, as is demonstrated by Table 6.3 below, which compares the area of incident with the area of jurisdiction.

Table 6.3 Area of incident/Jurisdiction

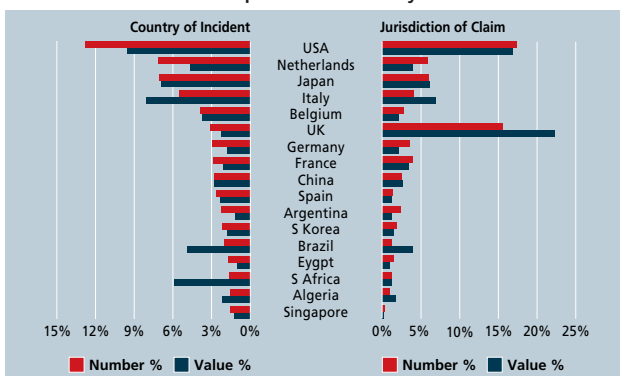


Looked at on a regional basis, Europe is perhaps more likely to give rise to high value claims than any other region. Interestingly the graph depicts Africa as a region where the value of claims is noticeably higher than might otherwise be expected. This represents significant operational risk for Members who trade to Africa, and in particular Nigeria, due to the difficulties encountered with legal regimes of varying quality in the region.

2. Jurisdiction in Contrast to Country of Incident

As stated previously, many disputes are resolved according to the predetermined contractual provisions of the parties concerned. Consequently, centres of maritime expertise

Table 6.4 Jurisdiction - Compared with Country of Incident



such as London and New York tend to see a greater number of disputed claims than other locations, as can be seen in table 6.4. Interestingly, as a jurisdiction, the UK produces a proportionately higher value of claims than the number of claims brought in this forum whereas the opposite is the case in the USA. Note too how Italy, Brazil, South Africa and Algeria have all produced high value claims.

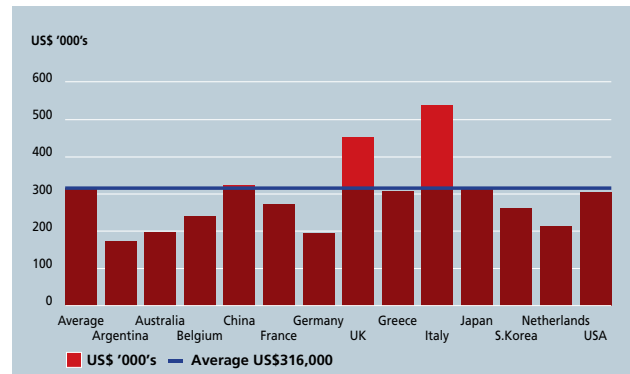
3. Jurisdiction and the Risk Profile Groups

Do the jurisdictions set out in Table 6.1 have a propensity for certain types of claims? The following group of Tables (Tables 6.5 to 6.9) analyse the disputed claims by the five principal risk categories underwritten by the Club.

Cargo Claims

As with pollution claims, Italy has a very high average value figure for major cargo claims. However, this is largely due to the distortion created by the loss of the 'Haven' which, in addition to a pollution claim, produced a cargo loss of over US\$21m.

Table 6.5 Cargo Claims – Average Value



One other jurisdiction which features strongly in this category of risk is the UK, with an average value for major cargo claims of US\$452,000. However, separate statistics reveal that the average value for cargo claims where the incident concerned took place in the UK is only US\$234,000. Furthermore, of the 226 cargo claims brought within UK jurisdiction, only 35 related to incidents which occurred within the UK. These figures reflect the number

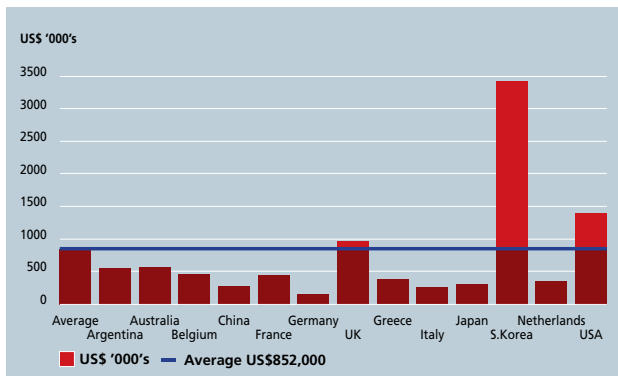
JURISDICTION

of international contracts which stipulate UK jurisdiction, especially in the dry trades. The other such major forum is the US, especially for the tanker trades. However, unlike the UK where nearly 85% of the cases arise from incidents outside the UK, in the US over 63% of the 253 cases disputed in the US have their origin in incidents which took place within the US. Interestingly the average value of a major cargo claim arising from an incident occurring within the UK (US\$234,000) compares with a similar figure for the USA of US\$243,000.

Third-Party Property Claims

Major property claims in South Korea are above average in value. This is principally due to a major incident in 1988 and two losses in 1993 and 1995, leading to payments of US\$1.4m, US\$4.2m and US\$14m respectively.

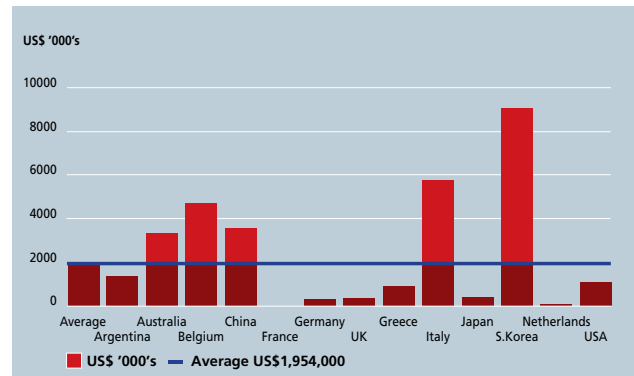
Table 6.6 Property Claims – Average Value



Pollution Claims

Both Italy and South Korea have presented exceptionally high average values for major claims involving pollution at US\$5,744m and US\$9,083m, well above the Club average of US\$1,954m. However, as is often the case with pollution incidents, the figures are distorted by a small number of expensive incidents. In the case of Italy the loss of the 'Haven' (US\$21m) in 1991, and in Korea the 'Sea Prince' (US\$75m) and the 'Honam Sapphire' (US\$18m), in 1995.

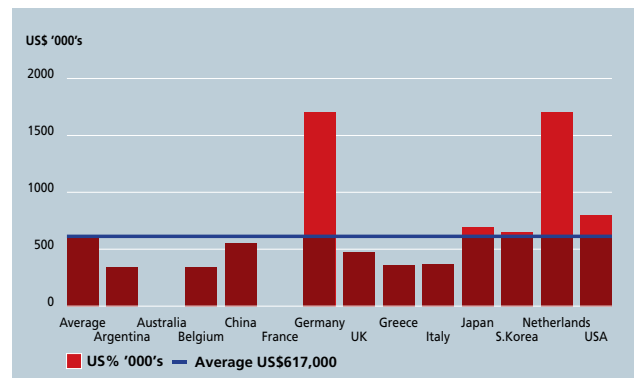
Table 6.7 Pollution Claims – Average Value



Collision Claims

Readers should remember that Club Members do not usually insure the whole of their collision risk with the Club. Only a quarter of the risk is insured by the Club, the balance being covered by the Members' hull underwriters. This background factor undoubtedly distorts the figures within this category of risk.

Table 6.8 Collision Claims – Average Value



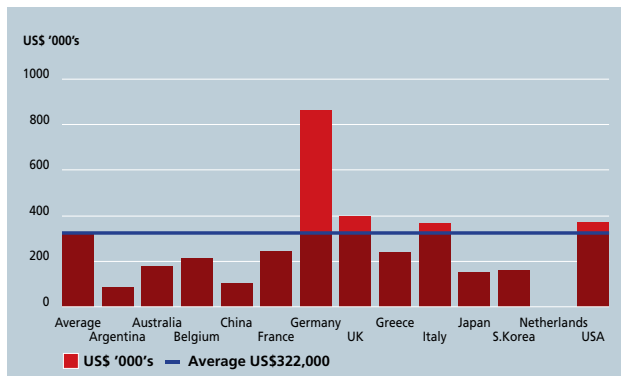
Collision claims tend to be few in number but expensive to resolve. Both the German and Dutch jurisdictions were adversely affected by major claims in this category in 1992 and 1987 respectively.

JURISDICTION

Personal Injury

In this category, the German jurisdiction presents an average value higher than the Club norm, principally as a result of the effect on the statistics of two major passenger liner incidents (the 'Costa Classica' (1993) and the 'Maxim Gorky' (1989)) both of which involved German nationals. This is perhaps a reflection of the fact that the losses involved relate to passenger liner incidents, which are recorded in our statistics as personal injury incidents: in other words, the figures do not reflect the quantum of the awards given to the individual litigants involved but rather reflect the consolidated figure reached by adding together all the claims from them.

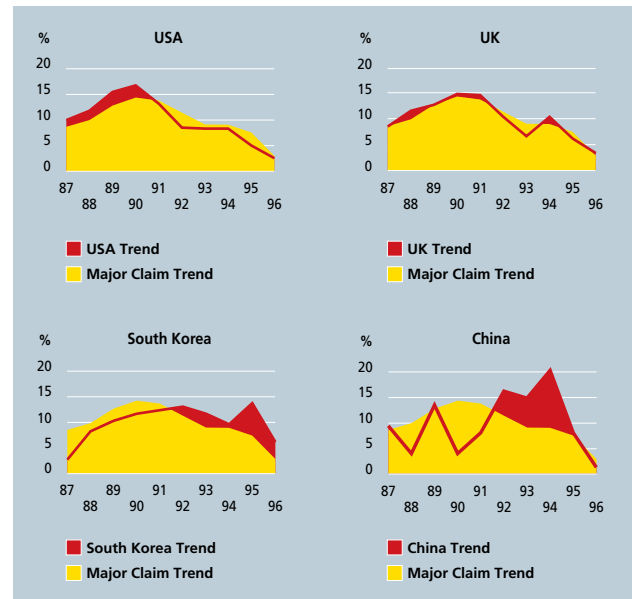
Table 6.9 Personal Injury Claims – Average Value



Trends

Table 6.10 displays the trend of major claims in terms of frequency in the UK, USA, South Korea and China. Interestingly, the two major centres for dispute resolution are showing a downward trend, while those of South Korea and China – a new but very active forum – are increasing.

Table 6.10 Frequency Trends – Jurisdictions



7. SHIP TYPE

When analysed by trade category there are a number of distinct variations in the experience of the various ship types entered in the Club. Some of the significant differences between the various ship types are commented on in other sections of this report. However, in this particular section the specific features of each of the main trade types are analysed in greater detail in order to allow Members to consider their own experiences against the experience of the Club as a whole. The general trends for each ship type are exhibited. We also review the data, in terms of cause, age of ship etc, to see what lies behind the number and average value trend of each ship type.

Table 7.1 Frequency of Claim – Type of Ship

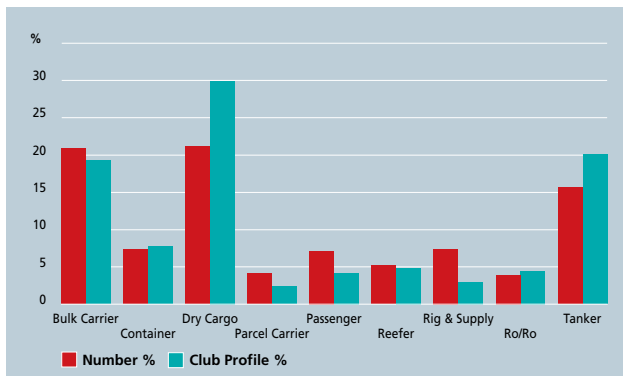
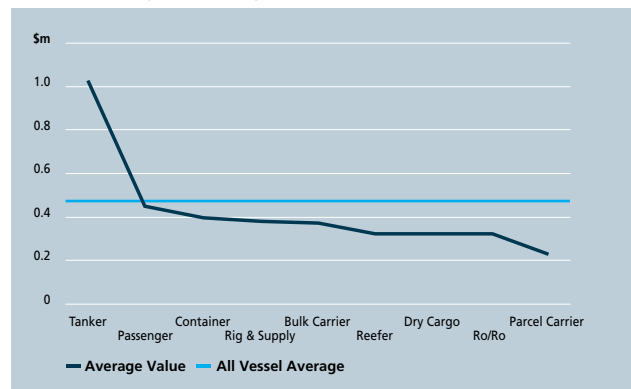


Table 7.1 sets out the percentage number of major claims generated by each ship type, measured against the Club entry of that ship type by number. This table highlights the three types of ship which make up the bulk of the Club's entry – bulk carriers, general cargo ships and tankers. It can be seen that the number of major claims on the last two ship types compares favourably with their Club entry, in contrast with that of bulk carriers which produce a higher percentage of claims. Major claims on passenger ships and rig and supply ships also account for a higher number of the Club's claims than their Club entry would suggest.

Table 7.2 gives a clear indication of the ship types that tend to generate claims above or, as the case may be, below the average.

Table 7.2 Ship Type – Average Value



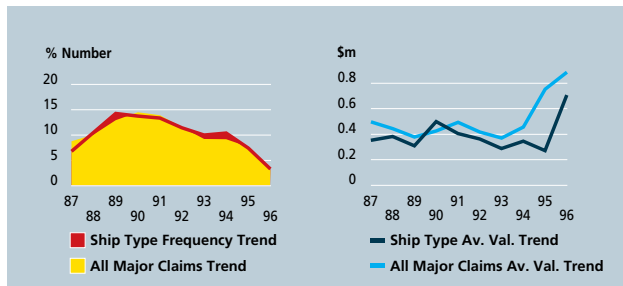
Bulk Carriers

Over the ten-year period of this study, bulk carriers, which make up 19% of the Club's entered tonnage, were involved in 779 major claims totalling US\$290m. This represents 21% of the total number of major claims presented to the Club and 16% of their total value.

Table 7.3 reveals that the frequency of major claims from bulk carriers has generally followed the overall major claims trend, which continues to decrease. In terms of average value the claims have been consistently below the average value trend.

SHIP TYPE

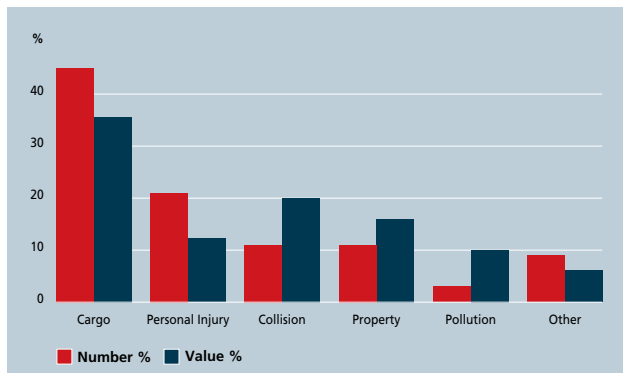
Table 7.3 Frequency/Average Value Trends – Bulk Carrier



In terms of cause of loss, the pattern of major claims is marginally different for bulkers in contrast with other ships, 25% being attributable to ship failure, compared with 23% across all ship types. It is thus clear that, for bulk carriers, maintaining structural integrity is of importance if losses are to be reduced. This is particularly true as regards hatchcover maintenance. Nevertheless, human error predominates at 55% with a less than even divide between shore personnel error and mistakes by those on board (16.3% in comparison with 39%).

Unsurprisingly, in terms of risk category (table 7.4) most bulk carrier claims are cargo-related at 45%, followed by personal injury (16%), third-party property damage and collision (12% each) and pollution (3%). While property, collision, and pollution claims are individually more expensive on average, it is the sheer number of cargo claims (351) which gives rise to the most concern. A major cargo claim in this ship type is 4 times more frequent than a collision claim, 15 times more likely than a pollution claim and twice as likely as a personal injury claim.

Table 7.4 Bulk Carrier – Risk Type



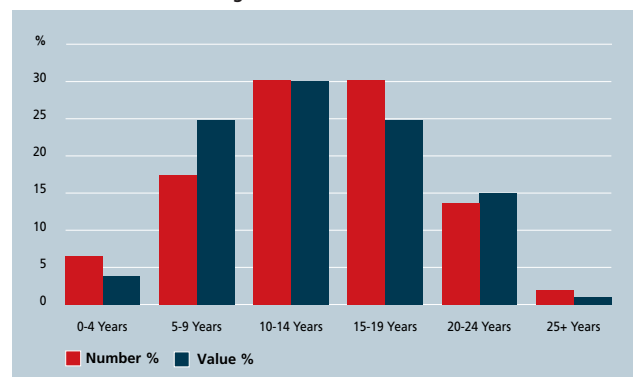
Bulk carriers along with tankers cause most of the Association’s property claims (25% bulkers; 23% tankers) the principal cause being human error by persons other than ship’s crew. Pilot error was a factor in 33 out of the 85 property damage claims. This is a greater involvement proportionately than found in other types of ship.

In our 1993 study, age appeared to be a consistent factor in claims arising from bulk carrier structural failures.

It would appear that the correlation between age, structural failure and size in the middle years of a bulk’s working life continues to be significant. There is therefore a particular need for a strong emphasis on monitoring the structural condition of these “work-horses of the sea” around this time.

In terms of size, bulk carriers of between 10,000-30,000gt account for over 68% of the total number of major claims, generating 72% by value, yet ships of this tonnage constitute only 60% of the bulk carriers entered in the Club (Table 7.6). Furthermore over half of all bulk carrier property damage claims involved ships of between 13,000 and 17,000gt.

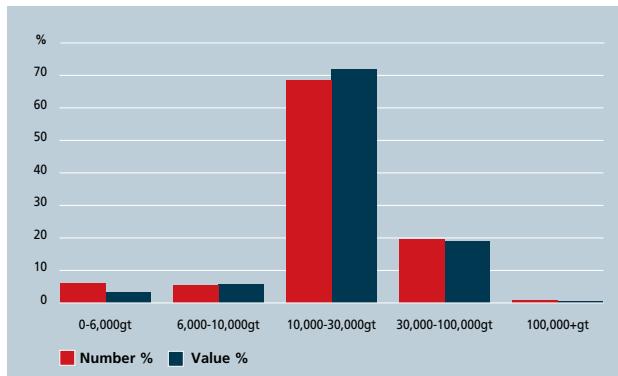
Table 7.5 Bulk Carrier – Age



SHIP TYPE

These factors taken together suggest that it may be the trading pattern of the medium size bulk carriers with perhaps shorter voyages and more berthing, discharging and loading operations per year, that results in a higher risk of a major claim incident, rather than any more simplistic measure such as age *alone*. This continues to underline the need for extreme care in the routine operation and management of such ships, particularly when entering port and when working cargo.

Table 7.6 Bulk Carrier – Size



The US still sees the majority of bulk carrier claims; 156 compared with the next highest, Japan, with 38. In terms of ports, New Orleans, Houston and Rotterdam have had 29, 21 and 16 major claims each over the ten-year period.

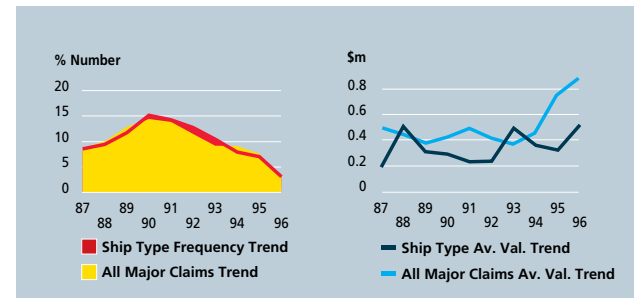
In summary, cargo claims predominate, age and the structural consequences of age are important factors in the claims record, but by no means the only contributors. Human error plays a significant role too. Bulk carrier claims arise from a variety of reasons, including hatchcover failures, bad stowage, etc. The US, and Houston in particular, feature as the main location where claims arise.

Dry Cargo Ships

Dry cargo ships, which make up 27% of the Club's entered tonnage, were involved in 21% of major claims by number. The trend has followed the overall trend over the past ten years, with the frequency of claims declining in line with the overall trend but at a slightly lower rate. The average value of such claims, however, does seem to be rising since the early 90s (Table 7.7).

Around 58% of dry cargo ship claims by number occur on ships between 10-20 years of age. The overall pattern is largely unchanged from that seen in our previous analysis with major claims peaking in ships aged 10 to 14 years. Over 97% by number occur on ships below 30,000gt, 41% of which fall in the 10,000-30,000gt band.

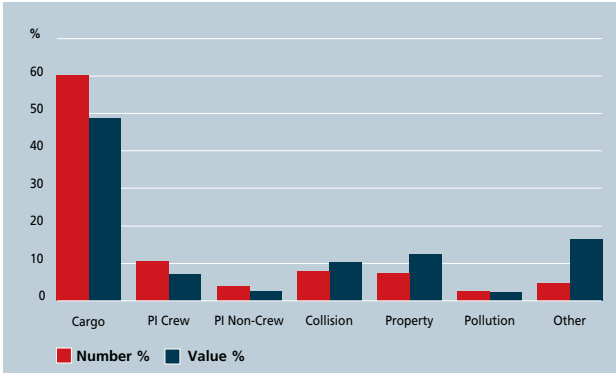
Table 7.7 Frequency/Average Value Trends – Dry Cargo



In terms of risk category, most incidents are cargo related (60%), followed by crew claims (11%), collision claims (8%), damage to third-party property (7%) and pollution (3%) (Table 7.8). By far the most numerous claims on these ships are for cargo and these are also the most expensive overall. Taken individually, however, the average value of a major cargo claim on these ships is only US\$250,000.

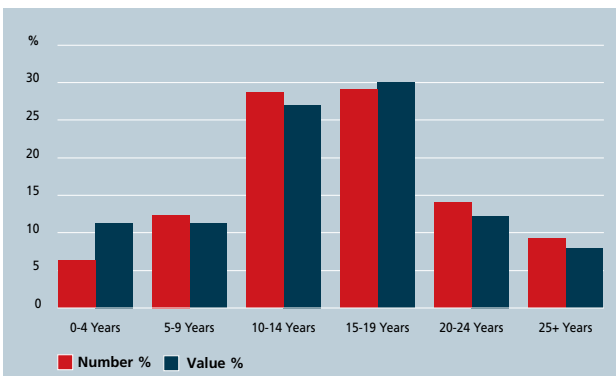
SHIP TYPE

7.8 Dry Cargo Ship – Risk Type



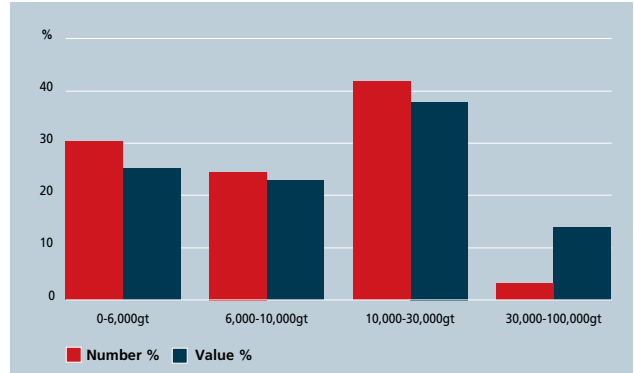
A point worth noting is that the number of claims caused by errors on the part of shore personnel is higher than in the case of most other types of ship. 95% of such claims relate to cargo. Some of the losses result from deliberate fraud or theft, but most arise from poor quality stevedoring or poor standards of care while cargo is in shore terminals or in the custody of land carriers while moving goods under a through bill of lading. Loss prevention in this area requires education of shore based personnel, care in choosing sub-contractors and in preserving and exercising, whenever possible, rights of recourse against them.

7.9 Dry Cargo Ship – Age



Failure of hatchcovers accounts for more than half the claims in the structural failure category.

7.10 Dry Cargo Ship – Size



Tankers

Over the ten-year period of this study there have been some 582 major claims totalling US\$596m involving tankers.

The main causes of these claims are shown in Table 7.11. Claims caused by deck officers, crew, pilot error and structural failure dominate in terms of average value. Deck officer error accounts for 28% of such claims, crew 15% and pilot error and structural failure 10% and 9% each.

7.11 Tanker – Main Cause

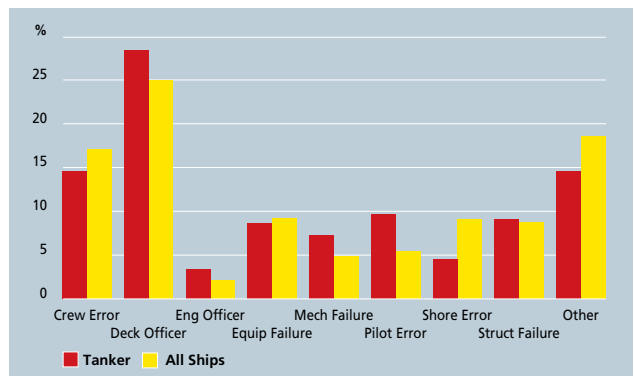
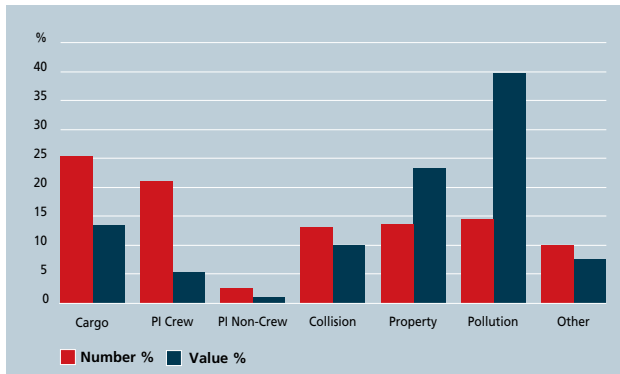


Table 7.12 sets out the types of risk involved in tanker claims. Contrary to popular belief, pollution is not the most frequent major claim reported by tankers. Pollution is the most expensive but cargo claims account for a greater number of major claims, closely followed by personal injuries. Cargo accounts for 25% of major claims by

SHIP TYPE

Table 7.12 Tanker – Risk Type

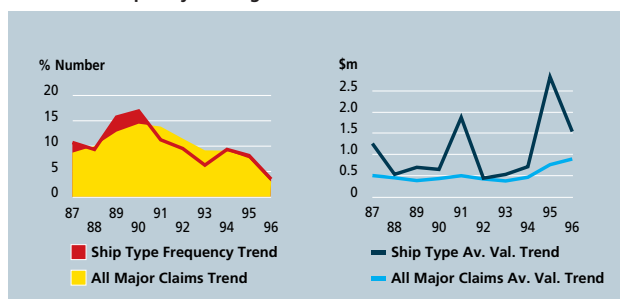


number; personal injury to crew around 20%. Collisions and damage to third-party property were the cause of 13% of major claims each. The high number of property damage claims may reflect the lack of manoeuvrability of this type of ship. When one sets this alongside the deck officer and pilot error statistics, the experience indicates the importance of seeking to minimise the risks inherent in pilot/master/deck officer interchanges.

While pollution claims make up only a small percentage of the overall figure, they are the single most expensive type of claim reported by tankers, at 40% of total value.

In terms of frequency of claims the overall trend is one of steady improvement, the number of tanker claims continuing to decrease in line with the overall major claims trend (Table 7.13). The improvement in the statistics began in 1991, two years following the Exxon Valdez accident.

Table 7.13 Frequency/Average Value Trends – Tanker



Detecting a trend in the average value of major claims from tankers is extremely difficult bearing in mind that it only needs one total loss or large pollution claim to produce a very large claim. Table 7.2 demonstrates that tanker claims can be amongst the most expensive of the major claims, at US\$1,024,782 on average. In 1995 the average value reached US\$2,822,000 from 47 claims.

Most tanker claims (58%) occur in the age band 10-20 years and 62% of incidents involve ships of between 10,000gt and 100,000gt (Tables 7.14-7.15).

Table 7.14 Tanker – Age

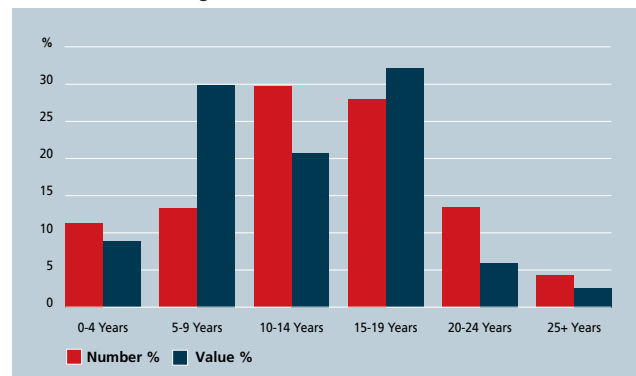
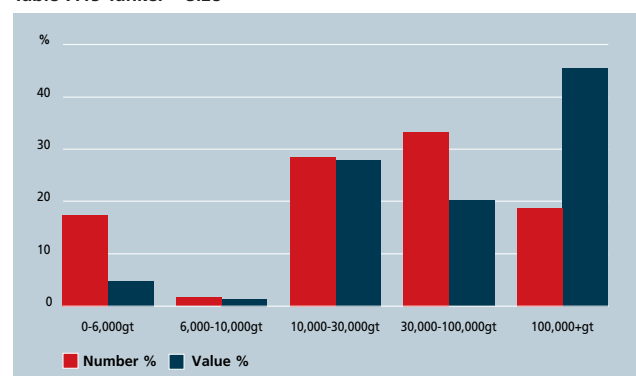


Table 7.15 Tanker – Size



In terms of country of incident, 14% of major tanker claims have occurred in the US. Other areas of note are Italy (5%), Australia (4%), Netherlands (4%), South Korea (4%), Brazil (3%), Egypt (3%) and Japan (3%).

SHIP TYPE

Refrigerated Cargo Ships (“Reefers”)

During the ten-year period of this study, refrigerated cargo ships (“reefers”) have accounted for 193 major claims, valued at US\$64m, representing 5% by number and 4% by value of the major claims analysed. The number of such major claims has tended to be above the overall major claims trend since 1991 (Table 7.16).

With the exception of the 1990 policy year there has been a relatively steady 15-25 large claims per year from reefers.

Table 7.16 Frequency/Average Value Trends – Reefer

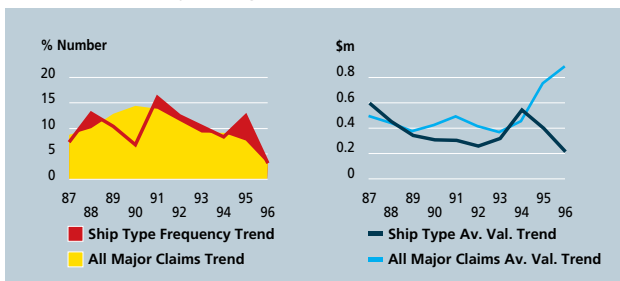
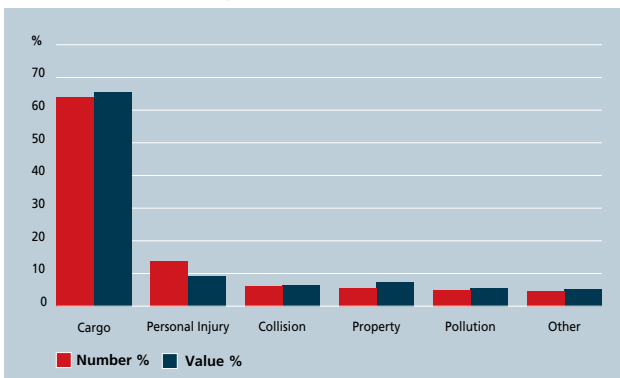


Table 7.17 Reefer – Risk Type

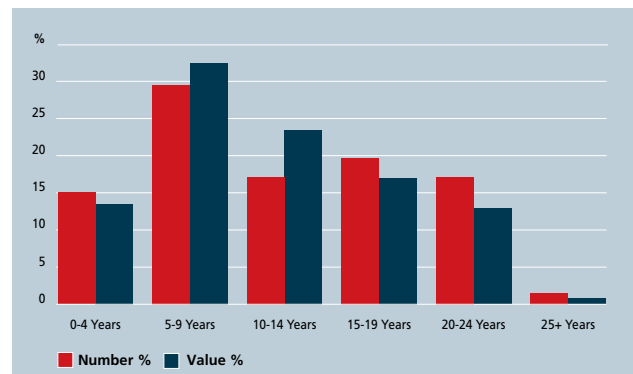


Although this is a relatively small trading category, in terms of overall Club Membership, the statistics demonstrate that it is capable of producing a significant number of claims.

Whilst reefer claims are generally believed to be expensive due to their high value and susceptibility to large loss from machinery failure, average values as seen in Table 7.16 do not appear to be exceptional and indeed since 1987 they have fallen, although there was a rise in 1993/94.

Reefer claims are analysed by risk type in Table 7.17 and by age in Table 7.18. Not surprisingly, cargo predominates in terms of risk category, generating 124 cases within the period, while in terms of age the relatively poor record of ships in the five to nine year age band is disproportionate; these ships account for only 23% of the Club’s reefer fleet and yet were involved in 30% of the reefer claims by number and 32% by value. By contrast, ships over 20 years old contribute only 19% of claims and 13% of the value of all such claims. Why is there a disproportionate number of accidents in younger ships? Perhaps the statistics lend support to the need to ensure that ships’ staff fully understand and are capable of maintaining the complex technology on board.

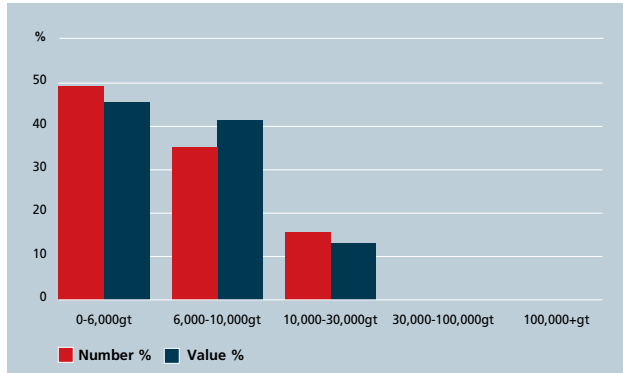
Table 7.18 Reefer – Age



In terms of size, the 6,000-10,000gt category produce claims which are relatively higher in value than the other two principal size bands of this ship type.

SHIP TYPE

Table 7.19 Reefer – Size

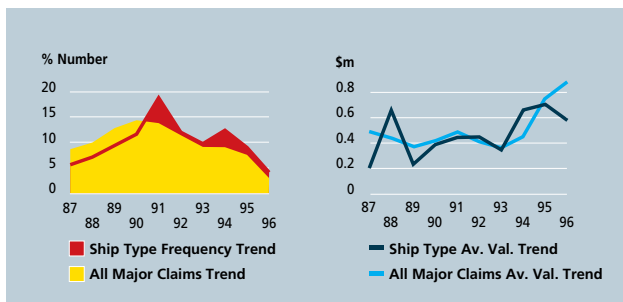


Passenger Ships

Passenger ships produced 266 major claims during the period under analysis, accounting for US\$120m in value, representing 7% by number and 7% by value of all major claims. As with bulk carriers, this ship type generates a higher percentage of claims in terms of number than its Club entry.

The frequency trend has been above the overall major claims trend since 1991, peaking in that year and again in 1994, and generally appears to have been moving upwards since the late 1980s. In terms of average value the trend has been erratic but above the general trend overall. Moreover, it is clear that the value of these claims is increasing, displaying a distinct upward trend from 1989 onwards (Table 7.20).

Table 7.20 Frequency/Average Value Trends – Passenger Ship



Turning now to analyse the twin factors of age and ship size, one sees that claims occur mainly on passenger ships over 25 years of age (44% by number, 35% by value), and from ships below four years of age (20% and 26% respectively). Nearly 50% of major claims occur on ships between 10,000gt and 29,000gt (Table 7.21/22).

By far the vast majority of claims are personal injury related, with over 50% being passenger/third-party personal injury claims. However, 27% by number (14% by value) relate to crew claims (Club average 8% by number and 7% by value). Shore person error is relatively low in this category, as one would expect given the nature of the trade (7% by number and 3% by value) (Table 7.23).

Table 7.21 Passenger Ship – Age

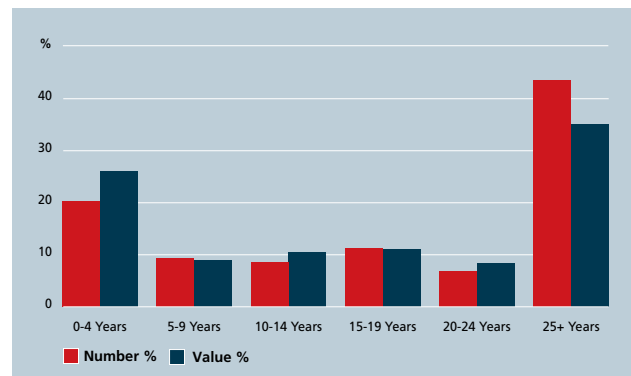
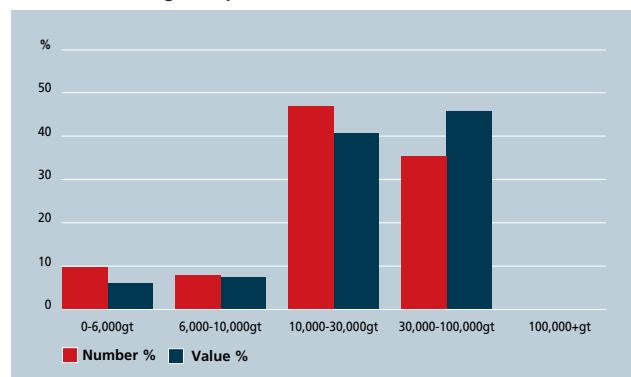


Table 7.22 Passenger Ship – Size

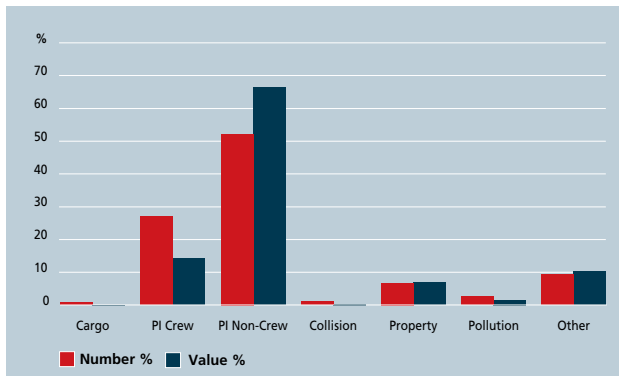


SHIP TYPE

In terms of risk profile passenger ships are eight times less likely to be involved in a collision than the overall Club average (1% in contrast with 8%) and are much less likely to be involved in third-party property damage or pollution claims (only 3% and 7% respectively).

Of the 266 claims in the sample size, 65 occurred in the US, 15 in the UK, 10 in Italy and 14 in Greece. Whilst only 65 occurred in the US, claimants managed to enforce US jurisdiction in 152 of the 266 cases, the most favoured state being Florida (60 cases) followed by California (30) and New York (19).

Table 7.23 Passenger Ship – Risk Type

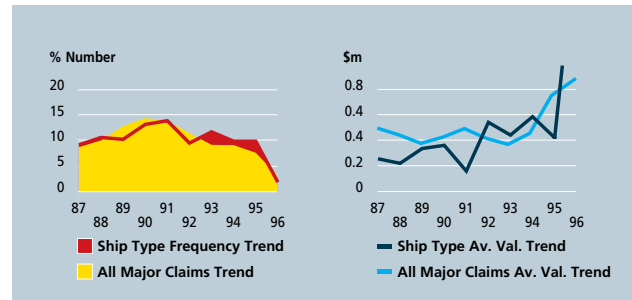


Passenger claims can be expensive, reflecting the consequential losses to injured passengers who tend to be drawn from high earning classes of people. Whilst all ships carrying passengers necessarily place a high degree of importance on passenger safety, the consequences of accidents are so significant in financial terms (as well as to the reputation of the carrier) that there can be no relaxation from a commitment to the total prevention of accidents.

Containerships

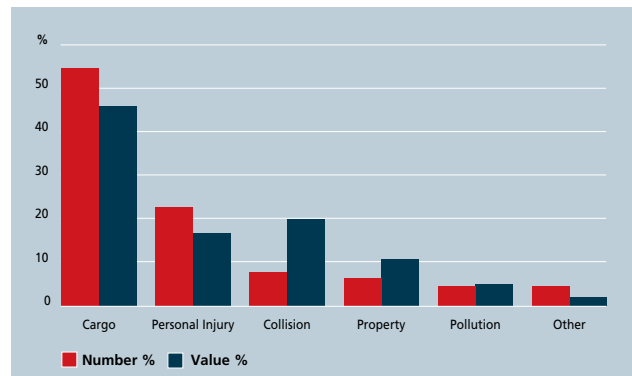
Containerships accounted for 273 major claims generating US\$110m in value, representing 7% by number and 6% by value of major claims. The frequency trend is deteriorating and it has remained above the all major claims trend since 1993.

Table 7.24 Frequency/Average Value Trends – Containership



Average values have increased steadily since 1991 and while they dropped back below the overall average trend in 1995, they have increased significantly of late (Table 7.24). The increase in the number of serious cargo and explosions/fires is worrying.

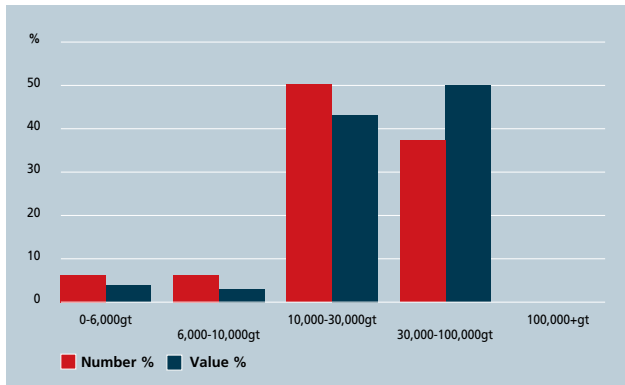
Table 7.25 Containership – Risk Type



In terms of risk category, containerships differ from most other ships in that shore error accounts for 21% of all major claims, compared with a 9% Club average across all ship types. Not surprisingly, this ship type has more than its fair share of cargo claims, 54% compared with a Club average of 40% and only slightly less than general cargo ships at 60%.

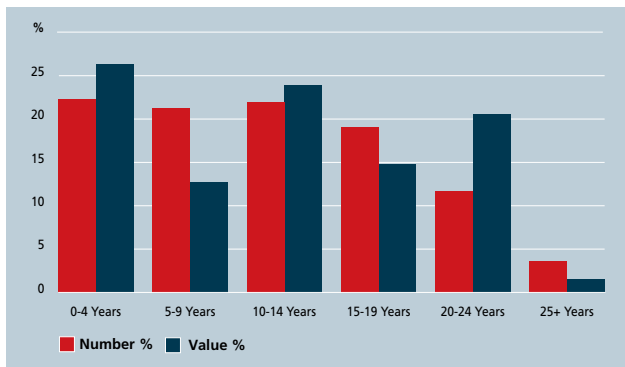
SHIP TYPE

Table 7.26 Containership – Size



In terms of the twin factors of ship size and age, the smaller ships of this type fare quite well. 87% of major claims occur on containerships above 10,000gt and account for 93% of the value of containership claims. Clearly, small feeder ships do not suffer the same experience of major claims. Also of interest is the fact that 44% of containership type claims occurred on ships of less than ten years of age.

Table 7.27 Containership – Age



Turning to country of incident, over a quarter of containership type major claims occurred in the US (28% by number and 20% by value). No one port stands out as having a significantly larger number of claims, the highest being Rotterdam with 10 claims, followed by Buenos Aires, Hong Kong, Antwerp and Long Beach.

Parcel carriers

Parcel carriers accounted for 153 major claims by number, totalling US\$35m in value, representing 4% by number and 2% by value of the total number of major claims presented to the Club during the ten-year period covered by this study.

Table 7.28 Frequency/Average Value Trends – Parcel Carrier

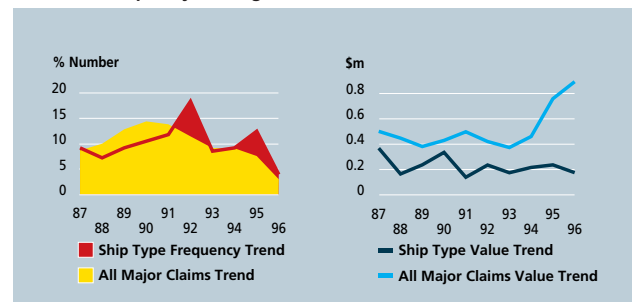
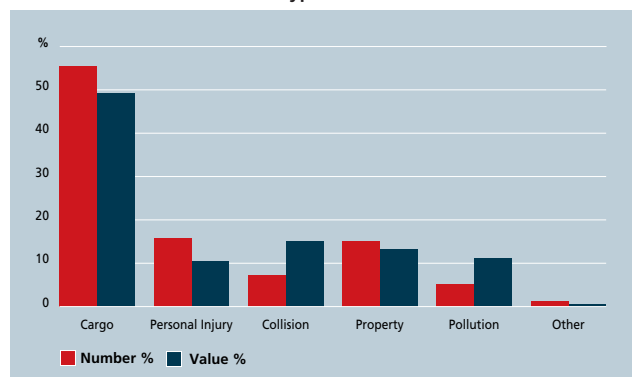


Table 7.28 reveals that the incidence of major claims involving parcel carriers has increased of late.

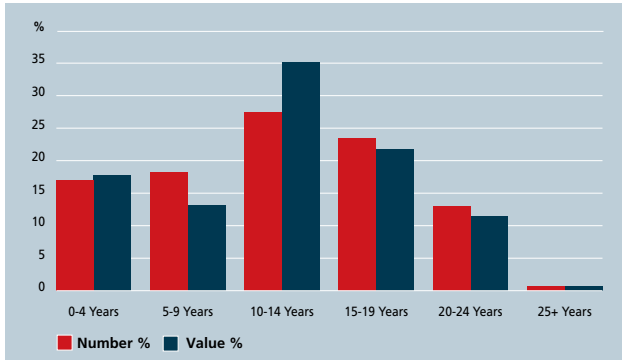
In terms of risk category, cargo claims predominate by a considerable margin, representing 56% of such claims by number and 49% by value. Next come personal injury claims accounting for 15% and 10% respectively.

Table 7.29 Parcel Carrier – Risk Type



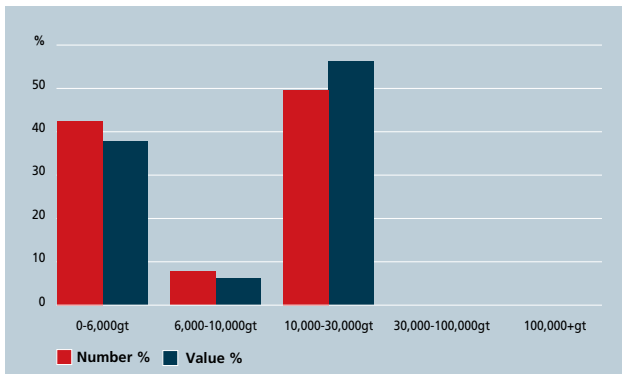
SHIP TYPE

Table 7.30 Parcel Carrier – Age



Age is a factor in major claims arising from parcel tankers, with ships between 10 and 20 years of age accounting for over 50% of such claims by number and 57% by value. In terms of size, parcel carriers between 0 and 6,000gt account for over 43% of the total number of major claims, generating 38% of value. The other main size group is the 10,000 to 30,000gt range accounting for 50% of the claims by number and 56% by value.

Table 7.31 Parcel Carrier – Size



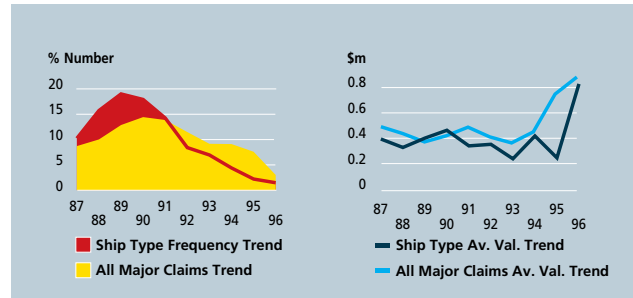
Turning to country of incident, Japan and the Netherlands have had 20 and 18 claims respectively. Generally speaking, amounts paid exceed frequency in both instances (Japan 13% by number, 14% by value; the Netherlands, 11% by number and 13% by value). However, in terms of frequency the US tops the list with 21 claims during the period but here the average value is lower, standing at US\$154,335

(in comparison with Japan at US\$263,429 and the Netherlands at US\$ 271,002). Apart from these three countries the losses are scattered throughout the world. One item of note – one large claim in Indonesia of US\$2,698,708 accounts for 7% of all amounts paid on this ship type.

Rig and Supply

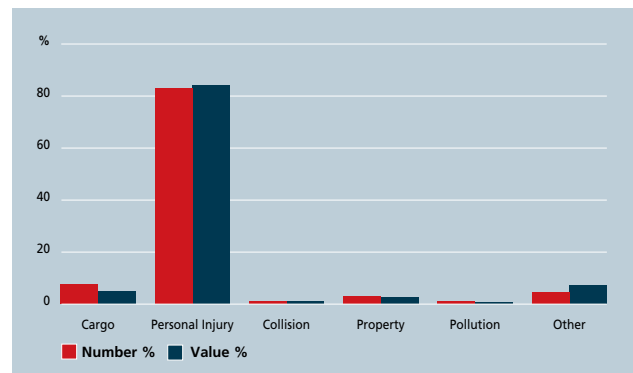
Rig and supply boats accounted for 275 major claims, totalling US\$104m in value, representing 7% by number and 6% by value of major claims when analysed by ship type.

Table 7.32 Frequency/Average Value Trends – Rig & Supply



Clearly, rig and supply boats created something of a challenge in the late 80s early 90s but claims have reduced since then. It is to be noted however, that 1991 witnessed a reduction of tonnage of this type from the Club's statistics and the data should be read with this in mind. 83% of claims on rig and supply boats are crew related.

Table 7.33 Rig and Supply – Risk Type



SHIP TYPE

The US is the most prominent general area of incident, accounting for 56% of the claims; but again the reader must bear in mind that the majority of this ship type in the Club is of US origin. The jurisdiction of most of these claims is Louisiana 52% and Texas, 38% and most of these incidents have occurred in the US Gulf area. The most common cause of claims is crew error, accounting for 57% compared with a Club average of 17% reflecting the hazardous nature of drilling rig/offshore operations.

Table 7.34 Rig and supply – Age

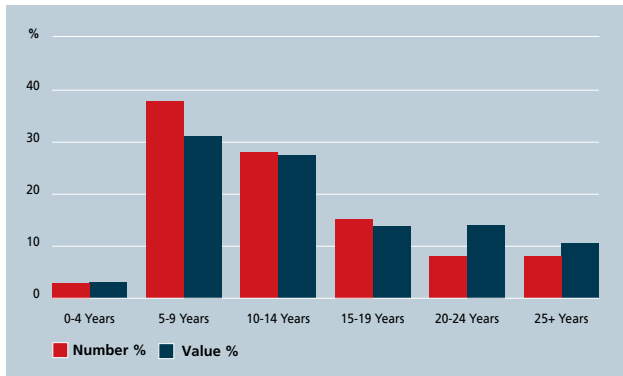
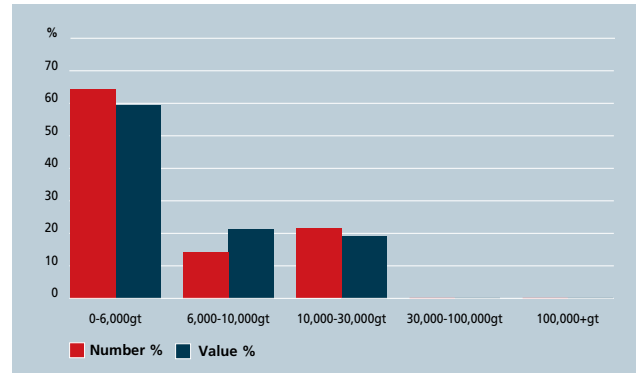


Table 7.35 Rig and Supply – Size



Most Rig and Supply boat claims occur on ships in the 5 to 9 year old age range and with rigs/boats of less than 6,000gt but again these figures reflect the profile of this fleet within the Club and no meaningful comparison can be drawn on a broader basis with world tonnage of this type.

8. SHIP FAILURE

Over the last ten years, ship failure has cost the Club US\$368m in major claims, but there has been a significant reduction in such claims during the 90s. Of all the ship failure claims that have been made since 1987, only one third of them have been presented since 1990.

Not all ship types have performed equally well, however. Which ship types have produced more claims than most?

1. General

This study adopts the same broad definition of what constitutes a structural failure as was applied in previous years. The definition includes a range of physical defects from the most serious shell plate failures to claims caused by leaking hatchcovers. The analysis includes an examination of the impact of structural failures on the five key risk areas (cargo, personal injury, etc.) as well as the types of ship most at risk.

In all sections of this report, ship failure refers to a combination of structural, mechanical and equipment failure and, for the purpose of this analysis, we have defined these concepts as follows:

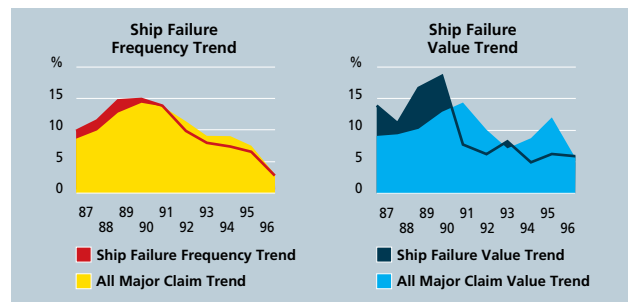
- i) **Structural Failure:** failure of the ship’s fabric, including hatchcover problems.
- ii) **Mechanical Failure:** heavy machinery failure, including main engine and steering gear.
- iii) **Equipment Failure:** non-heavy machinery failure, eg: bridge equipment.

The reader is advised that in some of the tables in this chapter particular trends are measured against a base trend of “All Major Ship Failure Claims,” in contrast to the All Major Claims Trend.

Over the ten-year period of this study, ship failure has presented 847 major claims to the Club totalling US\$368m. This represents 23% by number and 21% of the total value of major claims. However, there has been a significant reduction in such claims during the 90s.

As can be seen in Table 8.1 ship failure claims are showing a clear downward trend, in both numbers and value. In numbers alone, there has been a significant reduction since 1990, from 127 in that year to 84 in 1992, and continuing down to 56 in 1995. We see a similar picture in terms of value: down from a high of US\$69m in 1990 to US\$18m in 1994 – a dramatically improving trend.

Table 8.1 Ship Failure – Frequency/Value



2. The Three Constituent Elements of Ship Failure – Structural, Mechanical, Equipment Failure

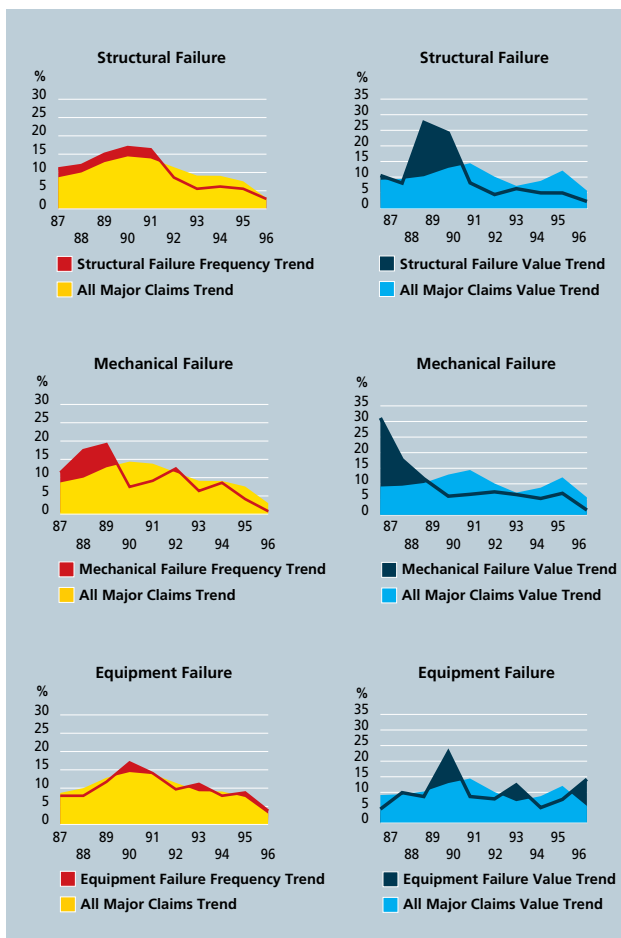
It is interesting to review the various components of ship failure – structural, mechanical and equipment failure – to see how they have each contributed towards the overall downward trend (Table 8.2). It is clear that the two components which have improved most dramatically are structural and mechanical failure.

In terms of claim frequency, structural failure claims peaked in 1990-1991, and reduced thereafter by over 50% in 1992. During 1987-90 such claims averaged around 45 claims a year: this has now reduced to around 20 claims a year and appears to be reducing still further, though not at such a rapid rate as earlier in the decade. Of more significance perhaps is the fall in the value of these claims, from a peak of US\$35m in 1990 to around US\$8m and lower in the years 92 to 96.

SHIP FAILURE

Mechanical failure claims fell by almost a third in 1990 virtually halving in value from a high in 1989 of US\$11m to US\$6m in 1990. The downward trend reversed in 1991/1992 but it has never returned to the heights of the late 80s, remaining very close to, or below, the all major claims trend line.

Table 8.2 The Three Constituent Elements of Ship Failure – Structural, Mechanical, Equipment Failure



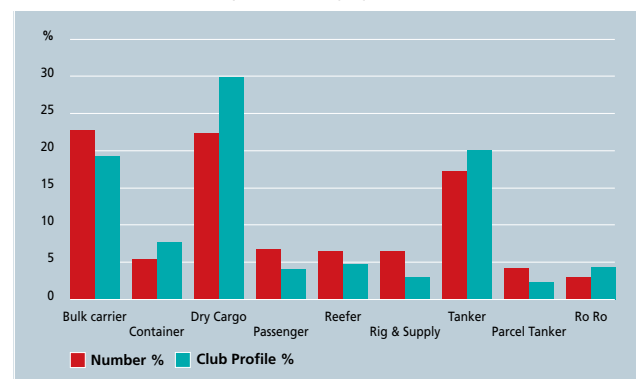
There are reverse trends within the overall trend, of course. For example, mechanical failure on board passenger ships has been significantly higher than on most other ship types over recent years, whereas tankers have produced fewer ship failure claims than most. Clearly these findings have to be read against a background of an increase in new passenger ship tonnage as a result of general growth in that trading sector and in the tanker category the effect of the legislative enactments and general increase in awareness following the Exxon Valdez incident in March 1989.

While equipment failure claims have followed the downward trend of reducing all major claims, they have not seen the dramatic improvement witnessed in the other two categories.

3. Ship Failure Major Claims Trends – By Ship Type

Our analysis of the types of ships where major losses have arisen from structural failure reveals that bulk carriers present more claims than their Club entry would warrant, but the trend of major claims from this ship type is one of improvement.

Table 8.3 Ship Failure Major Claims by Type of Ship



SHIP FAILURE

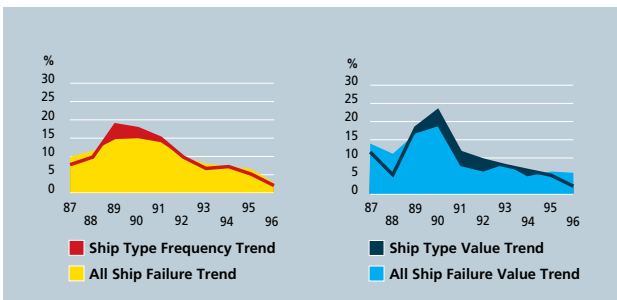
Ship types have not all fared equally in terms of ship failure. As can be seen in Table 8.3 all ships have had structural failure problems but bulk carriers, passenger, reefer, rig and supply boats and parcel carriers all record a higher percentage of major claims than their percentage of Club tonnage.

Bulk Carriers

Our previous reports acknowledged that the (failing) structural integrity of bulk carriers was a cause of concern in terms of major claims.

However, looking at the trends across this particular ship type it appears that the number of structural failure claims involving bulk carriers has decreased and since 1992 have been at or below the overall ship failure trend for all Club tonnage.

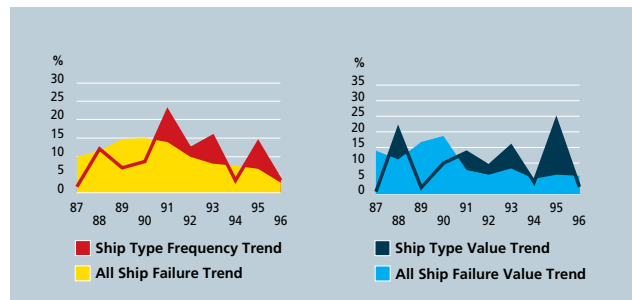
Table 8.4 Frequency/Value Trends – Bulk Carrier



Passenger Ships

While the frequency trend for passenger ships has been erratic, it has been largely above the overall trend for ship failure since 1991. Furthermore, it is apparent that the frequency experience is getting worse as are the costs.

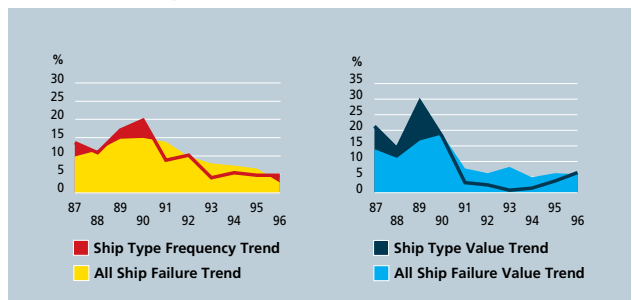
Table 8.5 Frequency/Value Trends – Passenger Ship



Tankers

Tankers display a consistent trend over the period towards reduction in the frequency of ship failure claims since 1990. However, it is to be noted that in 1996 the tanker trend exceeded the overall trend for the first time since 1992, though it remains well below its peak of 1990.

Table 8.6 Frequency/Value Trends – Tanker

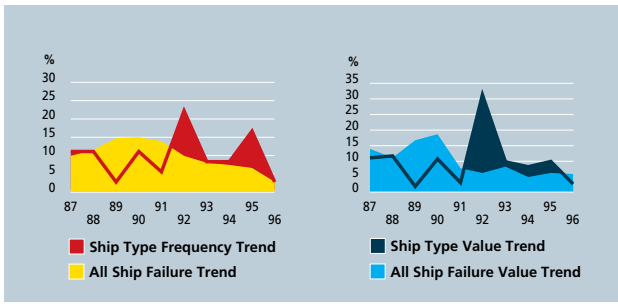


SHIP FAILURE

Parcel Carriers

Parcel carriers display an erratic trend which has peaked twice in the last ten years above the Club ship failure trend (Table 8.7). Generally speaking, parcel carriers produce relatively more major claims than their percentage of Club tonnage and present a higher average value. While the sample size is small (only 36 in ten years) the nature of the cargo carried by these ships tends towards higher value claims, for example as a result of contamination caused by poor cleaning of the tanks/lines.

Table 8.7 Frequency/Value Trends – Parcel Carrier



Dry Cargo Ships and Containerships

The ship failure trend for dry cargo ships follows that of the general (downward) ship failure trend, albeit deviating above it during the period 1991 to 1993. On the other hand, the number of containership ship failure major claims has deviated above the general trend and is increasing quite rapidly. Nevertheless there have been only 46 claims in 10 years.

Table 8.8 Frequency/Value Trends – Dry Cargo

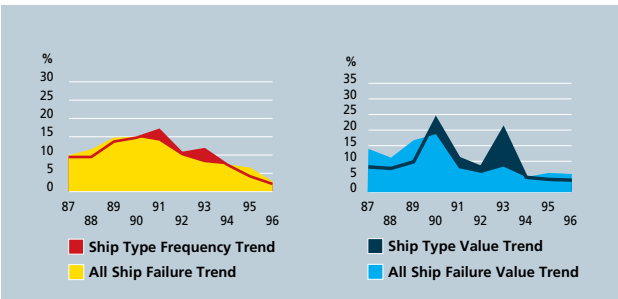
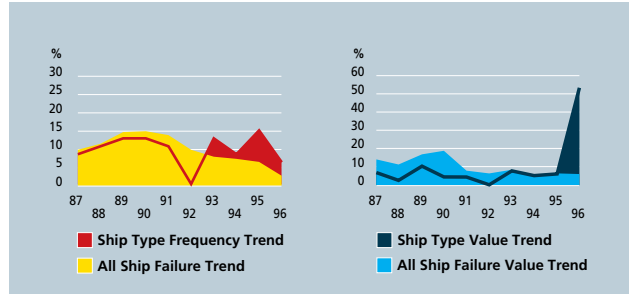


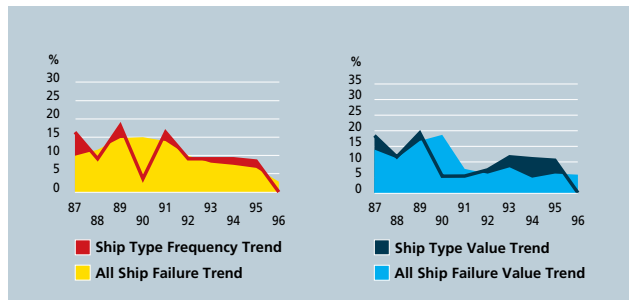
Table 8.9 Frequency/Value Trends – Containerships



Reefers

The number of major claims resulting from ship failure in the reefer category is also low, running at an average of five per year, but they have presented a profile consistently above the overall trend of late.

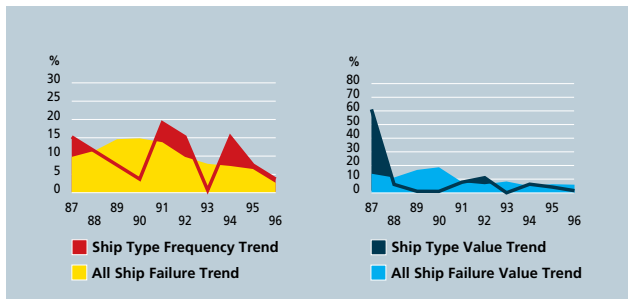
Table 8.10 Frequency/Value Trends – Reefer



Ro Ros

The sample size is too small for any meaningful conclusions to be drawn.

Table 8.11 Frequency/Value Trends – Ro Ro

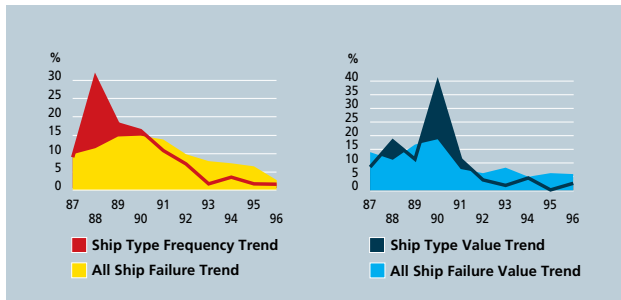


SHIP FAILURE

Rig and Supply Boats

Rig and Supply boats have seen a reduction in ship failure major claims, declining from a peak in 1988 but the sample size is too small to draw any meaningful conclusions.

Table 8.12 Frequency/Value Trends – Rig and Supply



4. Ship Failure Claims – by Age

This section examines the relationship between the age of ship at the time of the incident and the frequency of claims caused by ship failure.

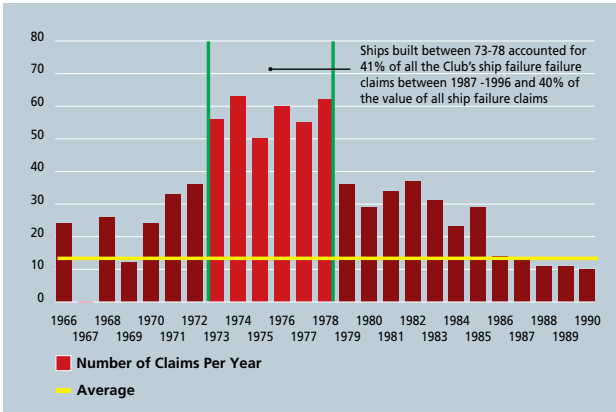
Age continues to be a factor in relation to structural failure claims, particularly in ships in excess of ten years old, but it must not be overlooked that there is a significant number of such claims in ships under ten years old. Over the ten-year period of this study, ships in the 10-20 year age bracket have generated a higher percentage of ship failure major claims than their percentage of Club tonnage. There is further evidence that ships of 15 years to 20 years also contribute a disproportionate number of claims (Table 8.13). However the trend tables set out in 8.13 illustrate that from 1990 onwards the trend for major ship failure claims moves away from the 10-14 year old category of ship to those in the 15-19 age bracket, with claims in the former falling at a faster rate below the Club trend while claims in the latter deviate above it, although still declining overall. It is too early to be definitive, but are we seeing evidence that structural failure problems are increasing in older ships particularly those in the age band 15-19 years. Two factors may be combining to produce this trend: first, the high number of claims resulting from hatchcover defects, particularly on ships aged between 15 and 19 years old;

Table 8.13 Ship Failure Claims by Age Band



SHIP FAILURE

8.14 Ship Failure and Year of Build



second, as can be seen in Table 8.14, it appears that ships built between 1973 and 1978 account for 41% of all the Club ship failure claims between the period 1987 and 1996 and 40% of their value. We speculated that, as the proportion of ships built during this period continues to

age, this may have an adverse impact upon the age bands 15-19, 20-24 and 25 plus years.

Also of interest is the trend graph for ships over 20 years of age; the numbers are low but indicate that ship failure claims have been consistently above the general trend in recent years. The fact that the proportion of ships of this age in the world fleet continues to increase confirms the need for continued vigilance by Members who face the challenge of operating these ships in conformity with their commitment to quality.

Finally, whilst ship failure claims are comparatively low on ships under 10 years of age, they nevertheless account for some 20 claims a year on average. Moreover, new ships, (ie up to four years old), have the highest average values for ship failure claims, perhaps indicating that the newer ships do not have the tolerances of the older vessels.

SHIP FAILURE

5. Ship Failure Claims – by Size

In terms of ship size, Table 8.15 illustrates that ships between 10,000-30,000gt have more ship failure claims than their percentage of Club entry. Predictably the larger ships in the 30,000gt plus category produce higher value

claims. This is in contrast to the smaller ships. The trends however may be changing: whilst the ship failure claims on ships below 6,000gt appear to be less now than prior to 1990, ships between 6,000-10,000gt seem to be exhibiting increased problems in the later years of the study.

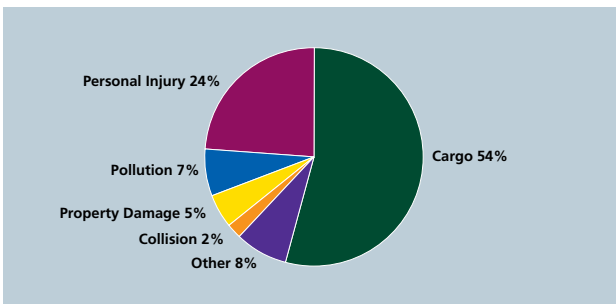
Table 8.15 Ship Failure Claims by Size Band



6. Ship Failure Claims – the 5 Principal Risk Categories

What is the impact of ship failure on the five key risk categories insured by the Club? Not surprisingly the risk category most affected is cargo. Out of the 847 ship failure related claims, 454 (54%) resulted in a major cargo claim. Table 8.16 also highlights the fact that the number of personal injuries arising from ship failure is relatively low.

8.16 Ship Failure – Risk Type



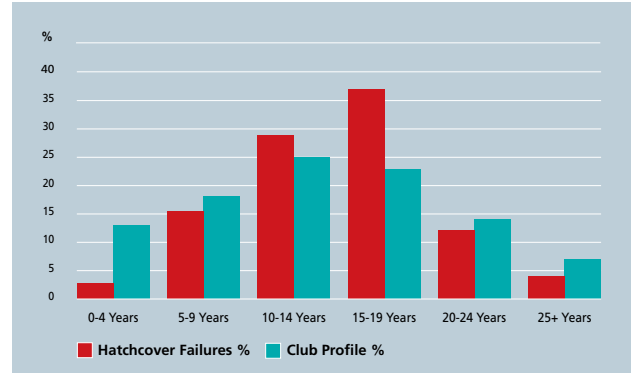
Further analysis of the data reveals which risks are most affected by ship failure. One explanation for the high number of cargo claims is the inclusion of hatchcover defects in the definition of structural failure. 30% of major cargo claims in this category (ship failure) resulted from hatchcover problems.

7. Hatchcovers

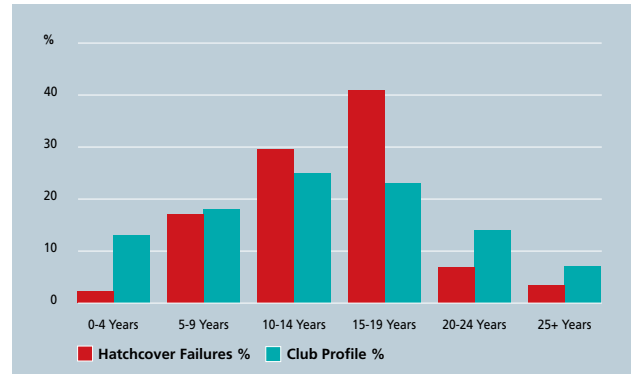
Within the generality of structure failure claims, a substantial number of claims stem from the continuing difficulties experienced in relation to hatchcovers. While hatchcover defects arise in ships of all ages, there are a significant number occurring in ships between 10 and 20 years old.

Ships in the age band 15-19 years pose the highest risk, although, as Table 8.17/8.18 reveals, the problem starts much earlier in a ship's life. This provides a clear illustration of the fact that hatchcovers must be maintained continuously from an early age. It is interesting to note that

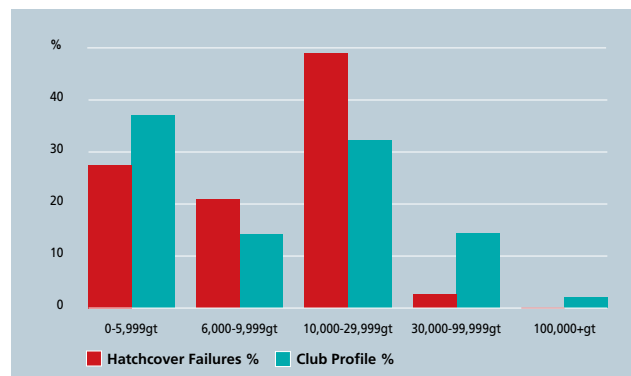
8.17 Hatchcover Failure by Age of Ship (Dec' 96)



8.18 Hatchcover Failure by Age of Ship (Dec' 92)



8.19 Hatchcover Failure by Size of Ship (Dec' 96)



the ships in the 10,000-29,999gt range have a significantly worse hatchcover claims profile than ships in all other tonnage ranges (Table 8.19).

SHIP FAILURE

8. Ship Failure Major Claims by Flag

Is the flag of the ship relevant in structural failure related claims?

General

Checking and monitoring the structural integrity of a ship's structure is an area where the flag state has a recognised role. Table 8.20 shows the distribution in percentage terms of major claims when categorised by the flag of the ship, compared with the percentage of entered ships

represented by those same flag states. Flag states which have had less than two claims a year have been excluded from this exercise.

In Table 8.20 it can be seen that several flag states have more ship failure problems than their proportion of Club entry would warrant. In particular, the US, Cyprus, Panama, Bahamas, Romania and Malta have substantially more ship failure claims than most. The statistics however have to be read in conjunction with the reasons and also the trends

Table 8.20 Ship Failure Major Claims by Flag



SHIP FAILURE

which in some cases show a different – and improving – story. There may be factors which contribute to the flag's position on the Tables, such as the substantial number of dry cargo ships and bulk carriers which tend to use the Panamanian flag and the fact that the rig and supply boat figures contribute greatly to the US flag quota of ship failure related major claims. The extent of this latter effect is shown in the trend graph for the US, where the number of such claims reduces steadily after 1991 (the same year as the Club's tonnage of rig and supply boats reduced).

However, the profile of ship failure claims on Bahamian flagged ships is of concern, being a pattern which is repeated in successive years. Numbers are low and should be treated with caution but this flag exhibits a frequency trend which is consistently in excess of the Club ship failure trend.

Review of Flag Countries, in Alphabetical Order

Bahamas

There has been a notable tendency of late for major ship failure claims on vessels flagged to this country to run above the Club ship failure major claims trend.

Cyprus

The Cyprus flag, whilst prominent in numbers of ship failure claims, far in excess of its Club entry, does appear to be having fewer such claims in the nineties compared with the late eighties.

Greece

The Greek flag exhibits an overall major claims percentage which is very close to its proportion of entered ships. However, the trend graph reveals considerable variations above and below the Club overall trend.

Liberia

Table 8.20 reveals that the Liberian flag's share of ship failure claims slightly exceeds the Club entry. The trend of claims appears erratic although claims are down in the later years of the analysis.

Malta

In 1989/91 ship failure claims exceeded the Club trend for such claims. Claims decreased significantly until 1994, when the trend reversed upwards and in 1995, again exceeded the Club trend.

Panama

The Panamanian flag saw claims peak in the 1989-1990 period, followed by another disappointing year in 1994. Overall the pattern of claims seems to have remained constant with little sign of dramatic change.

Russia

A 4% share of major claims compares favourably with an 18% share of the Club tonnage (ten-year average), but the trend is one of rapid deterioration from 1992 onwards.

USA

The US flag quota of claims does not compare favourably with its percentage of Club entry – 11%, compared with 3.76%. Nevertheless the overall trend is good, with claims dropping from a peak of 23 a year in 1990, to 4 a year and less from 1993 onwards. The improvement in the trend as contained in our statistical database also reflects the loss of some rig accounts in 1992.

9. HUMAN ERROR

As in previous years, human error dominates the underlying causes of major claims. The improvements on the 'hardware' side (for instance, in structural failure) point up the fact that while many forms of major claims are decreasing at a significant rate, those resulting from human error are by and large decreasing at a slower rate than most. Consequently, because of the significant diminution of ship failure claims, the relative impact of human error as an underlying cause of loss is of increasing importance.

1. General

Until recently most interest in ship safety was concentrated on the technical aspects of ship design, construction, and maintenance. These subjects continue to be of the utmost importance, despite the fact that the underlying trend as regards major claims which fall within the general description of ship failure has improved markedly of late.

In the past ten years, however, more attention has been paid to the human factor in shipping, in particular the need for better training of officers and crew in order to minimise the incidence of avoidable errors.

2. A Working Definition of Human Error

It has long been a truism that most marine accidents/casualties and claims are caused by "human error". Apart from "acts of God", there are very few claims that do not have their root cause in human error, whether of designer, builder, manager, operator, shore-side supplier or crew.

For the purposes of this chapter, the term "human error" is used to encompass any human act or omission identifiable as the direct and/or contributory cause of the loss from which the claim against the owner arises. So defined, a wide range of more or less blameworthy behaviour, from simple mistakes in arithmetic through errors in judgement to deliberate risk taking, is included.

In order to determine the trends in this category, the Club's claims records over the ten-year period of this study have been carefully analysed to identify the losses that have been caused directly and proximately by human error.

3. Further Research into Human Error

However, before setting out the results of our analysis, we have to acknowledge that, while we have endeavoured to provide as much detail as we can extract from our current database, we need to define and refine both the definition of human error and the manner in which such incidents are recorded if we are to provide greater assistance to our Members and to the industry as a whole.

Simply to identify human error in the manner undertaken in this analysis is not as helpful to the task of improving safety in shipping as it could be. What is lacking is a more detailed understanding of the root causes of 'human error.'

The challenge we face is that our data is incomplete insofar as we do not record the root causes of the human error which played a part in the incident. This is principally because, for the purpose of handling and settling liability claims, it is unnecessary, for example, to know that the reason that inadequate attention was paid to the water tightness of the hatchcovers was because the crewman concerned was fatigued.

Consequently, we do not have statistical data on issues such as fatigue, lack of training, inadequate management or the myriad of mental, motivational or emotional causes of human error.

Although the Club's experience shows that the volume of claims overall is falling, (even if the value of some types of claim is rising), further gains in safety will be easier to make if we know more about "*why people make mistakes*". We

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therefore intend to supply this deficiency in our understanding through a study into human error related major claims to identify the root cause in each case. It is hoped that this will ultimately produce objective information as to what constitutes human error and how much influence it exerts in claims worldwide, and will enable us to provide Club Members with better advice on how to minimise their exposure to major claims.

The underlying causes of human error have been considered in a study undertaken by the US Coast Guard entitled "Prevention through People" (1995) which analysed mainly US maritime casualty data and academic studies to propose a strategic long-term initiative to reduce human error in maritime operations. The PTP programme adopted a classification (known technically as a taxonomy) of human error to allow standardised data collection and analysis. We will collate data using the classification adopted by the US Coast Guard and will publish the results of these findings when we have sufficient data to create a meaningful sample.

4. Anecdotal Evidence of the Effect of Human Error and the Role of Loss Prevention

Having acknowledged that our database is incomplete in this area, we do have anecdotal and circumstantial (as opposed to statistical and empirical) evidence as to the effects of human error. We know that approximately three out of every five major claims are directly related to an error on the part of one or more individuals engaged in the operation of the Member's ships.

There is evidence that well-informed and properly trained personnel can be over confident, careless or even reckless, particularly when responding to commercial pressures. There are factors such as fatigue, discomfort, boredom, anger and stress which make people more prone to mistakes than might otherwise be the case.

Language problems also have a part to play in contributing to error. Not only may a pilot and master have difficulty in understanding one another, but the potential for misunderstandings between officers and crew is ever present in mixed nationality ships, and the consequences are inevitably more serious where there is little or no margin for error, such as in berthing or bunkering. Furthermore, language problems may have a part to play in the problems which arise when interfacing with shore side personnel – both office and dockside workers such as stevedores.

Simple confusion appears to be a frequent source of error in property damage claims, particularly where there is inadequate discussion between the master and the pilot, or where misunderstandings arise from the incomplete understanding of language.

Fatigue is a continuing cause for concern, with smaller crews and shorter turn round times in port, often themselves periods of intense activity. Fatigue may also be an element in explaining arithmetical mistakes in calculating stability and in other important professional tasks.

Minor slips in making mathematical calculations were causative in a number of major cargo losses, sometimes leading to instability of the ship, sometimes through an aggregation of container stack weights.

Pride is another factor which makes an appearance in some reports; there is a tendency for crew to carry out, single-handedly, tasks which require some assistance from another person. It was noted in our previous analysis that many injury claims seem to arise in this way.

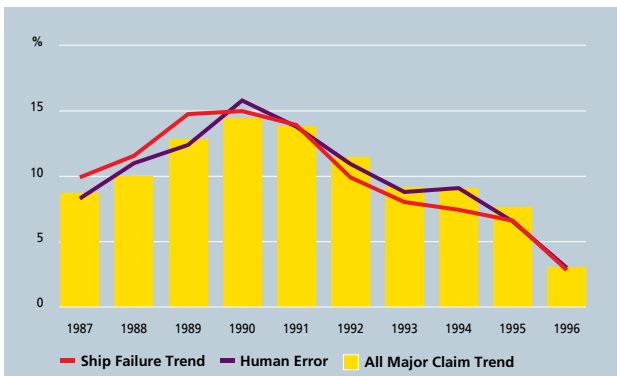
Many other errors are avoidable. Commercial pressures can cause masters to take calculated risks. Masters and officers can be sometimes unfamiliar with the workings of their own ships; stevedores will sometimes use wholly inappropriate methods of handling cargo; a terminal operator may have decided not to make the investment necessary to ensure that his security measures effectively deter theft.

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Some forms of human error, those which derive principally from human temperament and mood, cannot, by their very nature, be completely eliminated. However, while human error cannot be eradicated, there is no doubt that thoughtful and well designed working environments, sound procedures, proper training and enforcement of good practices help to make such errors less likely.

The role of loss prevention in this area must be to try to minimise both the effect and the frequency of such errors. More attention should therefore be paid to fail-safe systems, positive reporting systems and to contingency planning, using lessons learned from other industries, particularly the airlines and railways, where many detailed studies have been carried out.

Table 9.1 Human Error Compared with Ship Failure Frequency



5. Human Error compared with Ship Failure

Table 9.1 illustrates the fact that human error as a cause of loss presents an overall downward trend over the ten-year period of this study, but not at the same rate as the overall trend. Moreover, the (relatively) slower rate of improvement is made more marked by the fact that there has been such a dramatic improvement in ship failure claim trend which is now decreasing at a faster rate than the base trend of all major claims.

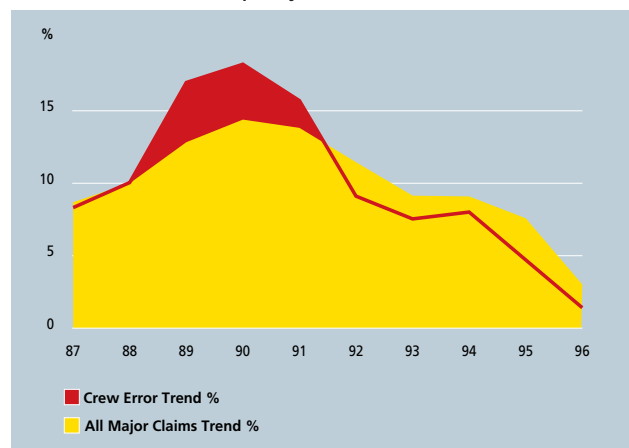
6. Human Error and Personnel

Claims caused by human error have been analysed into the different personnel groupings of crew members, deck officers, engineering officers, shore persons and pilots.

Crew Error

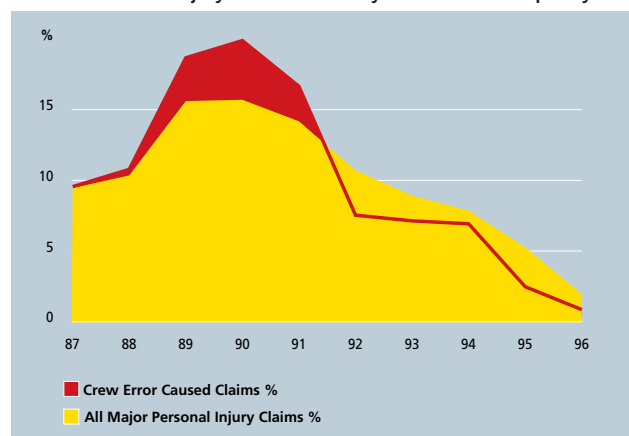
Table 9.2 sets out the incidence of crew error ('crew' being members of the ship's company who are neither deck nor engineering officers). It has tended to decline over the last few years, having peaked in 1990, at a faster rate than the reduction witnessed in the incidences of all other major claims.

Table 9.2 Crew Error – Frequency Trend



Our research confirms that the vast majority of crew error claims are the result of personal injuries to the crew Members themselves (over 68%), though it is to be noted that this type of claim is in decline reducing dramatically from its height in the early nineties (see Table 9.3). Perhaps

Table 9.3 Personal Injury Claims caused by Crew Error – Frequency



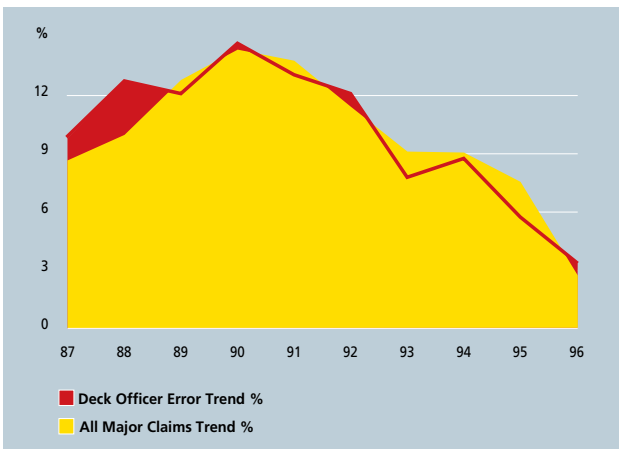
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this encouraging trend indicates that loss prevention measures which are designed to reduce crew injury, are having the desired effect. Another cause of this improving trend is the reduction in the number of rig and supply boat entries during the period under review.

Deck Officers

Table 9.4 reveals that deck officer errors are generally reducing as a percentage of human error claims and at a faster rate than the all major claims trend. Although there is a perception that some of the officers now serving on merchant ships are lacking in experience, the Club’s own findings contained in the Human Factor report would tend to dismiss this hypothesis. In fact, it shows that the majority of officers have considerable experience in terms of both years of service and training and qualifications. The improving frequency trend of their claims record lends support to the findings in our previous study.

Table 9.4 Deck Officer Error – Frequency Trends

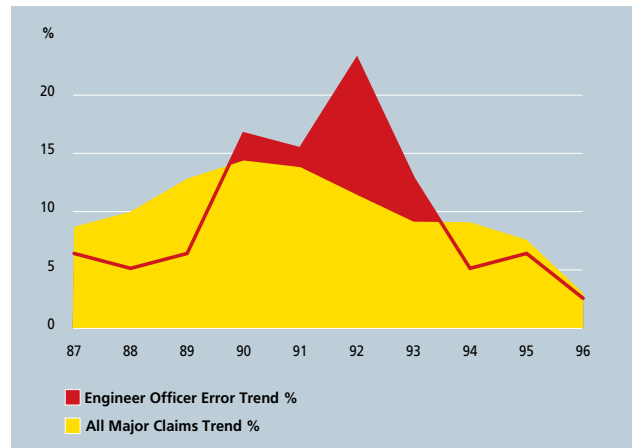


Engineering Officers

Whether or not engineering officers are correctly held responsible or whether many of their errors are attributed to them but are actually machinery or equipment failures, it appears from Table 9.5 that their “error rate”, having peaked in 1992, has settled at the end of the ten-year period at a point around that at which it was at the beginning of the period.

This improving trend might be indicative of the fact that engineering staff are no longer expected to carry out such heavy maintenance programmes. Their consequent reduced numbers on board would also tend to reduce the numbers of personal injury claims, which is where the preponderance of such claims lies (as with crew error).

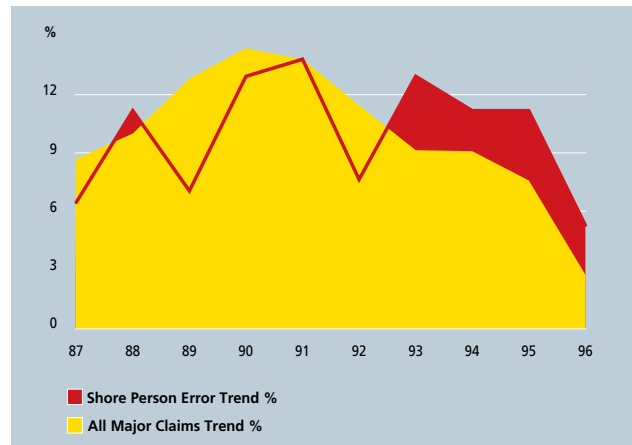
Table 9.5 Engineering Officer Error – Frequency Trends



Shore Persons

When considering the “Shore Person” error rate over the period of this study Table 9.6 reveals that shore person error increasingly contributes to the Club’s major claims. The trend table also shows that there have been times when shore person major claims have run counter to the decreasing major claim trend, most particularly in 1993 and quite sharply so illustrating a rapid rate of deterioration.

Table 9.6 Shore Person Error – Frequency Trends



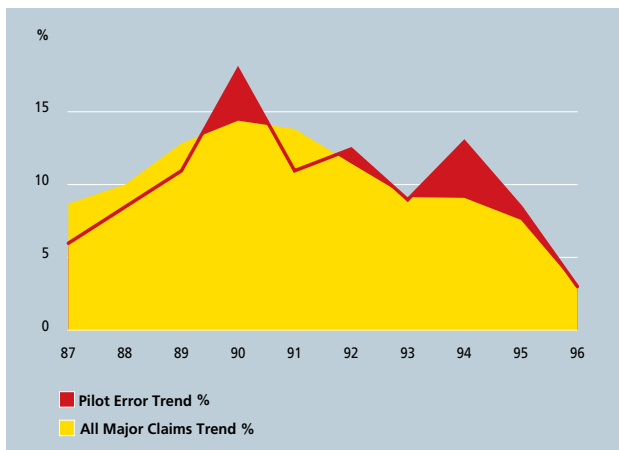
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The incidence of claims from shore person error also reflects the fact that it is often difficult for the shipowner to avoid the consequences of errors by those not under his control or to obtain recourse from them.

Pilot Error

Table 9.7 reveals that Pilot error plays a predominant role in the Club's major claims profile. This position has unfortunately changed little from the findings in the Club's earlier analysis. At times the rate of deterioration has been rapid and in contrast to the general trend, for example in 1990 and 1994.

Table 9.7 Pilot Error – Frequency Trends



Summary

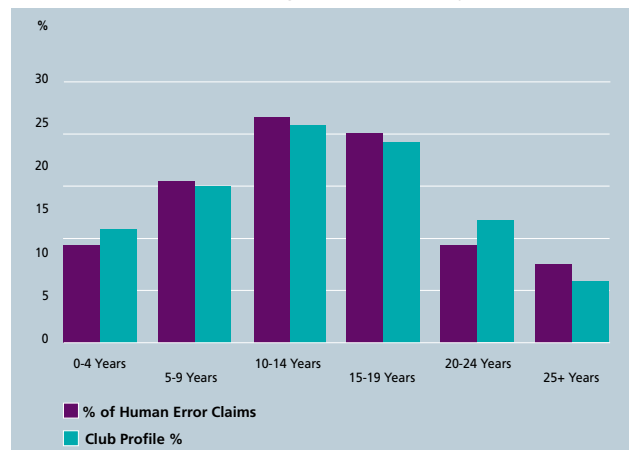
The largest proportion of human errors are attributable to the personnel on the bridge – whether they be the ship's officers or pilots. This is not altogether surprising but, whilst it is encouraging to see that the bridge officers' failure rate is improving, it is disappointing that ship safety is being jeopardised by the activities of pilots for whom the shipowners generally remain responsible.

7. Age, Size and Ship Type

Age

There is a popular belief that older ships engender poor morale and consequently a higher incidence of human error. In order to explore this theory, the human error claims have been analysed by the age bands of the ships on which they occurred. These figures were then compared with the Club's entered ships age profile. Table 9.8 reveals that the claims records of all ships of whatever age are broadly in line with their Club profile, with the possible exception of the 20-24 years old band and the 0-4 years old band.

Table 9.8 Human Error – Ship Age Band – Frequency/Value



The result for the youngest category tends to support the proposition that younger vessels have fewer human error related claims, but the same cannot be said of the older vessels.

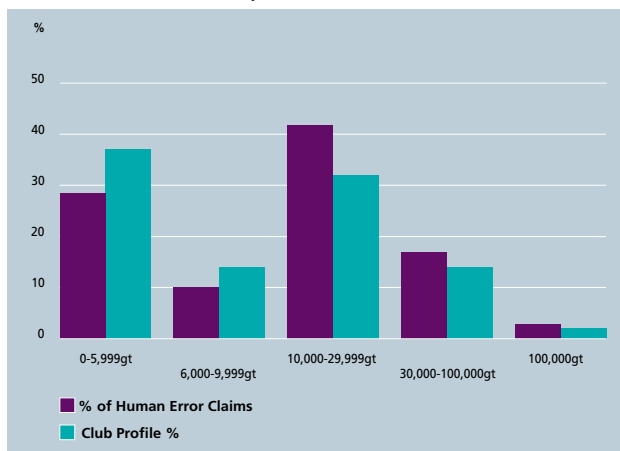
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What is true however, is the fact that both structural failure and human error peak in ships aged 10-14 years and decline thereafter. Why is it that both human error and ship failures are so prevalent in 10-14 year old ships? Is it simply because there are more ships in this age band entered in the Club? Or are there other factors as well as mere volume? There is no doubt that age is causally related to ship failure, as we have noted in Chapter 8. Given the correlation of risk factors, is it reasonable to suggest that the difficulties of running ships which are beginning to fail may account in turn for a high incidence of human error amongst those who work such ships? We speculated in Chapter 8 (Ship Failure) as to the extent of the correlation between an increase in ship failure claims and the year of a ship's build, it being noted that ships built between 1973 and 1978 have generated 41% of such claims during the period of the study. It will be interesting to observe in future years if there is any correlation between the year of a ship's build and the incidence of human error on board.

Size

Table 9.9 shows that ships of over 100,000gt conform to the Club's profile, as do those in the 30,000gt to 100,000gt category. The principal areas for further enquiry appear to be the 0-5,999gt band, where performance is better than the Club profile by quite a wide margin, and the 10,000/29,999gt band where the reverse in the case.

Table 9.9 Human Error – Ship Size



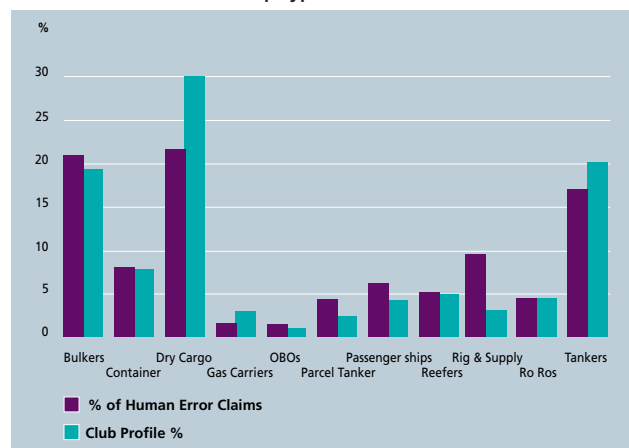
Risk Groups	All Tonnage	0-5K	10-29K
	%	%	%
Collision	8.06	5.79	8.75
Property	9.31	8.79	9.79
Pollution	5.10	3.00	4.41
Cargo	40.29	38.99	44.16
Injury Claims	30.23	35.88	26.65
Other	7.01	7.55	6.24
Total	100	100	100

We have analysed the claims experience for these two tonnage categories across the five principal risk categories of the Club and compared them with the incidence of claims for the Club as a whole. This exercise identifies the types of losses produced by human errors in ships in the two size bands. Cargo and collision appear to be more prevalent areas in the 10-29,000gt band range while injury claims are less so.

Ship Type

Generally speaking there is a remarkable consistency between the Club's entered ship profile when compared with the frequency of human error, as can be seen in Table 9.10.

Table 9.10 Human Error – Ship Type



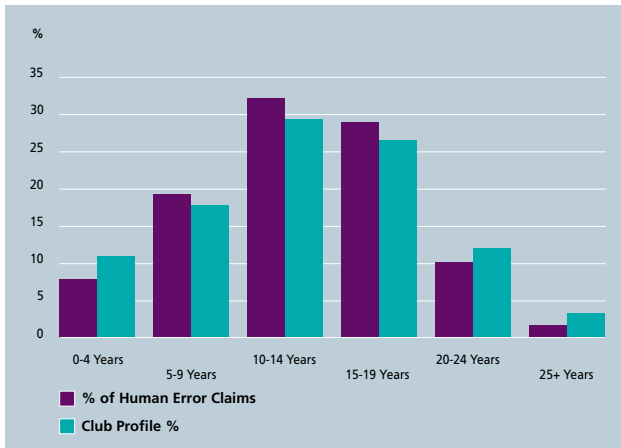
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Bulk Carriers

The statistics behind Table 9.10 undermine the popular hypothesis that the crews of bulk carriers are less skilled. The incidence of human errors on this ship type appears to be almost exactly in line with the percentage of bulk carriers entered in the Club.

There is no significant statistical variation on the basis of age as between the Club's profile and human error claims experienced by bulkers (Table 9.11).

Table 9.11 Bulk Carrier – Human Error – Age Band



On the other hand Table 9.12, which explores the significance of tonnage, reveals that bulkers in the 10,000gt to 29,999gt tonnage bands experience an incidence of human error claims more than 10% higher than Club profile.

Table 9.12 Bulk Carrier – Human Error – Size Band

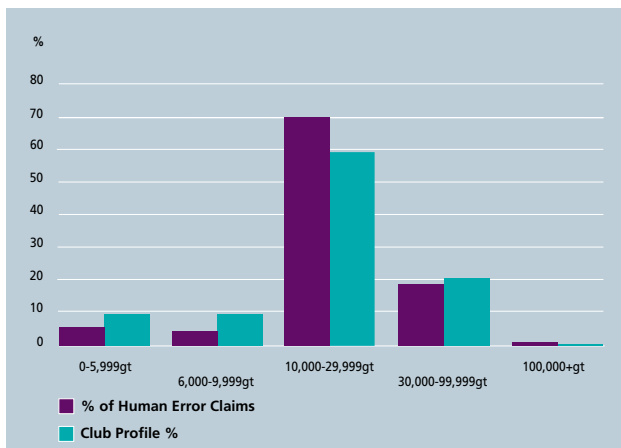


Table 9.13 Bulk Carrier – Officer/Crew Error – Frequency

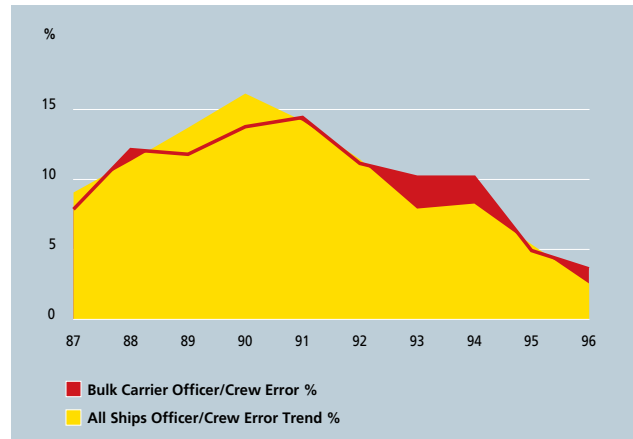


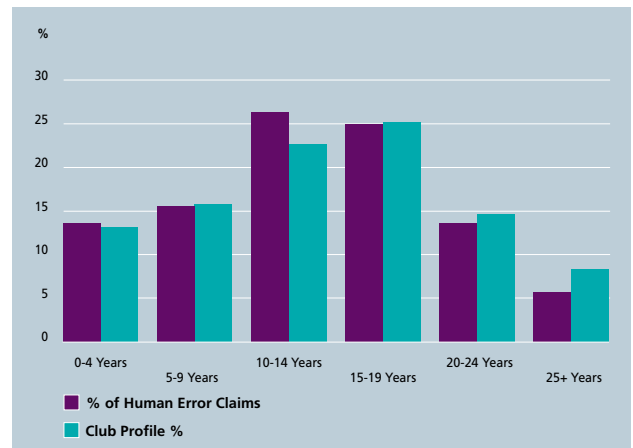
Table 9.13 reveals that the frequency of claims attributable to both officers and crew of bulk carriers is deteriorating when compared with the overall trend with above average claims in the 93-96 period.

Tankers

Tanker crews and their officers generally seem to have a decreasing claims trend which is comforting when one considers the value potential of accidents in respect of this ship type in terms of age and tonnage.

The age band comparison (Table 9.14) shows no statistical variations of any note, whereas the tonnage band breakdown (Table 9.15) reveals that the smallest category of tankers have a particularly good experience – 16% better than the Club entry.

Table 9.14 Tankers – Human Error – Age Band



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On the other hand, the 30,000gt to 99,999gt category of this ship type does not conform to its Club profile, with almost a 10% differential. There is no obvious explanation for this anomaly – although it is worth repeating that the overall tanker result is a good one.

Table 9.15 Tanker – Human Error – Size Band

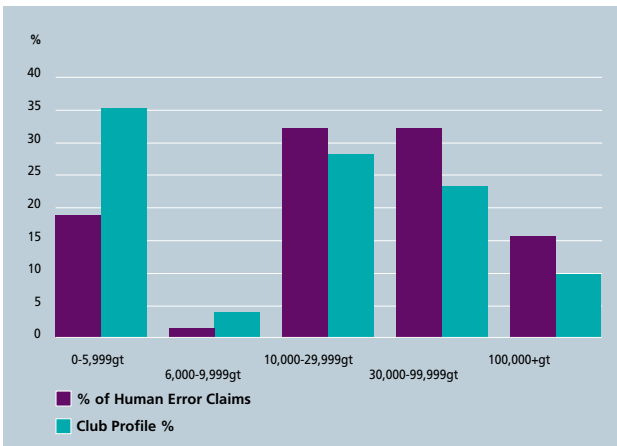
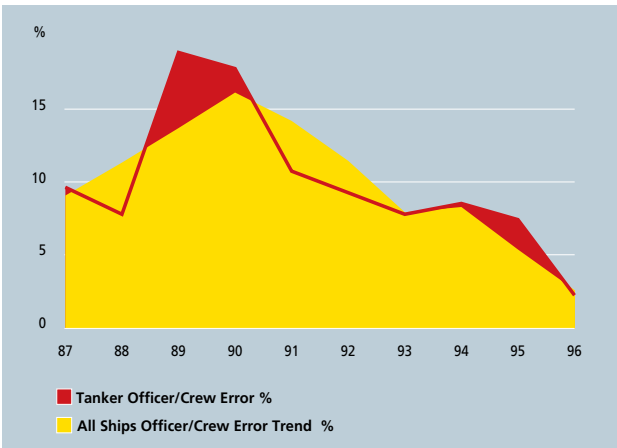


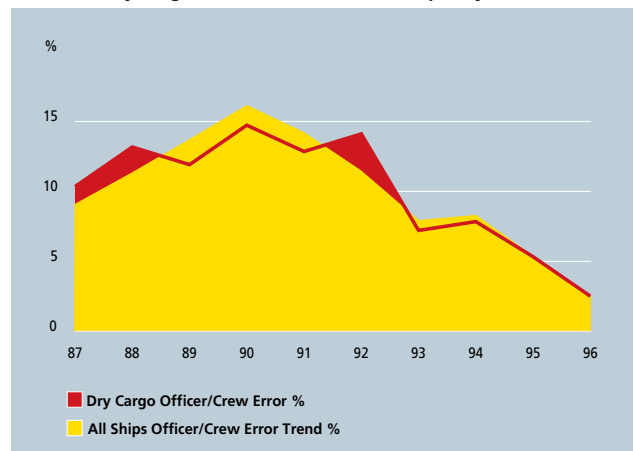
Table 9.16 Tanker – Officer/Crew Error – Frequency Trend



Dry Cargo

The record of personnel on board dry cargo ships compares favourably with those of the crew of other ship types as regards major claims resulting from human error (Table 9.10). Their record is improving, in line with the overall trend for major claims. This may come as something of a surprise to some as this class of ship is becoming older (over

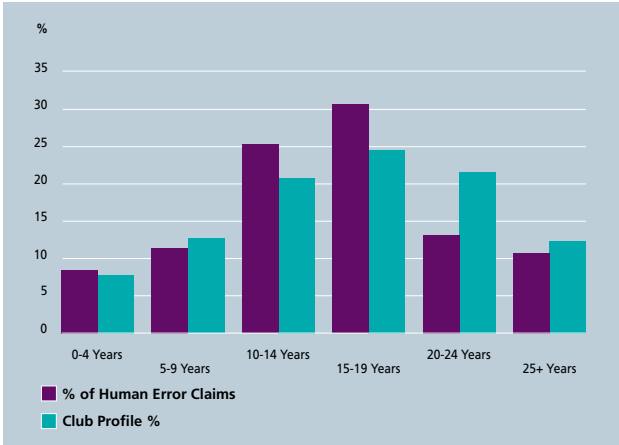
Table 9.17 Dry Cargo – Officer/Crew Error – Frequency Trend



58% of dry cargo ships entered in the Club are over 15 years of age) and are often engaged in hard working trades. Referring to Table 9.18 (Age) it can be seen that the incidence of human error on dry cargo ships is circa 10% above the Club profile level for the 10 to 20 year old ships. In terms of tonnage, the record is over 20% above Club profile for the 10,000-29,999gt tonnage bands (Table 9.19). However, in the smallest tonnage category dry cargo ships are experiencing claims well below their Club profile. This again runs contrary to the perception that ships on the heavy working short sea routes, in which many of these more modest sized ships operate, suffer from human error claims to a greater extent than do the larger tonnage categories.

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Table 9.18 Dry Cargo – Human Error – Age Band



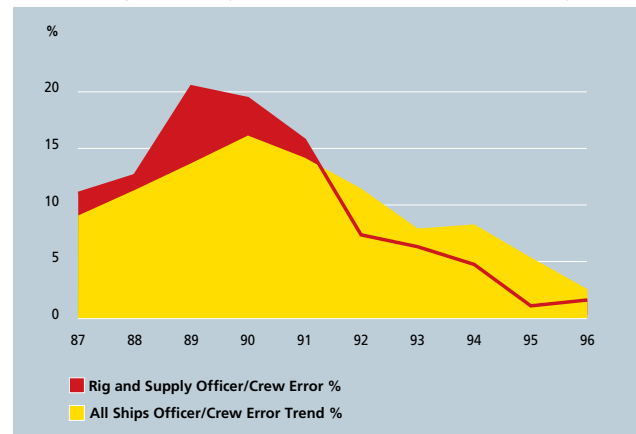
Rig/Supply

Looking back to Table 9.10, which sets out the experience of the different types of ship, one can see that Rig/Supply ships experience a proportion of major claims significantly above their entered tonnage. This is perhaps to be expected on a ship type where working conditions tend to be dangerous and stressful. However, this ship type represents only a small portion of the Club’s tonnage, and it is to be noted that their owners contribute towards a separate reinsurance programme. Furthermore the claims trend for their on board personnel has improved significantly over the period and at a markedly faster rate than the overall trend in recent years.

Table 9.19 Dry Cargo – Human Error – Size Band



Table 9.20 Rig and Supply Ship – Officer/Crew Error – Frequency Trend



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Containerships and Reefers

The frequency for officer and crew error on containerships is erratic with peaks above the average in 88, 91-92 and 95. Compared with the average, the general overall trend does appear to be one of deterioration. We see a similar picture with reefers, albeit less erratic with a clear

deteriorating trend commencing dramatically in 1991. Claims from this cause have declined from the 1991 peak but have still remained well above the average for much of the 90s which gives rise for concern.

Table 9.21 Containership – Officer/Crew Error – Frequency Trend

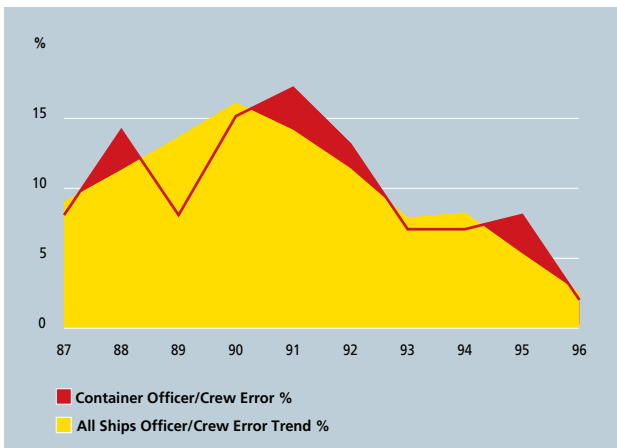
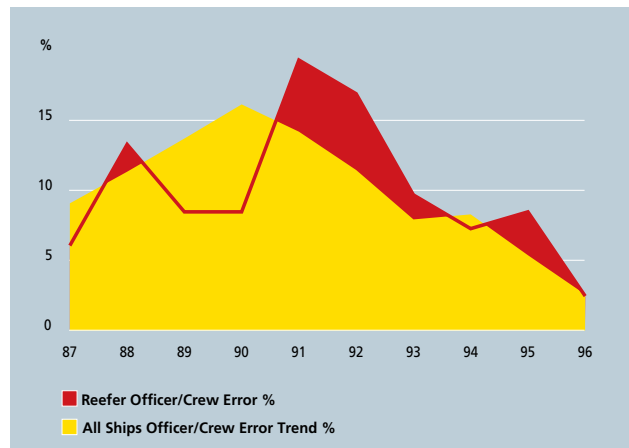


Table 9.22 Reefer Ship – Officer/Crew Error – Frequency Trend



10. CARGO

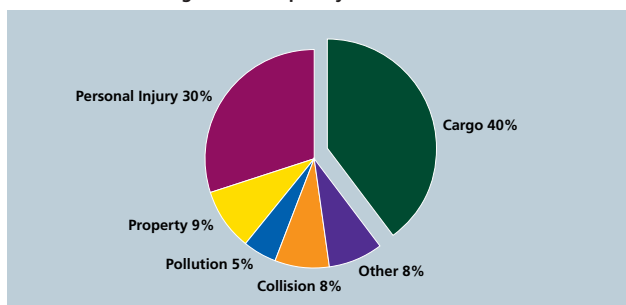
By far the most prevalent type of claim – and therefore the biggest drain on the Club’s resources – concerns damage to cargo. In the ten-year period of this study cargo has accounted for almost 40% of all claims, nearly double the percentage of the second most frequent type of claim, crew injury.

In this chapter we analyse the trends of various factors which contribute to major cargo claims. These trends are based on the claims experience of all Members in the Club, representing about 20% of the world’s ocean-going tonnage. Consequently, the trends should be indicative of those across the industry.

1. General

During the ten-year period of our study cargo incidents presented 1494 major cargo claims worth US\$469 million, representing 40% by number of the total number of major claims and 27% of their total value (Tables 10.1 and 10.2). As one of the five principal risk categories insured by the Club, cargo claims continue to dominate in terms of number, accounting for over one and a half times the number of major claims for crew injuries, the second most frequent type of major claim handled by the Club.

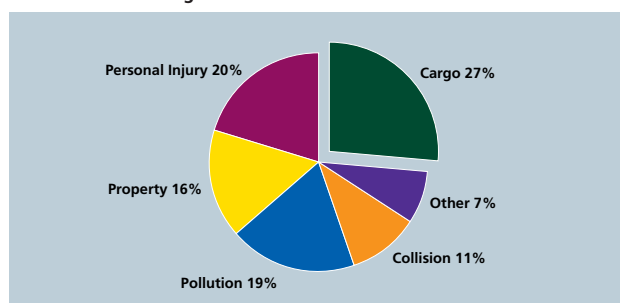
Table 10.1 Risk Categories – Frequency



We last examined major cargo claims in our 1993 report, where we identified the following features – cargoes associated with the greatest frequency of major cargo claims were dry bulk, reefer, containerised, generals, and steel; ships aged between ten and fourteen years were a greater risk, as were ships of 10,000gt to 30,000gt; the US was the most prominent country of incident; bad stowage, bad handling and leaking hatchcovers were the most frequent cause of damage: more major cargo claims were

caused by human error than by ship failure. To what extent has the picture changed since then? Are any of these findings contradicted by the enlarged data set which is now available?

Table 10.2 Risk Categories – Value



As well as reviewing the same items as before, we focus in more detail on both cargo type and ship type and ships’ flag. We also analyse the claims profile by causation and by a regional comparison of the place of incident and port of loading. The data is presented in a manner designed to indicate how trends are developing.

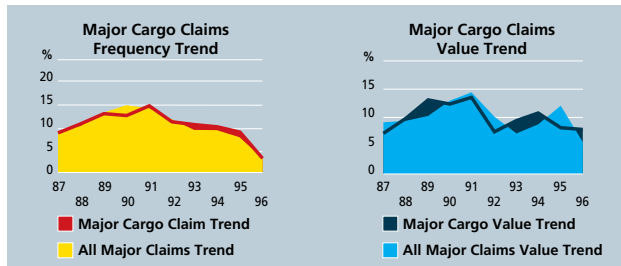
2. Trends – Number and Value

In terms of the number presented, the trend for major cargo claims follows quite closely the “all major claims trend” line until 1993, when it deviates above it (Table 10.3).

At the time of the last Major Claims Analysis in 1993 cargo incidents presented 42% of the total number of major claims and 30% of their total value. Currently the

CARGO

Table 10.3 Major Cargo Trend/All Major Claim Comparison



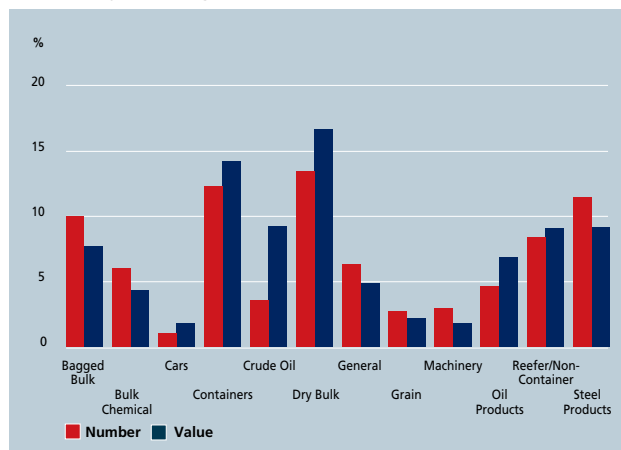
percentages exhibit only a minimal change; 40% and 27% respectively. However, there are indications within this overall trend that there is a general tendency to fewer major claims of increasing severity. For example, the 1996 year witnessed 45 major claims by number representing US\$37m by value as against 74 claims worth US\$24.3 million in 1991.

This finding is indicative of the general trend witnessed elsewhere in this report – fewer claims but greater values.

3. What Kinds of Cargo are Damaged?

We have analysed cargo claims under several headings, to observe how these factors have varied over the period of study. The first category subject to detailed analysis is cargo type.

Table 10.4 Type of Cargo

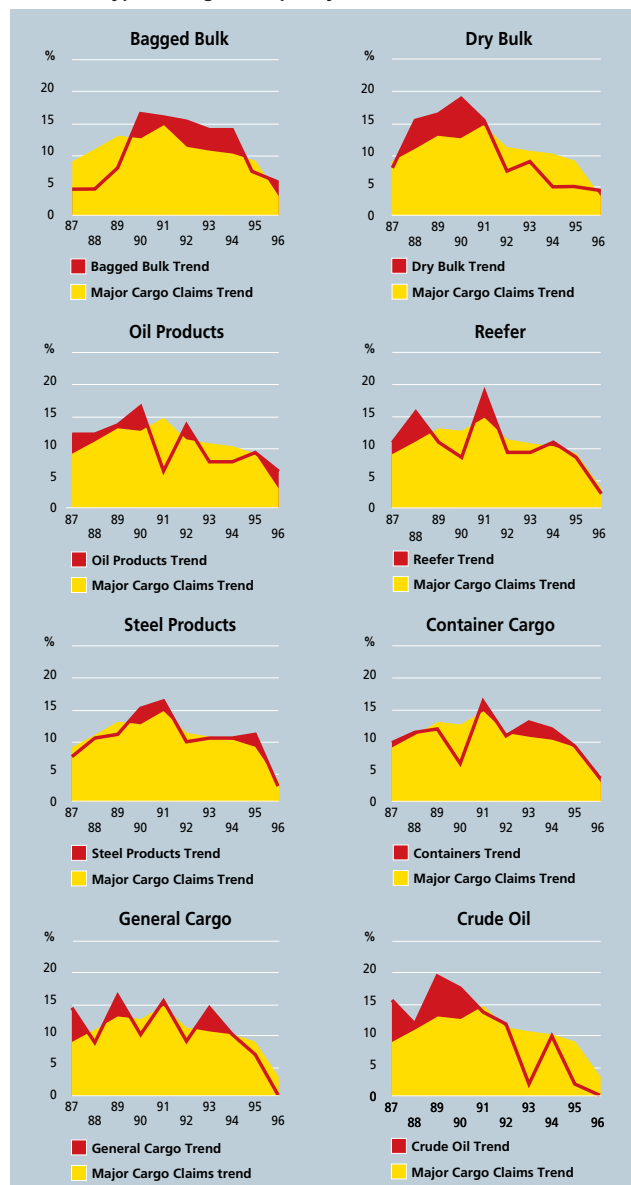


Frequency

Table 10.4 sets out, for each type of cargo, the number and value of claims as a percentage of all major cargo claims. The cargoes most commonly damaged are dry bulk, containers, steel products, bagged bulk, reefer and general cargo.

Tables 10.5 provides us with details as to the trends that each type of cargo claim has exhibited over the past ten years when compared to the all major cargo claims trend.

Table 10.5 Type of Cargo – Frequency



CARGO

First, bagged bulk claims can clearly be seen to have deviated dramatically above the all major cargo claims trend in the early nineties. Claims have abated of late but show no signs of decreasing to pre-1989 levels.

It is worrying that some 30% of these claims were for wet damage. The largest number of claims (16%) were caused by condensation and 10% resulted from hatchcover leakage. 14% of claims resulted from physical damage, 13% from shortage, 9% from bad stowage and 9% from bad handling. In 16% of the cases the cargo was damaged prior to loading and/or was the subject of a pre-shipment quality dispute. In terms of severity, bad stowage resulted in the most expensive claims, costing the Club US\$11m – 25% of the total. Most bagged bulk claims occurred on dry cargo ships (57%), followed by bulk carriers (29%). The most prominent country of export for bagged bulk cargoes resulting in claims was China, having 2.5 times the number of claims as the USA, the next nearest, indicating perhaps, that the owners should be extra careful when loading such cargoes in this area. The most common cargoes involved in such bagged bulk claims where China was the port of loading was rice 22%, sugar 14% and groundnuts 13%.

The Netherlands stands out as the most prominent country of claim as regards frequency, having three times as many claims as the next nearest – Germany, Algeria and Egypt. Whilst the number of claims in the Netherlands is to be expected bearing in mind the amount of cargo imported there, the prominence of Algeria and Egypt is disturbing.

By way of contrast, the trend for dry bulk cargo is an improving one. Prior to 1991 this type of cargo manifested an above average number of claims, but since 1990 the number of claims has decreased and now exhibits a trend consistently below the overall cargo claims trend. During the period 1987-1991 major dry bulk claims were occurring

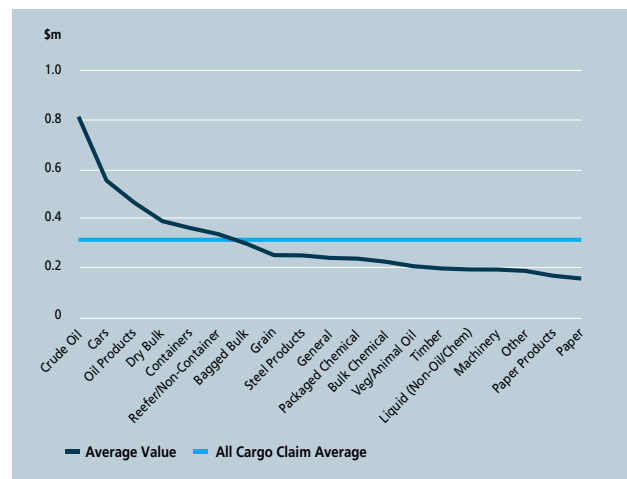
on average 29 times a year. Between 1992 and 1995 this reduced to an average of 12 a year. As with bagged bulk, most damage to dry bulk cargoes is caused by water (36%). However since 1992 there has been a reduction in this type of damage, which, together with a reduction in contamination damage, is a factor in the improvement of the claims record of this type of cargo.

Crude oil and oil products' cargo claims display a tendency to erratic upturns and downturns. However the picture is one of overall improvement since the late 80s in respect of crude oil: Five claims in 1994 compared with 10 claims in 1989. On the other hand container cargo claims are deteriorating with claims frequency between 1993 and 1995 deviating above the overall trend line.

Average Value

Table 10.6 provides an overview of the average value presented by each of the cargo types. The blue line presents the all major cargo claims average value and it can be seen that crude oil, cars, oil products, dry bulk, containers and reefers all produce major claims of above average value.

Table 10.6 Type of Cargo – Average Value

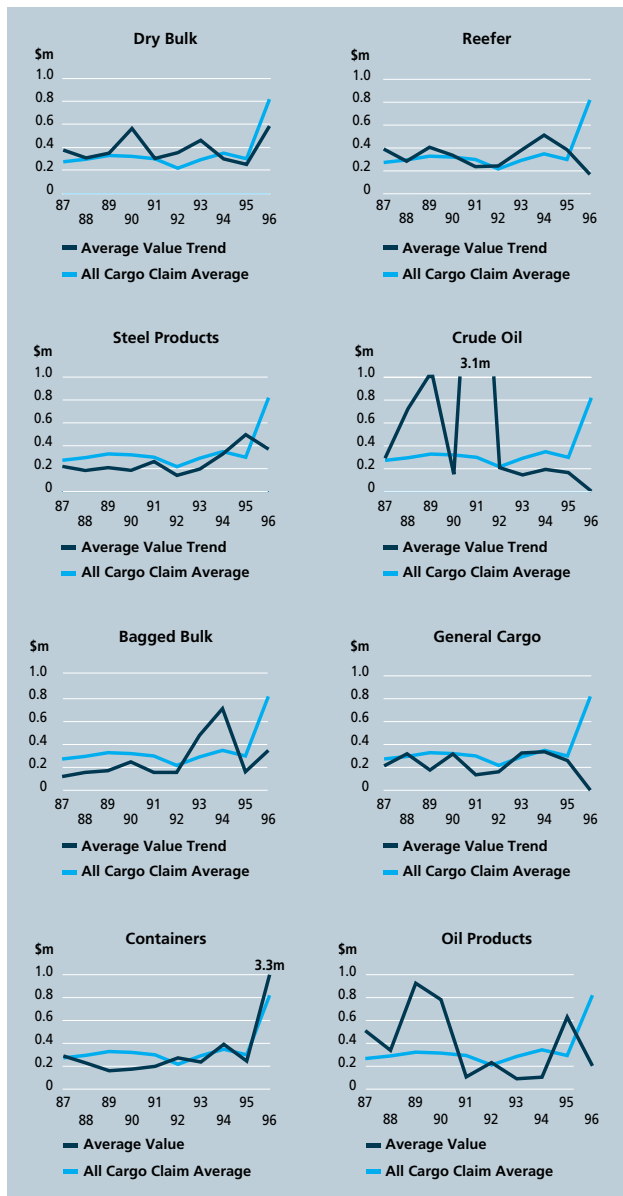


CARGO

The statistics reveal that the high average values of crude oil and oil products claims are the result in each case of a small number of very large claims inflating the overall value. Cars feature because of one particular claim where the ship was lost along with the cargo.

Looking at these values on a year-on-year basis (Tables 10.7), one can see that crude oil cargoes exhibit the highest values. Note in particular the peak in 1991. Crude oil cargoes account for only around 4% of cargo claims but clearly when they occur they can be very expensive.

Table 10.7 Type of Cargo – Average Value



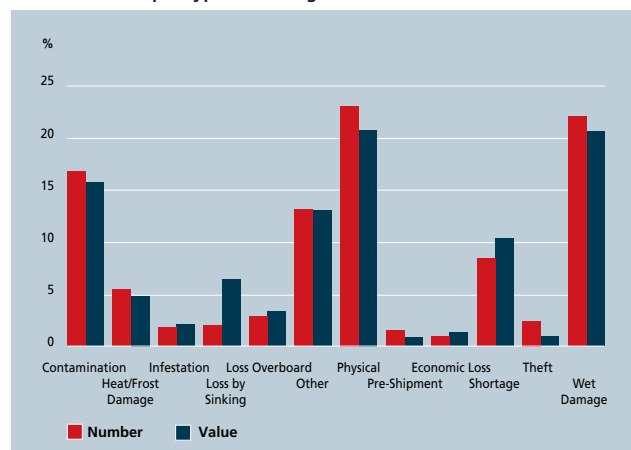
Most major cargo claims are displaying an upward trend in terms of value, as one would expect. Note in particular, steel, bagged bulk and containers.

One of the most significant trends appears to be the steady upward growth in value of container claims, which have almost doubled since 1989. The average value of all container claims over the ten-year period is US\$361,793 compared with the average value of all other major cargo claims which stands at US\$240,210.

4. What are the Most Frequent Causes of Loss and/or Damage that give rise to a Major Cargo Claim?

Table 10.8 sets out, by number and value, the most frequent causes of loss or damage that give rise to a major cargo claim. They are physical damage, wet damage, contamination and shortage. Thus it appears that while containerisation has revolutionised sea transport, it has not changed the liabilities surrounding the transport of goods.

Table 10.8 Principal Type of Damage



Physical Damage

The loss category entitled ‘physical’ includes damage caused by crushing, denting, bending, breakage, etc. It is the type of damage most often suffered by general, reefer, steel and containerised cargoes, often as a result of bad stowage.

Wet Damage

The cargoes most frequently damaged by water are steel products (28%) dry bulk (22%) and bagged bulk (14%), usually as a result of sea water ingress through defective hatchcovers (35%) or condensation (13%), or less frequently as a result of shell plate failure (6%). Hatchcover failure or damage presents an even greater number of wet damage claims in respect of dry bulk, accounting for 49% of wet damage dry bulk cargo claims, in terms of number, and 55% in terms of their value (US\$11m). The cargoes most frequently affected are grains, fertilisers, soya beans, cement and sugar, in that order.

Wet damage to steel can be an expensive item and is apportioned principally between bulk carriers and dry cargo ships in terms of number and value. Over the ten-year period wet damage to steel has accounted for some US\$26m paid by the Club. The most frequent countries of loading of steel shipments that are so damaged are Brazil, Turkey, Belgium and Romania. Brazil, Turkey and Belgium,

together account for 36% of steel loading but present 53% of steel wet damage claims by value. A review of pre-loading inspection and procedures might assist Members who trade regularly in these areas.

Contamination

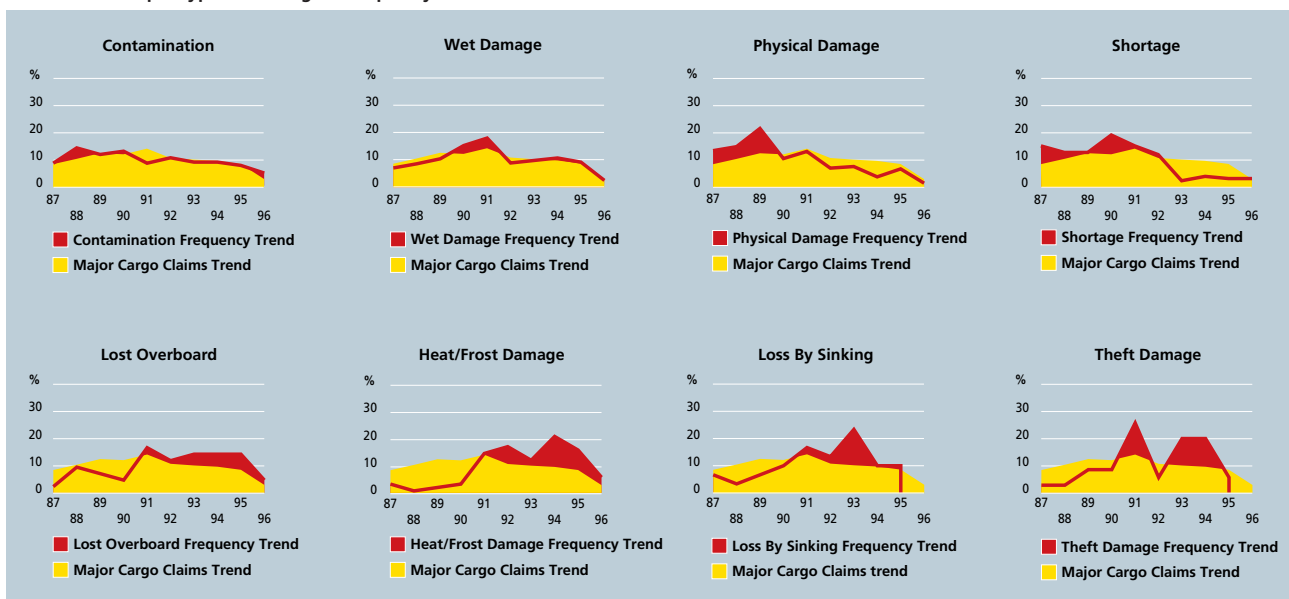
The most frequent types of cargoes affected by contamination are bulk chemicals (27%), oil products (20%), dry bulk commodities (17%) and vegetable/animal oils (8%). Most contamination is caused by inadequate tank cleaning which accounts for 20%, followed by bad handling (10%) bad stowage (9%) and valve/pipe failure (9%).

Shortage

Shortage most frequently affects crude oil, accounting for 26% of all major shortage claims, followed by bagged bulk (16%), dry bulk (13%), containers (12%), and oil products (10%).

Tankers account for 30% of shortage claims (and 73% of their value). Bulk carriers account for 26% and dry cargo ships 21%. The sample sizes are small but the countries of loading which appear to have a relatively high incidence of shortage claims are Iran (14%), and the US (9%). In terms of ports of discharge, US (13%) Italy (10%) and Argentina (6%) predominate.

Table 10.9 Principal Type of Damage – Frequency



What causes these shortages? The most common causes appear to be bad handling (12%), followed by fraud (10%), bad stowage (7%) and poor tallying/paperwork (6%).

Trends

In Tables 10.9 we set out the trends of the eight most frequent types of damage. There are discernible upward trends in the 90s of heating/freezing damage, loss overboard, loss by sinking and theft. While the sample sizes are small the evidence presented is sufficient to suggest that further investigation into these areas is warranted.

5. What are the Contributory Causes of such Loss and/or Damage?

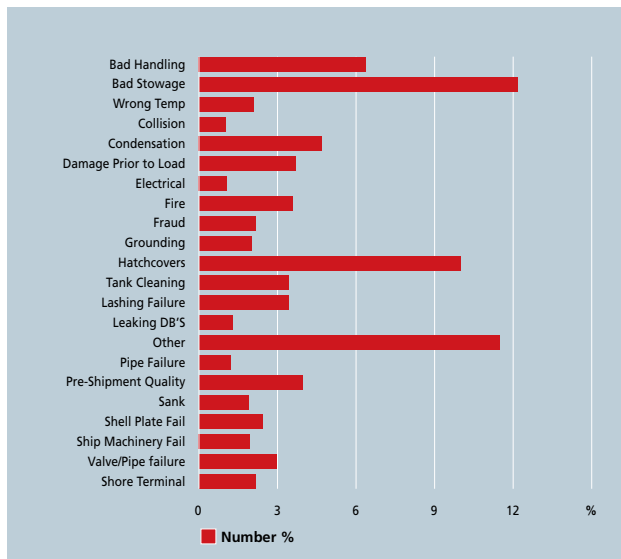
It is readily apparent from the foregoing that a number of factors contribute towards the principal causes of major cargo claims. Some of these ancillary causes have already been mentioned, eg. bad handling, bad stowage, condensation, hatchcover damage.

Table 10.10 shows, as a percentage distribution, all contributory causes of damage across all cargoes. It

illustrates how, over the ten-year period of this study, bad stowage, hatchcovers, bad handling, condensation, damage prior to loading, fire, inadequate hold/tank cleaning and lashing failure have all played a role in the cause of major cargo claims. Bad stowage, pre-shipment quality disputes, carriage at the wrong temperature, and the use of an unsuitable ship for the cargo in question also contribute to a significant number of the claims. These are all factors to which knowledge of cargoes and stowage is relevant, both on the part of those with immediate responsibility for safe carriage – the ship’s master, officers and crew – and on the part of those who charter the ships. Members can prevent losses by ensuring their officers have adequate training as well as practical guidance in methods of safe stowage of the cargoes carried.

Bad handling and problems in shore terminals account for about 9 per cent of the claims. If this percentage is added to that for bad stowage (12%) it means that 21%, (over one fifth) of all major cargo claims can be traced back to stevedore/shore person error. In this area, where the shipowner has less direct control, rights of recourse should be preserved and used wherever appropriate. This means that those who are immediately responsible for the safe carriage of the cargo – the master and officers – are conversant with the relevant contract terms and know how to collect evidence in the event of bad handling etc. on the part of shore personnel. Table 10.11 sets out the trends of the seven most significant contributory causes.

Table 10.10 Contributory Causes – Frequency



CARGO

Table 10.11 Contributory Causes – Frequency



Table 10.12 reveals which of the contributory causes give the most rise for concern in terms of value. It is not surprising that incidents such as sinkings, groundings, fires and shell plate failures tend to be expensive, but it is perhaps not so obvious that contributory causes such as

inadequate tank coatings, leaking vents and loading heavy containers on top of light ones feature so prominently. On a year by year basis condensation claims show a steady increase in value. Average value trends are set out in Table 10.13, where it can be seen that claims caused by leaking hatchcovers seem to have been steadily increasing in value (Table 10.13).

Table 10.12 Contributory Causes – Average Value

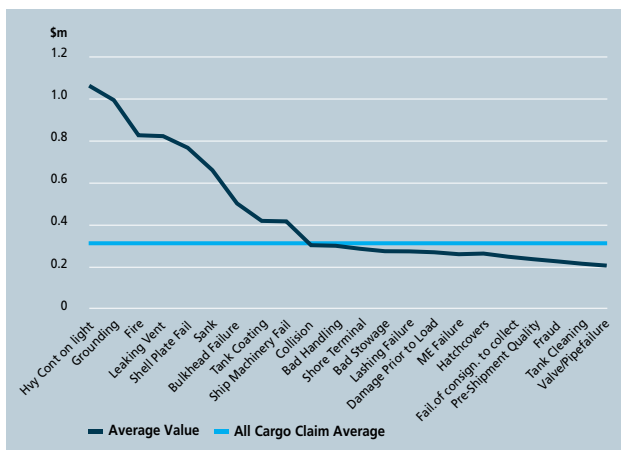
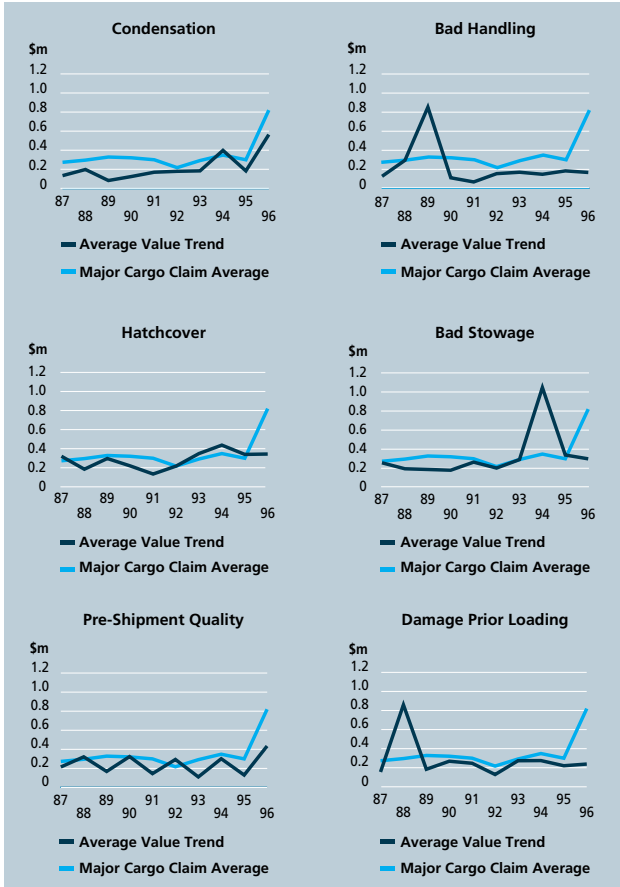


Table 10.13 Contributory Causes – Average Value



6. Human Error or Ship Failure?

How does human error or ship failure impact upon major claims in the cargo category? Our data reveals some interesting differences from the general pattern evidenced by all other major claims.

For ease of reference, we set out below our definitions of human error and ship failure.

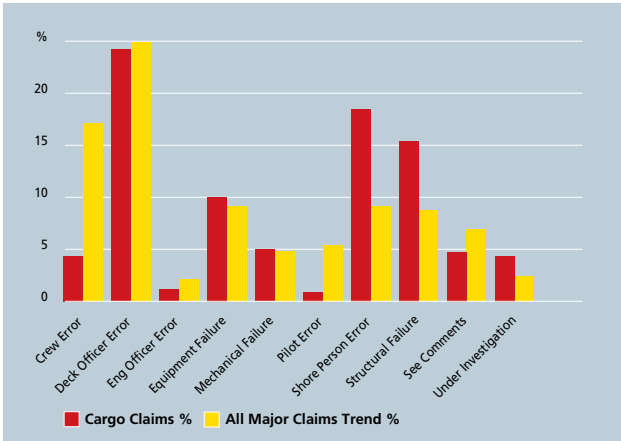
Ship Failure refers to a combination of structural, mechanical and equipment failure and, for the purpose of this analysis, we have defined these concepts as follows:

- i) **Structural Failure:** failure of the ship’s fabric, including hatchcover problems.
- ii) **Mechanical Failure:** heavy machinery failure, including main engine and steering gear.
- iii) **Equipment Failure:** non-heavy machinery failure, eg: bridge equipment.

Human Error refers to any human act or omission identifiable as the direct and proximate cause of the event from which the liability of the shipowner arises.

Table 10.14 provides a general overview of the main causes of major claims, as they fall within our definitions of human error and structural failure. Structural failure is a significant major contributor, accounting for some 15% of major cargo claims, above the general trend for all major claims of 9%. However, the reader is reminded that hatchcover failures are categorised as structural failure; in fact hatchcover problems account for 46% of structural failure cargo claims, followed by shell plate failure (14%) and leaking hulls.

Table 10.14 Main Cause Cargo Claims – Human Error Compared with Ship Failure



As for human error, deck officer error remains high at 24%, but crew error at 4% is considerably lower than the general experience where crew error accounts for 17% of major claims. Of greater interest is the fact that the second most frequent “human error” in cargo claims after deck officer error is shore person error. At 18% this is much higher than the general experience and is clearly a major cause of major cargo claims.

In future studies, we hope to attribute shore person error more accurately to one of the many parties to which the description applies, such as of the shore-side staff in owners’ offices or employees of charterers, local authorities, ports and terminals or of any other numerous intermediaries.

7. Country of Incident

Number

Table 10.15 shows the countries in which most of the Club’s major cargo claims have occurred during the ten-year period of this study. Tables 10.16 depict the trends exhibited in each country and compares them with the trend for all major cargo claims worldwide.

The US, Netherlands, Japan and Italy account for nearly one third of all major cargo claims, 32% by number and 29% by value.

Claims in the US have deviated below the general trend line every year since 1989. Similarly the frequency of cargo claims in Italy appear to have improved since the late eighties, exhibiting a dramatic reduction from 1992 onwards.

Table 10.15 Country of Incident – Frequency

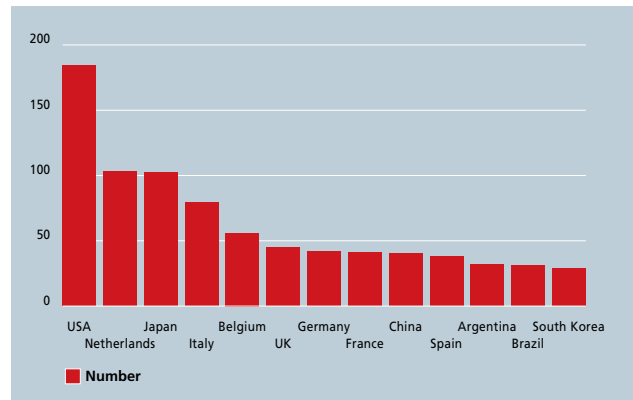
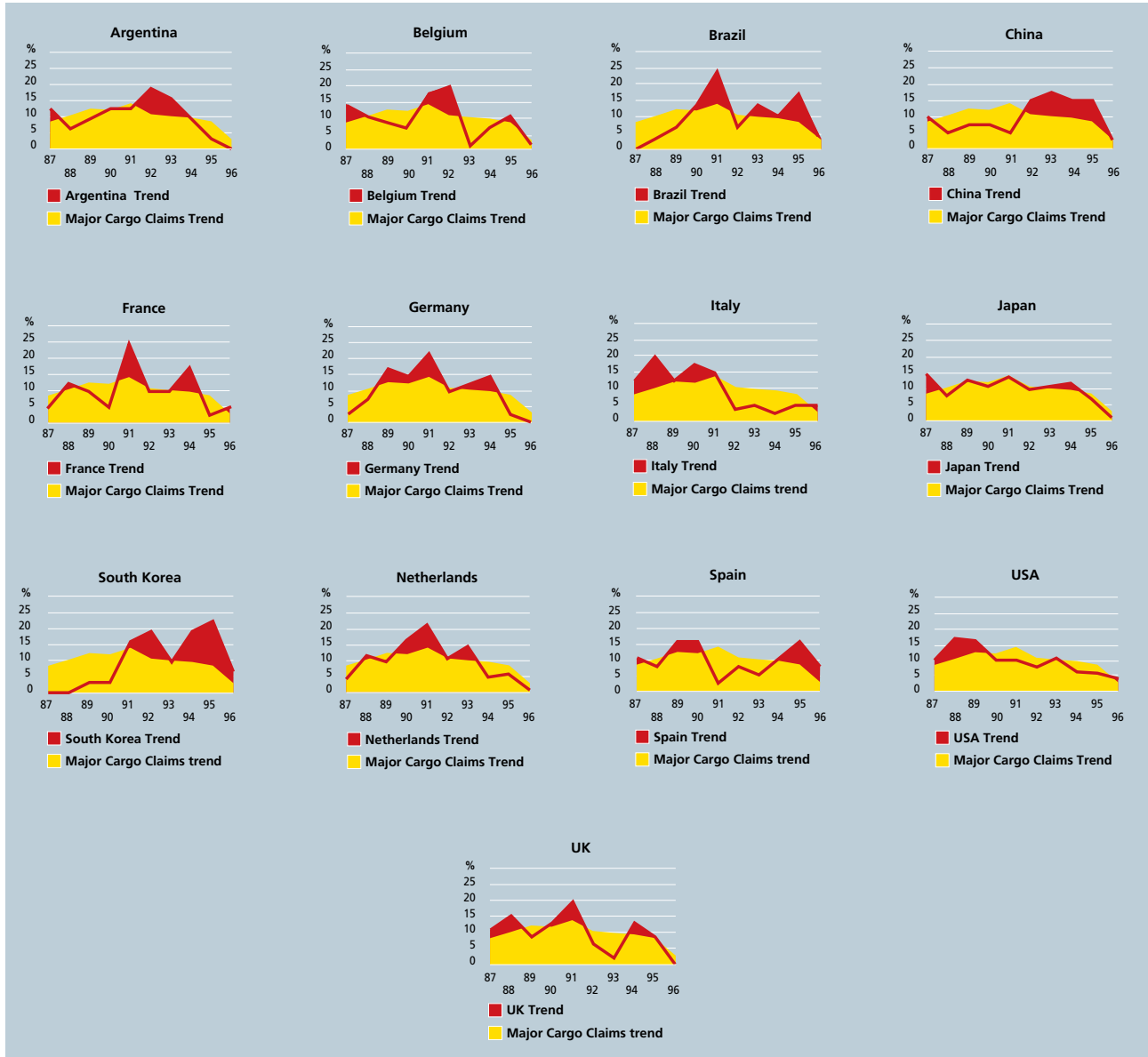


Table 10.16 Country of Incident – Frequency



On the other hand major cargo claims emanating from China have increased significantly since 1992. The main ports where such claims occur in China are Qingdao, Shanghai and Xingang in that order. Of such claims in China in the last 10 years 12% have been caused by fire, most of which have been in fishmeal cargoes. Numbers are low but compared with the Club average, where fire only accounts for 3.55% of all cargo claims, China clearly seems to suffer more than its fair share of this type of loss.

Other countries that present a frequency trend above the norm in recent years are South Korea, Spain and Brazil.

Table 10.17 Country of Incident – Average Value

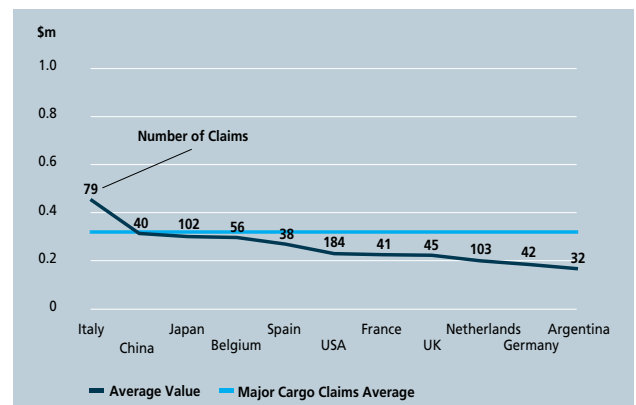


Table 10.18 Country of Incident – Average Value Trends



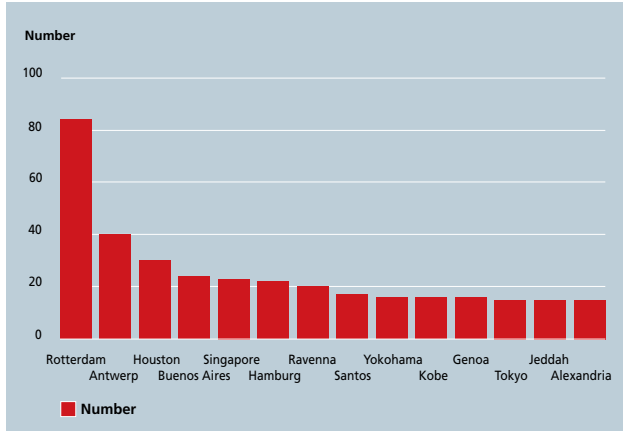
In S. Korea, eight out of 31 major claims involved reefer cargoes. This is nearly twice as many as in the next most common cargoes. These are steel, chemical and liquid non-oil. These large reefer claims are a relatively new phenomenon in S. Korea, only being seen since 1991 and all occurring in Busan. The chemical and liquid cargo claims occur exclusively in Ulsan. In Brazil containers give rise to major cargo claims, and the most frequent place of such claims is Santos.

It is interesting to note that with the exception of Italy, the majority of countries which present the greatest occurrences of major cargo claims, display an average value

per claim below the major claims overall average (Table 10.17). This suggests that it is the less frequented ports in other countries in which a higher proportion of high value claims are occurring.

If we look at average value trends on a year-on-year basis (Table 10.18), it is clear that there is an upward trend in S. Korea, rising from an average of US\$113,000 in 1989 to US\$425,000 in 1995. Italy exhibits a high average but this may be discounted because of the cargo claim from the Haven in 1991. By way of contrast Germany clearly shows a generally reducing average trend since 1991.

Table 10.19 Major Cargo Claims by Port

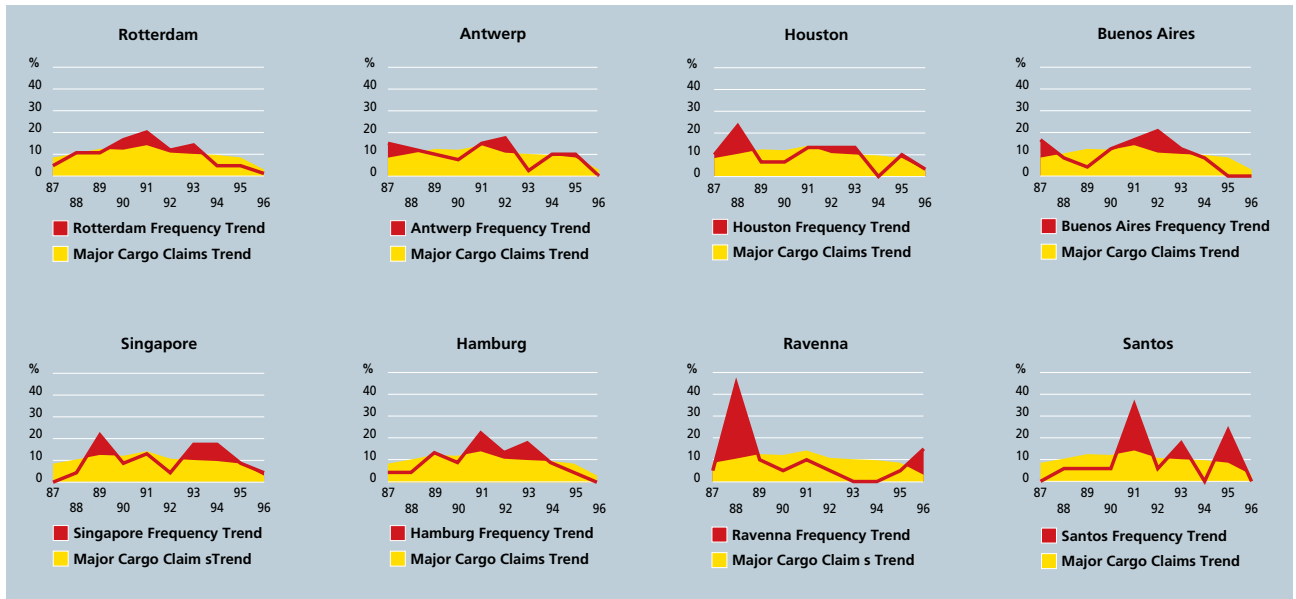


8. Port of Incident

When reviewing country of incident (Tables 10.15 - 10.18) we observed that the statistics – particularly in relation to value – suggested that perhaps it is some of the less frequented ports in which most of the high average value claims occur.

Table 10.19 presents the 14 ports with the highest number of major claims. Rotterdam exhibits the most, averaging over 8 claims a year. Tables 10.20 illustrate the trends of major cargo claims in eight of those ports over the ten-year period of this study.

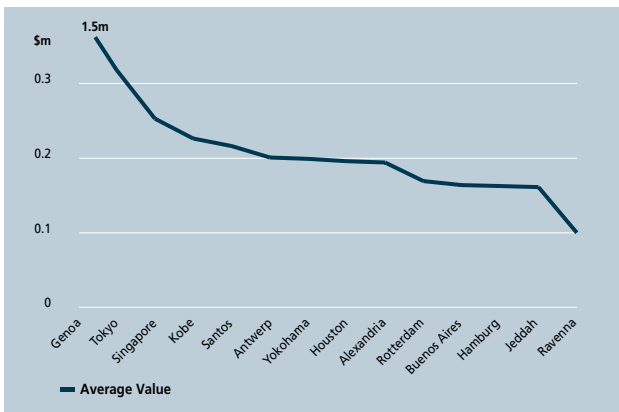
Table 10.20 Port of Incident – Frequency



Average Value

Table 10.21 sets out the average value of claims at the same 14 ports as in Table 10.19 above. However, looking for a trend of the average values by each port is inconclusive as the numbers are so low that no meaningful trends can be discerned.

Table 10.21 All Major Cargo Claims – Average Value



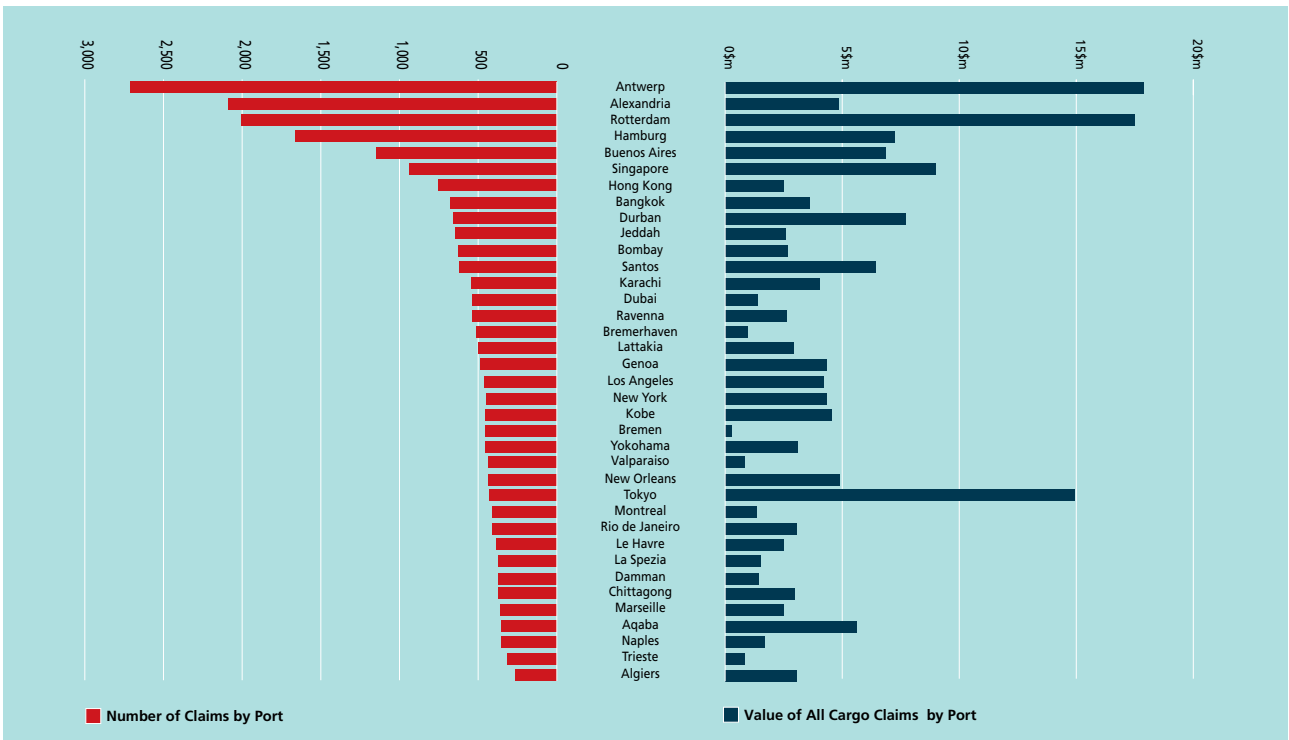
9. All Ports/All Cargo Claims

Given the low sample size generated by the 14 ports with the most frequent number of major claims, we have expanded our study to encompass *all cargo claims in all ports* (tables highlighted with green backgrounds) in order to obtain a better understanding of where the Club's cargo claims are occurring and at what magnitude. Expanding the scope of review in this way provides a statistical sample of 61,000 claims.

Table 10.22 sets out the 37 ports in the world where the 61,000 cargo claims have occurred. As can be seen, most of the ports which featured in Tables 10.19-21 feature prominently in this Table, although Ravenna, Tokyo, Kobe and Yokohama appear lower in the list.

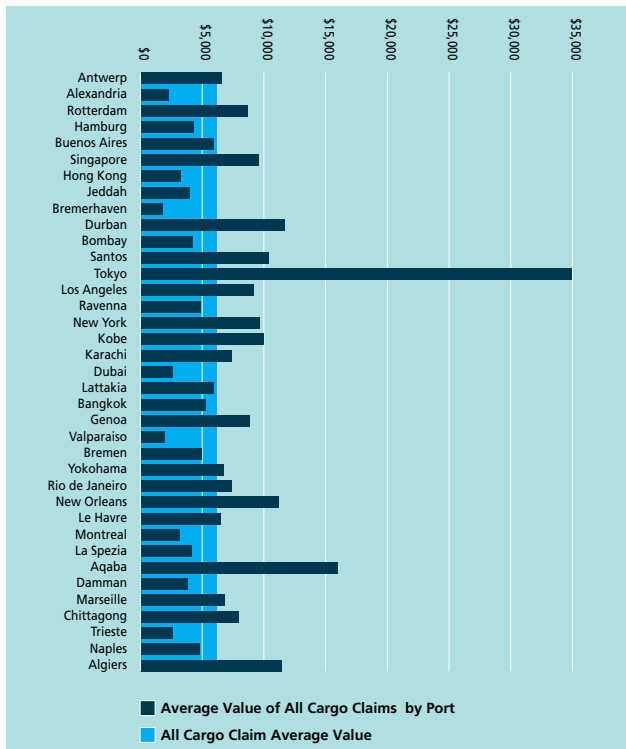
Out of the 37 ports listed, Antwerp, Rotterdam and Hamburg account for nearly one quarter of all cargo claims. Whilst this is to be expected given the significant amount of

Table 10.22 All Ports/All Cargo Claims – Frequency/Value



commercial and industrial activity in Northern Europe, Egypt displays a surprisingly high frequency. Many of these claims are related to customs penalties, but nevertheless run at nearly one a day. This points to a significant cost being borne by the Member concerned, if nothing else, in administration costs as many of these claims will be of low value.

Table 10.23 All Ports/All Cargo Claims – Average Value



Average values in the same 37 ports are set out in Table 10.23. It is worrying to see ports like Chittagong, Algiers, Karachi and Aqaba having above average value claims, some quite substantially so.

Whilst average values can be affected by the occasional very large claim the volume of claims involved is so substantial that the average values shown are indicative of the level of claims faced by each port. In terms of risk management, Members and the Club should direct particular efforts to investigating the cause and minimising losses at these ports.

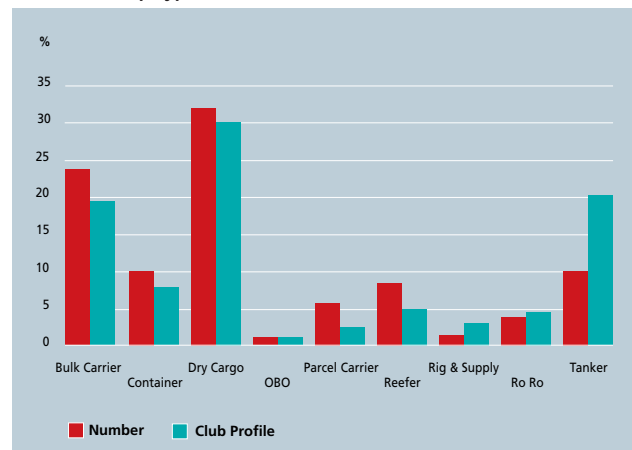
10. Ship Type

Number

Table 10.24 presents the distribution of major cargo claims across the various ship types, comparing the percentage number of claims generated by each ship type with its Club profile.

Dry cargo ships present the greatest number of claims but they also have the largest Club entry. Reefer, parcel carriers and bulk carriers present more claims than their percentage share of tonnage. Containerships also exhibit a higher frequency of major cargo claims. On the other hand, tankers present only half as many cargo claims as their Club profile would warrant.

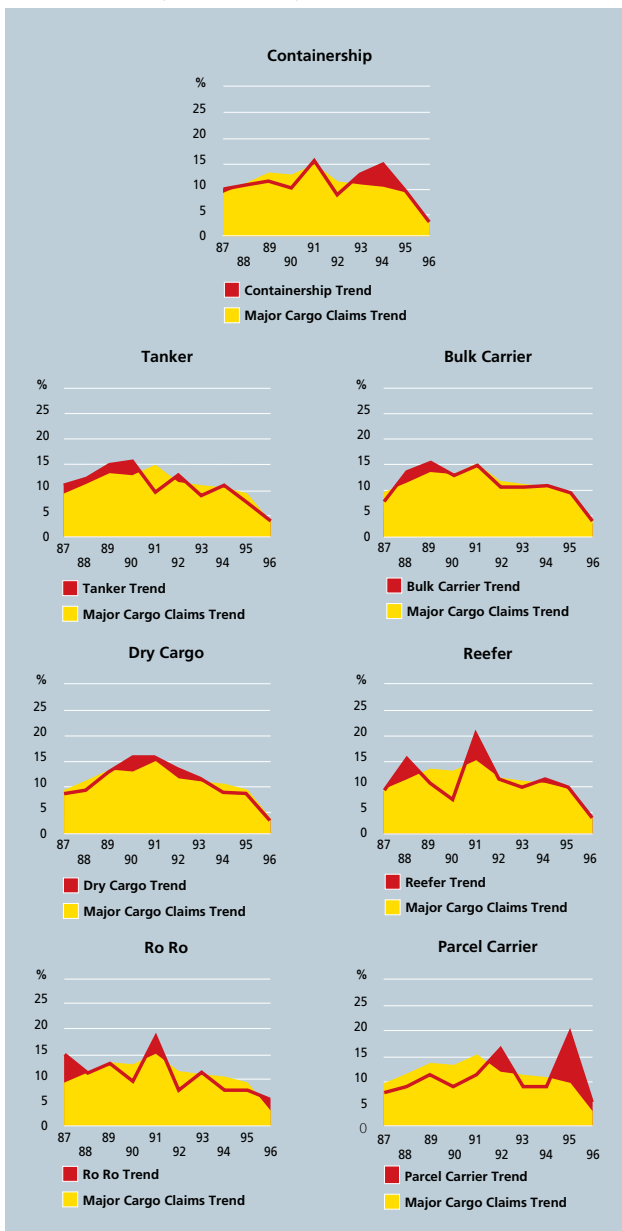
Table 10.24 Ship Type



CARGO

As more than 80 per cent of major cargo claims arise on bulk carriers, containerships, dry cargo ships, tankers and reefers, we have chosen to look in more detail at the frequency distribution of claims involving these ship types during the ten-year period of our study (Table 10.25).

Table 10.25 Ship Type – Frequency



Between 1989 and 1993 dry cargo ship types have had a higher frequency of major claims than the Club profile, but now exhibit a trend in line with the norm.

For bulk carriers, the disproportionately large number of cargo claims witnessed in the late eighties has declined and major cargo claims from this ship type now follow more closely the general trend line.

Major cargo claims from containerships appear to be increasing as can be seen by the extent of the deviation above the general trend since 1993 with a substantial increase in 1994.

Tanker cargo claims on the other hand were more frequent in the late eighties than appears to have been the case in the nineties. By 1991 they had reduced from an average 20 claims per year to 11.

Reefer ships have more major cargo claims than their percentage tonnage, but the trend has been erratic over the ten-year period.

Values

It is readily apparent that tankers, OBOs, gas carriers and reefers present major cargo claims above the average value (Table 10.26).

Table 10.26 Major Cargo Claims – Ship Type – Average Value

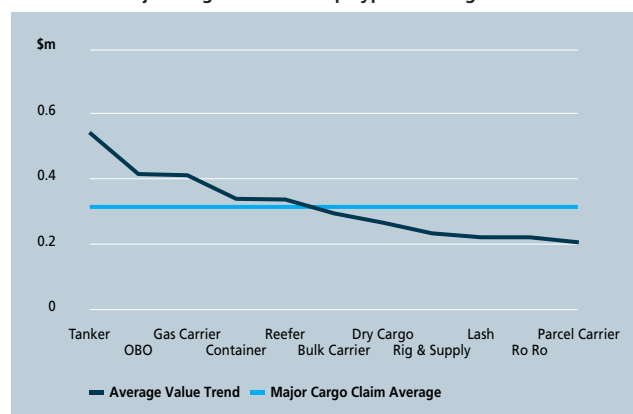
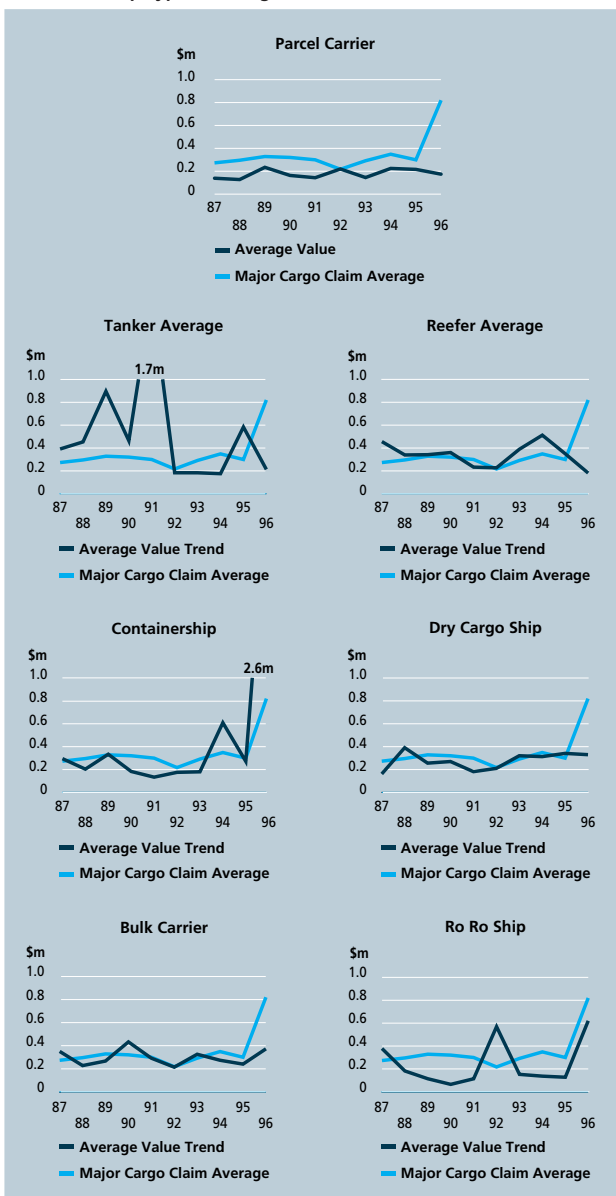


Table 10.27 shows how the value of major cargo claims on the various ship types has changed on a year-on-year basis over a ten-year period. Most changes are self explanatory but it is worth commenting on high values of major cargo claims from tankers in the late eighties and early nineties, and the fact that since 1991 tanker claims have been lower on average than the average for all ships, with the exception of 1995.

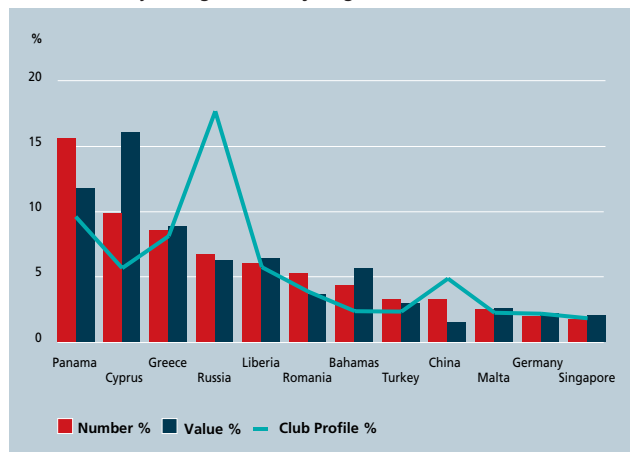
Table 10.27 Ship Type – Average Value



11. Ship's Flag

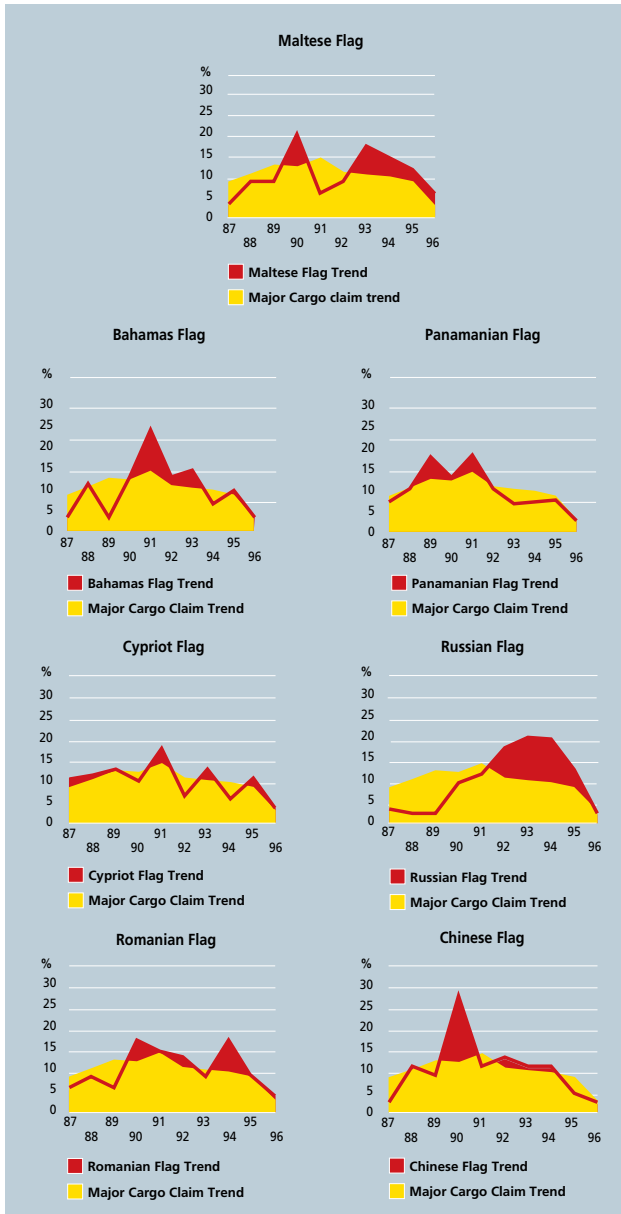
Table 10.28 reveals the Panamanian, Cypriot and Bahamanian flag exhibit a disproportionately greater number of major cargo claims than their percentage Club entry. On a year by year basis, (Table 10.29) Cypriot flagged ships tend to follow the average, albeit erratically, whereas Bahamanian flagged ships display a worse record in the 90s than the late 80s. Is this claims record linked to the claims record of this flag as regards structural failures? The disproportionately high value of major claims from Cypriot flagged ships is to be noted. Claims on Panamanian flag ships display a sustained improving trend in claims since 1991.

Table 10.28 Major Cargo Claims by Flag



While Russian flagged ships present fewer claims than their percentage of Club tonnage, they have exhibited a tendency of late to deviate considerably away from the general trend. The Club has seen a substantial increase during the same period of ship failure claims from Russian flagged ships. Romanian and Maltese flagged ships are presenting more claims in the 90s than in the late 80s.

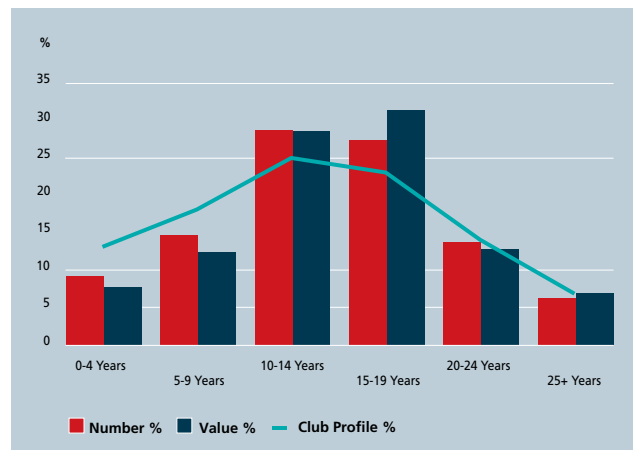
Table 10.29 Flag – Frequency



12. Age of Ship

Table 10.30 displays the distribution of major cargo claims by age band for all ship types. As with other tables of this kind it highlights, as a possible risk indicator, the age bands for each ship type where the claims profile shows a higher incidence than the profile of the Club's entry.

Table 10.30 Major Cargo Claims by Age – Number



Ships in the 15-19 year old bracket produce more major cargo claims than their Club profile, as do 10 to 14 year old ships. However, since 1991 there is a noticeable downward trend in the latter (Table 10.31). Claims on ships younger than 10 years of age are also showing a marked improvement from the late 80s

Since 1990 ships over 15 years of age have had more major claims proportionately than prior to 1990 – the exact opposite to the trend exhibited by the younger ships. Major cargo claims have been increasing on ships in the 20 to 24 year old age bracket, quadrupling from 7 a year in 1987 to 32 a year in 1994. Ships over 25 also display a disturbing upward trend. Both of these indicators are of concern, given the increasing age of the world's fleet overall.

Table 10.31 Age Band – Frequency

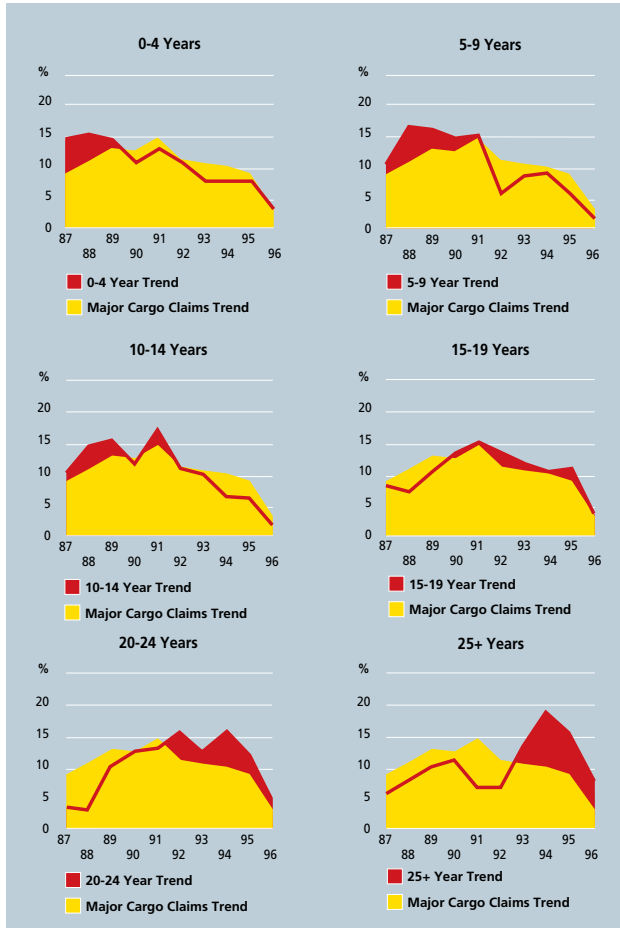


Table 10.32 Age Band – Average Value

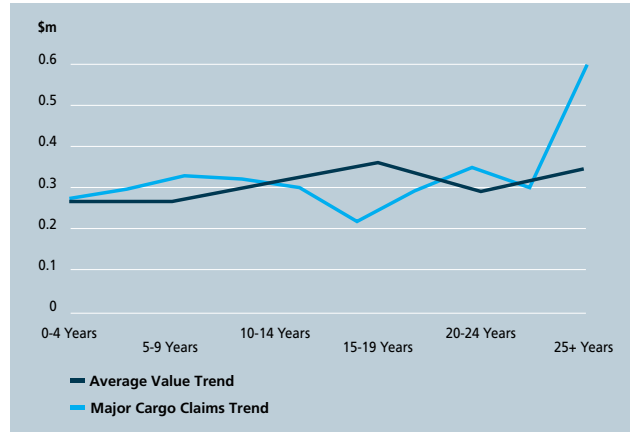
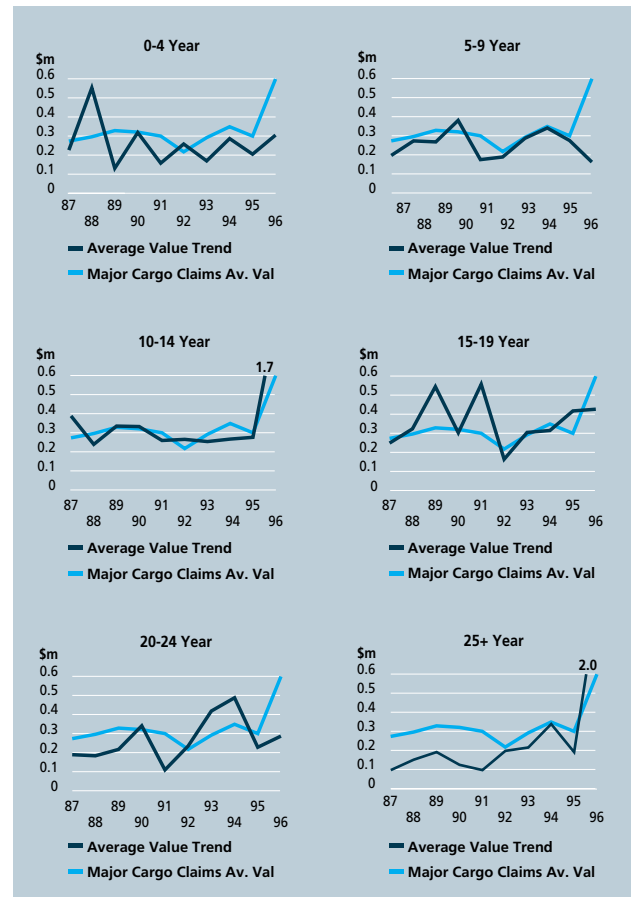


Table 10.33 Age Band – Average Value



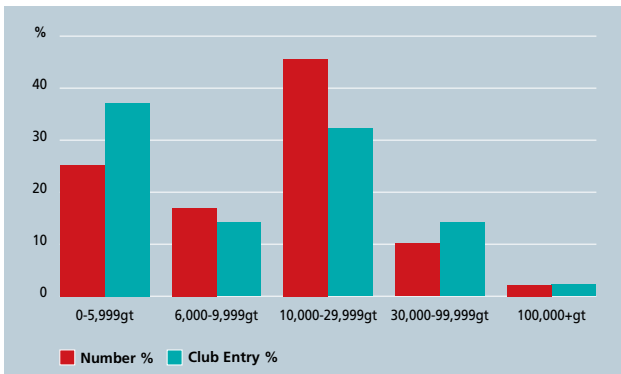
Values

Age of ship does not appear to affect the value of major cargo claims, except perhaps in the 25 plus age range. Average values ranging from US\$266,000 to US\$361,000 are set out in Table 10.32. If any trend can be discerned it is that claims values increase slightly the older a ship gets. This trend is reversed when a ship enters the 20 years plus age bracket, but rises again when the ship reaches 25 years plus. Ships in the 25 plus age bracket have seen an inexorable increase over the last 10 years in the average value of major cargo claims (Table 10.33).

13. Size of Ship

Table 10.34 reveals that ships in the size band 10,000-29,999gt have a greater incidence of major cargo claims than the profile of Club entry for that particular size band.

Table 10.34 Size Band – Frequency



Looking at frequency trends across tonnage bands, it is difficult to detect any discernible trend (Table 10.35), although for the 30,000gt to 100,000gt ship, 1991 saw major cargo claims rise sharply, remaining above the overall trend thereafter. 1991 also saw sharp rises on 0 to 6,000gt and 6,000 to 10,000gt ships. Claims on ships over 100,000gt appear to be quite markedly fewer in the mid 90s compared with the late 80s and early 90s.

Generally, major cargo claims exhibit an erratic trend when reviewed by tonnage. Whilst this is understandable on large ships it is somewhat surprising on the smaller ships. The sample size on the smaller ships is high – 377 claims; therefore the fluctuations are not insignificant.

Value Trends

Not surprisingly, there appears to be an increase in the average value of major cargo claims when the ship concerned is in excess of 30,000gt (Table 10.36). Ships above 30,000gt may have fewer claims than their Club profile but they tend to be high in terms of value. Ships over 100,000gt present a similar picture except that the severity of claims fluctuates even more dramatically on these ships when compared with claims on ships below 30,000gt (Table 10.37).

Table 10.35 Size Band – Frequency

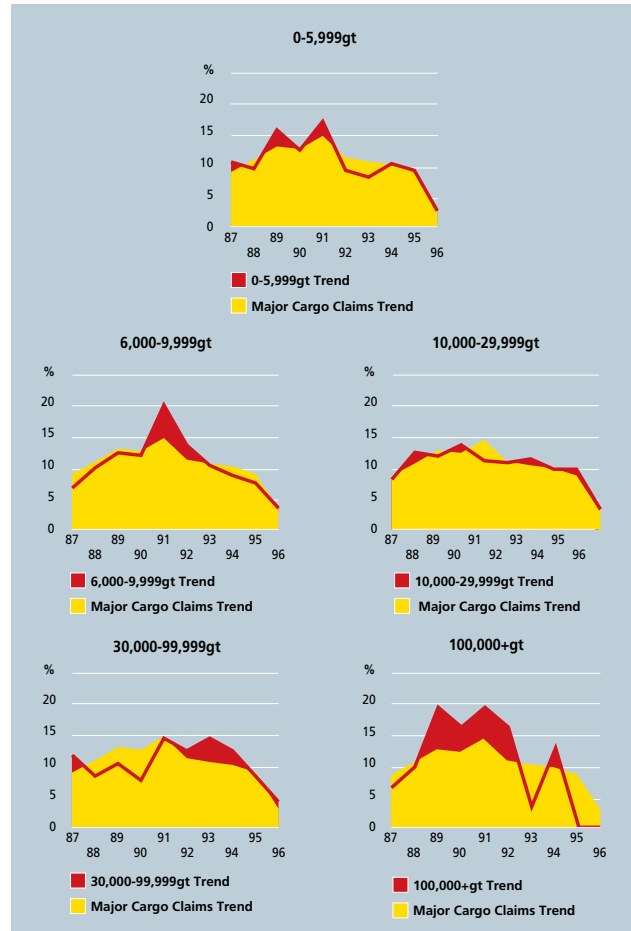


Table 10.36 Size Band – Average Value

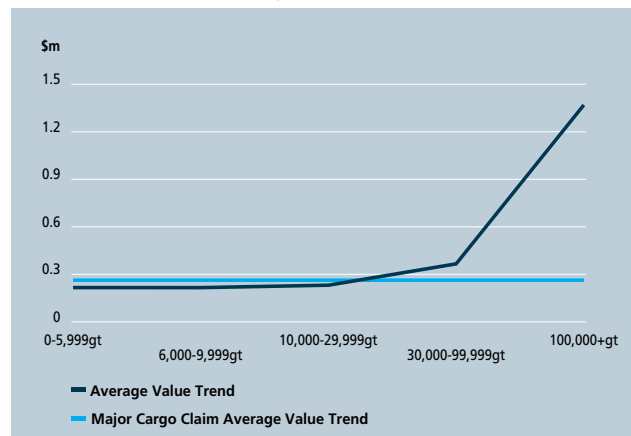
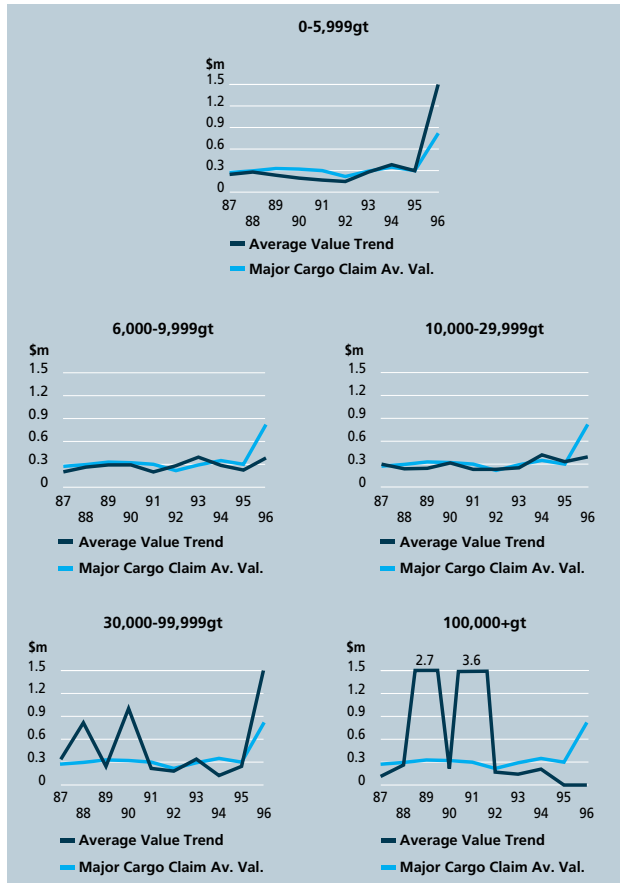


Table 10.37 Size Bands - Average Value



14. Trade/Contracts

Table 10.38 reveals that some 32% of major cargo claims occur on ships in liner service and 59% on tramp ships. Tramp ships appear to have the higher value claims, almost 2.5 times higher.

Table 10.38 Type of Service

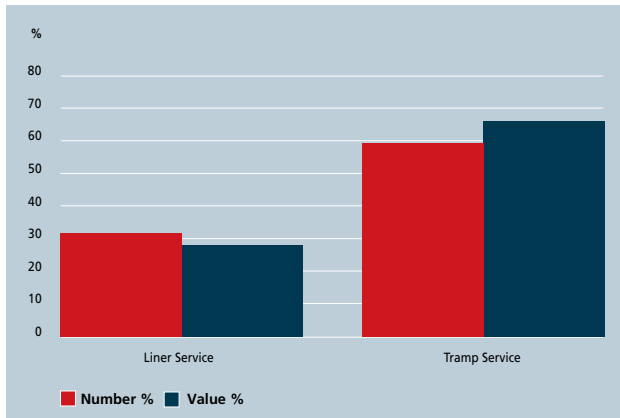
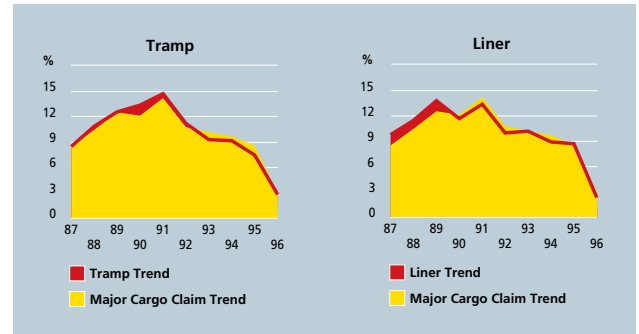


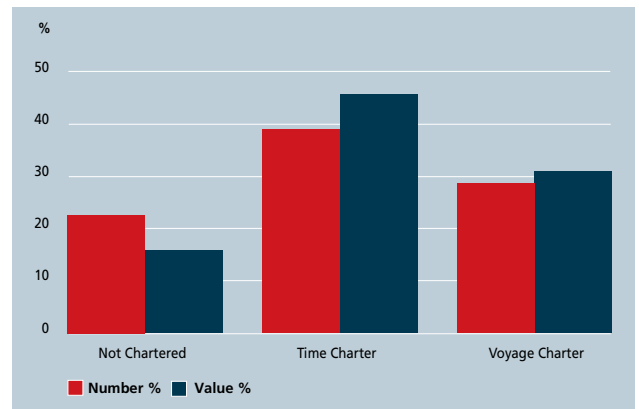
Table 10.39 demonstrates that over the ten-year period the number of major cargo claims on both types of service followed the average, although claims on liner ships were more prominent in the late eighties.

Table 10.39 Type of Service – Frequency



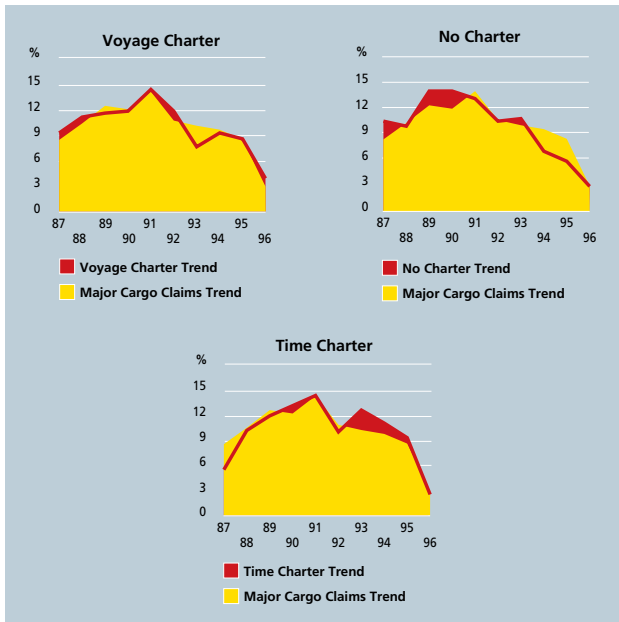
In reviewing the types of contract involved, we see that most major cargo claims occurred on ships under time charter, accounting for 39% by number and 46% by value, whilst voyage charters accounted for 29% by number and 31% of value (Table 10.40). A further 32% of claims occurred on ships that were either not chartered or were operating under another form of contract.

Table 10.40 Type of Contract



CARGO

Table 10.41 Type of Contract – Frequency



Owners appear to be facing more cargo claims when trading under time charters.

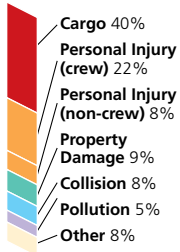
What creates the liability of the owner under these contracts? In 14% of cases it is bad stowage, in 9% hatchcover problems and in 6% bad handling. Lashing failure and condensation damage account for 5% each.

The cargoes most usually involved in time charter major cargo claims are containers (14%), dry bulk (14%), steel (13%), reefer and bagged bulk (11% each). Whilst containers accounted for the largest number of claims together with dry bulk, containerships were not involved to the same extent which indicates that there is a problem with the carriage of containers under time charters on non-containerships.

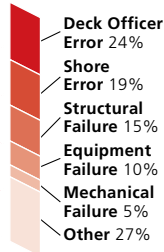
ANALYSIS OF MAJOR CLAIMS

SUMMARY OF CARGO CLAIMS – BY NUMBER

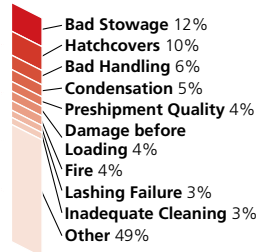
Risk Type



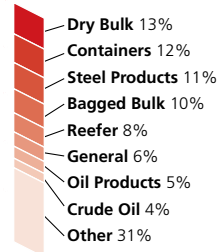
Main Cause



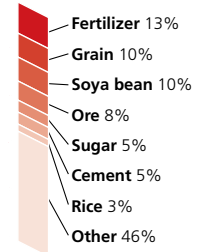
Contributory Cause



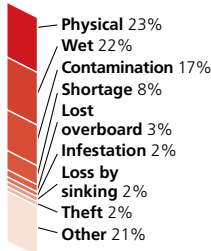
Type of Cargo



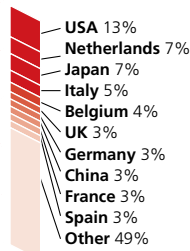
Type of Dry Bulk



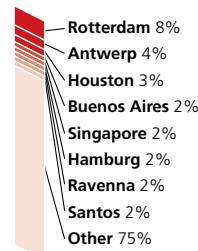
Type of Damage



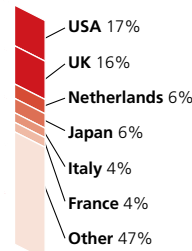
Discharge Country



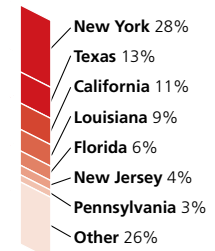
Discharge Port



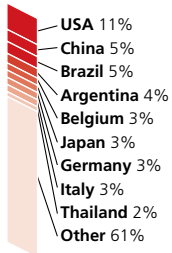
Jurisdiction



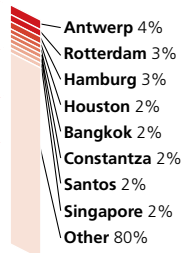
State in USA



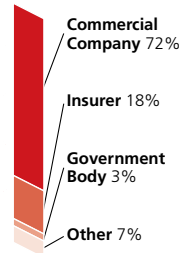
Load Country



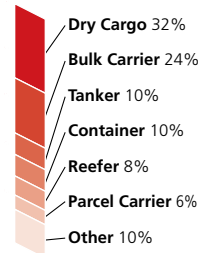
Load Port



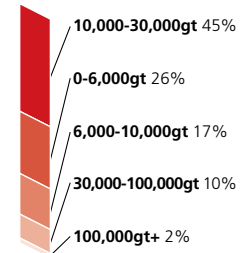
Claimant



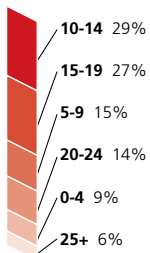
Type of Ship



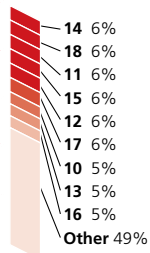
Size



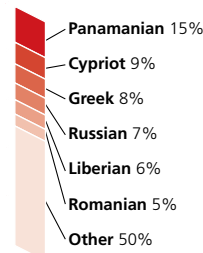
Age Band



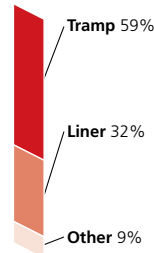
Age



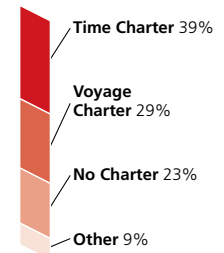
Flag



Trade



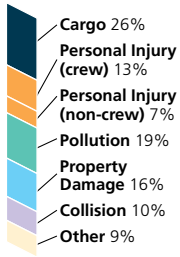
Contract



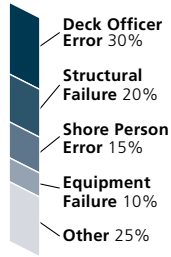
ANALYSIS OF MAJOR CLAIMS

SUMMARY OF CARGO CLAIMS – BY VALUE

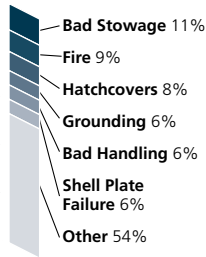
Risk Type



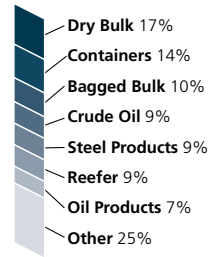
Main Cause



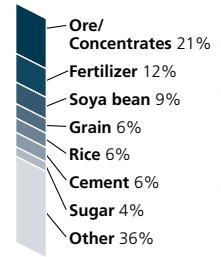
Contributory Cause



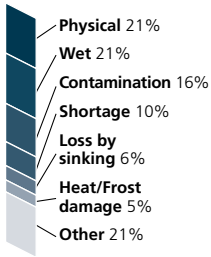
Type of Cargo



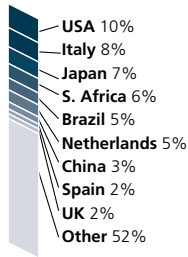
Type of Dry Bulk



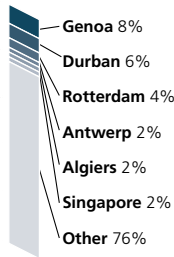
Type of Damage



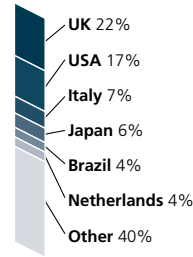
Discharge Country



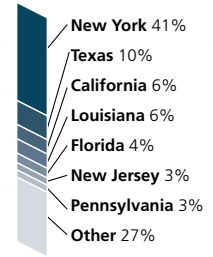
Discharge Port



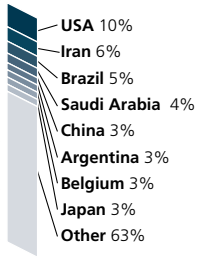
Jurisdiction



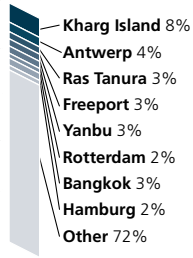
State in USA



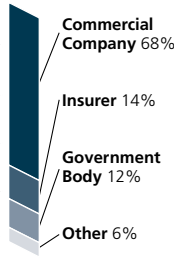
Load Country



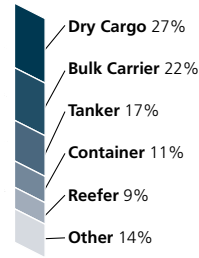
Load Port



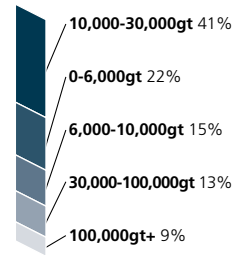
Claimant



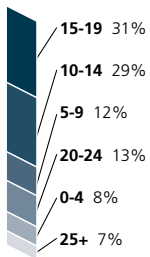
Type of Ship



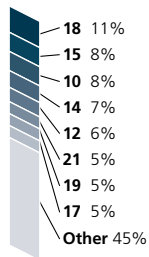
Size



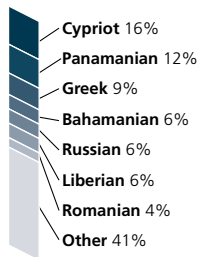
Age Band



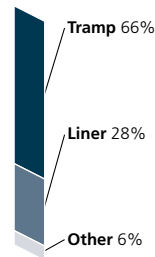
Age



Flag



Trade



Contract

